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Interventions before consultations for helping patients address their information needs (Review)

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Interventions before consultations for helping patients address their information needs.
Cochrane Database of Systematic Reviews 2007, Issue 3. Art. No.: CD004565.
DOI: 10.1002/14651858.CD004565.pub2.

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[Intervention Review]

Interventions before consultations for helping patients address their information needs

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Editorial group: Cochrane Consumers and Communication Group.
Publication status and date: Edited (no change to conclusions), published in Issue 1, 2010.

Citation: Kinnersley P, Edwards AGK, Hood K, Cadbury N, Ryan R, Prout H, Owen D, MacBeth F, Butow P, Butler C. Interventions before consultations for helping patients address their information needs. *Cochrane Database of Systematic Reviews* 2007, Issue 3. Art. No.: CD004565. DOI: 10.1002/14651858.CD004565.pub2.

ABSTRACT

Background

Patients often do not get the information they require from doctors and nurses. To address this problem, interventions directed at patients to help them gather information in their healthcare consultations have been proposed and tested.

Objectives

To assess the effects on patients, clinicians and the healthcare system of interventions which are delivered before consultations, and which have been designed to help patients (and/or their representatives) address their information needs within consultations.

Search methods

We searched: the Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library* (issue 3 2006); MEDLINE (1966 to September 2006); EMBASE (1980 to September 2006); PsycINFO (1985 to September 2006); and other databases, with no language restriction. We also searched reference lists of articles and related reviews, and handsearched *Patient Education and Counseling* (1986 to September 2006).

Selection criteria

Randomised controlled trials of interventions before consultations designed to encourage question asking and information gathering by the patient.

Data collection and analysis

Two researchers assessed the search output independently to identify potentially-relevant studies, selected studies for inclusion, and extracted data. We conducted a narrative synthesis of the included trials, and meta-analyses of five outcomes.

Main results

We identified 33 randomised controlled trials, from 6 countries and in a range of settings. A total of 8244 patients was randomised and entered into studies. The most common interventions were question checklists and patient coaching. Most interventions were delivered immediately before the consultations.

Commonly-occurring outcomes were: question asking, patient participation, patient anxiety, knowledge, satisfaction and consultation length. A minority of studies showed positive effects for these outcomes. Meta-analyses, however, showed small and statistically significant increases for question asking (standardised mean difference (SMD) 0.27 (95% confidence interval (CI) 0.19 to 0.36)) and patient satisfaction (SMD 0.09 (95% CI 0.03 to 0.16)). There was a notable but not statistically significant decrease in patient anxiety before consultations (weighted mean difference (WMD) -1.56 (95% CI -7.10 to 3.97)). There were small and not statistically significant changes in patient anxiety after consultations (reduced) (SMD -0.08 (95%CI -0.22 to 0.06)), patient knowledge (reduced) (SMD -0.34 (95% CI -0.94 to 0.25)), and consultation length (increased) (SMD 0.10 (95% CI -0.05 to 0.25)). Further analyses showed that both coaching and written materials produced similar effects on question asking but that coaching produced a smaller increase in consultation length and a larger increase in patient satisfaction.

Interventions immediately before consultations led to a small and statistically significant increase in consultation length, whereas those implemented some time before the consultation had no effect. Both interventions immediately before the consultation and those some time before it led to small increases in patient satisfaction, but this was only statistically significant for those immediately before the consultation. There appear to be no clear benefits from clinician training in addition to patient interventions, although the evidence is limited.

Authors' conclusions

Interventions before consultations designed to help patients address their information needs within consultations produce limited benefits to patients. Further research could explore whether the quality of questions is increased, whether anxiety before consultations is reduced, the effects on other outcomes and the impact of training and the timing of interventions. More studies need to consider the timing of interventions and possibly the type of training provided to clinicians.

PLAIN LANGUAGE SUMMARY

Interventions before healthcare consultations for helping patients get the information they require

Patients often report that they want more information from their healthcare providers or that the information they do receive does not address their needs. Generally, the amount of information given is small. People have differing needs for information, which also varies with the specific illness, but providing information is important as it helps patients recall, understand and follow treatment advice and be more satisfied. Clinicians may underestimate or undervalue the information needs of patients. They may also lack the skills to give information effectively. Training doctors and nurses probably helps, but another approach is to try to directly help patients ask questions in their consultations. This can be done by various methods such as question prompt sheets (which encourage patients to write down their questions) or coaching (when someone helps the patient to think of the questions they want to ask). This review evaluated studies of these types of interventions.

We identified 33 randomised controlled trials involving 8244 patients from six countries, mainly the USA, in a range of clinical settings. Most interventions, which included written materials (for example, question prompt sheets) and coaching sessions, were delivered in the waiting room immediately before the consultation. They were compared to dummy interventions or usual care. Health issues included primary care and family medicine, cancer, diabetes, heart problems, women's issues, peptic ulcer and mental illness.

We found small increases in question asking and patient satisfaction and a possible reduction in patient anxiety before and after consultations. We also found a possible reduction in patient knowledge and a possible small increase in consultation length. Both coaching and written materials produced similar effects on asking questions but coaching had a larger benefit in terms of patient satisfaction. Interventions immediately before the consultation led to a small increase in patient satisfaction whereas giving the intervention some time before did not. Interventions immediately before the consultation also resulted in small increases in consultation length, particularly when using written materials rather than coaching. Interventions some time before the consultation did not alter consultation time.

The interventions seem to help patients ask more questions in consultations, but do not have other clear benefits. Doctors and nurses need to continue to try to help their patients ask questions in consultations and question prompt sheets or coaching may help in some circumstances.

BACKGROUND

Patients (or healthcare consumers) often report that they want more information from clinicians (doctors and nurses) or that the information they do receive does not address their particular needs (Boberg 2003; Boreham 1978; Jenkins 2001). External observation confirms that the amount of information usually given to patients is small (Ford 1995; Maguire 1996; Svarstad 1974; Waitzkin 1984). Patients have varying information needs and clinicians need to tailor the information given accordingly (Leydon 2000; Meredith 1996). Providing information is important because it is a determinant of patient satisfaction, compliance, recall and understanding (Deyo 1986; Faden 1981; Hall 1988). It has also been associated with symptom resolution, reduced emotional distress, physiological status, use of analgesia, length of hospital stay and quality of life (Egbert 1964; Fallowfield 1994; Kaplan 1989; Roter 1995; Stewart 1995). Failure to give information, or the provision of unwanted information, can reduce the benefits of the consultation or can cause negative outcomes (Fallowfield 1999).

Information giving may be poor for a number of reasons. Clinicians may underestimate or undervalue the information needs of patients (Beisecker 1990; Faden 1981; Kindelan 1987; Tuckett 1985; Waitzkin 1984). Alternatively, they may overestimate the amount of information they give (Makoul 1995), lack the skills to give information (Jenkins 2002; Maguire 1986; Tuckett 1985) or use technical language and jargon (Korsch 1968). Furthermore, patients may feel intimidated or otherwise unable to voice their needs (Leydon 2000; McKenzie 2000; Stimson 1975; Tuckett 1985). This may be particularly relevant for patients with serious or life-threatening diseases to whom clinicians may be reluctant to give information, believing it to be harmful (Fleissig 2000; Jefford 2002; Silverman 2005).

Improving clinicians' provision of information to patients presents challenges. Clinicians' skills may not improve even with specific training, which can be resource intensive and in which clinicians may be reluctant to participate (Fallowfield 2002; Kramer 2004). As an adjunct or alternative, interventions directed at helping patients express their information needs and address them in consultations have been evaluated. Various methods has been identified to encourage patients to ask questions, including coaching sessions before consultations (Greenfield 1988), videos (Lewis 1991), and written materials (for example, question prompt sheets) (Butow 1994). Various outcomes have been studied with some positive results. For example, Greenfield and colleagues (Greenfield 1988) found that a 20-minute patient coaching session delivered before consultations to improve participation and information-seeking skills in the consultation led to patients reporting improved physical outcomes. Other positive results including increased patient satisfaction and improved psychological adjustment have been found in studies in both primary care and hospital settings, among patients with various conditions (Butow 1994; Kaplan 1989; Rost 1991; Roter 1977).

Despite these apparent benefits, we know of no routine implementation of strategies to help patients address their information needs. Given the large number of patients who consult clinicians in hospital and primary care settings, this suggests that there is either lack of knowledge of the potential benefits, doubts about the consistency of the evidence, or concerns about unforeseen negative outcomes. In these circumstances a systematic review is required to evaluate the current evidence, identify further research needs, and inform decisions about implementation of the interventions.

This review complements a number of other Cochrane reviews; for example, the review by Wetzels et al (Wetzels 2007) which focuses on interventions to involve older patients in primary care, the review by Scott et al (Scott 2003) on the provision of tape recordings or summaries of consultations, and the review by Lewin et al (Lewin 2001) of interventions aimed at providers to promote patient-centred care.

OBJECTIVES

To assess the effects on patients, clinicians and the healthcare system of interventions which are delivered before consultations, and which have been designed to help patients (and/or their representatives) address their information needs within consultations.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCTs).

Excluded: controlled (non-randomised) clinical trials (CCTs), prospective cohort studies (including controlled before-and-after studies and interrupted time series), studies without comparison groups, individual case reports.

In the protocol for this review we planned to include RCTs, CCTs and prospective cohort studies including controlled before-and-after studies and interrupted time series. This inclusive approach was designed to avoid missing important data in a rapidly expanding field, preliminary exploration of which suggested that few RCTs existed. However, we found 33 RCTs meeting the inclusion criteria for this review. Therefore we were able to raise the threshold for study design inclusion to include RCTs only, as these provide a more robust level of evidence than other study designs.

Types of participants

Patients and/or their representatives (or carers) of all ages before 'one-to-one' consultations with doctors or nurses in healthcare settings.

Excluded: Individuals or groups attending activities such as health promotion clinics (for example, antenatal classes) or in-patients for whom there were not specific subsequent identifiable consultations. Individuals consulting other healthcare professionals.

Types of interventions

Interventions directed at individual patients, representatives or carers before a consultation and intended to help them address their information needs in the consultation.

Evidence of this intention was that patients were encouraged to:

- consider and/or express their information needs by identifying and asking questions;

- consider and/or express the amount and content of information they require;
- consider how they might express their information needs in the consultation;
- consider how they might overcome barriers to communication within the consultation; and/or
- clarify and/or check their understanding of information provided in the consultation.

We excluded:

- interventions provided to patients during their consultations, for example information leaflets about illnesses or diseases, and decision aids;
- symptom diaries, unless the material appeared to encourage identification of patient information needs as well as provision of information;
- interventions describing treatment options and effects of treatments;
- interventions intended to provide patients with more information about their symptoms or illness unless this was intended to help the patient identify further information needs;
- interventions intended to improve communication other than addressing information needs;
- training and other interventions solely targeted at clinicians to encourage them to change their consulting behaviour, for example by providing more information to patients;
- interventions intended to help patients address information needs outside consultations.

Types of outcome measures

We categorised outcomes into three major domains:

1. the consultation process;
2. the consultation outcome; and
3. service outcomes.

This allowed us to distinguish between measures of change in the consultation process (for example, patient question asking) and measures of consultation outcome (for example, psychological health after the consultation).

Within the second domain of consultation outcomes, we used two sub-domains, as we considered primary outcomes to be measures of patient health (2a) and secondary outcomes to be measures which reflected the care the patient had received, or their experience or perception of it (such as patient satisfaction) (2b).

We considered service outcomes (domain 3), that is the effects of interventions on clinicians and the service as a whole, since benefits to patients must be weighed against other effects.

We thus intended to identify a range of outcomes which would provide data about the consultation process and outcomes for patients and service providers, and which enabled us to summarise data across studies.

We examined potentially important effect modifiers on the outcomes measured, looking in particular (where data were available) for the effects of: type of intervention, timing of intervention, and whether the interventions also included training for clinicians.

Search methods for identification of studies

Electronic searches

We used an explicit search strategy agreed with the Cochrane Consumers and Communication Group to search the following databases from their start date:

- Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library,* issue 3, 2006);
- MEDLINE (Ovid) (1966 to September 2006);
- EMBASE (1980 to September 2006);
- PsycINFO (1985 to September 2006);
- ERIC (1966 to September 2006);
- CINAHL (1982 to September 2006).

The search strategy was adapted for the requirements of each database. We conducted the searches in English, but considered citations identified in any language. We initially ran the searches in January 2004 and updated them in September 2006.

The search strategy for MEDLINE (Ovid) is presented in Appendix 1.

Searching other resources

We inspected the reference lists of possibly-included studies to identify further potentially-relevant citations. In addition, in an attempt to identify unpublished studies, we wrote to authors of included studies asking for information about similar studies not identified by our search and selection process. We also reviewed in detail the reference lists of five reviews on related topics (Anderson 1991; Cegala 2003, Gaston 2005; Harrington 2004; Jahad 1995).

Finally, since it was the journal in which the largest proportion of possibly-included studies were published, we also handsearched the contents of *Patient Education and Counseling* from 1986 to September 2006 (including those articles listed as being 'in press').

Data collection and analysis

Consumer involvement

Before conducting the review, the protocol was submitted to two groups of consumers (University of Wales College of Medicine Simulated Patients and Cochrane Consumer and Communication Review Group consumer representatives) and other peer-reviewers, and modified in the light of feedback.

Selection of studies

For the electronic searches, two researchers (PD and HP, DO or NC) independently reviewed each title and, where electronically available, the abstract. We categorised citations into three groups: 1) background literature; 2) possibly included studies; and 3) excluded (clearly irrelevant) studies.

Two authors (PK and HP or DO) reviewed independently the full text of the possibly-included studies, and determined whether they met the review's inclusion criteria (stated previously). Disagreements were resolved by discussion, or by seeking a third opinion (AE).

Two members of the research team (PK and RR or NC) independently extracted the data from each study. Disagreements

were resolved by discussion. We attempted to contact all authors to establish whether further data from studies were available, and to clarify any difficulties with interpretation or data extraction. When available, this additional data has been presented. We used piloted, specially-developed data extraction forms. Fields included: author; year; country; setting (primary/secondary care); description of intervention; patient groups; clinician groups; disease area; inclusion/exclusion criteria; numbers eligible/approached/recruited/followed up; randomisation; outcomes; blinding of assessor; duration of follow up; results and comments. Where studies used combined interventions (for example, written materials and coaching) we used data on the effects of the combined intervention for the principal outcomes. However, we used the effects of separate elements of the intervention in secondary analyses (for example, comparing the effects of written materials to coaching).

Avoidance of bias/criteria for assessing quality

In order to make an evaluation of study quality we assessed studies for: (1) selection bias, (2) performance bias, (3) attrition bias, and (4) detection bias (Clarke 2003). In addition, we gathered data on the adequacy of randomisation with particular attention to concealment of allocation. We reported allocation concealment in the Characteristics of included studies table using the following classification scheme: (A) Adequate, (B) Unclear, (C) Inadequate, or (D) Not used. We used intention-to-treat analyses if available.

Methods for combining studies

We conducted a narrative synthesis of the included trials, presenting their characteristics and results, focusing in particular on the effects of similar interventions. Since the studies were reasonably similar in terms of settings, inclusion criteria and interventions, we pooled data across studies and conducted meta-analyses where appropriate data were available. We conducted planned subgroup analyses to examine the possible effects of the type of intervention (written materials compared to coaching), and post-hoc analyses to examine the timing of the interventions (some time before the consultation compared to immediately before the consultation) and whether or not the clinicians in the study had received additional training as to how to deal with patients' questions. These were performed to provide further evidence to inform the implementation of future interventions. In the analyses we used the data reporting the effects of appropriate components of the intervention.

We used statistical tests for heterogeneity between studies. To estimate effects we used fixed-effect models where there was homogeneity, and random-effects models where heterogeneity existed. For those outcomes which were measured using the same methods and units we used the weighted mean difference (WMD) method (Higgins 2006). For outcomes measured using differing methods, (for example, satisfaction), or where there was likely to be variation due to the context (for example, consultation length, or questions asked) we used the standardised mean difference (SMD) method (Higgins 2006).

RESULTS

Description of studies

The search strategy generated 4876 citations. From these, the review authors identified 71 citations for possible inclusion. Eleven citations were added from the review by Cegala (Cegala 2003) and eleven from additional reading and citations of reviewed articles. In addition, as the review was proceeding, three further citations were added from the review by Harrington (Harrington 2004), four from handsearching *Patient Education and Counseling*, and six from further reading. We then assessed this final set of 106 citations. Of this set we excluded 71 papers. We included 33 trials described in 35 papers. The total number of patients randomised and entered into the studies was 8244. Three of the included studies were reported in more than one paper (Cegala 2000; McCann 1996; Roter 1977); also, two papers (Sander 1996; Thompson 1990) each reported two trials, and are thus labelled Sander 1996a and Sander 1996b; Thompson 1990a and Thompson 1990b.

The main characteristics of the 33 studies, including participants, interventions and outcomes measured, are described in the table 'Characteristics of included studies' . All were published in English. Seventeen studies were from the USA, seven from the UK, four from Australia, two from the Netherlands, two from Canada and one from Indonesia. There appeared to be increasing interest in the subject over time, with one study published in the 1970s, 3 published in the 1980s, 15 in the 1990s and 14 after 1999. The studies varied in size, with 2 studies involving less than 50 patients, 6 studies involving between 50 and 100 patients, 15 involving 100 to 200 patients and 10 involving over 200 patients. In addition, the number of clinicians varied, with 10 studies involving less than 5 clinicians, 4 studies involving between 5 and 9 clinicians, and 10 studies with 10 or more clinicians. In nine studies it was unclear how many clinicians were involved.

The patient population varied. Thirteen studies reported on primary care or family medicine patients, nine reported on patients with cancer, two on patients with diabetes, two on patients with cardiac problems, two on patients with obstetric or gynaecological problems, one on mixed outpatients, one on women attending family planning clinics, one on women attending a well baby clinic, one on children attending a paediatric clinic and one on patients with peptic ulcers. In the study conducted in a paediatric setting, both children and their parents received interventions (Lewis 1991). In one study, some of the patients were in-patients, although they subsequently had an additional outpatient consultation (Butow 1994). Thirty studies reported on patients consulting physicians, two on patients consulting either physicians or nurses, and one on family planning care providers.

Interventions

The studies assessed a range of interventions, with some studies using multiple or combined interventions of varying complexity. Additional Table 1 provides further information on the interventions, with studies grouped by time of implementation of the intervention, and by level of complexity (single / combined interventions).

With regard to the interventions targeted at patients, 26 studies reported on single interventions and 7 reported on multiple interventions.

Studies assessing single interventions for patients

Of the single interventions, 20 had only one component and 6 had multiple components. The single component interventions were:

- written materials in 15 studies (Bolman 2005; Brown 2001; Bruera 2003; Butow 1994; Butow 2004; Fleissig 1999; Frederickson 1995; Hornberger 1997; Maly 1999; Martinali 2001; McCann 1996; Middleton 2006; Tabak 1988; Thompson 1990a; Wilkinson 2002);
- coaching in four studies (Finney 1990; Greenfield 1985; Greenfield 1988; Roter 1977); and
- an audiotape of the previous consultation in one study (Ford 1995).

The multiple component (single) interventions were:

- coaching and written materials in four studies (Davison 1997; Kim 2003; Oliver 2001; Tennstedt 2000);
- coaching and a computer programme in one study (Davison 2002); and
- coaching, written materials and a video in one study (Lewis 1991).

Studies assessing multiple interventions for patients

Of the seven studies assessing multiple interventions:

- one study compared written materials with written materials and coaching (Brown 1999);
- one study compared written materials with brief advice on question asking (Cegala 2000);
- one study compared a brief message about question asking with an interview to identify questions and a third intervention of coaching (Kidd 2004);
- two studies compared two different forms of written materials (Little 2004; Sander 1996a);
- one study compared two different forms of coaching (Sander 1996b); and
- one study compared written materials with a brief message about question asking (Thompson 1990b).

All seven studies had an additional group who received usual care or a dummy intervention.

Intervention timing

In 26 of the 33 studies, the interventions were delivered to the patients in the waiting room immediately before their consultation. In six studies the intervention was delivered some time before the consultation - by post in five studies (Bolman 2005; Butow 2004; Fleissig 1999; Martinali 2001; Wilkinson 2002) and by community-based training in one study (Tennstedt 2000). In one study one group of patients received the intervention (a booklet to help them identify and ask questions) by post a few days before the consultation, and a second group of patients received a different intervention (brief advice about question asking) at the clinic on the day of the consultation (Cegala 2000).

Comparisons

In 20 studies, the control patients received a dummy intervention intended to be similar in length to that being studied, and in 11 studies they received only usual care. In one study (Kidd 2004) there were two control groups with one receiving a dummy intervention and the other usual care. Little 2004 used a 2 x 2 design testing two interventions with one group receiving neither and acting as a control. In three studies the interventions were repeated at subsequent consultations to the same patients (Bolman 2005; Greenfield 1988; Maly 1999).

Interventions for clinicians

In five studies (Bolman 2005; Brown 1999; Brown 2001; Lewis 1991; Middleton 2006) the clinicians also received an intervention intended to improve their ability to elicit questions from the patient and/or to enable them to answer patients' questions more effectively. In Bolman 2005 all clinicians were trained before the patient interventions were implemented. In Lewis 1991 only those clinicians who were seeing patients who received the intervention received training. Brown 1999 trained clinicians to address the patients' list of questions (if they had them). In Brown 2001 clinicians were randomised to address or to not address the question lists of patients who had received the intervention (that is, half of the patients who received a prompt sheet saw a doctor who actively endorsed the sheet and systematically reviewed each question). Finally, Middleton 2006 used a 2 x 2 design, with patients and clinicians being randomised to interventions.

Outcomes

We extracted data on all reported outcomes (See additional Table 2; and Table 3).

Our primary focus is on seven important and commonly-reported outcomes (question asking; patient participation; anxiety; patient satisfaction; knowledge; consultation length and clinician satisfaction) which are categorised into the outcome domains specified earlier, as follows:
1. Consultation process: question asking; patient participation;
2. Consultation outcomes:
a) Patient health outcomes: anxiety (primary outcome);
b) Patient care outcomes: patient satisfaction, knowledge (secondary outcomes); and
3. Service outcomes: consultation length, clinician satisfaction.

It should be noted that consultation length could be considered both to be a measure of consultation process and an outcome. However, for the purposes of this review, we chose to categorise it as an outcome of particular relevance to clinicians and the service itself.

We conducted meta-analyses on five outcomes: question asking, anxiety, patient satisfaction, knowledge and consultation length. We did not meta-analyse clinician satisfaction, since different methods were used to measure it in the three studies in which it was reported (Bruera 2003; Hornberger 1997; Lewis 1991). We did not meta-analyse patient participation because there was no consistency of measurement in patient questionnaires, and because some studies assessed it from patient questionnaires while others used consultation audiotapes.

Consistent methods of data collection were used across studies (see table Characteristics of included studies). Seventeen studies audiotaped or videotaped patient consultations to measure features of the conversation between patient and clinician (most commonly question asking and consultation length). Twenty six studies used exit questionnaires given to the patients immediately after the consultation to be completed on the premises or to be returned by post, while 14 studies used postal questionnaires or phone interviews to follow up patients days or weeks after their consultations.

1. Consultation process

Question asking was measured in 17 studies (Brown 1999; Brown 2001; Bruera 2003; Butow 1994; Butow 2004; Cegala 2000; Fleissig 1999; Ford 1995; Greenfield 1985; Greenfield 1988; Kidd 2004; Kim 2003; McCann 1996; Roter 1977; Tabak 1988; Thompson 1990a; Thompson 1990b) using direct counts from an audiotape.

Participation was measured in 14 studies (Bolman 2005; Butow 2004; Cegala 2000; Fleissig 1999; Ford 1995; Greenfield 1985; Greenfield 1988; Kim 2003; Lewis 1991; Martinali 2001; Roter 1977; Sander 1996a; Sander 1996b; Tennstedt 2000). Eight studies measured it from audiotapes of consultations (Butow 2004; Cegala 2000; Ford 1995; Greenfield 1985; Greenfield 1988; Kim 2003; Lewis 1991; Roter 1977) and six used a range of patient questionnaires (Bolman 2005; Fleissig 1999; Martinali 2001; Sander 1996a; Sander 1996b; Tennstedt 2000).

2. Consultation outcomes

a) Patient health outcomes

Patient anxiety was measured in 12 studies, 8 of which used the Spielberger questionnaire (Bolman 2005; Brown 1999; Brown 2001; Butow 2004; Davison 1997; Martinali 2001; Thompson 1990a; Thompson 1990b). The Hospital Anxiety and Depression Questionnaire was used in three studies (Ford 1995; Hornberger 1997; Little 2004), while Lewis 1991 used the Children's Picture Test of Anxiety to measured anxiety in children . In seven studies, anxiety was measured before the index consultation either as a baseline measure or an assessment of the impact of the intervention (Bolman 2005; Brown 1999; Brown 2001; Butow 2004; Davison 1997; Ford 1995; Martinali 2001). Anxiety was measured after the consultation in 10 studies (Brown 1999; Brown 2001; Butow 2004; Davison 1997; Ford 1995; Hornberger 1997; Lewis 1991; Little 2004; Thompson 1990a; Thompson 1990b).

b) Patient care outcomes

Patient satisfaction was measured in 23 studies. Four studies used questionnaires based on that developed by Roter (Roter 1977): Brown 1999; Brown 2001; Butow 1994; Butow 2004. Another four studies used methods based on the Medical Interview Satisfaction Scale (Finney 1990; Lewis 1991; Little 2004; McCann 1996). The remaining 15 studies used a variety of methods (Bolman 2005; Bruera 2003; Davison 2002; Fleissig 1999; Greenfield 1985; Greenfield 1988; Hornberger 1997; Kidd 2004; Maly 1999; Martinali 2001; Middleton 2006; Roter 1977; Tennstedt 2000; Thompson 1990a; Thompson 1990b).

Patient knowledge was measured in five studies. Two studies used the same questionnaire for patients with heart problems (Bolman 2005; Martinali 2001), and the remaining three studies each used different instruments (Greenfield 1985; Greenfield 1988; Oliver 2001).

3. Service outcomes

Consultation length was measured in 17 studies; in 11 directly from audiotape (Brown 2001; Bruera 2003; Butow 1994; Butow 2004; Ford 1995; Greenfield 1985; Greenfield 1988; Hornberger 1997; Kim 2003; McCann 1996; Roter 1977), and in 6 by other methods (Bolman 2005; Little 2004; Maly 1999; Martinali 2001; Middleton 2006; Thompson 1990a). The unit of measurement for consultation length in all studies was minutes.

As stated earlier, clinician satisfaction was measured in three studies using various methods (Bruera 2003; Hornberger 1997; Lewis 1991).

Risk of bias in included studies

The studies were of variable quality, with more rigorous methods tending to be used in more recently published papers.

Study design

All of the included studies were described as randomised controlled trials. However, methods of randomisation were described only briefly. In 27 studies the information was very brief, using terms such as 'patients were randomly allocated' or 'patients were randomly given an envelope' (Bolman 2005; Brown 1999; Bruera 2003; Butow 1994; Butow 2004; Cegala 2000; Davison 1997; Davison 2002; Finney 1990; Frederickson 1995; Greenfield 1985; Greenfield 1988; Hornberger 1997; Kidd 2004; Kim 2003; Lewis 1991; Martinali 2001; McCann 1996; Oliver 2001; Roter 1977; Sander 1996a; Sander 1996b; Tabak 1988; Tennstedt 2000; Thompson 1990a; Thompson 1990b; Wilkinson 2002). In two studies computers were used to generate random numbers (Brown 2001; Fleissig 1999); two studies used random number tables (Little 2004; Middleton 2006); one study used a remote trials co-ordination centre (Ford 1995); and one study used a card shuffling technique (Maly 1999).

In 30 studies, randomisation was by patient. In two studies, randomisation was by clinician (Hornberger 1997; Lewis 1991) and in one by site of delivery of a community-based intervention (Tennstedt 2000). In these three latter studies no attempt was made to account for the effects of clustering, which can lead to overestimation of the significance of the intervention. To explore this we conducted post-hoc meta-analyses with and without data from these studies and have described the results.

Only six studies provided sample size calculations (Bolman 2005; Brown 1999; Brown 2001; Kidd 2004; Little 2004; Middleton 2006).

Method of allocation concealment

Only four trials provided sufficient evidence of adequate concealment of allocation (Ford 1995; Little 2004; Middleton 2006; Tabak 1988). The methods used included an external trials co-ordination centre (Ford 1995), numbered, pre-prepared, sealed, opaque envelopes (Little 2004), and randomisation of appointment slots with blinding of receptionists (Middleton 2006). Twenty four studies were judged to be unclear about the method of allocation concealment, usually because insufficient information was provided. There was insufficient blinding of allocation in five studies (Cegala 2000; Frederickson 1995; Maly 1999; Sander 1996b; Tennstedt 2000).

Protection against contamination

In the two studies which were randomised by clinician (Hornberger 1997; Lewis 1991), no particular steps seem to have been taken to prevent contamination between clinicians in the different study arms. In addition, in Brown 2001 in which clinicians were randomly selected for training to address the intervention, there was a risk of contamination between trained and non-trained clinicians and also the possibility that trained clinicians might use their training with patients who had not received the intervention (the trained clinicians were required to actively endorse the list of questions for those patients who had received a prompt sheet). Evidence

was provided that the clinicians did vary their consulting style appropriately and did not overly facilitate questions with patients who had not received the prompt sheet.

Blinding of outcome assessors

In the 17 studies that used audio or videotapes to gather data about the consultation, 7 studies (Bruera 2003; Cegala 2000; Finney 1990; Greenfield 1985; Greenfield 1988; Kidd 2004; Tabak 1988) reported that those who assessed the tape were blind to patients' group allocation. In addition, 8 studies (Brown 2001; Butow 2004; Cegala 2000; Ford 1995; Greenfield 1985; Greenfield 1988; Hornberger 1997; Kidd 2004) reported reliability checks on the gathering of this data, with double rating of a sample or of all tapes. Most studies were unclear about the blinding of assessors for other key outcomes. However as most studies used patient-reported measures (questionnaires), there may be low risk of ascertainment bias.

Use of intention-to-treat analyses

Only two studies stated they used intention-to-treat analyses (Brown 2001; Little 2004).

Effects of interventions

Additional Table 2 'Main outcomes for each study' shows the effects of interventions on the outcomes measured in each study, classified as reduced, no change, or increased. These descriptors reflect statistical significance; that is, a statistically significant reduction in anxiety is labelled 'reduced' while a statistically insignificant reduction is labelled 'no change'

Additional Table 3 'Summary of outcomes sought' outlines the outcomes we looked for and the number of studies which reported them. We sought but did not find data on outcomes including: patients' satisfaction with knowledge provision, confidence and ability to cope, lifestyle or behavioural outcomes, use of health services, provision of information, clinicians' perceptions of the intervention, and, importantly, harms.

The most commonly-used measures of consultation process were question asking and patient participation. Primary consultation outcome measures - patient health outcomes - were measured rarely apart from psychological health. We have summarised below secondary consultation outcome measures of patient care - patient satisfaction and knowledge. The service outcome, consultation length, is also summarised below.

Meta-analyses were undertaken for the outcomes of: patient question asking (Analysis 1.1), patient anxiety (before and after the index consultation (Analysis 1.2; Analysis 1.3)) patient satisfaction (Analysis 1.4), knowledge (Analysis 1.5; Analysis 1.6), and consultation length (Analysis 1.7), where studies or authors provided appropriate data.

Additional analyses examined the effect of the type of intervention (written materials versus coaching), timing of interventions (some time before the index consultation versus immediately before the index consultation) and co-interventions (training for clinicians) for the same outcomes. However, for patient anxiety and knowledge there were insufficient studies in particular groups to undertake these further analyses, and for question asking it was only possible to investigate the effects of the type of intervention. To help with the interpretation of our findings, we considered effect sizes of around 0.2 to be 'small', 0.5 'moderate' and 0.8 or greater 'large' (Cohen 1988).

1. Consultation process

Question asking

With regard to consultation process outcomes, 17 studies measured question asking in the consultation, with 6 studies finding statistically significant increases (Brown 1999; Butow 2004; Cegala 2000; Kim 2003; Roter 1977; Thompson 1990a), and 11 studies finding no effects of the interventions compared to the controls (Brown 2001; Bruera 2003; Butow 1994; Fleissig 1999; Ford 1995; Greenfield 1985; Greenfield 1988; Kidd 2004; McCann 1996; Tabak 1988; Thompson 1990b).

The meta-analysis (Analysis 1.1) shows a small and statistically significant increase in patient question asking (SMD 0.27 (95% CI 0.19 to 0.36). It should be noted that for the study by Roter (Roter 1977), we had to make two assumptions about the data; first, that the number of people analysed in the interventions and the control groups for the outcomes of question asking and patient satisfaction were equal, and second, that for patient satisfaction the means for the two groups were 1.46 and 1.37, and not 146 and 1.37 as stated in the text.

Patient participation

Patient participation in the consultation was measured in a variety of ways in 14 studies (Bolman 2005; Butow 2004; Cegala 2000; Fleissig 1999; Ford 1995; Greenfield 1985; Greenfield 1988; Kim 2003; Lewis 1991; Martinali 2001; Roter 1977; Sander 1996a; Sander 1996b; Tennstedt 2000). It was increased by the interventions in eight studies (Butow 2004; Cegala 2000; Fleissig 1999; Ford 1995; Greenfield 1985; Greenfield 1988; Kim 2003; Lewis 1991), with no effect in five studies (Martinali 2001; Roter 1977; Sander 1996a; Sander 1996b; Tennstedt 2000). In Bolman 2005 participation was found to be increased after the first consultation and decreased in a second and third consultation.

2. Consultation outcomes

a) Patient health outcomes: anxiety

Anxiety is reported by the time of its measurement, either before or after the consultation.

With regard to primary consultation outcomes, patients' mental health was measured in the form of anxiety in 12 studies. In seven studies anxiety was measured before the index consultation (Bolman 2005; Brown 1999; Brown 2001; Butow 2004; Davison 1997; Ford 1995; Martinali 2001), but in three studies this was at the same time as the intervention (Brown 1999; Brown 2001; Davison 1997), so we considered it inappropriate to use this measurement as an outcome since it was intended as a baseline measure. However in four studies, the interventions were delivered some time before the consultation and anxiety was measured when the patient arrived for the consultation (Bolman 2005; Butow 2004; Ford 1995; Martinali 2001); in these studies we considered the assessment to be a true measure of the effects of the intervention.

Two studies which measured anxiety before the consultation found it to be reduced (Bolman 2005; Martinali 2001), one found it unchanged (Ford 1995) and one study found it increased (Butow 2004).

The meta-analysis (Analysis 1.2) showed a large decrease in patient anxiety before consultations, but this result was not statistically significant (WMD -1.56 (95% CI -7.10 to 3.97)).

In the nine studies measuring anxiety after the index consultation, one study found an increase in anxiety (Brown 2001) two found decreases (Hornberger 1997; Thompson 1990a) and the other six studies found no effect (Brown 1999; Brown 2001; Butow 2004; Davison 1997; Ford 1995; Hornberger 1997; Lewis 1991; Little 2004; Thompson 1990a; Thompson 1990b). The meta-analysis (Analysis 1.3) showed a small and statistically insignificant decrease in patient anxiety after consultations (SMD -0.08 (95% CI -0.22 to 0.06)).

b) Patient care outcomes: Patient satisfaction

Patient satisfaction was measured in 23 studies. In 14 studies there were no changes (Bolman 2005; Brown 1999; Brown 2001; Bruera 2003; Butow 1994; Butow 2004; Davison 2002; Greenfield 1985; Greenfield 1988; Hornberger 1997; Martinali 2001; McCann 1996; Middleton 2006; Thompson 1990a) , and in 5 there was increased satisfaction (Fleissig 1999; Little 2004; Maly 1999; Roter 1977; Thompson 1990b). In two studies there were only increases for particular aspects of satisfaction (depth of relationship (Middleton 2006), interpersonal satisfaction (Tennstedt 2000)). In Lewis 1991 child satisfaction increased but parent satisfaction was unchanged (we used the data on parent satisfaction in the meta-analyses, since all other patient groups were adults) and in Kidd 2004 there was no immediate change in satisfaction, but it was increased at three months post intervention.

The meta-analysis (Analysis 1.4) shows a small and statistically significant increase in patient satisfaction (SMD 0.09 (95%CI 0.03 to 0.16)).

Patient satisfaction was affected by the type of intervention and its timing (see below).

Patient knowledge

With regard to secondary outcomes, patient knowledge was measured in five studies with reductions in two studies (Bolman 2005; Greenfield 1985) and no change in three studies (Greenfield 1988; Martinali 2001; Oliver 2001). However, in two studies we considered that the placebo intervention for the control group was likely to increase patients' knowledge of their condition, because it also included information about their condition (Greenfield 1985; Martinali 2001) .

The meta-analysis (Analysis 1.5) shows a small and not statistically significant decrease in knowledge (SMD -0.34 (95% CI -0.94 to 0.25)). We repeated the analysis omitting Greenfield 1985 and Martinali 2001 (Analysis 1.6) and still found a small and not statistically significant decrease in knowledge (SMD -0.26 (95%CI -0.52 to 0.01)).

3. Service outcomes

Consultation length

Seventeen studies measured consultation length with 3 studies (Hornberger 1997; McCann 1996; Middleton 2006) finding statistically significant increases in consultation length and 13 studies (Brown 2001; Bruera 2003; Butow 1994; Butow 2004; Ford 1995, Greenfield 1985; Greenfield 1988; Kim 2003; Little 2004; Maly 1999; Martinali 2001; Roter 1977; Thompson 1990a) finding no effect. The study by Bolman (Bolman 2005) found that the first of three linked consultations was reduced in length, while the third consultation was increased.

The meta-analysis (Analysis 1.7) shows a small and not statistically significant increase in consultation length (SMD 0.10 (95% CI -0.05 to 0.25)).

Consultation length was affected by the type of intervention and its timing (see below).

Clinician satisfaction

In three studies (Bruera 2003; Hornberger 1997; Lewis 1991) clinician satisfaction was measured, but with no notable effects identified. No meta-analysis was conducted for this outcome.

With regard to other outcomes, there were no consistently positive effects.

Types of intervention (written materials and coaching)

Question asking

With regard to the effects of different types of intervention, for the comparison between written materials alone and coaching alone there were similar, small to moderate and statistically significant increases for both types of intervention for the outcome of question asking (Analysis 2.1) (written materials SMD 0.42 (95% CI 0.26 TO 0.59); coaching SMD 0.36 (95% CI 0.16 to 0.56)).

Patient satisfaction

For patient satisfaction (Analysis 2.2), written materials produced a small increase which was borderline for statistical significance (SMD 0.08 (95% CI 0.00 to 0.16)), whereas for coaching the effect was small and statistically significant (SMD 0.23 (95% CI 0.08 to 0.38)).

Consultation length

For the outcome of consultation length (Analysis 2.3), written materials led to a small and statistically significant increase in consultation length (SMD 0.13 (95% CI 0.05 to 0.21)), whereas for coaching there was a smaller increase in consultation length which was not significant (SMD 0.07 (95% CI -0.07 to 0.20)).

Timing of the intervention

For the effects of timing of the intervention, there were only two studies with extractable data in which the interventions were conducted some time before the consultation (Bolman 2005; Martinali 2001).

Patient satisfaction

For patient satisfaction (Analysis 3.1), interventions immediately before the consultation led to a small and statistically significant increase in patient satisfaction (SMD 0.10 (95% CI 0.02 to 0.17)) whereas those interventions given some time before the consultation led to a small and not significant change (SMD 0.07 (95% CI -0.20 to 0.34)).

Consultation length

Similarly for consultation length (Analysis 3.2), interventions immediately before the consultation led to a small and statistically significant increase in consultation length (SMD 0.16 (95% CI 0.03 to

0.29)), whereas those some time before the consultation led to no change (SMD -0.04 (95% CI -0.93 to 0.86)).

Clinician training

For the effects of clinician training, there were two possible analyses to be considered. First, whether clinician training combined with interventions targeted at patients provided greater benefits than interventions targeted at patients alone. Since we considered this comparison to be of prime interest to those wanting to improve services to patients, we conducted a meta-analysis of these data (Analysis 4.1; Analysis 4.2).

Three studies contained usable data of combined interventions for the outcomes of patient satisfaction and consultation length (Brown 2001; Lewis 1991; Middleton 2006).

Patient satisfaction

Meta-analysis showed that additional clinician training had no effect on patient satisfaction (Analysis 4.1) when interventions were combined with clinician training (SMD -0.01 (95%CI -0.15 to 0.12)) compared with patient interventions alone which had a small effect (SMD 0.13 (95%CI 0.05 to 0.21)).

Consultation length

We found the same effects on consultation length in studies where there was additional clinician training as in studies where there was no clinician training (Analysis 4.2). In both types of study there was little impact on consultation length (studies with clinician training SMD 0.17 (95% CI 0.01 TO 0.32); studies without clinician training SMD 0.17 (95%CI 0.10 to 0.24)).

An alternative approach is to consider the impact of patient interventions in the context of the clinicians also receiving training (that is, all clinicians being trained so that patients from both control and intervention groups saw trained clinicians). For this analysis, two studies contained relevant data (Bolman 2005; Middleton 2006). Bolman 2005 showed that the patient intervention produced a small decrease in consultation length (SMD -0.49 (95%CI -0.88 to -0.10)) and had no effect on patient satisfaction (SMD 0.00 (95%CI -0.39 to 0.39)). Middleton 2006 showed a small increase in consultation length (SMD 0.24 (95%CI -0.05 to 0.43)), and very little effect on patient satisfaction (SMD 0.03 (95%CI -0.16 to 0.22)).

From these two analyses we conclude, from the limited evidence available, that there are no clear benefits from clinician training, either combined with patient interventions or before the implementation of patient interventions.

Three studies were randomised by clinician (Hornberger 1997; Lewis 1991; Tennstedt 2000). These cluster randomised trials may have overestimated the effects found. We re-calculated the effect sizes and confidence intervals without these studies, and found small changes to the reported results (Additional Table 4). It should be noted that other studies may have also been vulnerable to clustering effects, and reported standard errors and confidence intervals may be overestimates.

DISCUSSION

Patients still do not get the information they require in clinical consultations (Rogers 2005). This review identified 33 randomised trials, in a range of settings and countries, of interventions designed to address this challenge which were targeted at patients. Our meta-analyses show that although the individual effects found in particular trials may be small or non-significant, when combined there are small and statistically significant effects in terms of increased patient question asking and increased patient satisfaction. The result for patient anxiety before consultations demonstrated a large, but not statistically significant, effect. Results for patient anxiety after consultations and consultation length were also small and not statistically significant. The effects of the interventions on patient knowledge are unclear due to methodological difficulties. Assessing patient participation remained a challenge throughout the review; although commonly measured, a range of methods are used (from tapes of consultations and from patient questionnaires); additionally, participation could mean different things to different people.

Question asking

The increase in question asking demonstrates the most direct effect of the interventions. Patients were asked, largely through written messages or coaching, to identify questions, and told that the clinicians were interested in the patients asking these questions and would try to provide information. While increased question asking in itself may be of little direct benefit to patients or clinicians, these findings demonstrate that relatively straight forward interventions are able to influence the dialogue between clinician and patient, albeit to a small degree. However, the interventions may be expected to have greater direct effects. A possible explanation for this is that many clinicians, and probably patients, adopt 'ritual' styles of consulting (Neighbour 1996), and these may not readily be changed by interventions, particularly if delivered immediately before the consultation and only targeted at one participant in the consultation (as most of these interventions were). Unfortunately, we did not have the data to explore whether question asking increased more when the clinicians were trained. In addition, desire for information by patients may not necessarily translate into question asking (Beisecker 1990). As a result, while the interventions may have helped patients to identify questions to ask, patients may have been unable to ask them, and may have left with the questions unanswered (Butow 2004; Fleissig 1999). Another possibility is that the doctor may have given the information unprompted and in trials randomising by patient there is the real possibility that clinicians may start giving more information to all patients, and not only those who asked questions. This could minimise the effects found for all outcomes; not just question asking. It should also be noted that most studies using this outcome focused on the number of questions asked, rather than the type of questions or topics raised. It would be hoped that the increase in number of questions indicated that the patient was able to address important information needs. This is supported by Brown's finding of an increase in the number of questions about prognosis in patients with cancer (Brown 2001). Prognosis would clearly be a topic of great significance in this patient group, but also could be an issue that patients might be reluctant to address without specific encouragement (Fleissig 2000; Leydon 2000).

Patient anxiety

The tentative finding of a reduction in patient anxiety before consultations indicates the most sizeable effect of the interventions. However, this result did not reach statistical significance and the number of studies and patients involved

is small (3 studies involving 372 patients). Patients attending consultations feel they have a story to tell and questions to which they want answers (Helman 2007). However, they may feel uncertain as to whether they will get the chance to express their needs and get the information they seek. It would appear that the interventions reviewed here may act as an acknowledgement to the patients that their concerns will be heard and that they will get their questions answered. In addition, helping patients to organise their thoughts and plans for the consultation is likely to be an effective strategy for reducing anxiety. It should be noted, however, that the study by Butow which involved patients with cancer showed an increase in patient anxiety (Butow 2004), which suggests that the effects may be different with particular patient groups. It is also notable that Bolman found that fewer patients used the intervention at successive consultations and that pre-consultation anxiety increased before each successive consultation in both the control and intervention groups (Bolman 2005). This suggests that rather than patients becoming familiar with the physicians at the clinic and feeling less need to organise themselves, they were finding that the clinicians were relatively unresponsive to their questions and thus there was little to be gained from the process. Support for this possibility comes from the finding that anxiety after consultations was not similarly reduced. It might be hoped that the interventions would give patients a greater sense of control within the consultations as they would be more organised about their concerns and more assertive. In addition, they would have identified and in some cases practised asking the questions they wanted to ask to alleviate their concerns. However, anxiety may not consequently be reduced for two possible reasons. First, the clinician may not respond helpfully, thus frustrating the patient's attempts to gather information or, second, the information provided as a result of the increased question asking may be worrying. This would be particularly likely in oncology clinics (in which nine studies were set).

Patient satisfaction

The small increase in patient satisfaction indicates another benefit of these interventions. Satisfaction is a commonly measured outcome for consultations and has itself been related to other beneficial outcomes. The increase found here is consistent with other reports of increased patient satisfaction with more patient-centred styles of consulting (Kinnersley 1999; Krupat 2000; Lewin 2001). However, increased satisfaction may not be an automatic benefit of increased question asking by patients. Roter suggests that increased question asking by the patient changes the patient's role and the consultation process, thus disrupting the usual consultation 'harmony' (Roter 1977). Indeed, the interventions could even generate conflict, between patients expecting answers to questions and clinicians used to providing relatively limited information. As a result, satisfaction may not be increased - as anxiety may not be reduced - if the expectations generated by the intervention are not fulfilled by the subsequent consultation. It has been suggested that the interventions would probably have had more effect if endorsed by the clinicians or supported by clinician training, as some patients reported not feeling comfortable referring to their question list during consultations (Butow 2004; Fleissig 1999; Roter 1977). Although this advice has only been followed in a small number of studies in this review, those studies in which the clinicians received training had less impact on patient satisfaction than those in which the clinicians were not trained. This may be because the clinician training was inadequate or ineffective; certainly it appears to have been quite brief in most reports (Brown 1999).

Consultation length

The finding that the effects of interventions on consultation length were small and not statistically significant is important, as clinicians and healthcare providers will be understandably cautious about interventions which they may expect to increase consultation length. It is notable that written materials increased consultation length but coaching did not. This suggests that coaching has the advantage that patients can be guided as to how to ask questions efficiently, which would be more difficult with written materials (since both seem equally effective in terms of increasing patient question asking). It is more difficult to interpret the effect of timing of intervention and clinician training but it would appear that even when the effects are statistically significant their size is small. Clearly how clinician and patient spend the consultation time is likely to be as important as the amount of time itself (Wilson 2002a).

Patient knowledge

The effects on patient knowledge are difficult to interpret for two reasons. First, the results of the meta-analysis should be regarded with caution, since in two of the studies the placebo intervention for the control group included information for patients about their condition (Greenfield 1985; Martinali 2001). Secondly, the number of studies using this outcome is small. It would be expected that increased question asking would lead directly to increased patient knowledge and therefore this finding requires further exploration. It should be noted that careful attention to the design of placebo interventions and rigorous attention to other methodological details (such as allocation concealment) will be required.

Types of intervention

The effects of the different types of interventions (written materials and coaching) are interesting. Although their effects on question asking are similar, coaching led to a greater increase in patient satisfaction with no concomitant increase in consultation length. This may be because whilst both methods are effective in helping the patient generate questions, coaching leads to patients asking more significant questions more efficiently. However, it is also possible that the increase in patient satisfaction is, in some part, a reflection of patients' positive responses to the 'consultation' they have with the coaching provider. These differences are important since coaching is more costly than the provision of written materials, and is probably impractical in many healthcare settings. Further research may be needed to clarify whether the apparent benefits of coaching are sustained if the coaching is delivered some time before, and thus separate from, the consultations.

Timing of intervention

The effects of the timing of the interventions are mixed, and the meta-analyses must be interpreted with caution given the small number of studies which provided data some time before the consultations. It would appear that interventions employed some time before the consultations may not increase consultation length nor patient satisfaction, while interventions immediately before consultations increase both consultation length and satisfaction. This may be as a result of the small numbers of studies, or it could

suggest that patients who attend their consultation having had time to consider their needs have greater expectations which may not be fulfilled. One would expect interventions some time before consultations to be preferable, since this would give patients more time to identify, prioritise and rehearse questions, but they may result in more demanding consultations for clinicians.

Clinician training

The effects of clinician training are notable. It might be expected that clinician training would lead to greater efficiency in consultations and greater patient satisfaction but in fact we found similar small increases in consultation length between studies with and without clinician training and no effect on patient satisfaction when there was clinician training but a small increase when there was no training. However, as already noted the number of studies in which clinicians were trained is small, and the training provided was brief. Studies are needed in which clinicians are trained more intensively to help patients express their information needs and to provide information skilfully. Qualitative studies might also be useful to understand why patients are not satisfied.

Considering patient needs

Certain patient groups or patients with particular conditions may find the interventions more helpful than others. Many of the studies were in settings in which patients were consulting oncologists. This may reflect oncologists' interest in providing high quality information to patients and therefore in research methods to achieve this, or may be an acknowledgement that patients with cancer have particularly complex information needs (Leydon 2000). However, no single study explored the use of the same intervention in different settings. Cegala (Cegala 2000) and McCann (McCann 1996) assessed the impact of the interventions on different patient groups and found that younger, white, middle-class, educated patients asked more questions. Since younger patients are known to ask more questions generally however, these findings may not indicate a specific effect of the intervention. In addition, it is notable that older, less educated patients did not perceive themselves as being less involved, or to have less control over decision making (Tennstedt 2000).

Size of effect

For the outcomes studied, the benefits of the interventions are modest. This is not to dismiss the interventions' value, but they do not appear to be the solution to the challenge of improving communication between patients and clinicians. A particular concern is that they represent mechanistic 'quick fixes' which can be readily implemented. This approach is now being advanced by various websites set up to guide patients on how to prepare for consultations. Such resources may be helpful, but focusing on the patient alone (without ensuring the clinician is also receiving guidance) may not produce long-term patient benefits, due to the complexity of the dialogue between patient and clinician (Roter 2000).

Quality of the evidence

With regard to the validity of our results, we have reviewed a considerable body of research (33 trials, 8244 patients). All of these were randomised trials although we note that the information provided about the methods used, particularly in the earlier reports, was limited and often inadequate. Thus there has to be some caution about the quality of the evidence. However, it should also be noted that there was general consistency, in terms of the results found across studies, although for some the confidence intervals are very wide and some meta-analyses show considerable statistical heterogeneity.

Broader relevance of the findings

A successful consultation requires that the patient, rather than their disease, be the focus of health care (Bensing 2000). Patient and clinician must reach common ground over the nature of the problem and what could and should be done about it (Starfield 1981). Information needs to be exchanged, and decision making shared, and clinicians need to be sufficiently flexible to adapt to the varying preferences of different patients or the same patient in different circumstances (Edwards 2006; Elwyn 1999; Elwyn 2000; Fleissig 2000). Some patients will not want information about their illness, or at least not at that particular consultation, preferring a non-participatory role (Leydon 2000). Furthermore, clinicians may continue to have mixed views of the benefits of increased patient participation in consultations, viewing the encouragement of question asking as threatening when time is limited and their focus is on the medical agenda. Thus a combined approach is required in which patients are encouraged and helped to participate in consultations if they wish, and in which clinicians have the skills to identify and adapt to different patients' needs. Interventions like those for helping patients address their information needs can address part of this approach, but a spiral curriculum of communication skills training for clinicians, from initial generic training to methods that address the needs of specialist roles, has been argued (Silverman 2005). An alternative approach is demonstrated by the use of specialist nurses, who may consult with the patient, as well as accompany the patient when consulting with the specialist physician. In these circumstances, the nurse can provide information directly to the patient and also be an advocate for information gathering or an interpreter of the information provided.

Most studies used multiple outcome measures to assess the effects of interventions and there was generally consistent use of validated measures for certain specific outcomes. Given the apparent ease of audiotaping consultations, estimates (rather than accurate measurements) of patients' question asking or of consultation length by clinicians or patients should not be used. The definition of some outcomes (such as knowledge) requires improved reporting. Furthermore, there was relatively limited attention to outcomes directly related to patients' health, for example symptom control and performance status, with researchers preferring to assess more readily measurable outcomes related to patient care (such as satisfaction).

Clearly it is important to consider the context in which care is being provided when considering patient empowerment. In acute life threatening emergencies, the majority of patients look to clinicians to make decisions and take action, without their active participation. However, when there is clinical uncertainty or in the management of chronic disease, patients need to participate in their consultations and be actively involved in their care (Elwyn 1999). This is likely to demand methods of enhancing patient participation as reviewed here, but also requires clinicians having the necessary skills and attitudes to reach common ground and share decisions (Edwards 2006).

Strengths of the review

Several related reviews have been published (Anderson 1991; Cegala 2003; Harrington 2004; Jahad 1995; Post 2002; Wetzels 2007). This suggests a growing concern with helping patients to participate fully in their consultations. However, we have used a more comprehensive search and review strategy than other reviews, and have identified more trials of interventions directed at patients, despite limiting included studies to those with random allocation of participants. We also contacted and received responses from authors, thus enabling us to clarify or add to the data presented. In addition, to our knowledge no other review on this subject has incorporated meta-analyses. The other reviews are broadly supportive of interventions to promote patient information gathering, identifying a range of beneficial outcomes. However, the data provided by our meta-analyses enable us to provide clearer and more conclusive evidence of the effects of these interventions.

Weaknesses of the review

Despite our efforts to search comprehensively for relevant studies, we may have omitted some studies. Although we contacted authors, we were only able to identify published trials and it is possible that other relevant trials remain unpublished. Furthermore there may be an English language bias as a result of the databases we searched. However, given the attention paid to this subject in original research and reviews, we believe it is unlikely that any other major study which would have changed our conclusions has been omitted.

We restricted the review to studies involving patients consulting doctors or nurses. It may be that interventions have been tested for patients consulting other health professionals. However, since doctors and nurses are considered by patients as being their main source of information about major illnesses we consider that we have reviewed the most important area of relevant literature.

AUTHORS' CONCLUSIONS

Implications for practice

The effects of interventions focused on patients prior to their consultations, designed to help them address their information needs within consultations, are small. Since written interventions are likely to be much cheaper than coaching they should be perhaps be used in preference, although they may slightly increase consultation length. Clinicians should continue to try to encourage their patients to ask questions and to provide them with information. Question prompt sheets or coaching may be helpful with particular groups for whom asking questions is particularly difficult, but these interventions do not appear to produce consistent major benefits.

Implications for research

Despite the relatively large number of similar trials conducted, there appears to be a need for further research to fully evaluate the effects of these types of interventions. While many studies counted the number of questions asked, there were very few assessments of the questions' quality or content. Patients' information needs are specific. Some questions may be more difficult to ask (for example, about prognosis in cancer consultations) and thus may require particular facilitation by the clinician. Additionally, and probably most importantly, further research should explore the effects of the clinicians' responses to question asking by patients, and whether clinician training can enhance this. In the studies reported here, where clinician training occurred it appears to have been ineffective in producing consistent additional benefits. Further trials are needed to establish whether patient-focused interventions combined with intensive training of clinicians can produce overall and sustained benefits. Finally, other outcomes should be considered. As an outcome, patient satisfaction has limitations, since patients may be satisfied with less than ideal care. Alternative outcomes should be considered and tested in randomised trials.

ACKNOWLEDGEMENTS

We thank the staff and editors of the Cochrane Consumers and Communication Review Group, particularly Megan Prictor for her overall advice and guidance, Sophie Hill as Coordinating Editor of the Review Group, Dell Horey, contact editor for the review and Dominique Broclain, contact editor for the protocol, and former Trials Search Coordinator Judy Stoelwinder for her assistance with the search strategy. We would also like to thank Damien Jolley and Kelly Allen for their statistical feedback and the other anonymous editors and external peer reviewers for their comments. We thank the following consumers for their helpful feedback : from University of Wales College of Medicine Simulated Patients Janine Cooper-Marshall, Pat Oliver, Iris Mackenzie, Peter Palmer, Richard Berry; from Cochrane Consumer and Communication Group consumer representatives Amy Zelmer, Nete Villebro, Rosemary Humphreys, Amy Arkle, Judi Strid. The initial idea for this work came when Paul Kinnersley was working in Australia funded by a grant from the PPP Foundation (now known as the Health Foundation).

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Bolman 2005

Methods	RCT Randomisation such that each clinician got balanced number of intervention and control patients.
Participants	Setting: One cardiology clinic, the Netherlands. Clinicians : 16 cardiologists. Participants: Adult patients recently discharged after acute cardiac event attending for three follow up consultations; 194 patients approached; 153 recruited and randomised; 118 at baseline (2 died, 33 withdrew); 105 in intention-to-treat analysis (13 excluded); 75 completed follow up.
Interventions	Timing: One week before consultation. Intervention: Question prompt sheet - containing 49 frequently asked questions. Patients encouraged to identify which questions applied to them and ask these in consultation. Intervention repeated after each consultation. Controls: Information booklet providing details of telephone helpline ('did not contain substantive information about coronary artery disease') Clinicians: Brief training on how to respond to patients' questions.
Outcomes	Pre consultation questionnaire: State anxiety (20 item Spielberger) Exit questionnaire: Participation (2 items) Satisfaction (18 items) Information exchange (10 items) Knowledge (25 items) Clinician questionnaire: length of consultation (estimate)
Notes	

Bolman 2005 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Brown 1999

Methods	RCT Two intervention groups and one control group; one third of patients allocated to each group.
Participants	Setting: One cancer clinic, Australia. Clinicians: Two oncologists. Participants: Adult patients with mixed cancers; 61 approached, 60 randomised (1 refused); 60 completed follow up.
Interventions	Timing: Immediately before consultation. Interventions: a) Question prompt sheet - containing 17 frequently asked questions. Doctors endorsed the prompt sheet and went through list eliciting and answering questions according to a standard protocol; b) question prompt sheet/coaching - sheet and coaching from research psychologist covering question generation, benefits of and barriers to question asking and rehearsal. Controls: Usual care. Clinicians: Training to endorse the interventions.
Outcomes	Consultation audiotape: Question asking Exit Questionnaire: State anxiety (Spielberger - no of items not provided) Postal questionnaire (7 to 10 days after consultation): Satisfaction (25 items) State Anxiety (Spielberger - no of items not provided) Psychological adjustment (fighting spirit and hope/helplessness - no of items not provided)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Brown 2001

Methods	RCT Two intervention groups and one control group; one quarter of patients to each intervention group and one half to control group.

Brown 2001 *(Continued)*

	Clinicians randomised to be 'active' or 'passive'.
Participants	Setting: Two cancer clinics, Australia. Clinicians: 9 oncologists. Participants: Adult patients with mixed cancers; 336 approached, 318 randomised (18 refused) and completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Question prompt sheet endorsing question asking as an activity useful to the patient and welcomed by the doctor. Participants circled questions they would ask. Half those who got prompt sheets saw doctor who actively endorsed sheet and systematically reviewed each question. Controls: Usual care. Clinicians: Half trained to review question sheet and monitored.
Outcomes	Consultation audiotape: Question asking Consultation length Exit questionnaire: State anxiety (Spielberger - no of items not provided) Postal questionnaire (7 days after consultation): Information needs (7 content areas) Satisfaction (25 items) Telephone interview (7 to 10 days after consultation): Recall
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Bruera 2003

Methods	RCT
Participants	Setting: One cancer clinic, USA. Clinicians: number not stated. Participants: Adult women with breast cancer; 132 screened for entry, 60 enrolled and randomised, 60 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Question prompt sheet - containing 22 frequently asked questions with space for patient to write additional questions. Controls: General information sheet about breast cancer

Bruera 2003 *(Continued)*

	Clinicians: Usual practice.
Outcomes	Consultation audiotape: Question asking Consultation length Exit questionnaire: Satisfaction (6 items) Clinician questionnaire: Satisfaction (1 item) Estimate of consultation length.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Butow 1994

Methods	RCT
Participants	Setting: One cancer clinic, Australia. Clinician: One oncologist. Patients: Adults with mixed cancers; 142 recruited and randomised, 92 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Question prompt sheet - designed to encourage patients to ask questions in the consultation. Patients instructed to list and rank questions to ask. Controls: General information sheet about cancer services. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Question asking Consultation length Postal questionnaire (1 to 3 weeks after consultation): Satisfaction (22 items) Psychological adjustment (21 item) Recall of information
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Butow 2004

Methods	RCT
Participants	Setting: One cancer clinic, Australia. Clinicians: Four oncologists. Patients: Adults with mixed cancers; 200 recruited and randomised, 141 completed follow up.
Interventions	Timing: at least 2 days before consultation. Intervention: Question prompt sheet - designed to encourage patients to ask questions in the consultation. Controls: General information sheet about cancer services. Clinicians: Usual practice.
Outcomes	Pre consultation questionnaire: Anxiety (Spielberger 20 items) Depression (no of items not provided) Information and involvement preferences (2 items) Satisfaction with intervention (no of items not provided) Consultation audiotape: Question asking Consultation length Patient participation Exit questionnaire: Anxiety (Spielberger 20 items) Depression (no of items not provided) Perception of involvement (no of items not provided) Satisfaction with treatment decision (no of items not provided) Satisfaction with consultation (25 items) Postal questionnaire (1 month after consultation): Anxiety (Spielberger 20 items) Depression (no of items not provided) Perception of involvement (no of items not provided) Satisfaction with treatment decision (no of items not provided) Satisfaction with consultation (25 items) Clinician questionnaire: Satisfaction with decision making, perceived success in meeting patient's information preferences (no of items not provided)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Cegala 2000

Methods	RCT

Cegala 2000 *(Continued)*

	Two intervention and one control group. Six patients per physician entered into study, two to each group.
Participants	Setting: Two university hospital clinics and 7 private practices, USA. Clinicians: 25 family physicians. Participants: Adults with mixed problems; 150 recruited and randomised, 134 completed follow up.
Interventions	Timing: Intervention a) 2 to 4 days before consultation; Intervention b) immediately before consultation. Interventions: a) booklet : 14 page workbook encouraging patient to list topics they wanted to discuss then sections on information seeking and verifying. Booklet briefly gone over on arrival. b) brief advice: summary of points in booklet, patients encouraged to organise thoughts and ask questions. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Question asking Information provision by doctor Information provision by patient Verifying of information by patient Telephone interview (2 weeks after consultation): Compliance
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Davison 1997

Methods	RCT
Participants	Setting: One community clinic, Canada. Clinicians: Two urologists. Participants: Men with prostate cancer; 60 approached and randomised, 59 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Coaching - patients asked by researcher to think about the type of information they needed to decide treatment best for them. List of frequently asked questions reviewed and questions identified. Given information pack and shown where to find answers to questions. Further questions added to list. Encouraged to ask for audiotape of consultation. Controls: Information package which they were encouraged to read and 'social' interview. Clinicians: Usual practice.

Davison 1997 *(Continued)*

Outcomes	Phone interview (5 to 6 weeks after consultation): State anxiety (Spielberger 20 items) Trait anxiety (Spielberger 20 items) Depression (20 items) Preferences for control over treatment decision (5 items)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Davison 2002

Methods	RCT
Participants	Setting: Three cancer clinics, Canada. Clinicians: Number not stated. Participants: Women with breast cancer; 749 recruited and randomised, 734 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Computer programme/coaching - patients used computer programme to identify control preferences then completed questionnaire on computer to identify information needs. Nurse then coached patient in using computer print outs in the consultation to gather information. Controls: Completed paper version of control preferences scale and had general discussion with nurse. Clinicians: Usual practice.
Outcomes	Pre consultation questionnaire: Role preferences (Active, Collaborative, Passive) Exit questionnaire: Satisfaction (14 items) Role assumed Role preferred
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Finney 1990

Methods	RCT
Participants	Setting: One well baby clinic, USA.

Finney 1990 *(Continued)*

	Clinicians: One male paediatrician and one female paediatric nurse practitioner (most patients in each group saw the nurse practitioner). Participants: Mothers and their babies consulting for well baby checks; 32 recruited, randomised and completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Coaching - brief prompting strategy to ask questions of interest to mothers. Controls: General talk with investigator of equivalent length (no further details provided). Clinicians: Usual practice.
Outcomes	Consultation audiotape: Question asking Bids for information Parent initiated discussions Total topics discussed Asking and discussion of initial questions Exit questionnaire: Satisfaction (16 items)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Fleissig 1999

Methods	RCT
Participants	Setting: Three outpatient clinics (Gynaecology, Orthopaedics and Dermatology) at one hospital, UK. Clinicians: Number not stated. Participants: Newly referred adult patients; 2603 approached, 1683 attended clinic during study period, 1208 randomised, 762 completed follow up.
Interventions	Timing: Posted to patients two weeks before consultation. Intervention: Question prompt sheet - 'Help card' suggesting general questions to ask clinician with space for patient to write down further questions. Suggestions covered patient's condition, tests, treatments and other concerns. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Postal questionnaire (within 1 week of consultation): Satisfaction (9 items) Information needs Expectation that questions welcome Preparation of questions Were prepared questions raised?

Fleissig 1999 *(Continued)*

	Unanswered questions after consultation
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Ford 1995

Methods	RCT
Participants	Setting: One cancer clinic, UK. Clinicians: 5 oncologists. Participants: newly referred patients with mixed cancers; 117 recruited and randomised, 95 consulted.
Interventions	Timing: Prior to consultation. Intervention: Audiotape of previous consultation, patients encouraged to listen and identify further questions. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Pre-consultation questionnaire: Psychological morbidity Depression (GHQ 30 items) Anxiety (HADS 14 items) Consultation audiotape: Consultation length Question asking Requests for clarification Requests for information given earlier Patient: clinician talk
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Frederickson 1995

Methods	RCT
Participants	Setting: One general practice, UK. Clinician: One general practitioner.

Frederickson 1995 *(Continued)*

	Participants: Consecutive mixed adult patients; 80 recruited, randomised and completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Leaflet - single page encouraging patient to 'stop, think and tell' the doctor about the problem and their concerns. Controls: Usual care. Clinician: Usual practice.
Outcomes	Clinician questionnaire: Rating of quality of consultation (good/not good)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Greenfield 1985

Methods	RCT
Participants	Setting: One outpatient clinic, USA. Clinicians: 8 physicians. Participants: Adults with peptic ulcers; 87 eligible, 51 made clinic visits, 45 randomised (6 excluded), 44 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Coaching - 20 minute session with 3 components - review of records, review of treatment algorithm, behaviour change strategy to increase involvement in consultation. Controls: Similar intervention covering review of ulcer disease. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Consultation length Questions asked Patient utterances Controlling utterances by patient Patient: physician utterances Physician fact: control utterances Exit questionnaire: Knowledge (23 items) Postal questionnaire (6-8 weeks): Role limitations (3 items) Physical limitations (5 items) Ulcer related pain (9 items) Preference for active involvement (5 items) Satisfaction (4 items)

Greenfield 1985 *(Continued)*

Notes	Intervention for controls could affect outcome of knowledge.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Greenfield 1988

Methods	RCT
Participants	Setting: Two hospital diabetes clinics, USA. Clinicians: 56 physicians. Participants: Adults with diabetes; 98 eligible, 73 randomised, 59 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Coaching - 20 minute session with 3 components - review of records, review of treatment algorithm, behaviour change strategy to increase involvement in consultation. Repeated before follow up consultation at which outcomes measured. Controls: Similar intervention covering review of diabetes. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Consultation length Questions asked Patient utterances Controlling utterances by patient Patient: physician utterances Effectiveness of patient information seeking Patient questionnaire (2 weeks after second consultation): Physical function (10 item scale) Knowledge (22 items) Mobility (4 items) Global health (1 item) Satisfaction (7 items) Adherence (5 items) Desire for health information Interest in medical records Apprehension about seeing medical records
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Hornberger 1997

Methods	RCT Randomisation by clinician.
Participants	Setting: One primary care clinic, USA. Clinicians: 15 physicians approached, 10 participated in trial (5 refused). Participants: adults with mixed primary care problems; 221 identified, 102 entered into trial.
Interventions	Timing: Immediately before consultation. Intervention: question prompt sheet - questionnaire identifying patient concerns with encouragement to ask questions. Patients identified three main concerns and wrote these down. This list attached to patient records so physician could address it. Controls: Pamphlet about hospital and clinic. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Number of diagnoses Consultation length Exit questionnaire: Health status (SF 36) Anxiety (HAD - no of items not provided) Depression (HAD - no of items not provided) Satisfaction (4 items) Provision of services in consultation Clinician questionnaire: Satisfaction (6 items)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Kidd 2004

Methods	RCT Three intervention and two control groups.
Participants	Setting: One diabetes clinic, UK. Clinicians: Number not stated. Participants: Adults with diabetes; 332 approached, 202 randomised and entered into study (93 refused, 37 withdrew) and completed follow up.
Interventions	Timing: Immediately before consultation. Interventions: a) Question encouragement - encouraged to ask questions by written message; b) Question prompt interview - five minutes with researcher identifying at least three questions to ask; c) Question prompt interview/Coaching - question identification and rehearsal of question asking.

Kidd 2004 *(Continued)*

	Controls: a) Discussion of layout of hospital and clinic; b) Usual care. Clinicians: Usual practice
Outcomes	Consultation audiotape: Question asking Exit questionnaire: Self efficacy (2 items) Satisfaction (1 item) Postal questionnaire (3 months after consultation): Self efficacy (2 items) Satisfaction (1 item) Physiological test: HbA1c
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Kim 2003

Methods	RCT 12 patients per clinician, balanced so that there were 4 new patients and 8 returning patients per clinician.
Participants	Setting: 64 family planning clinics, Indonesia. Clinicians: 64 family planning providers. Participants: Women attending family planning clinics; 768 recruited, randomised and completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Coaching/leaflet - individual 'Smart Patient' coaching and leaflet to identify questions to ask and how to ask questions. Controls: Leaflet on HIV/AIDS and session with educator to answer questions. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Consultation length Questions asked Participation in consultation Exit interview: Assessment of communication (no of items not provided) Patient follow up (8 months, new patients only): Contraceptive use

Kim 2003 *(Continued)*

Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Lewis 1991

Methods	RCT Randomisation by clinician.
Participants	Setting: Three university paediatric clinics, USA. Clinicians: 56 residents randomised but only 34 actually involved in study. Participants: Children and their parents; 141 recruited and followed up (about 20% refused to participate).
Interventions	Timing: Immediately before consultation. Interventions: Video/workbook/coaching - three facets targeted at child, parent and clinician. Child: 10 minute video and workbook to encourage question asking and to write down questions. Practised asking questions with research assistant. Parents: 10 minute video. Controls: Children - video on bicycle safety and workbook. Parents: Video on bicycle safety. Clinicians: Randomised into groups - Intervention - One hour training session including 15 minute video with training 'boosters' at 3, 8 and 15 months. Controls: Educational session including video on management of febrile convulsions.
Outcomes	Consultation videotape: Child participation in consultation Exit questionnaire: Recall (General and medication recommendations) Child's Health related attitudes and behaviour (20 items) Child Satisfaction (no of items not provided) Parent satisfaction (no of items not provided) Child anxiety (8 items) Clinician questionnaire: Satisfaction (13 items)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Little 2004

Methods	RCT Four groups: intervention leaflet, another leaflet, both, neither.
Participants	Setting: 5 general practices, UK. Clinicians: Number not stated. Participants: Adults with mixed primary care problems; 636 recruited and randomised, 485 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Leaflet - asking patient to list issues they wanted to raise and explaining that the clinician wanted them to talk, discuss and ask questions. For half the patients, a second leaflet on depression was provided. Controls: Group 1: Leaflet listing symptoms of depression, asking patient if had these and telling them that clinician would like to discuss these. Group 2: Usual care. Clinicians: Usual practice.
Outcomes	Exit questionnaire: Satisfaction (no of items not provided) Anxiety (HADS - no of items not provided) Depression (HADS - no of items not provided) State Anxiety Inventory (no of items not provided) Enablement (no of items not provided) Resolution of symptoms (MYMOP - no of items not provided) Clinician questionnaire: Consultation length Number of investigations Pressure from patient for investigations
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Maly 1999

Methods	RCT
Participants	Setting: One family practice clinic, USA. Clinicians: 35 physicians. Participants: Adults with mixed problems attending for two consultations; 276 eligible, 265 recruited, 205 followed up (56 did not attend for second consultation).
Interventions	Timing: Immediately before each of two consultations.

Maly 1999 *(Continued)*

	Intervention: Question prompt sheet - question list telling patient to write down the two main questions they wanted to ask, also given copy of previous entry into medical records. Intervention repeated at second linked consultation. Controls: Asked to write down two main improvements for clinic, also got health education sheet. Clinicians: Usual practice.
Outcomes	Consultation length Patient questionnaire (2 weeks after second consultation): Physical function (10 item scale) Mobility (4 items) Global health (1 item) Satisfaction (7 items) Adherence (5 items) Desire for health information Interest in medical records (6 items) Apprehension about seeing medical records (no of items not provided)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Martinali 2001

Methods	RCT
Participants	Setting: One university cardiology clinic, the Netherlands. Clinicians: 14 cardiologists. Participants: Adult patients with mixed cardiac problems; 168 contacted, 142 randomised (26 refused), 103 completed follow up (17 did not attend, 15 declined on attending, 7 incomplete follow up).
Interventions	Timing: One week before consultation. Intervention: Question prompt sheet/information booklet - list of frequently asked questions and information book about heart disease. Controls: Information booklet alone (Brochure from Dutch Heart Foundation on coronary artery disease). Clinicians: Usual practice.
Outcomes	Pre consultation questionnaire: Anxiety (Spielberger 20 items) Exit questionnaire: Adequacy of information exchange (10 items) Perception of participation (2 items) Knowledge (25 items) Satisfaction (18 items) Clinician questionnaire: Consultation length

Martinali 2001 *(Continued)*

Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

McCann 1996

Methods	RCT
Participants	Setting: One general practice, UK. Clinician: One general practitioner. Participants: Adult patients with mixed problems; 163 approached, 120 randomised and followed up (43 refused).
Interventions	Timing: Immediately before consultation. Intervention: Question prompt sheet - 'Speak for yourself' leaflet containing encouragement to ask questions and space to write down own questions. Controls: Leaflet on healthy eating. Clinician: Usual practice.
Outcomes	Consultation audiotape: Consultation length Questions asked Exit questionnaire: Satisfaction (26 items) Health status (SF36) Patient questionnaire (4 weeks) Health status (SF36) Clinician questionnaire: Rating of consultation (3 items) Record review (12 months): Number of consultations
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Middleton 2006

Methods	RCT
Participants	Setting: general practices, UK. Clinicians: 46 general practitioners. Participants: Adults with mixed problems, 971 randomised, 857 completed followed up.
Interventions	Timing: Immediately before the consultation. Intervention: Patient agenda form asking patients to identify questions they wanted to ask. Controls: Usual care. Clinicians: Randomised so that half received training to increase awareness of the patient agenda model in consultations.
Outcomes	Exit questionnaire: Patient satisfaction - four components (each single item) general satisfaction professional care perceived time depth of relationship Clinician questionnaire: Number of problems identified Consultation length
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Oliver 2001

Methods	RCT
Participants	Setting: Two cancer clinics, USA. Clinicians: 8 oncologists. Participants: adults with moderate cancer pain; 355 suitable, 87 randomised (177 refused, 91 deferred), 78 attended and entered into study, 67 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Coaching/booklet - patients taught practical pain management techniques and empowered to participate actively in their own care. Booklet had space to write down questions. Controls: Education on controlling cancer pain. Clinicians: Usual practice.
Outcomes	Patient interview (by telephone at two weeks): Average pain (1 item) Pain related impairment (6 items)

Oliver 2001 *(Continued)*

	Pain frequency (1 item) Pain related knowledge (6 items) Adherence to analgesic regime (1 item)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Roter 1977

Methods	RCT
Participants	Setting: One family practice centre, USA. Clinicians: Two physicians and one nurse practitioner. Participants: Adults with mixed problems; 294 'took part in study,' 200 randomised.
Interventions	Timing: Immediately before consultation. Intervention: Coaching - 10 minute session with health educator working through question-asking protocol to identify patient's questions and practice how to ask them. Patients took list of questions into consultation. Controls: Similar session on use of healthcare facilities. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Questions asked Consultation length Bids for clarification Patient information statements Patient approval statements Patient personal remarks Provider personal statements Provider questions Provider opinion statements Provider instructions Provider approval statements Provider agreement statements Provider question requests Patient anxiety Patent anger Patient matter of factness Patient sympathy Provider anxiety Provider anger Provider matter of factness Provider sympathy Exit interview: Satisfaction (6 items) Locus of control (no of items not provided)

Roter 1977 *(Continued)*

	Record review (4 months): Appointments kept
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Sander 1996a

Methods	RCT Two intervention groups.
Participants	Setting: One family practice clinic, USA. Clinicians: 18 physicians. Participants: Adult patients with mixed problems; 129 randomised.
Interventions	Timing: Immediately before consultation. Interventions: Question prompt sheets - two versions of health concerns card focusing on health maintenance concerns and designed to stimulate the patient to seek further information. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Exit questionnaire: Patient requests for information Telephone interview (4 to 6 weeks): Recall of information (no of items not provided) Likelihood of using information to effect change (no of items not provided) Perceptions of participation in consultation (no of items not provided)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Sander 1996b

Methods	RCT Two intervention groups, patients randomised by day of consulting.
Participants	Clinical setting: One family practice clinic, USA.

Sander 1996b *(Continued)*

	Clinicians: 18 physicians. Participants: Adults consulting with mixed problems; 163 randomised.
Interventions	Timing: Immediately before consultation. Intervention: Coaching - two versions of 5 minute coaching with encouragement to identify and write down questions. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Exit questionnaire: Patient requests for information Telephone interview (4 to 6 weeks): Recall of information (no of items not provided) Likelihood of using information to effect change (no of items not provided) Perceptions of participation in consultation (no of items not provided)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Tabak 1988

Methods	RCT
Participants	Setting: One family medicine clinic, USA . Clinicians: 14 residents. Patients: Adults with mixed problems; 141 eligible, 101 consented, 67 used (34 not used - audiotape problems, drop outs).
Interventions	Timing: Immediately before consultation. Intervention: Booklet - encouraging question asking. Controls: Booklet on clinic hours and services. Clinicians: Usual practice.
Outcomes	Consultation audiotape: Question asking
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Tennstedt 2000

Methods	RCT Randomised by site.
Participants	Setting: 36 community sites, USA. Clinicians: number not stated. Participants: Older patients with mixed problems attending Family Practice clinics; 355 attended consultations, 345 completed follow up.
Interventions	Timing: Up to 3 months before consultation. Intervention: Coaching/booklet - two hour programme with booklet to record questions for clinicians. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Telephone interview: Participation in consultation (no of items not provided) Satisfaction (no of items not provided)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Thompson 1990a

Methods	RCT
Participants	Setting: One obstetric and gynaecology clinic, USA . Clinicians: One obstetrician/gynaecologist. Participants: Women with obstetric and gynaecology problems; 66 recruited, 53 completed follow up.
Interventions	Timing: Immediately before consultation. Intervention: Question prompt sheet - list of possible health concerns with instructions to write down at least 3 questions for the clinician. Controls: Questionnaire about the waiting room. Clinician: Usual practice.
Outcomes	Consultation length Exit questionnaire: Questions asked State Anxiety (Spielberger - no of items not provided) Satisfaction (9 items)

Thompson 1990a *(Continued)*

	Clinician questionnaire: Satisfaction (2 items) Questions asked by patient (estimate)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Thompson 1990b

Methods	RCT Two intervention groups.
Participants	Setting: One obstetric and gynaecology clinic, USA. Clinicians: Two obstetrician/gynaecologists. Participants: Women with obstetric and gynaecology problems; 105 recruited, 49 completed follow up.
Interventions	Timing: Immediately before consultation. Interventions: a) Question prompt sheet - list of possible health concerns with instructions to write down at least 3 questions with checklist of information to obtain during consultation. b) Message - written message that clinician wanted them to ask questions in the consultation. Controls: Questionnaire about the waiting room. Clinicians: Usual practice.
Outcomes	Exit questionnaire: Questions asked Extent to which questions answered Satisfaction (9 items) Satisfaction with information received (1 item) State Anxiety (Spielberger) Sense of control (5 items) Accuracy of recall Confidence of recall (14 items)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Wilkinson 2002

Methods	RCT

Wilkinson 2002 *(Continued)*

Participants	Setting: One primary care clinic, USA. Clinicians: Number not stated. Participants: Veterans with mixed problems attending primary care team visits; 278 selected and randomised, 277 participated, follow up unclear.
Interventions	Intervention: 'Appointment guidebook' with suggestions as to how to prepare for consultation including space to write down questions. Controls: Usual care. Clinicians: Usual practice.
Outcomes	Patient questionnaire (few days after consultation): Evaluation of visit (5 items) Record review: Health promotion interventions
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Ader 1992	Not randomised trial
Agre 1993	Intervention not intended to change patient information seeking within consultation
Albertson 2002	Intervention not intended to change patient information seeking within consultation
Ambler 1999	Not randomised trial
Anderson 1987	Intervention not before a specific consultation
Anderson 1995	Intervention not before a specific consultation
Bekker 1999	Not randomised trial
Belkora 2006	Not randomised trial
Bergus 2002	Intervention not intended to change patient information seeking within consultation
Bertakis 1977	Intervention not before a specific consultation
Cegala 2001	Not randomised trial
Courtney 1997	Intervention not before a specific consultation

Study	Reason for exclusion
Cull 1998	Intervention not intended to change patient information seeking within consultation
Cunningham 2000	Not randomised trial
Done 1998	Intervention not before a specific consultation
Dow 1991	Intervention not before a specific consultation
Fleissig 2001	Intervention not intended to change patient information seeking within consultation
Greaves 1999	Intervention not before a specific consultation
Gustafson 1999	Intervention not before a specific consultation
Hardy 2001	Intervention not intended to change patient information seeking within consultation
Harmsen 2005	Intervention not intended to change patient information seeking within consultation
Inui 1979	Intervention not intended to change patient information seeking within consultation
Jenkinson 1988	Intervention not before a specific consultation
Jensen 1993	Intervention not intended to change patient information seeking within consultation
Jones 2002	Not randomised trial
Kaplan 1989	This paper describes 4 studies - two are by Greenfield already included in review separately, a third is RCT but data cannot be disaggregated from other trials, fourth trial is non-randomised.
Keeble 2002	Intervention not intended to change patient information seeking within consultation
Kennedy 2002	Intervention not intended to change patient information seeking within consultation
Kennedy 2002a	Intervention not intended to change patient information seeking within consultation
Kennedy 2004	Intervention not intended to change patient information seeking within consultation
Kitai 2002	Intervention not before a specific consultation
Kruijff 1997	Not randomised trial
Kupst 1975	Intervention not before a specific consultation
Kutner 1999	Intervention not intended to change patient information seeking within consultation
Madden 1994	Intervention not intended to change patient information seeking within consultation
McGee 1998	Not randomised trial
Middleton 1995	Not randomised trial
Miller 1986	Intervention not before a specific consultation
O'Mara 2003	Intervention not intended to change patient information seeking within consultation

Study	Reason for exclusion
Oermann 2003	Not randomised trial
Pasacreta 1998	Not randomised trial
Post 2002	Not a trial - a review
Pruyn 2004	Intervention not intended to change patient information seeking within consultation
Richard 1998	Not randomised trial
Rieger 1999	Intervention not intended to change patient information seeking within consultation
Robinson 1985	Not randomised trial
Rost 1991	Intervention not before a specific consultation
Ruland 2003	Intervention not intended to change patient information seeking within consultation.
Rutten 1991	Intervention not intended to change patient information seeking within consultation
Rutten 1993	Intervention not before a specific consultation
Schouten 2005	Intervention not intended to change patient information seeking within consultation
Selvachandran 2002	Intervention not intended to change patient information seeking within consultation
Sepuchra 2000	Not randomised trial
Sepuchra 2002	Not randomised trial
Sepuchra 2003	Not randomised trial
Shepperd 1995	Decision aid
Smith 1998	Intervention not before a specific consultation
Stapleton 2002	Intervention not before a specific consultation
Street 1995	No randomised controlled data for effects of encouraging question asking (both interventions explicitly encourage question asking)
Sulmasy 1996	Intervention not intended to change patient information seeking within consultation
Teutsch 2003	Not randomised trial
Thomas 2000	Intervention not intended to change patient information seeking within consultation
Tran 2004	Not randomised trial
Van Dam 2003	Not randomised trial
Velikova 2002	Intervention not before a specific consultation
Wallston 1979	Intervention not before a specific consultation

Study	Reason for exclusion
Weinberger 1998	Not randomised trial
Wells 2004	Not randomised trial
Wetzels 2005	Intervention not intended to change patient information seeking within consultation
Wilson 2002	Intervention not intended to change patient information seeking within consultation

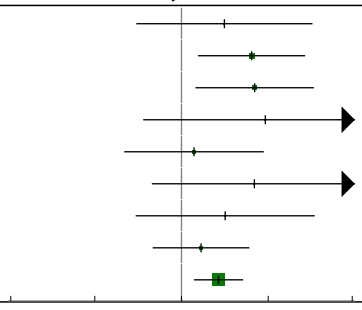
DATA AND ANALYSES

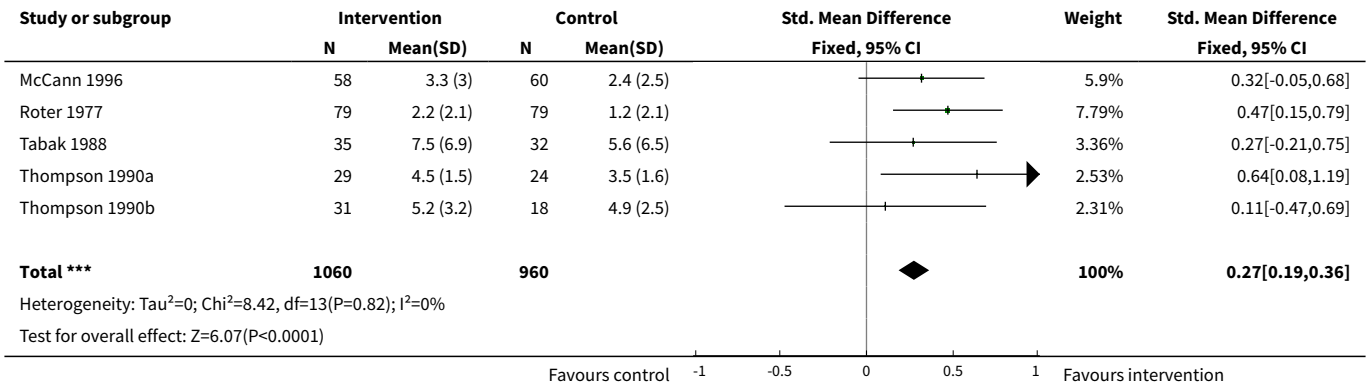
Comparison 1. Intervention versus control

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Question asking	14	2020	Std. Mean Difference (IV, Fixed, 95% CI)	0.27 [0.19, 0.36]
2 Anxiety (before consultation)	3	372	Mean Difference (IV, Random, 95% CI)	-1.56 [-7.10, 3.97]
3 Anxiety (after consultation)	6	809	Std. Mean Difference (IV, Fixed, 95% CI)	-0.08 [-0.22, 0.06]
4 Patient satisfaction	17	3316	Std. Mean Difference (IV, Fixed, 95% CI)	0.09 [0.03, 0.16]
5 Patient knowledge	5	378	Std. Mean Difference (IV, Random, 95% CI)	-0.34 [-0.94, 0.25]
6 Patient knowledge (omitting 2 studies)	3	231	Std. Mean Difference (IV, Fixed, 95% CI)	-0.26 [-0.52, 0.01]
7 Consultation length	13	3406	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.05, 0.25]

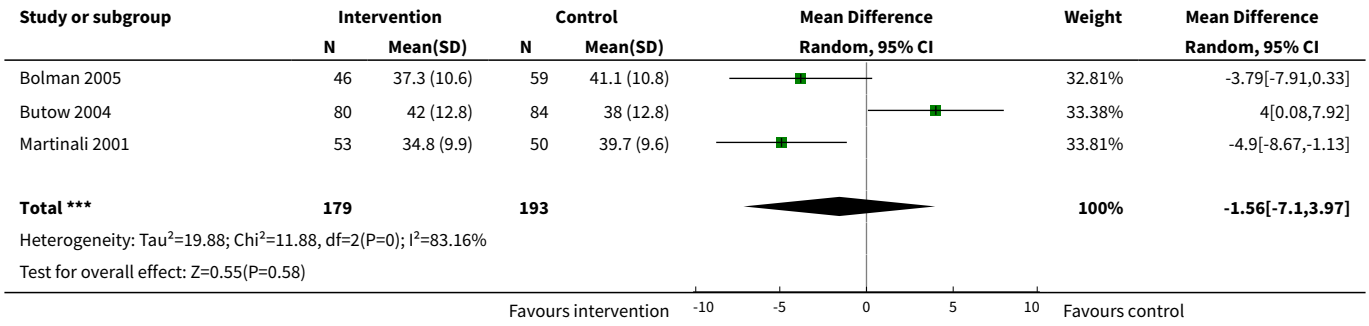
Analysis 1.1. Comparison 1 Intervention versus control, Outcome 1 Question asking.

Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
Bruera 2003	30	10.3 (7.5)	30	8.7 (5.3)		3.02%	0.25[-0.26,0.76]
Butow 2004	80	13 (9.9)	84	9 (9.9)		8.14%	0.4[0.09,0.71]
Cegala 2000	99	3.9 (1.9)	51	3.1 (2)		6.69%	0.42[0.08,0.76]
Finney 1990	16	7.6 (8.8)	16	4.1 (4.7)		1.57%	0.48[-0.22,1.19]
Ford 1995	48	6.4 (5.3)	47	6 (5.7)		4.81%	0.07[-0.33,0.47]
Greenfield 1985	23	5.5 (4)	22	4 (2.9)		2.23%	0.42[-0.17,1.01]
Greenfield 1988	33	1 (3.9)	26	0.3 (0.3)		2.92%	0.25[-0.26,0.77]
Kidd 2004	115	9.9 (6.8)	87	9.1 (7.4)		10.03%	0.11[-0.17,0.39]
Kim 2003	384	6.3 (6.5)	384	4.9 (6.6)		38.71%	0.21[0.07,0.36]

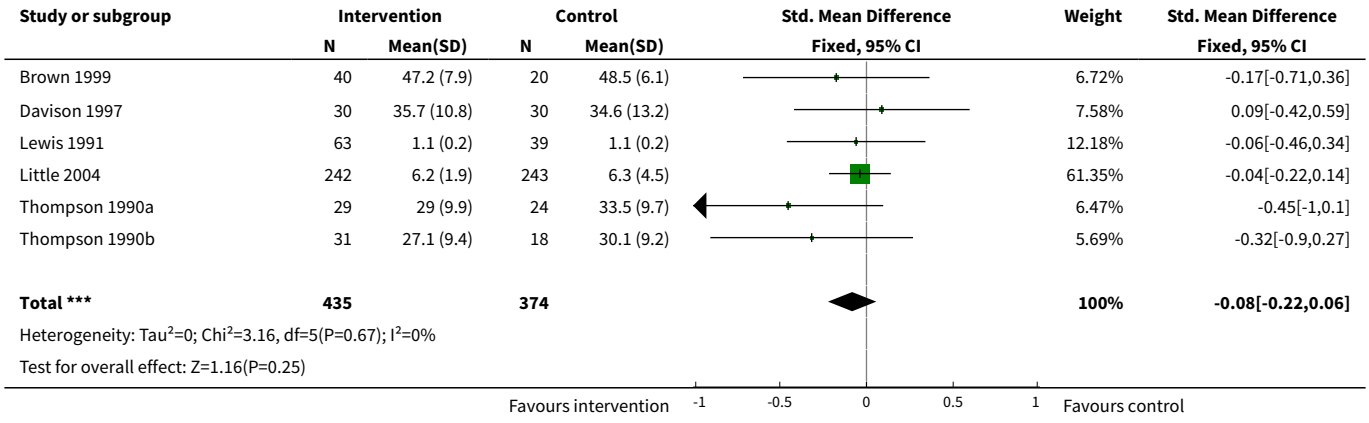




Analysis 1.2. Comparison 1 Intervention versus control, Outcome 2 Anxiety (before consultation).



Analysis 1.3. Comparison 1 Intervention versus control, Outcome 3 Anxiety (after consultation).



Analysis 1.4. Comparison 1 Intervention versus control, Outcome 4 Patient satisfaction.

Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
Bolman 2005	46	4.1 (0.6)	59	4.1 (0.6)		3.15%	0[-0.39,0.39]
Brown 2001	160	107.4 (10.8)	158	107.6 (10.8)		9.69%	-0.02[-0.24,0.2]
Bruera 2003	30	8.7 (1.6)	30	9 (1.7)		1.82%	-0.2[-0.71,0.31]
Finney 1990	16	95.7 (5.6)	16	90 (9)		0.9%	0.74[0.02,1.46]
Greenfield 1985	22	17.5 (5.2)	22	18.7 (5.8)		1.33%	-0.21[-0.81,0.38]
Greenfield 1988	33	46.1 (7.9)	26	45.9 (9.1)		1.77%	0.02[-0.49,0.54]
Kidd 2004	115	6 (1)	87	5.9 (1.1)		6.04%	0.06[-0.22,0.34]
Lewis 1991	79	1.6 (0.4)	60	1.6 (0.4)		4.14%	-0.17[-0.5,0.17]
Little 2004	242	5.4 (0.9)	243	5.3 (0.9)		14.72%	0.2[0.02,0.37]
Maly 1999	103	31.4 (4.6)	102	31.3 (5.2)		6.25%	0.02[-0.25,0.29]
Martinali 2001	53	23.9 (9.9)	50	22.5 (9.7)		3.13%	0.14[-0.25,0.53]
McCann 1996	58	4.4 (0.4)	61	4.4 (0.7)		3.62%	0.1[-0.26,0.46]
Middleton 2006	430	84.3 (12.1)	427	83.5 (15.6)		26.12%	0.06[-0.07,0.19]
Roter 1977	72	1.5 (0.3)	72	1.4 (0.3)		4.35%	0.27[-0.06,0.6]
Tennstedt 2000	142	79.9 (19.7)	200	75.1 (21.5)		10.06%	0.23[0.01,0.44]
Thompson 1990a	29	39.2 (3.8)	24	39.2 (3.6)		1.6%	0[-0.54,0.54]
Thompson 1990b	31	41.3 (3.2)	18	38.2 (5.2)		1.29%	0.76[0.16,1.36]
Total * **	**1661**		**1655**			**100%**	**0.09[0.03,0.16]**

Heterogeneity: $Tau^2=0$; $Chi^2=18.39$, df=16(P=0.3); $I^2=13\%$

Test for overall effect: Z=2.68(P=0.01)

Analysis 1.5. Comparison 1 Intervention versus control, Outcome 5 Patient knowledge.

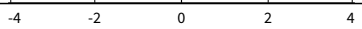
Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
Bolman 2005	46	67.1 (9)	59	73.6 (9)		21.08%	-0.72[-1.12,-0.32]
Greenfield 1985	22	11.7 (4.1)	22	16.8 (1.4)		17.71%	-1.63[-2.33,-0.94]
Greenfield 1988	33	11.9 (4.2)	26	11.1 (3.6)		19.81%	0.2[-0.32,0.72]
Martinali 2001	53	41.5 (20.8)	50	36.4 (20.2)		21.18%	0.25[-0.14,0.63]
Oliver 2001	34	73.3 (19.4)	33	72.8 (17.7)		20.22%	0.02[-0.45,0.5]
Total * **	**188**		**190**			**100%**	**-0.34[-0.94,0.25]**

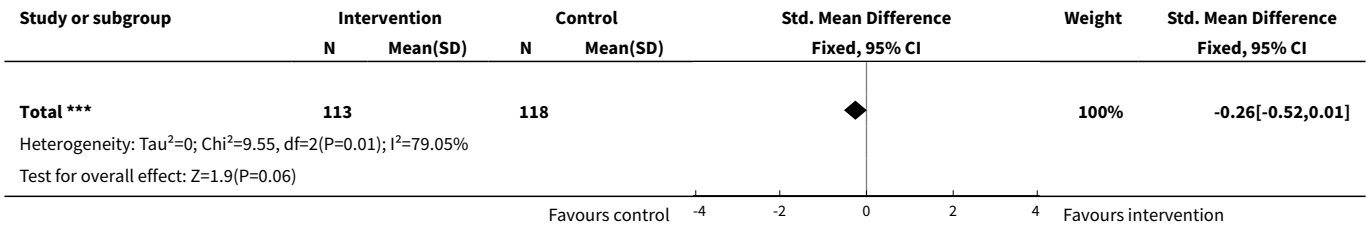
Heterogeneity: $Tau^2=0.4$; $Chi^2=31.27$, df=4(P<0.0001); $I^2=87.21\%$

Test for overall effect: Z=1.14(P=0.26)

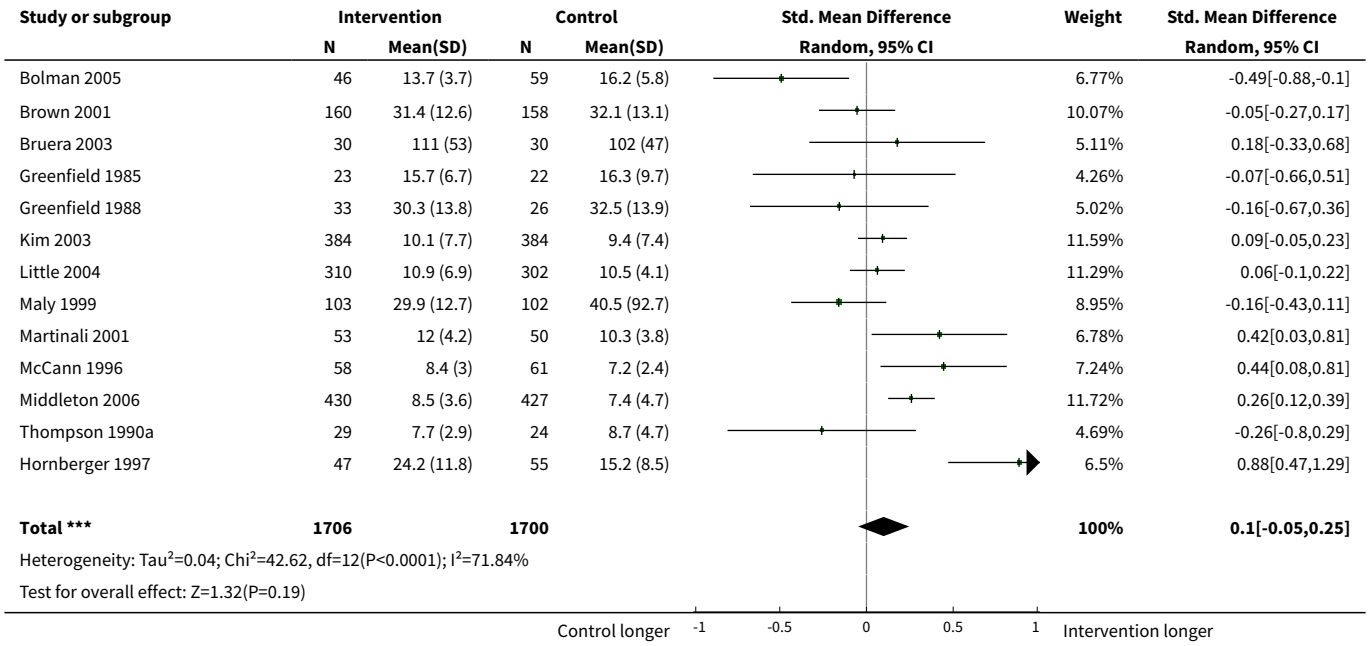
Analysis 1.6. Comparison 1 Intervention versus control, Outcome 6 Patient knowledge (omitting 2 studies).

Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
Bolman 2005	46	67.1 (9)	59	73.6 (9)		43.71%	-0.72[-1.12,-0.32]
Greenfield 1988	33	11.9 (4.2)	26	11.1 (3.6)		26.09%	0.2[-0.32,0.72]
Oliver 2001	34	73.3 (19.4)	33	72.8 (17.7)		30.2%	0.02[-0.45,0.5]





Analysis 1.7. Comparison 1 Intervention versus control, Outcome 7 Consultation length.



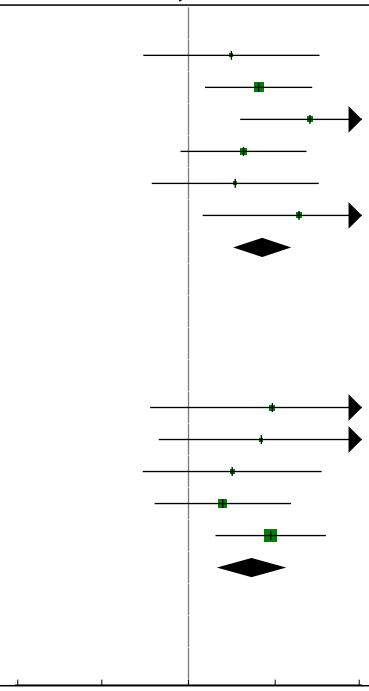
Comparison 2. Written materials and coaching

Outcome or sub-group title	No. of studies	No. of partici-pants	Statistical method	Effect size
1 Question asking	11		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 Written materials	6	563	Std. Mean Difference (IV, Fixed, 95% CI)	0.42 [0.26, 0.59]
1.2 Coaching	5	414	Std. Mean Difference (IV, Fixed, 95% CI)	0.36 [0.16, 0.56]
2 Satisfaction	16		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.1 Written materials	10	2354	Std. Mean Difference (IV, Fixed, 95% CI)	0.08 [0.00, 0.16]
2.2 Coaching	6	722	Std. Mean Difference (IV, Fixed, 95% CI)	0.23 [0.08, 0.38]
3 Consultation length	13		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only

Outcome or sub-group title	No. of studies	No. of partici-pants	Statistical method	Effect size
3.1 Written materials	10	2534	Std. Mean Difference (IV, Fixed, 95% CI)	0.13 [0.05, 0.21]
3.2 Coaching	3	872	Std. Mean Difference (IV, Fixed, 95% CI)	0.07 [-0.07, 0.20]

Analysis 2.1. Comparison 2 Written materials and coaching, Outcome 1 Question asking.

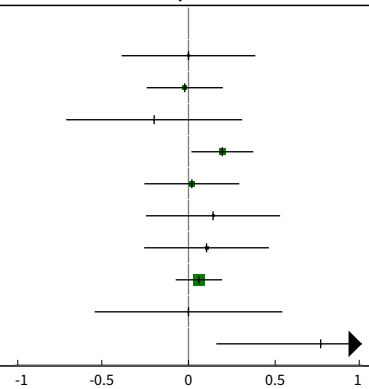
Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
2.1.1 Written materials							
Bruera 2003	30	10.3 (7.5)	30	8.7 (5.3)		10.87%	0.25[-0.26,0.76]
Butow 2004	80	13 (9.9)	84	9 (9.9)		29.32%	0.4[0.09,0.71]
Cegala 2000	50	4.5 (1.9)	51	3.1 (2)		17.34%	0.7[0.3,1.1]
McCann 1996	58	3.3 (3)	60	2.4 (2.5)		21.27%	0.32[-0.05,0.68]
Tabak 1988	35	7.5 (6.9)	32	5.6 (6.5)		12.1%	0.27[-0.21,0.75]
Thompson 1990a	29	4.5 (1.5)	24	3.5 (1.6)		9.1%	0.64[0.08,1.19]
Subtotal ***	**282**		**281**			**100%**	**0.42[0.26,0.59]**
Heterogeneity: Tau^2=0; Chi^2=3.59, df=5(P=0.61); I^2=0%							
Test for overall effect: Z=4.97(P<0.0001)							
2.1.2 Coaching							
Finney 1990	16	7.6 (8.8)	16	4.1 (4.7)		8.07%	0.48[-0.22,1.19]
Greenfield 1985	23	5.5 (4)	22	4 (2.9)		11.45%	0.42[-0.17,1.01]
Greenfield 1988	33	1 (3.9)	26	0.3 (0.3)		15.04%	0.25[-0.26,0.77]
Kidd 2004	35	10.6 (7.9)	87	9.1 (7.4)		25.92%	0.2[-0.2,0.59]
Roter 1977	78	2.1 (1.9)	78	1.2 (1.9)		39.53%	0.47[0.16,0.79]
Subtotal ***	**185**		**229**			**100%**	**0.36[0.16,0.56]**
Heterogeneity: Tau^2=0; Chi^2=1.47, df=4(P=0.83); I^2=0%							
Test for overall effect: Z=3.56(P=0)							
Test for subgroup differences: Chi^2=0.21, df=1 (P=0.65), I^2=0%							



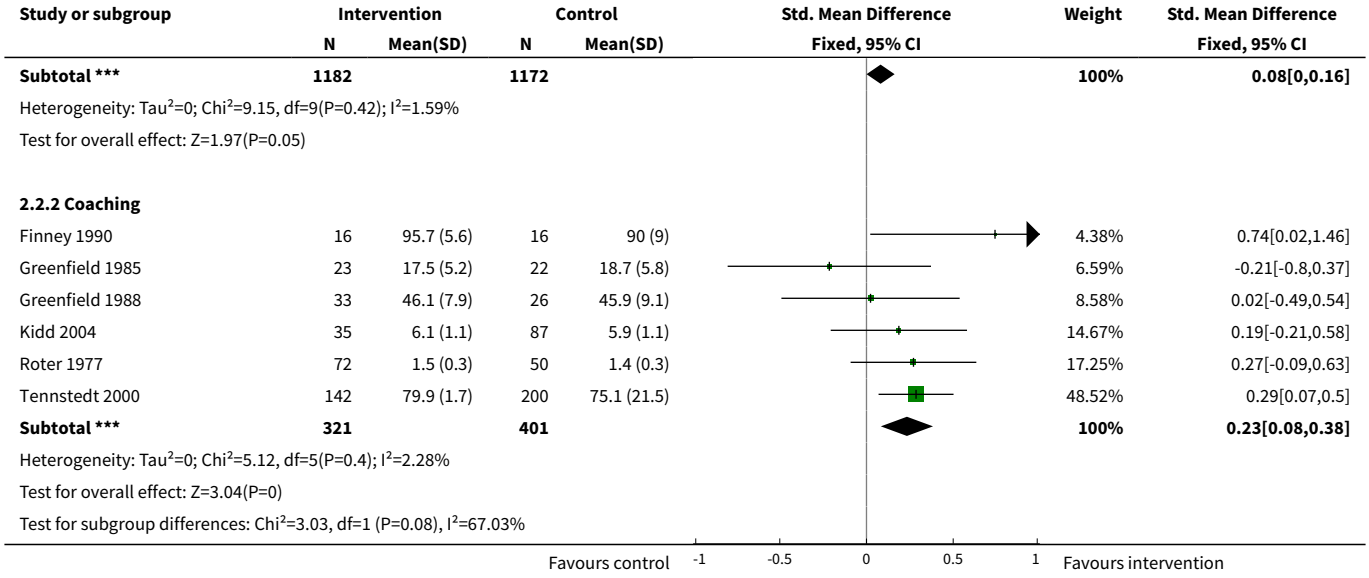
Favours control — Favours intervention

Analysis 2.2. Comparison 2 Written materials and coaching, Outcome 2 Satisfaction.

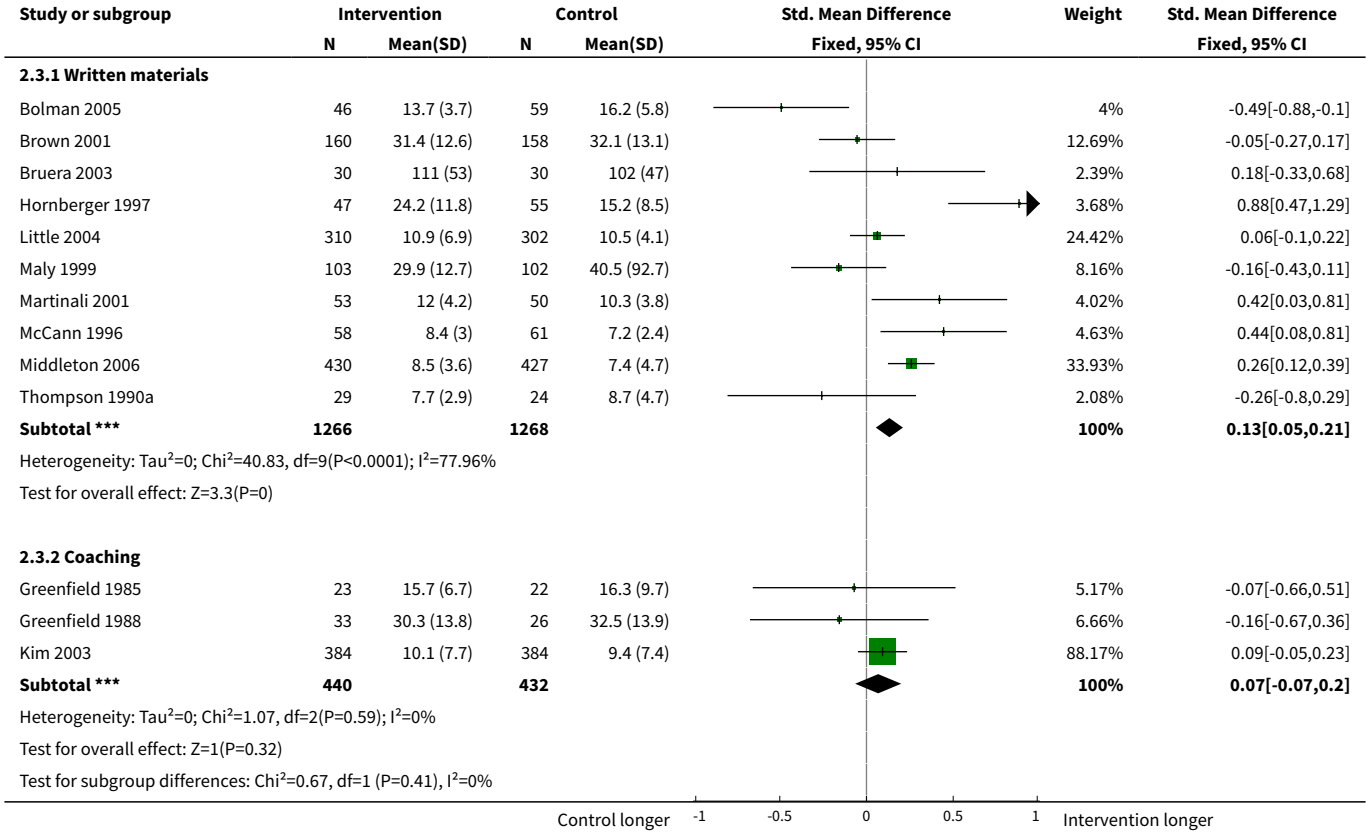
Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
2.2.1 Written materials							
Bolman 2005	46	4.1 (0.6)	59	4.1 (0.6)		4.42%	0[-0.39,0.39]
Brown 2001	160	107.4 (11.5)	158	107.6 (10.8)		13.58%	-0.02[-0.24,0.2]
Bruera 2003	30	8.7 (1.6)	30	9 (1.7)		2.55%	-0.2[-0.71,0.31]
Little 2004	242	5.4 (0.9)	243	5.3 (0.9)		20.61%	0.2[0.02,0.37]
Maly 1999	103	31.4 (5)	102	31.3 (5.2)		8.75%	0.02[-0.25,0.29]
Martinali 2001	53	23.9 (9.9)	50	22.5 (9.7)		4.38%	0.14[-0.25,0.53]
McCann 1996	58	4.4 (0.4)	61	4.4 (0.7)		5.07%	0.1[-0.26,0.46]
Middleton 2006	430	84.3 (12.1)	427	83.5 (15.6)		36.58%	0.06[-0.07,0.19]
Thompson 1990a	29	39.2 (3.8)	24	39.2 (3.6)		2.24%	0[-0.54,0.54]
Thompson 1990b	31	41.3 (3.2)	18	38.2 (5.2)		1.81%	0.76[0.16,1.36]



Favours control — Favours intervention



Analysis 2.3. Comparison 2 Written materials and coaching, Outcome 3 Consultation length.

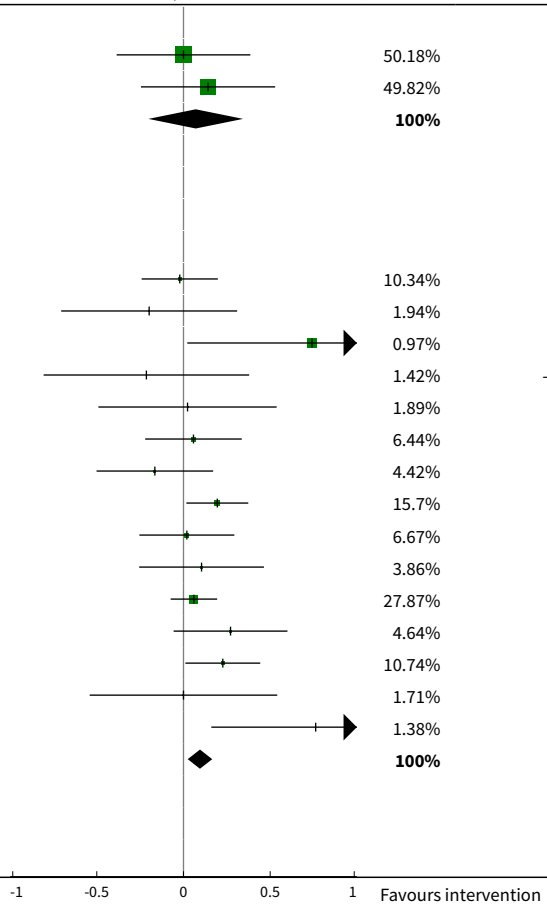


Comparison 3. Timing

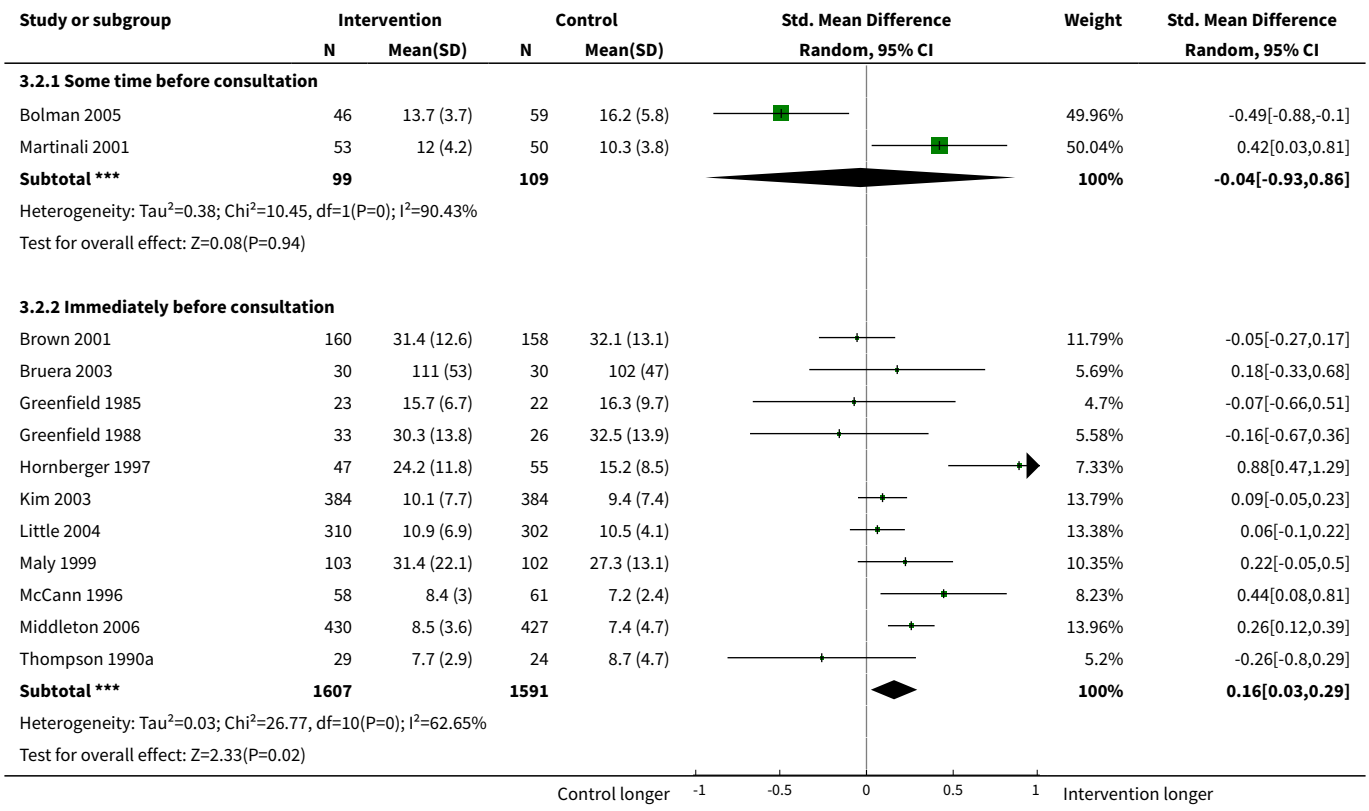
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Satisfaction	17		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 Some time before consultation	2	208	Std. Mean Difference (IV, Fixed, 95% CI)	0.07 [-0.20, 0.34]
1.2 Immediately before consultation	15	3108	Std. Mean Difference (IV, Fixed, 95% CI)	0.10 [0.02, 0.17]
2 Consultation length	13		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 Some time before consultation	2	208	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.93, 0.86]
2.2 Immediately before consultation	11	3198	Std. Mean Difference (IV, Random, 95% CI)	0.16 [0.03, 0.29]

Analysis 3.1. Comparison 3 Timing, Outcome 1 Satisfaction.

Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
3.1.1 Some time before consultation							
Bolman 2005	46	4.1 (0.6)	59	4.1 (0.6)		50.18%	0[-0.39,0.39]
Martinali 2001	53	23.9 (9.9)	50	22.5 (9.7)		49.82%	0.14[-0.25,0.53]
Subtotal ***	**99**		**109**			**100%**	**0.07[-0.2,0.34]**
Heterogeneity: Tau^2=0; Chi^2=0.26, df=1(P=0.61); I^2=0%							
Test for overall effect: Z=0.51(P=0.61)							
3.1.2 Immediately before consultation							
Brown 2001	160	107.4 (11.5)	158	107.6 (10.8)		10.34%	-0.02[-0.24,0.2]
Bruera 2003	30	8.7 (1.6)	30	9 (1.7)		1.94%	-0.2[-0.71,0.31]
Finney 1990	16	95.7 (5.6)	16	90 (9)		0.97%	0.74[0.02,1.46]
Greenfield 1985	22	17.5 (5.2)	22	18.7 (5.8)		1.42%	-0.21[-0.81,0.38]
Greenfield 1988	33	46.1 (7.9)	26	45.9 (9.1)		1.89%	0.02[-0.49,0.54]
Kidd 2004	115	6 (1)	87	5.9 (1.1)		6.44%	0.06[-0.22,0.34]
Lewis 1991	79	1.6 (0.4)	60	1.6 (0.4)		4.42%	-0.17[-0.5,0.17]
Little 2004	242	5.4 (0.9)	243	5.3 (0.9)		15.7%	0.2[0.02,0.37]
Maly 1999	103	31.4 (5)	102	31.3 (5.2)		6.67%	0.02[-0.25,0.29]
McCann 1996	58	4.4 (0.4)	61	4.4 (0.7)		3.86%	0.1[-0.26,0.46]
Middleton 2006	430	84.3 (12.1)	427	83.5 (15.6)		27.87%	0.06[-0.07,0.19]
Roter 1977	72	1.5 (0.3)	72	1.4 (0.3)		4.64%	0.27[-0.06,0.6]
Tennstedt 2000	142	79.9 (19.7)	200	75.1 (21.5)		10.74%	0.23[0.01,0.44]
Thompson 1990a	29	39.2 (3.8)	24	39.2 (3.6)		1.71%	0[-0.54,0.54]
Thompson 1990b	31	41.3 (3.2)	18	38.2 (5.2)		1.38%	0.76[0.16,1.36]
Subtotal ***	**1562**		**1546**			**100%**	**0.1[0.02,0.17]**
Heterogeneity: Tau^2=0; Chi^2=18.1, df=14(P=0.2); I^2=22.64%							
Test for overall effect: Z=2.64(P=0.01)							
Test for subgroup differences: Chi^2=0.03, df=1 (P=0.87), I^2=0%							



Analysis 3.2. Comparison 3 Timing, Outcome 2 Consultation length.

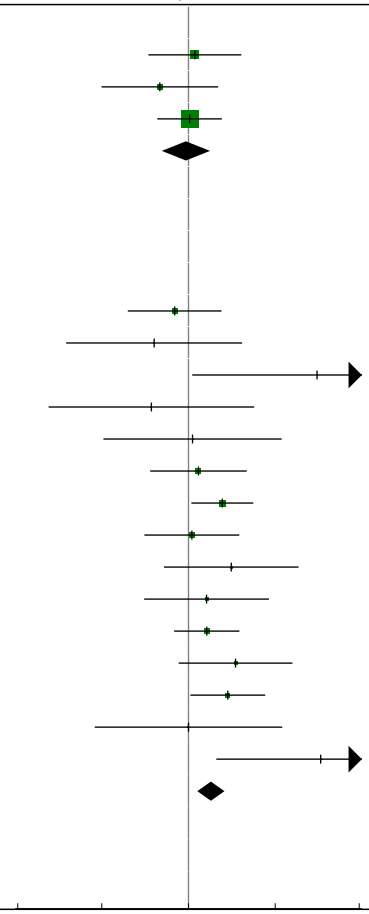


Comparison 4. Clinician training

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Satisfaction	16		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 Clinicians trained	3	821	Std. Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.15, 0.12]
1.2 Clinicians not trained	15	2569	Std. Mean Difference (IV, Fixed, 95% CI)	0.13 [0.05, 0.21]
2 Consultation length	12		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.1 Clinicians trained	2	682	Std. Mean Difference (IV, Fixed, 95% CI)	0.17 [0.01, 0.32]
2.2 Clinicians not trained	12	2798	Std. Mean Difference (IV, Fixed, 95% CI)	0.17 [0.10, 0.24]

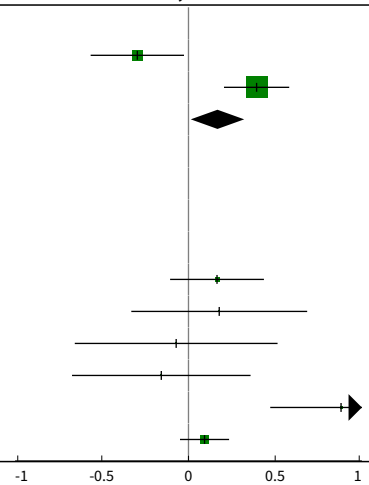
Analysis 4.1. Comparison 4 Clinician training, Outcome 1 Satisfaction.

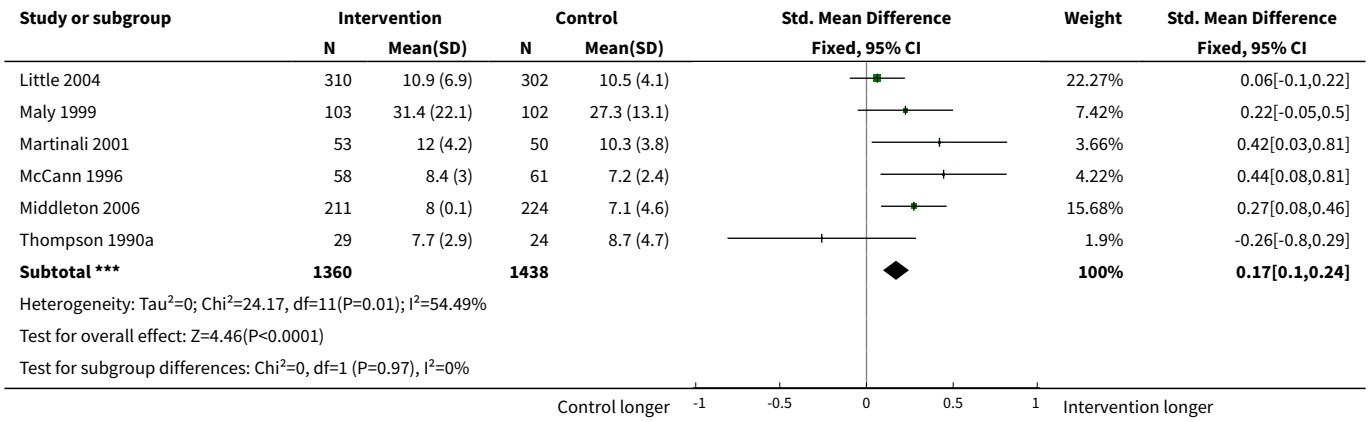
Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
4.1.1 Clinicians trained							
Brown 2001	81	108 (10.9)	158	107.6 (10.8)		27.01%	0.04[-0.23,0.3]
Lewis 1991	79	1.6 (0.4)	60	1.6 (0.4)		17.14%	-0.17[-0.5,0.17]
Middleton 2006	219	83.7 (15.2)	224	83.6 (16.4)		55.85%	0.01[-0.18,0.19]
Subtotal ***	**379**		**442**			**100%**	**-0.01[-0.15,0.12]**
Heterogeneity: Tau^2=0; Chi^2=0.96, df=2(P=0.62); I^2=0%							
Test for overall effect: Z=0.21(P=0.83)							
4.1.2 Clinicians not trained							
Brown 2001	79	106.7 (12.1)	158	107.6 (10.8)		8.39%	-0.08[-0.35,0.19]
Bruera 2003	30	8.7 (1.6)	30	9 (1.7)		2.38%	-0.2[-0.71,0.31]
Finney 1990	16	95.7 (5.6)	16	90 (9)		1.18%	0.74[0.02,1.46]
Greenfield 1985	22	17.5 (5.2)	22	18.7 (5.8)		1.74%	-0.21[-0.81,0.38]
Greenfield 1988	33	46.1 (7.9)	26	45.9 (9.1)		2.32%	0.02[-0.49,0.54]
Kidd 2004	115	6 (1)	87	5.9 (1.1)		7.89%	0.06[-0.22,0.34]
Little 2004	242	5.4 (0.9)	243	5.3 (0.9)		19.23%	0.2[0.02,0.37]
Maly 1999	103	31.4 (5)	102	31.3 (5.2)		8.17%	0.02[-0.25,0.29]
Martinali 2001	53	41.5 (20.8)	50	36.4 (20.2)		4.07%	0.25[-0.14,0.63]
McCann 1996	58	4.4 (0.4)	61	4.4 (0.7)		4.73%	0.1[-0.26,0.46]
Middleton 2006	211	85 (8.7)	224	83.6 (16.4)		17.29%	0.11[-0.08,0.29]
Roter 1977	72	1.5 (0.3)	72	1.4 (0.3)		5.68%	0.27[-0.06,0.6]
Tennstedt 2000	142	79.9 (19.7)	200	75.1 (21.5)		13.15%	0.23[0.01,0.44]
Thompson 1990a	29	39.2 (3.8)	24	39.2 (3.6)		2.09%	0[-0.54,0.54]
Thompson 1990b	31	41.3 (3.2)	18	38.2 (5.2)		1.69%	0.76[0.16,1.36]
Subtotal ***	**1236**		**1333**			**100%**	**0.13[0.05,0.21]**
Heterogeneity: Tau^2=0; Chi^2=15.93, df=14(P=0.32); I^2=12.12%							
Test for overall effect: Z=3.24(P=0)							
Test for subgroup differences: Chi^2=3.13, df=1 (P=0.08), I^2=68.01%							



Analysis 4.2. Comparison 4 Clinician training, Outcome 2 Consultation length.

Study or subgroup	Intervention N	Intervention Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Fixed, 95% CI	Weight	Std. Mean Difference Fixed, 95% CI
4.2.1 Clinicians trained							
Brown 2001	81	28.5 (9.9)	158	32.1 (13.1)		32.8%	-0.3[-0.56,-0.03]
Middleton 2006	219	9 (5.1)	224	7.1 (4.6)		67.2%	0.39[0.2,0.58]
Subtotal ***	**300**		**382**			**100%**	**0.17[0.01,0.32]**
Heterogeneity: Tau^2=0; Chi^2=16.86, df=1(P<0.0001); I^2=94.07%							
Test for overall effect: Z=2.13(P=0.03)							
4.2.2 Clinicians not trained							
Brown 2001	79	34.4 (14.9)	158	32.1 (13.1)		7.65%	0.16[-0.11,0.44]
Bruera 2003	30	111 (53)	30	102 (47)		2.18%	0.18[-0.33,0.68]
Greenfield 1985	23	15.7 (6.7)	22	16.3 (9.7)		1.64%	-0.07[-0.66,0.51]
Greenfield 1988	33	30.3 (13.8)	26	32.5 (13.9)		2.11%	-0.16[-0.67,0.36]
Hornberger 1997	47	24.2 (11.8)	55	15.2 (8.5)		3.36%	0.88[0.47,1.29]
Kim 2003	384	10.1 (7.7)	384	9.4 (7.4)		27.93%	0.09[-0.05,0.23]





ADDITIONAL TABLES

Table 1. Details of interventions

Study name	Setting	Intervention
		IMMEDIATELY BEFORE CONSULTATION (WHILE PATIENT WAITING TO SEE CLINICIAN)
		- Written materials
Brown 2001	Oncology clinics, Australia	Question checklist endorsing question asking as a useful activity and welcomed by the doctor. Contained checklist of questions and participants circled questions they wanted to ask. Clinicians actively endorsed the checklist for a sample of patients.
Bruera 2003	Oncology clinic, USA	Question checklist containing 22 questions with space for additional questions.
Butow 1994	Oncology clinic, Australia	Question checklist designed to encourage question asking in the consultation.
Frederickson 1995	General practice, UK	Leaflet (single page) encouraging patients to 'stop, think and tell the doctor about their problems and worries'.
Hornberger 1997	Primary care clinics, USA	Question checklist with 25 items covering five categories of concerns. Patients marked whether they wanted to discuss the concern then identified three main concerns. List attached to medical records so physician could address during consultation.
Little 2004	General practices, UK	Leaflet asking patients to list issues they wanted to raise and explaining that the doctor wanted them to be able to ask questions.
Maly 1999	Family medicine clinic, USA	Question checklist in which patients asked to record two main questions they wanted to ask. Also given copy of previous entry in medical records.
McCann 1996	General practice, UK	Question checklist ('Speak for yourself' leaflet) with space to write down ideas and encouraging patients to ask questions.
Middleton 2006	General practices, UK	Patient agenda form asking patients to identify questions.

Table 1. Details of interventions *(Continued)*

Sander 1996a	Family medicine clinic, USA	Two intervention groups - each given different versions of 'health concerns card' focusing on health maintenance and designed to stimulate patient information seeking.
Tabak 1988	Family medicine clinic, USA	Question checklist designed to encourage question asking in the consultation.
Thompson 1990a	Obstetric and gynaecology clinic, USA	Question checklist with list of possible concerns and instructions to write down at least three questions.
Thompson 1990b	Obstetric and gynaecology clinic, USA	Two intervention groups - Group 1: Question checklist with list of possible concerns and instructions to write down at least three questions. Group 2: Written message from physician encouraging patients to ask questions but not write them down.
		- Coaching
Finney 1990	Well baby clinics, USA	'Brief prompting strategy' to help patients identify questions of interest to them.
Greenfield 1985	Outpatient clinic, USA	Twenty minutes with three components: a) review of records, b) review of a treatment algorithm, c) behaviour change strategy to increase involvement in consultation.
Greenfield 1988	Diabetic clinic, USA	As in Greenfield 1985 but delivered twice, before initial and follow up consultations (before outcomes measured) to increase the involvement of patients in medical decision making and to improve patient information seeking.
Roter 1977	Family medicine clinic, USA	Ten minutes with health educator working through a question asking protocol to identify and write down patients' questions. Also encouragement to ask questions and patients took list of questions into consultation.
Sander 1996b	Family medicine clinic, USA	Two intervention groups - each given different versions of 5 minutes of coaching with encouragement to identify and/or write down questions.
		- Combined interventions
		-- Written materials and coaching
Brown 1999	Oncology clinic, Australia	Two intervention groups - Group 1: Question checklist containing 17 questions. Group 2: Question checklist with brief coaching from research psychologist covering question generation, exploration of benefits of and barriers to asking questions and rehearsal. Clinicians 'endorsed' the checklist and elicited and answered questions according to a standard protocol.
Davison 1997	Oncology clinic, Canada	Combined intervention - Question checklist completed by patient and then reviewed with researcher who provided coaching using an information pack to identify additional questions to ask. Patients encouraged to ask questions and ask for audiotape of consultation.
Kidd 2004	Diabetic clinic, UK	Three intervention groups - Group 1: Written message encouraging patients to ask questions. Group 2: Coaching for five minutes with researcher including identifying at least three questions to ask. Group 3: Coaching and rehearsal:

Table 1. Details of interventions *(Continued)*

		five minutes with researcher identifying at least three questions to ask and also rehearsal of asking.
Kim 2003	Family planning clinics, Indonesia	Combined intervention - Question checklist completed by patient and 'Smart patient' coaching including how to ask questions and identification of questions to ask.
Oliver 2001	Oncology clinics, USA	Combined intervention - Question checklist in form of booklet encouraging question asking with space to write down questions combined with coaching: to teach patients practical pain management techniques and to empower patients to participate actively in their own care.
		-- Computer and coaching
Davison 2002	Oncology clinic, Canada	Combined intervention - Computer programme to identify control preferences and information needs followed by coaching from nurses as to how to use computer printouts in the consultation to gather information.
		-- Video and coaching
Lewis 1991	Paediatric clinic, USA	Combined intervention - three facets: Children shown 10 minute video with workbook to write down questions then coached to practice questions with research assistant. Parents shown 10 minute video. Physicians shown 15 minute video as part of one hour training session with boosters at 3, 8 and 15 months. Four common themes to videos - 1) opportunity to think about the goals of the medical visit; 2) the long term goal of medical care is to encourage the child to be an active participant in the consultation; 3) modelling of skills to achieve this; 4) provision of evidence to support this.
		SOME TIME BEFORE THE DAY OF THE CONSULTATION
		- Written materials
Bolman 2005	Cardiology clinics, The Netherlands	Question checklist containing 49 questions on 10 different issues (as Martinali 2001). Mailed to patient one week before each of three linked consultations.
Butow 2004	Oncology clinic, Australia	Question checklist - 'Cancer consultation package' with three components: 1) 'How treatment decisions are made' booklet describing principles of evidence-based medicine; 2) 'Your rights and responsibilities as a patient' brochure describing patients' legal rights; 3) question prompt sheet endorsing question asking with 19 suggested questions and recommendation to prepare list of questions (as in Butow 1994, Brown 1999, Brown 2001). Mailed to patients at least 2 days before consultation.
Fleissig 1999	Outpatient clinic, UK	Question checklist in form of 'help card' and letter. The help card suggested general questions with space for the patient to write down questions covering the patient's condition, tests, treatment and other concerns. Mailed to patients two weeks before hospital visit.
Martinali 2001	Cardiology clinics, The Netherlands	Question checklist with 49 items 'frequently asked questions' on 10 different issues. Also information booklet about heart disease. Mailed to patients one week before consultation.
Wilkinson 2002	Family medicine clinics, USA	Question checklist in format of guidebook 'How to be prepared' with aim of improving patients' perceptions of primary care visit effectiveness with space for patient to write down questions. Mailed to patient prior to visit.

Table 1. Details of interventions *(Continued)*

		- Combined interventions
		-- Written materials and coaching
Tennstedt 2000	Family medicine clinic, USA	Combined intervention - Question checklist in format of booklet for patient to record and prioritise reasons for visit and to record questions to ask. Coaching: two hour group programme including modelling of both desirable and undesirable behaviours. Up to three months before consultation.
		-- Written materials and information
Cegala 2000	Primary care clinics, USA	Two intervention groups - Group 1: Question checklist in format of 14 page workbook encouraging patients to list topics they wanted to discuss with additional sections on information seeking and verifying. All sections contained example questions. Mailed to patients 2 to 4 days before consultation and briefly gone over on arrival at clinic. Group 2: Brief summary of points in training booklet and patients encouraged verbally to organise thoughts and ask questions. On arrival at clinic.
		AUDIOTAPE OF PREVIOUS CONSULTATION
Ford 1995	Oncology clinic, UK	Audiotape of initial consultation, patient encouraged to listen to it at home before second consultation which was a month later.

Table 2. Main outcomes for each study

Study name	Intervention	Numbers randomised	Question asking	Anxiety	Patient satisfaction	Knowledge	Consultation length	Other outcomes
Bolman 2005	Question checklist - before each of three visits	153		Reduced (before first visit)	No change	Reduced (before first and third visits)	Reduced (first visit), increased (third visit)	Information exchange - no change; Usefulness of intervention (Intervention group only) positive.
Brown 1999	Question checklist; coaching	60	Increased	No change	No change			Psychological adjustment no change; Types of question asked about prognosis increased
Brown 2001	Question checklist; doctor training	318	No change	Increased	No change		No change	Recall no change; Types of question asked about prognosis increased
Bruera 2003	Question checklist	60	No change		No change		No change	Clinician satisfaction no change; Types of questions asked no change; Helpfulness of interventions (both groups) increased; Satisfaction with communication no change; Clinician estimate of consultation length no change.
Butow 1994	Question checklist	142	No change		No change		No change	Psychological adjustment no change; Types of question asked about prognosis increased; Recall no change
Butow 2004	Question checklist	164	Increased	Increased (Before consultations); No change (after consultation and at 1 month)	No change (immediately and at 1 month)		No change	Participation increased; Usefulness of intervention positive; Depression (before and after consultation) no change; Involvement in decision making no change; Satisfaction with treatment decision no change
Cegala 2000	Question checklist; brief information and coaching	150	Increased (Checklist only)					Participation increased; Compliance increased

Table 2. Main outcomes for each study *(Continued)*

Davison 1997	Question checklist and coaching	60		No change				Depression no change; Preferences for control over treatment decisions increased
Davison 2002	Computer programme and coaching	749			No change			Role preferences no change
Finney 1990	Coaching	32	No change		No change			
Fleissig 1999	Question checklist	1208			Increased			Participation increased; Prepared questions raised no change
Ford 1995	Audiotape of previous consultation	117	No change	No change (before consultation)			No change	Participation increased; Depression no change (before consultation)
Frederickson 1995	Question checklist	80						Doctor's assessment of quality of consultation increased
Greenfield 1985	Coaching	45	No change		No change	Reduced	No change	Participation increased; Role and physical limitation reduced; Pain no change; Preference for active involvement increased
Greenfield 1988	Coaching (delivered twice)	73	No change		No change	No change	No change	Participation increased; Functional limitations reduced; Health status increased; Days lost from work reduced; HbA1c reduced
Hornberger 1997	Question checklist	101		Reduced	No change		Increased	Depression no change; Health status no change; Services provided no change; Clinician satisfaction no change
Kidd 2004	Written message; coaching; coaching and rehearsal	202	No change		No change (immediately); increased (three months)			Patient self efficacy increased; HbA1c no change
Kim 2003	Question checklist and coaching	768	Increased				No change	Participation increased; Patient assessment of communication no change; Discontinuation of contraception no change

Table 2. Main outcomes for each study *(Continued)*

Lewis 1991	Videotape for child, parent and clinician	141		Child anxiety no change	Child satisfaction increased; parent satisfaction no change			Participation increased; General recall no change; Medication recall increased; Child preference for active health role increased; Physician satisfaction no change
Little 2004	Question checklist	636		No change	Increased		No change	Depression no change; Enablement no change; Resolution of symptoms no change; Number of investigations increased
Maly 1999	Question checklist (delivered twice)	265			Increased		No change	Physical function increased; Global health no change; Disability days no change; Adherence no change; Desire to see medical records no change; Propensity for medical information increased.
Martinali 2001	Question checklist	142		Reduced (before consultation)	No change	No change	No change	Participation no change; Adequacy of information exchange no change.
McCann 1996	Question checklist	120	No change		No change		Increased	Physical function no change; Mental health no change; Clinician evaluation no change; Consultations in next 12 months no change.
Middleton 2006	Question prompt sheet	955			No change except for depth of doctor-patient relationship (increased)		Increased	
Oliver 2001	Question checklist and coaching	87		No change		No change		Pain reduced; Pain-related impairment no change; Pain frequency no change; Analgesic adherence no change.
Roter 1977	Coaching	200	Increased		Increased		No change	Participation no change; Patient expression of emotions increased; Patient internality of locus of control increased; Adherence to appointments increased.

Table 2. Main outcomes for each study *(Continued)*

Sander 1996a	Question checklist	129					Participation no change; Patient requests for information increased; Likelihood of using information from consultation no change; Recall no change.
Sander 1996b	Coaching	163					Participation no change; Patient requests for information increased; Likelihood of using information from consultation no change; Recall no change.
Tabak 1988	Question checklist	101	No change				
Tennstedt 2000	Coaching	355			No change except Interpersonal satisfaction increased		Participation no change
Thompson 1990a	Question checklist	66	Increased	Reduced	No change	No change	Clinician satisfaction no change
Thompson 1990b	Checklist of information to obtain; message encouraging questions	105	No change	No change	Increased		Extent to which questions answered increased; Sense of control increased; Recall no change.
Wilkinson 2002	Question checklist	278					Evaluation of visit no change; health record review no change apart from prostate screening (increased)

Table 3. Summary of outcomes sought

Outcomes sought	No. of studies
1) CONSULTATION PROCESS	
Patients' perceptions of communication, including usefulness of information provision	7
Information seeking and participation	14
Question asking	17
Provision of information	2
Verifying information	0
Types of questions asked	4
2) CONSULTATION OUTCOMES	
2a) Patient health outcomes	
Symptom control	3
Performance status (ability to undertake activities of daily living)	5
Pysiological measures of disease control	2
Physical health	4
Psychological health	21 (including 12 studies measuring anxiety)
2b) Patient care outcomes	
i) Patient knowledge	
Understanding/Knowledge acquisition	5
Retention of information, recall of information	6
Satisfaction with knowledge provision	0
ii) Evaluation of care	
Perception of care	1
Patient satisfaction	23
Perception of intervention	3
iii) Self-efficacy	
Empowerment	2
Enablement	1

Table 3. Summary of outcomes sought *(Continued)*

Confidence	0
Ability to cope	0
Sense of control	5
iv) Health behaviour	
Adherence (compliance)	5
Lifestyle or behavioural outcomes	0
Use of health services	0
Use of intervention	1
v) Treatment outcomes	
Adverse outcomes	0
3) SERVICE OUTCOMES	
Provision of information	0
Clinician satisfaction	3
Clinician perception of intervention	0
Consultation length	17
Service utilisation	4

Table 4. Comparison of results with and without clustered data

Comparison	Effect size all data	95% CI	Effect size no clust	95%CI
INTERVENTION VERSUS CONTROL				
Anxiety (after consultation)	-0.08	-0.22 to 0.06	-0.09	-0.23 to 0.06
Patient satisfaction	0.09	0.03 to 0.16	0.09	0.02 to 0.16
Consultation length	0.10	-0.05 to 0.25	0.05	-0.08 to 0.18
WRITTEN MATERIALS VERSUS COACHING				
Coaching: Satisfaction	0.23	0.08 to 0.38	0.18	-0.03 to 0.39
Written materials: Consultation length	0.13	0.05 to 0.21	0.10	0.02 to 0.18

Table 4. Comparison of results with and without clustered data *(Continued)*

TIMING OF INTERVENTION				
Immediately before consultation: Satisfaction	0.10	0.02 to 0.17	0.09	0.02 to 0.17
Immediately before consultation: Consultation length	0.16	0.03 to 0.29	0.12	0.01 to 0.22
CLINICIAN TRAINING				
Clinicians trained: Satisfaction	-0.01	-0.15 to 0.12	0.02	-0.14 to 0.17
Clinicians not trained: Satisfaction	0.13	0.05 to 0.21	0.11	0.03 to 0.20
Clinicians not trained: Consultation length	0.17	0.10 to 0.24	0.15	0.07 to 0.22

APPENDICES

Appendix 1. MEDLINE (Ovid) search strategy

1 pamphlets/ or pamphlet$.tw.
2 (leaflet$ or diary or diaries or booklet$ or guidebook$).tw.
3 sheet$.tw.
4 cues/ or cue$.tw.
5 (prompt$ or coach$).tw.
6 (checklist$ or check list$).tw.
7 agenda$.tw.
8 (written or write).tw.
9 (question or questions or question?ing or question?ed).tw.
10 (information adj3 need$1).tw.
11 (card or cards or helpcard$).tw.
12 (video$ or tape$ or cd$ or film$ or telephone$ or phone$1 or computer$).tw.
13 or/1-12
14 communication/ or communicat$.tw.
15 patient education/
16 ((patient$ or consumer$) adj3 (educat$ or skill$ or teach$ or train$ or coach$)).tw.
17 14 and (15 or 16)
18 13 or 17
19 (preconsultation$ or pre-consultation$).tw.
20 office visits/ or (office adj3 visit$).tw.
21 consult$.tw.
22 (medical adj3 interview$).tw.
23 waiting room$.tw.
24 scheduled appointment$.tw.
25 ((prior adj3 visit$) or previsit$).tw.
26 "appointments and schedules"/
27 or/19-26
28 18 and 27
29 randomized controlled trial.pt.
30 controlled clinical trial.pt.
31 randomized controlled trials.sh.
32 random allocation.sh.
33 double blind method.sh.
34 single blind method.sh.
35 or/29-34

36 animal/ not (human/ and animal/)
37 35 not 36
38 clinical trial.pt.
39 exp clinical trials/
40 (clin$ adj25 trial$).ti,ab.
41 ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab.
42 placebos.sh.
43 placebo$.ti,ab.
44 random$.ti,ab.
45 research design.sh.
46 or/38-45
47 46 not 36
48 37 or 47
49 28 and 48
50 (time adj series).tw.
51 (pre test or pretest or (post test or posttest)).tw.
52 cohort studies/ or cohort.tw.
53 50 or 51 or 52
54 28 and 53
55 49 or 54

WHAT'S NEW

Date	Event	Description
8 May 2008	Amended	Converted to new review format.

CONTRIBUTIONS OF AUTHORS

Paul Kinnersley led this review identifying the initial need, writing the protocol, conducting the review process and writing the review. Hayley Prout, Diane Owen, Rebecca Ryan and Naomi Cadbury acted as independent reviewers of citations and conducted data extraction. They also assisted with the production of the review. Kerry Hood was the statistician for the review and directed the meta-analyses and statistical analyses. Adrian Edwards guided the review process and assisted with the production of the review and the interpretation of the results. Fergus MacBeth, Phyllis Butow and Chris Butler assisted with the production of the protocol and final review and the interpretation of the results.

DECLARATIONS OF INTEREST

Paul Kinnersley leads a Communication Skills Training Unit that generates income by delivering training to clinicians. Phyllis Butow is an author of two studies included in this review.

SOURCES OF SUPPORT

Internal sources

- Cardiff University, UK.

External sources

- No sources of support supplied

INDEX TERMS

Medical Subject Headings (MeSH)

Anxiety [diagnosis]; Information Dissemination [*methods]; Patient Education as Topic [*methods]; Patient Participation; Randomized Controlled Trials as Topic

MeSH check words

Humans