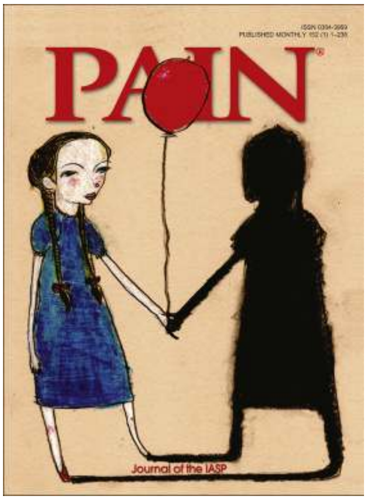

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Cognitive and affective reassurance and patient outcomes in primary care: a systematic review

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Abstract

In the context of uncertainty about aetiology and prognosis, good clinical practice commonly recommends both affective (creating rapport, showing empathy) and cognitive reassurance (providing explanations and education) to increase self-management in groups with non-specific pain conditions. The specific impact of each of these components in reference to patients' outcomes has not been studied. This review aimed to systematically evaluate the evidence from prospective cohorts in primary care that measured patient-practitioner interactions with reference to patient outcomes. We carried out a systematic literature search and appraisal of study methodology. We extracted measures of affective and cognitive reassurance in consultations and their associations with consultation-exit and follow up measures of patients' outcomes. We identified 16 studies from 16,059 abstracts. Eight studies were judged to be high in methodological quality. Pooling could not be achieved due to heterogeneity of samples and measures. Affective reassurance showed inconsistent findings with consultation exit outcomes. In three high-methodology studies, an association was found between affective reassurance and higher symptom burden and less improvement at follow up. Cognitive reassurance was associated with higher satisfaction and enablement and reduced concerns directly after the consultations in eight studies; with improvement in symptoms at follow up in seven studies; and with reduced health care utilization in three studies. Despite limitations, there is support for the notion that cognitive reassurance is more beneficial than affective reassurance. We present a tentative model based on these findings and propose priorities for future research.

Key words: Reassurance, systematic review, primary care

Introduction

In primary care, where a large proportion of consultations are for self-limiting or medically unexplained disorders, delivering effective reassurance is a core skill for all practitioners. Doing this effectively has the potential to improve health outcomes and, by reducing onward referrals, reduce health care costs. The effects of patient-practitioner interactions, including reassurance, on patient outcomes are most likely to be demonstrable in groups with conditions that are defined by subjective symptoms[39]. Amongst the commonest of these groups are patients with non-specific pain conditions, in which a clear cause cannot be established [34]. With such uncertainty, the consultation can be challenging for practitioners and patients, yet a primary goal of the consultation is to reassure patients and to support them to manage their condition. Delivering reassurance to those with non-specific pain is advised by many guidelines, including low back pain,[1, 52] neck pain[7, 51] and Irritable Bowel Syndrome[42].

Most models of good practice during consultations are based on the principles of patient-centred care, which typically include an element of reassurance[63]. The method of ‘reassurance’ is in the behaviour of the healthcare provider. Thus, data gathering in relation to signs, symptoms, concerns and the impact of the problem is a pre-requisite to reassurance, but reassurance itself is in the response of the health care provider to the data gathered.

We were able to identify only one evidence–informed model that explicitly focuses on reassurance[11]. The model is deduced from studies of persuasion and categorizes reassurance into affective communication, which aims to reduce worry, create rapport and reassure patients through a sense of being cared for, respected and understood; and cognitive reassurance, which aims to change patients’ perceptions and beliefs through education.

Coia and Morley[8] argue that affective reassurance is heuristic and rapid, and produces an immediate response in reducing concerns and worry. However, such responses are transient, and when problems return to impact on patients in the absence of the reassuring practitioner, the patient has not been empowered with new tools to deal with them. In contrast, the authors argue, cognitive reassurance is systematic and time consuming, but its impact in changing beliefs and increasing understanding is preserved, and in turn will improve adherence and self-management. Crucially, this model asserts that the two processes are mutually exclusive. Once affective reassurance has taken place the patient has insufficient motivation or capacity to engage properly with processing information to enable cognitive reassurance to take place.

If this hypothesis is correct, it requires a substantial shift in training and delivery of care. We therefore carried out a review of the evidence from prospective cohorts of patients consulting in primary care in which practitioners' communication could be categorized as affective or cognitive, and was measured in relation to outcomes. We focused on consultations in primary care in which uncertainty is commonly high[45], and where expressions of psychological need for emotional support are high[59].

Method:

Defining and coding reassurance

For the purposes of this review we used Linton's definition of reassurance[44], and the categorisation into affective and cognitive components outlined by Coia and Morley[8]. According to these, reassuring is defined as behaviour carried out by the practitioner. Reassurance is achieved if the patient changes his/her behaviour, understanding or thoughts. Hence, effective reassurance should be measured through patient outcomes, including self-report of change in beliefs and mood and measures of change in behaviour resulting in improved coping and management of the problem.

Search strategy

Our search focused on observational prospective study designs that provide detailed measurement of the components carried out during consultations and that measure subsequent patient outcomes. Specifically, we were interested in patients presenting with pain and discomfort, with poorly understood aetiology, and for whom further tests and referrals are not indicated (Table 1). We included groups with non-specific disorders typified by pain (e.g. low back pain, fibromyalgia, irritable bowel syndrome, unexplained chest pain, alone or in combination), mixed clusters of these populations defined in the original studies in reference to a lack of a clear pathological cause (such as medically unexplained syndromes) and mixed undefined groups attending primary care consultations, as these include large proportions of our target groups [15, 31, 33, 35]. We did not address studies investigating the impact of delivery of test results and educational material on patient outcomes: these have been reported elsewhere[4, 30, 40].

Database and citation-based searches (see figure 1):

We undertook an initial scoping exercise by searching MEDLINE and PsycInfo databases from 1979 to November 2010 using the terms 'pain and reassurance', 'pain and communication skills' and 'pain and practitioner-patient relationship' in the title and abstract. A start date of 1979 was selected based on the year of publication of Kessel's seminal article on consultation-based reassurance[41]. We did a backward citation search, followed by forward citation search on the pool of selected articles We supplemented this with a second systematic search, following the recommendations from The Centre for Reviews and Dissemination[10]. The following databases were searched from 1979 to October 2012 for relevant studies: MEDLINE, PsycInfo, PsycExtra and ProQuest Dissertations and Theses. Full details of the search strategy are shown in Appendix 1. We used EPPIreviewer 4.0[68] systematic-review dedicated software for coding. Finally, we hand-searched the reference lists of the two most recent review articles our search identified[11, 54] (see figure 1).

Titles and abstracts were screened according to the criteria presented in table 1.

Table 1 about here

Data extraction:

We extracted data on patient samples, country, practitioner sample, details of baseline measures, details of consultation measures, details of outcome measures, analysis and findings (Tables 2 and e1). We coded the consultation into affective / cognitive components, excluding measures of data gathering, and communications from patients to practitioners. Affective reassurance included verbal and non-verbal communication showing caring, empathy, and confidence, recognising and responding to distress cues, being warm and friendly, and offering generic reassuring statements, such as ‘I don’t think you should worry’. Cognitive reassurance included explanation of symptoms, explicit exclusion of serious disease, agreeing goals, negotiating treatment options, discussing prognosis and future care, checking understanding, discussing obstacles, and summarising,. The clarification into cognitive and affective reassurance was carried out by the researchers, through scrutiny of the description of the measures used, as presented in the original articles. All studies were extracted and coded by two independent researchers, and agreement was achieved through discussion. Outcomes were categorised into short-term (consultation exit), and follow- up.

Analysis:

Because of the known heterogeneity in samples, measures of consultation and outcome measures, statistical pooling of results was not planned. Methodological quality coding was carried out by two researchers independently, based on recommendations for evaluation of the quality of prognosis studies in systematic reviews[29] (Table e2). There are no established cut-points to define adequate / high methodology, thus we present the total score for each study, but refer to high methodology as those studies that scored above 10/13.

Results

We considered 16,059 abstracts, read 58 publications, describing 53 studies. From these we identified 16 studies that met our entry criteria (figure 1) and measured and analysed both cognitive and affective reassurance (table 2). Composite components of both types of reassurance were excluded.

Figure 1 about here

Coding

All studies were independently double coded. Inter-coder agreement was 93% for inclusion / exclusion at the final stage. There was disagreement about two studies, both of which were excluded after discussion. Agreement on the coding of the methodological quality of the studies was estimated from the number of criteria (13) multiplied by the number of studies (16). There was disagreement on three items (1%); this was resolved by discussion.

Findings

Affective reassurance

Affective reassurance was associated with higher satisfaction and enablement in three studies[55, 56, 67], and with lower satisfaction, and increased concerns in one study with high methodology[23] and one with lower methodology[70]. One study[31] found no association between affective reassurance and improved satisfaction. Importantly, in the following studies, all rating high for methodological quality, affective reassurance was associated with higher symptom burden/ less improvement[19, 45, 61], with lower rates of return to work in one[61], and with reduced adherence in another[19]. Two of these studies [18, 45] adjusted for clinical status at baseline, and the third [61] found no significant correlation between patients or practitioners' communication and pain intensity at baseline.

Cognitive reassurance

Four high quality[43, 45, 57, 64] and four lower quality studies[36, 37, 55, 67] found an association between cognitive reassurance and immediate (consultation exit) outcomes, including increased satisfaction and enablement and reduced concerns.

Four high quality[18, 45, 64, 69] and three lower quality studies[36, 37, 56] found associations with improvement in symptoms at follow up. Associations were also found with reduced further health care utilization in three studies[37, 56, 64], one of which[64] was of high methodology. The relationship between cognitive reassurance and adherence remains unclear: One study found an association with improved adherence[56] but another found no association with pill count[62]. One study[49] found no association between cognitive reassurance and improved satisfaction, and two studies[57, 61] found no associations between cognitive reassurance and symptom resolution at follow up.

Table 2 here

Discussion

Principal findings

The findings suggest that cognitive reassurance improves patients' outcomes, immediately after the consultation and at follow up. Associations were found in seven studies with improvements in symptoms, and with reduced subsequent health care utilisation in three studies. In contrast affective reassurance was associated at best only with improved satisfaction and at worst with poorer outcomes. Three studies with good methodology found an association between affective reassurance and reduced recovery/higher symptom burden.

Strengths and weaknesses of this review

To our knowledge this is the first review investigating reassurance in primary care, based on a model that explicitly codes practitioners' behaviour into cognitive and affective components. While this coding enabled a direct comparison between the two types of reassurance, it resulted in exclusion of many studies that used composite measures of patient-centred consultations in association with outcomes. Although agreement between coders was high, there is a possibility of errors in coding, especially when coding is based indirectly on previous direct coding by study authors.

In addition, despite the associations found, causality cannot be established in observational studies.. Not all the studies adjusted for severity of symptoms, mood and function at baseline and these could have affected practitioners' behaviour. As outcomes in some of these groups are likely to be poorer, it is impossible to know whether increases in affective reassurance reduced or increased the likelihood of poor outcomes.

However, of the three studies with high methodology that found worse outcomes associated with affective reassurance, two adjusted for clinical status, and the third found no correlations between pain intensity at baseline and communications at the consultation.

The majority of studies identified in this review included consecutive mixed groups of patients, which are likely to be extremely heterogeneous. However, primary-care samples are reported to include large proportions of our target groups [15, 31, 33, 35]. The majority of the identified studies included follow up in durations up to four months. The long term impact of reassurance remains therefore unknown. Further work is needed: a) to determine whether similar associations between reassurance and outcomes may be found in groups with a clear aetiology, prognosis and choice of treatment; b) to explore other aspects of patient-centred approaches, including empathy and sensitivity, both of which may be necessary to elicit the comprehensive picture of patients' problems and concerns; and c) potential differences in reassuring new patients and those known to the practitioners. A systematic review, published after our analyses were complete, reports evidence for a relationship between empathy and patient' outcomes[11], but interpretation of the findings in relation to our review are not clear, as measures of empathy do not distinguished between data gathering and information giving, and often include items that measure a combination of affective and cognitive reassurance [e.g. 50]. We also note that studies that measured only cognitive or affective components of the consultation might be compromised, as the presence of the other (unmeasured) component may nonetheless impact on patients' outcomes. We therefore consider the stronger evidence to be forthcoming from studies that measures both components in the same consultation.

How the findings fit with other studies

The low number of studies examining the impact of practitioner-patient interactions on patient outcomes was surprising, even before we applied the inclusion criterion for studies that explicitly measured cognitive and affective reassurance. Our systematic searches were comprehensive and together included over 16,000 abstracts, yet we identified only 53 empirical prospective cohorts in primary care that met our inclusion criteria. Existing narrative reviews [e.g. 9, 16, 21] and publications on how to improve consultations [e.g. 2, 5, 13] far exceed the empirical evidence. The assumption that all aspects of patient-centred consultations have a positive impact on all outcomes, in all patients, demonstrates a case in which implementing a theory may have galloped ahead of evidence:

Other reviews of the impact of consultation-based factors in broader groups have provided inconclusive and inconsistent findings[6, 26, 32, 48]. Practitioner-patient collaboration has been found to predicts treatment adherence, but the effect size is small[3, 27, 28]; meeting patient expectations has a modest effect on satisfaction, but the evidence is inconclusive for other outcomes[58]. The current review advances the field by categorizing consultations into affective and cognitive components, and addressing groups in which reassurance is considered to be a primary goal of the consultation.

We did not include RCTs in our analysis. The research question within RCTs, will this intervention change outcome, is distinctly different from that in the observational studies we have included where we are looking for the characteristics that predict a good outcome following the consultation. Others have systematically reviewed the literature on studies to improve the consultation, and have not found a convincing benefit on patient outcomes; and they have failed to adequately draw out the components of effective reassurance [12, 14, 25, 38].

Unanswered questions and future research:

Provisional evidence from this review suggests that some aspects of reassurance are more beneficial than others. In light of practitioners having to prioritize behaviors under time pressure, offering clear explanations and information about prognosis, explicit exclusion of serious disease, and discussion of treatment plan should take priority. We note that receiving information has been rated as a more important aspect of patient-centered care by patients, in comparison with clinicians prioritizing receptiveness and affective components[53].

We have developed a model to guide future research (figure 2). The model is based on the findings from the current review in combination with other theories, in reference to sequence [46, 47], content and components of the consultations [17, 20, 60] and paths to outcomes [66].We aim to provide guidance for future research, rather than providing a definitive model of evidence-based reassurance.

Specifically, the model includes measurement of known predictors of outcomes outside of consultation-related factors, details the consultation components at the different stages of the consultation, and a division of outcomes into short, medium and long term. Following from left to right, the block arrows at the bottom of the figure denote that patients' characteristics and those of their problem (e.g. psychosocial factors, previous experience, education & knowledge, general health & fitness, pain, symptom burden, function) affect all aspects of the consultation, and outcomes at all stages. There is a plethora of evidence to support the association between patient characteristics and a) their behaviour during consultations [e.g. 65] and b) their prognosis [e.g. 22]. The block arrows at the top of the page denote that practitioner and setting characteristics (e.g. personal characteristics, orientation, perceived roles, patients-related beliefs, work related factors such as consultation duration and stress) impact on all aspects of the consultation[24].

The first stage of the consultation is data gathering. The practitioner is involved in exploring symptoms, eliciting concerns / feelings, elicit illness perceptions / causal attributions, exploring expectations, and where appropriate carrying out examinations. The patient is involved in exposition, description of the problem and its impact, and voicing beliefs, concerns and requests. This stage of the consultation affects the next stage (denoted by thin arrows) both in terms of the practitioners' behaviour and the patients' behaviour.

The next stage, information giving, involves the practitioner offering affective and cognitive reassurance. These communications affect immediate outcomes, which in turn affect medium and long term outcomes. Cognitive reassurance results in changes in knowledge and understanding, increased sense of control, and change in beliefs. The questions that remain to be addressed (denoted by question marks) are whether changes in short term outcomes such as satisfaction, perceived support and reduced anxiety (for which there is some evidence for an association with affective reassurance) improve or worsen medium and long term outcomes; and whether cognitive reassurance can be effectively delivered independently of affective reassurance. Thus, the two paths from affective reassurance to outcomes (a direct path, and a path via cognitive reassurance) form priorities for research.

Figure 2 here

Conclusion

We have shown that some, but not all, patient-practitioner interactions during the consultation are related to patients' outcomes. There is sufficient evidence to suggest that cognitive reassurance is an important aspect of the consultation, and that giving clear explanations and information improve patients' outcomes in the short term, and in the long term. The findings also raise questions about the impact of affective reassurance on patient outcomes, which at best, appears to be related only to short term outcomes. Future research should, in the first instance, establish comprehensive, reliable and valid measures of both affective and cognitive reassurance. Experimental and longitudinal observational studies are necessary to compare the impact of cognitive and affective reassurance on patients' outcomes, including their recall of information given during the consultation, their compliance with advice, and shift in their beliefs, in addition to symptom resolution, well-being and utilization of health care services. There is a need to investigate these in distinct sub-groups. How to effectively reassure patients in the context of uncertainty remains a primary goal for future research.

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- Saz Ahmed, Royal Holloway, University of London
- Jennifer Mills, Royal Holloway, University of London
- Jennah Hylton-Edwards, Royal Holloway, University of London

Authors' Contributions: Pincus and Holt had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Pincus, Vogel, Underwood & Taylor. Acquisition of data: Pincus, Holt, Vogel. Analysis and interpretation of data: Pincus, Holt, Vogel, Walsh, Savage, Underwood & Taylor. Drafting of the manuscript: Pincus & Holt.

Critical revision of the manuscript for important intellectual content: Pincus, Holt, Vogel, Walsh, Savage, Underwood, & Taylor. Study supervision: Pincus.

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Figure 1: Literature searches and screening results.

Figure 2: Model of reassurance in relation to outcomes

Figure 2

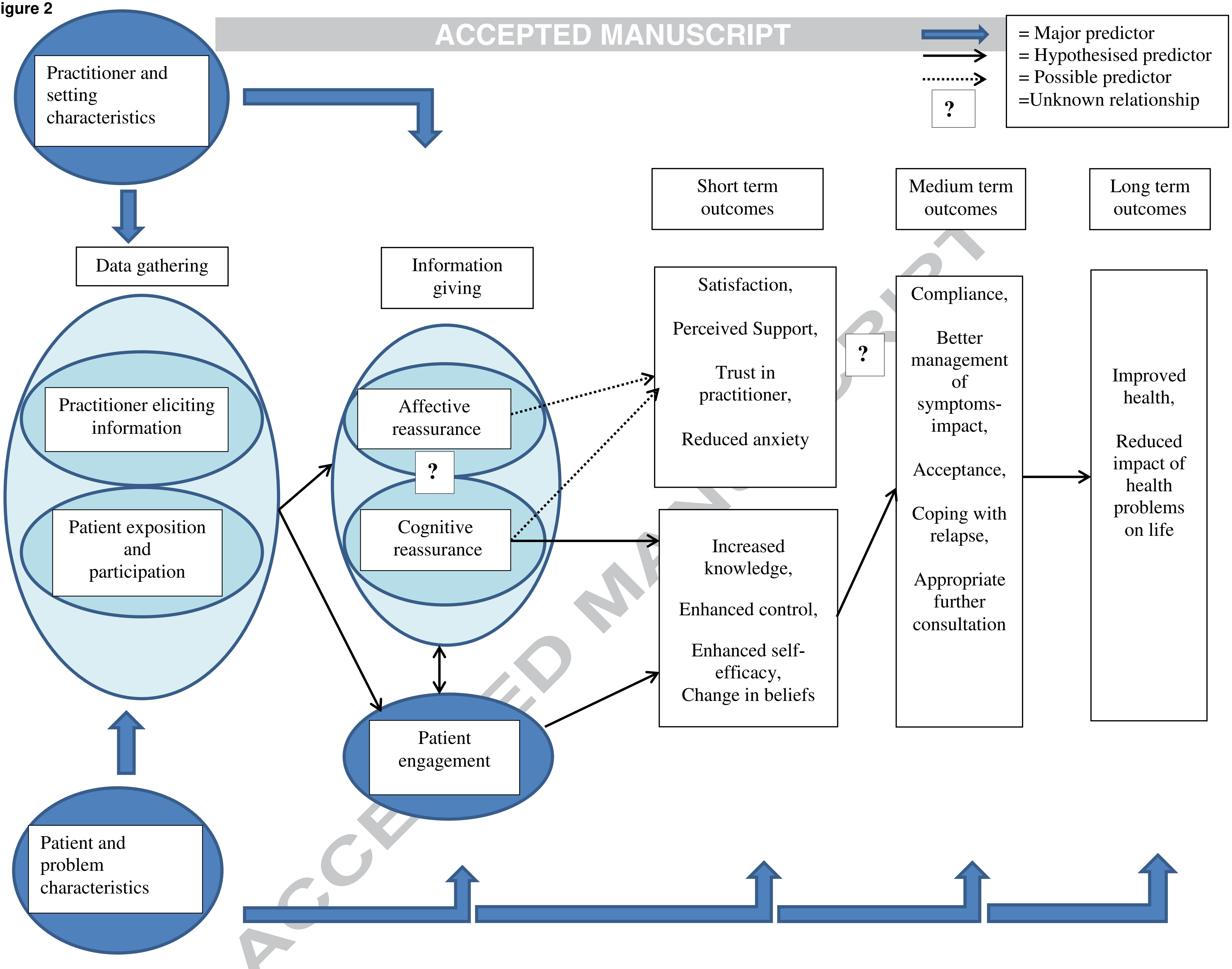
= Major predictor
= Hypothesised predictor
= Possible predictor
?
=Unknown relationship
Practitioner and setting characteristics
Data gathering
Information giving
Short term outcomes
Medium term outcomes
Long term outcomes
Practitioner eliciting information
Patient exposition and participation
Affective reassurance
?
Cognitive reassurance
Satisfaction,
Perceived Support,
Trust in practitioner,
Reduced anxiety
?
Increased knowledge,
Enhanced control,
Enhanced self-efficacy,
Change in beliefs
Compliance,
Better management of symptoms-impact,
Acceptance,
Coping with relapse,
Appropriate further consultation
Improved health,
Reduced impact of health problems on life
Patient engagement
Patient and problem characteristics

Figure 1 flow chart

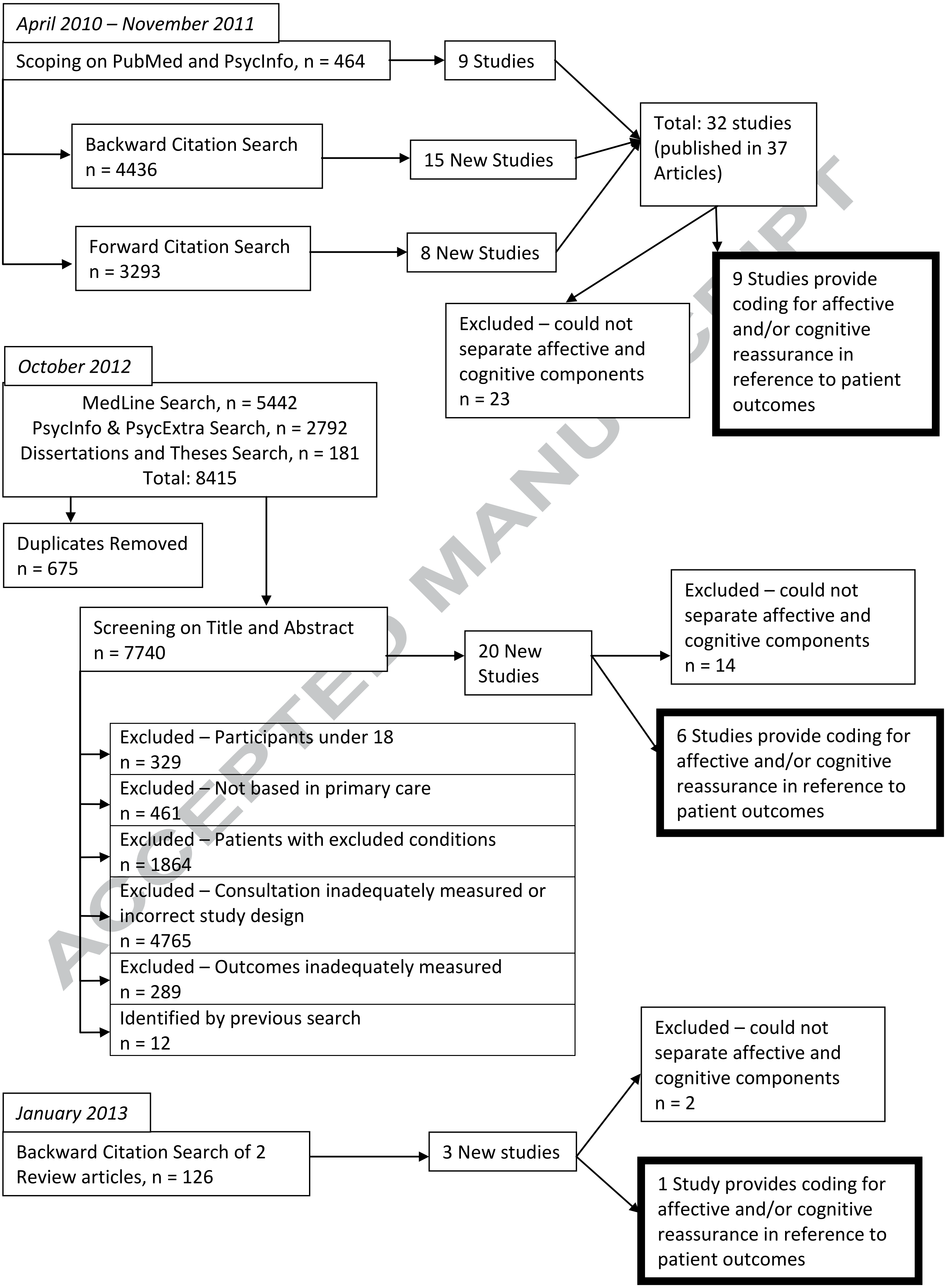

Table 1: Inclusion and exclusion criteria

Inclusion criteria:
Patient groups in which a) investigations were not indicated or had proven negative, and b) self-management was indicated, without regular monitoring from a health care practitioner (e.g. low back pain, fibromyalgia, irritable bowel syndrome, unexplained chest pain, alone or in combination).
Mixed clusters of these populations defined in the original studies in reference to a lack of a clear pathological cause (such as medically unexplained syndromes (MUS)).
Mixed undefined groups attending primary care consultations, as these include large proportions of our target groups.
Settings: Primary care, or studies where at least 50% of subjects were recruited from primary care.
Consultations: Studies had to include specific measures of the process of a consultation, rather than generic measures of trust in practitioners, expectations of outcome etc.
Studies had to report patient outcomes post-consultation. We did not limit the outcomes, they were all extracted.
Exclusion criteria
Populations with disorders for which reassurance and subsequent health-related behaviour required regular testing, monitoring or interventions from health care providers, such as , diabetes, cancer, , dental, rheumatoid arthritis, and psychiatric disorders such as hypochondriasis, and emotional problems
Studies where a majority of patient participants were aged under 18
Studies focusing exclusively on information leaflets, ordering tests and giving test results, prescriptions, duration rather than content of the consultation, continuity of care and practitioner demographic characteristics such as gender, age and ethnicity.

Any study design other than observational prospective cohort – including retrospective studies, cross sectional designs, interview studies and randomised controlled trials

Table 2

Table 2: Findings from empirical studies

Study	**Sample (country, n, & description)**	**Affective***	**Cognitive**†	**Statistical Analysis**	**Results (by follow-up period)**	**MQ**‡ **Score (n/13)**
Studies that measured and analysed affective and cognitive components						
Fassaert et al., 2008[18]	Netherlands, 263, minor illness (12% digestive; 52% musculoskeletal; 23% respiratory; 12% Skin)	Active listening, defined as GPs attentiveness and acknowledgement of the patients' suffering.	Positive communication, 3 components: Explicit exclusion of serious disease; clear explanation of cause and symptoms; explicit statement about favourable prognosis.	Multiple linear regression, adjusting for baseline measures of outcomes, corrected for clustering.	CE: Clear explanation and good prognosis associated with reduced anxiety (.55, SE=23, p=0.02) 2 weeks: Clear explanation and good prognosis associated with better physical (-.12, SE=0.5, p=0.02) and overall health (-.11, SE=0.4, p=0.02), and better mood (-0.12, SE=0.5, p=0.02). Active listening associated with feeling worse, physically (.03, SE=0.1, p=0.02 and overall (.03, SE=0.01, p<0.01, and for patients with good mood at baseline, reduced adherence (-.39, SE=0.16, p=0.01).	11.5
Gilbert &	USA, 155, mixed,	Approving, expressing	Orienting or instructing,	Mixed-Model	CE: expressing concern and more non-	11

Hayes, 2009[23]	female, age >65	concern, expressing reassurance and optimism, non-verbal activities (eye contact etc)	giving life style advice	Regression Analysis	verbal activity reduced satisfaction (-.053, SE=0.19, p<0.01; -0.15, SE=0.07, p=0.03). Orienting and instructing increased intention to adhere (0.21, SE=0.08, p=0.01). Giving life style advice reduced intention to adhere (-0.08, SE=0.03, p<0.01). 4 weeks: approving related to improvement in presenting problem (1.18, SE=0.47, p=0.01), giving life style information reduced improvement (-0.57, SE=0.18, p<0.01), and reduced improvement in physical health (-2.36, SE=0.88, p<0.01). Lower rates of reassurance and optimism and of non-verbal activity related to improvement on mental health (-2.21, SE=0.79, p<0.01; -13.79, SE= 6.44, p=0.03).	
Little et al.,	UK, 661,	Personal relationship (knows	Positive and clear approach	Logistic	CE: positive clear approach predicted	10.5

2001[45]	consecutive mixed	and understands me and my emotional needs)	(clear explanation, definite and positive about problem and prognosis); Health promotion and prevention advice	regression, multiple regression and ANCOVA	satisfaction, and enablement. Health promotion predicted enablement. 1 month: positive clear approach predicted less symptom burden Personal approach related to higher symptom burden, but was related with fewer referrals. Other health care utilisation not related to components.	
Mead et al., 2002[49]	UK, 173, consecutive mixed	therapeutic alliance- socio-emotional utterances, empathy= affective reassurance; non-verbal caring= warmth, concern.	involving the patient (explanations, clarification etc / total talk= cognitive)	Multiple regression (for satisfaction) and logistic regression (for enablement)	CE: enablement and satisfaction on CSQ: Not related to any.	9.5
Pawlikowska et al., 2012[55]	UK, 88, consecutive mixed	Global affect: Interest/attentiveness, friendliness/warmth, hurried/rushed,	RIAS item, counselling regarding medical condition or therapeutic regimen, doctor only	Logistic regression and chi-square	CE: regression model predicting enabling included 7 items, including RIAS cognitive item (R^2=0.07, p=0.004). Global affect NS. Of the Non-verbal behaviours,	4.5

		anxiety/nervousness, anger/irritability, dominance/assertiveness. Non-verbal (MIPS, Ford et al., 2000)		analysis	only relaxed hand movements (not writing) was associated with higher enablement.	
Phillips et al., 2011[56]	USA, 243, consecutive, mixed	Interpersonal skills, 5 items: Doctor sympathetic; understanding of patients' feelings; Doctor is a good person; Doctor is like a friend or family member; Doctor concerned with patients' feelings.	Common-sense self-regulation model (CS-SRM, behaviours: Discussion of cause, explanation of examination, timeline, treatment instructions, discussion of consequences, tips about incorporating treatment into daily routine, information on monitoring.	Causal path analysis, comparison of theoretical models.	All 1 month unless otherwise stated: the better model depicts paths from CS-SRM Behaviours to adherence and problem resolution. Interpersonal skills were related to patient satisfaction (at 24-28 hours) but not to adherence or problem resolution. (RMSEA=0.083, GFI=0.97, AGFI=0.91).CS-SRM significantly lower for those attending emergency room (t= 2.03, p=0.04).	6.5
Thom, 2001[67]	USA, 343, consecutive mixed	Being comforting and caring	Discussing options, working to adjust treatment, answering clearly, explaining, checking	Pearson correlation	CE, 1 month, and 6 months later: all items correlated with patient trust and satisfaction (p<0.01).	9.5

			understanding, demonstrating competency			
Shaw et al., 2011[61]	USA, 83, new acute episodes of low back pain	Rapport building, socializing, facilitation and engagement	Biomedical/ therapeutic information, Lifestyle/ psychosocial information	Pearsons' correlations and t-tests	1 and 3 months: rapport building associated with poorer function (r=0.31, p<0.01) higher pain intensity (r=0.31, p<0.01), less return to work (t(75)=1.96, p<0.05, and less case resolution (t(75)=2.13, p<0.05). Facilitation and engagement associated with poorer function (r=0.4, p<0.01) higher pain intensity (r=0.5, p<0.01), less return to work (t(75)=4.01, p<0.05, and less case resolution (t(75)=4.49, p<0.05.	10
Studies that measured and analysed only cognitive components						
Jackson & Kroenke, 2001[37]	USA, 632, consecutive patients with physical symptoms		Met expectations for diagnosis and prognosis	Logistic regression	CE: Diagnosis and prognosis related to higher satisfaction (CI 1.2-1.6 and 1.2-1.5 respectively) 2 weeks: diagnosis related to fewer revisits (0.79-0.99) and greater symptom	8.5

					improvement (CI 1.02-1.3). Prognosis related to fewer revisits (0.69-0.91) and symptom improvement (CI 1.04-1.3).	
Jackson, 2005[36]	USA, 500, consecutive, physical complaint excluding upper respiratory infection (500)		Unmet expectations; patient-report of what clinician did during visit (prescription, diagnostic test, referral, discussion of diagnosis or prognosis).	Satisfaction: student t-tests. Symptom outcome: chi-square or Kruskall-Wallis. Likelihood of symptom improvement: multivariable modelling. Functional status: ANOVA	CE: receiving diagnostic or prognostic information led to higher satisfaction (CI 1.5-3.1 diagnostic; 1.4-2.9 prognostic), less residual worry (CI 0.29-0.64 diagnostic; 0.36-0.79 prognostic) 2 weeks: receiving diagnostic or prognostic information led to fewer unmet expectations (CI 0.24-0.71 diagnostic; 0.52-0.98 prognostic). Stepwise increase in 2 week functional improvement when had received diagnostic ($p < 0.04$) or prognostic ($p < 0.03$) information. Those who received prognostic information were significantly more likely to have improved at 2 weeks (CI 1.3-3.1).	8

Kravitz et al., 2002[43]	USA, 909, patients with concern over a new / worsening problem or missed diagnosis		Fulfilled requests for medical information (one of four possible requests)	Regressions (not specified)	CE: satisfaction with care lower if information not received in full (p<0.001). 2 weeks: no relation of information received to further health care visits, or function. Incomplete requests (any, i.e. tests and referrals included) predicted more health concerns and less symptomatic improvement (p<0.001 for both.	11.5
Putnam et al., 1985[57]	USA, 102, new patients, mixed, females only		Explanations: giving objective information about illness and treatment	Pearson correlation, linear regression, ANOVA	CE: explanations related to cognitive satisfaction (understanding and feeling able to control problem (r=0.36, p<0.001) but not affective satisfaction (feeling warmth, able to express oneself etc). 1 and 4 weeks: explanations not related to change in symptoms.	10
Stewart et al., 2000[64]	Canada, 315, mixed, one or more recurring		Finding common ground: Clear description of problem and management plan,	Multiple regression and multiple	CE and 2 months: perception of finding common ground was associated with reduced concerns (P=0.04), and	11

	problems (315)		answered questions discussed and agreed plan. Patients' perception that common ground was found in relation to treatment option.	logistic regression, adjusting for baseline measures.	subsequent diagnostic test (4.1% compared to 25.4%), and subsequent referrals (6.1% compared to 14.9%). Audio-taped coding was not significant related to recovery, health status, subsequent medical care.	
Turner et al., 1998[69]	USA, 68, back pain (68)		Explanation and diagnosis, treatment recommendations, advice on returning to normal activity	Not specified (bivariate)	1 month: advice on return to normal activity significantly higher in improvers (18 versus 5%)	10
Studies that included only analysis of affective reassurance						
Stewart, 1984[62]	Canada, 140, new or continuing problem, mixed (140)	Physician patient-centred behaviours: showing solidarity, expressing tension release, agreement, asking for opinions, asking for suggestions, asking for help.		Not specified	10 days: physician patient-centred behaviours linked to higher compliance assessed by pt self-report ($p < 0.05$), but not by pill count ($p < 0.10$) Asking for opinions ($p < 0.05$) significantly linked to higher satisfaction with physician's personal qualities. Asking for help was significantly linked ($p < 0.05$)	6.5

					to higher satisfaction with physician's professional competence.	
Van Dulmen & van den Brink-Muinen (2004)[70]	Netherlands, 698, not described	GPs' empathy, measured by adequate responses (facilitating or acknowledging emotional content) to patients expressing concerns from videotape, and patient perceptions post-visit.		Pearson's correlations	CE: patients who had perceived a more empathic GP were less anxious (r = 0.10; p = 0.03). However, more adequate responses from GP related to higher post-visit anxiety (r = 0.15; p = 0.000)	5.5

CE= consultation exit

[*] Affective reassurance: verbal and non-verbal behaviour indicating being empathic, comforting, and caring; giving messages that the practitioner is experienced, competent and optimistic without giving specific information; giving generic reassuring statements.

[†] Cognitive reassurance: providing information about diagnosis, prognosis and treatment; providing advice; negotiating a treatment plan with the patient; explicit exclusion of serious disease.

‡ Methodological Quality

eTable 1: Description of empirical studies

Reference	Patients (description & n)*	Practitioners (country, description & n)	Baseline measures (pre-consultation)	Consultation components (method, description, measure)†	Patients outcomes and time from consultation‡
Fassaert et al., 2008[18]	C, common minor ailments (digestive, musculoskeletal, respiratory and skin) excluding chronic disease (263)	Netherlands; General practitioners (139)	Socio-demographic, functional health status (COOP/WONCA§), anxiety (STAI).	V Positive communication, three components: exclusion of serious disease; clear explanation; favourable prognosis. Active listening (ALOS-global)	CE Anxiety 2 weeks: Functional health status, adherence to medication prescription (MAQ)
Gilbert & Hayes, 2009[23]	Mixed, female pts (age >65) (155)	USA; nurse practitioners (NPs) (31)	Physical and mental health (SF-12v2)	V Coded for frequency of 43 verbal 'utterances' (RIAS); non-verbal activity check sheet; relationship messages	CE Satisfaction, intention to adhere 4 weeks: adherence, change in presenting problems; physical and mental health (SF-12v2)
Jackson, 2005[36]	C, physical complaint excluding upper respiratory infection	USA; 28 clinicians at an army medical centre (4 NPs; 7	Mental health (PRIME-MD); symptom type, duration and severity;	S Unmet expectations; patient-report of what clinician did during visit	CE Satisfaction (MOS 9 item); residual serious worry.

	(500)	medicine residents; 2 FPs; 15 general internists)	recent stress; Previsit expectations ; functional status (MOS-SF-6,); physical symptoms (PHQ-15)	(prescription, diagnostic test, referral, discussion of diagnosis or prognosis).	2 weeks: Symptom outcome and severity; recent stress; functional status (MOS-SF-6); satisfaction; unmet expectations.
Jackson & Korenke (2001) [37]	Physical symptoms (632)	USA; physicians from a primary care walk-in clinic at an army medical centre.	Symptoms, expectations, functional status (MOS-SF-6) depression and anxiety (PRIME-MD)	S Unmet symptom-related expectations (diagnosis, prognostic information, prescription, diagnostic test, referral, or other) Physicians completed DDPRQ	CE Satisfaction (MOS); worry about serious illness. 2 weeks: symptom outcome and severity, residual worry, unmet expectations, functional status (MOS-SF-6) satisfaction
Kravitz et al., 2002[43]	Pts with concern over a new / worsening problem or missed diagnosis (909)	USA, family practice (16), internal medicine (18) and cardiology (11) physicians	General health and concerns; trust in the physician	S Proportion of requests fulfilled	CE Satisfaction; endorsement of physician. Physicians' rating of consultation (demanding / satisfying). 2 weeks:

					Self-reported health care utilization; health concerns; symptom improvement; health status (SF-36)
Little et al., 2001[45]	Consecutive, mixed (661)	UK, GPs	What patients wanted the doctor to do	S exploring disease/illness experience, understanding whole person, finding common ground, health promotion, and physician-patient relationship	CE Positive and definite approach of the doctor to diagnosis; anxiety (SSAQ); enablement (PEI); satisfaction (MISS); symptom burden (MYMOP). 1 month: Symptom burden (MYMOP); reattendance, investigation and referral (from notes)
Mead et al., 2002[49]	C, mixed (173)	UK, GPs (14)	Demographic; physical health (COOP / Wonca); emotional health (GHQ-12); GP acquaintance with patient; surgery visits in past 12 months	V patient-centeredness (adaptation of RIAS), patient-directed eye gaze, clinical behaviours	CE Satisfaction (CSQ); enablement (PEI)

Pawlikowska et al., 2012[55]	C, mixed (261, but analysis performed on 88)	UK, GPs (3)		V Verbal communication with socio-emotional exchange, Patient-centred communications (RIAS), Verbal dominance, Global affect (warm, friendly reassuring manner), emotionally supportive non-verbal communication (MIPS)	CE Enablement (PEI)
Phillips et al., 2011[56]	C, mixed, included only those for whom treatment was prescribed (243)	USA Primary care physicians		S CS-SRM behaviours: Discussion of cause, explanation of examination, timeline, treatment instructions, discussion of consequences, tips about incorporating treatment into daily routine, information on monitoring. Interpersonal skills, 5 items.	24-48 hours Change in understanding, Satisfaction 1 month Adherence, Problem resolution, Emergency care utilization

Putnam et al., 1985[57]	N, mixed female (102)	USA, physicians and medical residents (14)	Symptom status ; health beliefs; acute or chronic status.	AT VRM for medical history, physical examination and conclusion. Coded as patient exposition (during medical history) and physician explanation (during conclusion).	CE Cognitive and affective satisfaction (MISS) 1 and 4 weeks post-consultation: compliance; change in symptom status
Shaw et al., 2011[61]	N, acute low back pain (83)	USA Community-based practitioners (14, 6 physicians; 4 nurses; 2 physician assistants, 1 osteopath, 1 chiropractor)	Pain	AT Interaction Analysis (RIAS), 10 items.	1 and 3 months Numerical Pain rating Disability (RMDQ) Return to work
Stewart, 1984[62]	N or continuing, mixed (140)	Canada, 24 family physicians		AT Patient-centred statements by patient and physician (Bales Interaction Process Analysis). Physician behaviours grouped as	10 days: Satisfaction ; compliance as measured by both pt self-report and pill counts.

				patient-centred: showing solidarity, expressing tension release, agreement, asking for opinions, asking for suggestions, asking for help.	
Stewart et al., 2000[64]	Pts with one or more recurring problems (315)	Canada, family physicians (39)		AT patient-centred communication: exploring illness, understanding whole person, finding common ground S Pt perception of patient-centeredness	CE and at 2 months: Recovery; health status (SF-36); health care utilization (chart review)
Thom, 2001[67]	Consecutive, mixed (343)	USA, family physicians (20)	Length of relationship with physician; number and type of health conditions; health status (SF-36)	S Interpersonal behaviour of physician (14/23 items from Humanistic Behaviours Questionnaire plus 4 items from focus groups: finding out all reasons for visit; respecting opinions and feelings; caring and	CE, 1 month and 6 months later: Trust in the physician (Trust in the Physician Scale); satisfaction (13 items from Consumer Satisfaction Survey)

				concern; demonstrating competency)	
Turner et al., 1998[69]	Back pain (68)	USA, family practice physicians (10) and Nurses (2)	Details of back pain (duration, intensity, interference) and goals for visit.	AT physical examination; explanation of pain and diagnosis; pain and disability assessment; other problem assessment; pain management strategies; discussion of prognosis; treatment recommendations	One month: Pain intensity and interference classified into functional, improved and unimproved.
Van Dulmen & van den Brink-Muinen (2004)[70]	Not described (698)	Netherlands, GPs (142)	Anxiety (STAI); extent to which preferred empathic GP.	VT GPs' responses to patients' concerns (RIAS) S Patient perception of GP empathy	CE: Anxiety (STAI)

[*] Patients: N= new, C=consecutive, MUS= medically unexplained symptoms

[†] Method of data collection on consultation components: AT= audiotaped, OB= observation, S= survey, V= videotaped

[‡] Time of outcome data collection: CE= measured at consultation exit FU= follow up

[§] Measurements Key:

ALOS –global: Active Listening Observation Scale. COOP/WONCA: functional health assessment charts developed by the Dartmouth COOP as part of the World Organization of National Colleges. CSQ: Consultation Satisfaction Questionnaire. CS-SRM: Common Sense – Self-Regulation Model. DDPRQ: Difficult Doctor-Patient Relationship Questionnaire. GHQ-12: General Health Questionnaire – 12 item. MAQ: Medication Adherence Questionnaire. MARS-5: Medication Adherence Report Scale-5. MIPS: Medical Interaction Process System. MISS: Medical Interview Satisfaction Scale. MOS: Medical Outcomes Study. MOS-SF-6: Medical Outcomes Study – Short Form – 6. MYMOP: Measure Yourself Medical Outcome Profile. PEI: Patient Enablement Instrument.

PHQ-15: Patient Health Questionnaire-15. PRIME-MD: Primary Care Evaluation of Mental Disorders. RIAS: Roter Interaction Analysis System. RMDQ: Roland-Morris Disability Questionnaire. SSAQ: Short State Anxiety Questionnaire. SF-12v2: Short Form health survey -12v2. SF-36: Short Form health survey-36 item. STAI: State Trait Anxiety Inventory. VRM: Verbal Response Modes.

Table e-2

eTable 2: Methodological quality coding of empirical studies

Reference	Fassaert et al., 2008[18]	Gilbert & Hayes, 2009[23]	Jackson, 2005[36]	Jackson & Kroenke, 2001[37]	Kravitz et al. 2002[43]	Little et al., 2001[45]	Mead et al., 2002[49]	Pawlik-owska et al., 2012[55]	Phillips et al., 2011[56]	Putnam et al., 1985[57]	Shaw Et al., 2011[61]	Stewart 1984[62]	Stewart et al., 2000[64]	Thom et al., 2001[67]	Turner et al., 1998[69]	Van Dulmen & van den Brink-Muinen (2004)[70]
Study participation[a]	Y	Y	Y	P	Y	Y	N	P	Y	P	Y	P	Y	Y	Y	P
Study sample[b]	Y	P	Y	Y	P	P	Y	P	P	Y	Y	P	Y	Y	Y	N
Study attrition[c]	P	Y	DK	Y	Y	Y	N/A	N/A	Y	Y	Y	Y	Y	Y	Y	N
Practitioners Described[d]	P	Y	Y	N	Y	N	Y	Y	N	Y	Y	P	Y	Y	Y	N
Consultation Measure Quality[e]	Y	Y	DK	DK	Y	Y	Y	P	P	Y	Y	Y	Y	Y	Y	Y
Independent Coders of Consultation[f]	P	P	N/A	N/A	N/A	N/A	P	N	N/A	Y	Y	Y	DK	N/A	Y	DK
Outcome Measures Quality[g]	Y	Y	P	P	Y	Y	Y	Y	P	P	Y	Y	Y	Y	N	Y
Follow- up outcome[h]	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N
Confounding: baseline measureme	Y	Y	Y	Y	Y	Y	Y	N	N	Y	P	N	Y	Y	Y	Y

Reference	**Fassaert et al., 2008[18]**	**Gilbert & Hayes, 2009[23]**	**Jackson, 2005[36]**	**Jackson & Kroenke, 2001[37]**	**Kravitz et al. 2002[43]**	**Little et al., 2001[45]**	**Mead et al., 2002[49]**	**Pawlik-owska et al., 2012[55]**	**Phillips et al., 2011[56]**	**Putnam et al., 1985[57]**	**Shaw Et al., 2011[61]**	**Stewart 1984[62]**	**Stewart et al., 2000[64]**	**Thom et al., 2001[67]**	**Turner et al., 1998[69]**	**Van Dulmen & van den Brink-Muinen (2004)[70]**
nt of outcome variables[i]																
Confounding: Baseline adequately measured[j]	Y	Y	Y	P	Y	Y	Y	N/A	N/A	DK	P	N/A	DK	Y	N	Y
Confounding: baseline adjusted in Analysis[k]	Y	N	DK	Y	Y	Y	Y	N	N	Y	DK	N/A	Y	N	Y	DK
Appropriate Analysis[l]	Y	Y	P	Y	Y	Y	Y	P	Y	N	P	N	Y	N	N	N
Adequate Sample size for Analysis[m]	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	P	N	Y	Y	Y	Y[n]
Total	11.5	11	8	8.5	11.5	10.5	9.5	4.5	6.5	10	10	6.5	11	9.5	10	5.5

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[a] Adequate description of sampling frame and recruitment, recruitment setting geographic location. Adequate description of inclusion and exclusion criteria.

[b] The baseline study sample (i.e., individuals entering the study) was adequately described for key characteristics (e.g. presenting problems, gender, age, socio-economic status, education).

[c] Frequency of loss to follow-up from sample to study response <40% (i.e., proportion of study sample completing the study and providing outcome data at least 60%) **Or:** Attempts to collect information on participants who dropped out of the study were described **and** reasons for loss to follow-up were provided **and** participants lost to follow-up were adequately described for key characteristics, **and** there were no important differences between key characteristics and outcomes in participants who completed the study and those who did not.

[d] Provide adequate information on : Numbers, Clinical Experience, Specialisation.

[e] A clear definition or description of the consultation factors measured, with the measurement of consultation-related factors reported or refered to adequately validity and reliability to limit misclassification bias (e.g., may include relevant outside sources of information on measurement properties).

[f] Independent double coding of transcriptions, audio-tapes etc.

[g] A clear definition of the outcome of interest was provided, including duration of follow-up. The outcome measure and method report or refer to adequately validity and reliability.

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[h] Included measures of outcome beyond the consultation exit.
[i] Baseline measures of potential confounding variables which may impact both on consultation-factors and on patient outcomes (e.g. pain, disability, health status, expectations, duration of problem) measured.
[j] Measurement of all important confounders was adequately valid and reliable (e.g., may include relevant outside sources of information on measurement properties).
[k] Important potential confounders were accounted for in the analysis (i.e., appropriate adjustment).
[l] Used appropriate analysis (multivariate where appropriate, avoiding multiple testing, reporting significance and confidence intervals, or other appropriate measures of variance).
[m] Adequate sample size for statistical analysis.
[n] Y = yes; N = no; P = partial; DK = don't know; N/A = not applicable

Appendix 1: Search strategy for systematic searching of databases

DATABASE, HOST, DATE	SEARCH TERMS	LIMITERS	RESULTS
MEDLINE, EBSCOhost, 12/10/12	1. MH Family Practice 2. MH General Practice 3. MH Physicians, Family 4. MH General Practitioners 5. MH Physicians, Primary Care 6. MH Primary Health Care 7. OR/1-6 8. Patient-cent* 9. Consultation 10. ((Communication OR Interaction) AND (Skills or Style)) 11. Reassur* 12. ((Clinician-Patient OR Physician-Patient OR Practitioner-Patient) AND (Interaction OR Communication)) 13. OR/8-12 14. AND/7 and 13	1. 1979< 2. English Language 3. Human 4. All adult: 19+ years	5442
PsycInfo and PsycExtra, EBSCOhost, 16/10/12	1. DE “Primary Health Care” 2. DE “General Practitioners” 3. DE “Family Medicine” 4. General Practi* 5. Family Practi* 6. Primary Care 7. OR/1-6 8. Patient-cent* 9. Consultation 10. ((Communication OR Interaction) AND (Skills or Style)) 11. Reassur* 12. ((“Clinician-Patient” OR “Physician-Patient” OR “Practitioner-Patient”) AND (Interaction OR Communication)) 13. OR/8-12 14. AND/7 and 13	1. 1979< 2. English 3. Adulthood (18yrs&older) 4. Methodology (empirical study; followup study; prospective study; longitudinal study; quantitative study; treatment outcome/clinical trial)	2792
Dissertations and Theses, ProQuest, 16/10/12	1. Primary Care 2. Family Pract* 3. General Pract* 4. OR/1-3 5. Patient-cent* 6. Consultation 7. ((Communication OR Interaction) AND (Skills or Style)) 8. Reassur* 9. ((“Clinician-Patient” OR “Physician-Patient” OR	1. 1979< 2. English 3. Subject heading: primary care	181

	“Practitioner-Patient”) AND (Interaction OR Communication)) 10. OR/5-9 11. AND/4 and 10		
MH = Medline MeSH terms DE = PsycInfo Thesaurus Terms * = truncation symbol			

In the context of uncertainty about aetiology and prognosis, good clinical practice commonly recommends both affective (creating rapport, showing empathy) and cognitive reassurance (providing explanations and education) to increase self-management in groups with non-specific pain conditions. The specific impact of each of these components in reference to patients' outcomes has not been studied. This review aimed to systematically evaluate the evidence from prospective cohorts in primary care that measured patient-practitioner interactions with reference to patient outcomes. We carried out a systematic literature search and appraisal of study methodology. We extracted measures of affective and cognitive reassurance in consultations and their associations with consultation-exit and follow up measures of patients' outcomes. We identified 16 studies from 16,059 abstracts. Eight studies were judged to be high in methodological quality. Pooling could not be achieved due to heterogeneity of samples and measures. Affective reassurance showed inconsistent findings with consultation exit outcomes. In three high-methodology studies, an association was found between affective reassurance and higher symptom burden and less improvement at follow up. Cognitive reassurance was associated with higher satisfaction and enablement and reduced concerns directly after the consultations in eight studies; with improvement in symptoms at follow up in seven studies; and with reduced health care utilization in three studies. Despite limitations, there is support for the notion that cognitive reassurance is more beneficial than affective reassurance. We present a tentative model based on these findings and propose priorities for future research.

Summary

Cognitive reassurance (explanation, education) is associated with improved outcomes in patients in primary care. Affective reassurance (rapport, empathy) is related only to patients' satisfaction.