

# Patient focused interventions and communication in the surgical clinic: a systematic review and meta-analysis



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## Summary

**Background** Communication is the foundation of a strong doctor–patient relationship. Holistic care of the patient involves good communication and empathy. There are various tools and interventions aimed at increasing the Surgeon's performance, but these have the drawback of heavy cost and time commitments. In contrast, patient focused interventions are often simple and cheap. In surgery this is an evolving field, and little is known about the impact these interventions have on clinical encounters. The aim of this review is to determine how patient focussed interventions impact communication in the Surgical Outpatient Consultation.

**Methods** In this systematic review and meta-analysis, two reviewers independently searched MEDLINE (incl. PubMed), EMBASE, EMCARE, CINAHL, and the Cochrane Library for the period starting 01 February 1990 to 01 February 2022. Filtration and screening was performed in accordance with PRISMA guidelines. Conflicts were resolved by discussion. Risk of Bias was assessed using the RoB 2 tool. Meta-analyses were conducted by an independent statistician using Stata Statistical Software. This systematic review was prospectively registered with PROSPERO (ID CRD42022311112).

**Findings** After screening, 38 papers were included in the final analysis. These involved 6392 patients consisting of 32 randomised controlled trials (RCT), one crossover RCT, three non-randomised experimental studies, and three cohort studies. All articles were published between 1999 and 2022. Four types of intervention were identified: Patient Decision Aids, Educational Materials, Question Prompt Lists and Patient Reported Outcome Measures. There was much heterogeneity in the reported results but ultimately four recurring domains for assessing quality of communication were identified: Patient knowledge; decisional conflict; satisfaction; and anxiety. Meta-analyses showed that patient focussed interventions increased patient knowledge and reduced decisional conflict. Meta-regression demonstrated significant knowledge increases in females compared with males. Results regarding satisfaction and anxiety were not statistically significant.

**Interpretation** Our study suggested that patient focused interventions demonstrate promising results for increasing patient engagement and improving communication. Further multicentre randomised controlled trials with consistent validated endpoints should be conducted to evaluate this evolving field.

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**Keywords:** Communication; Surgery; Outpatient; Patient engagement

## Introduction

Good surgical practice extends beyond operative process. Holistic care of the patient requires good communication, empathy and other non-technical skills.<sup>1,2</sup> In recent years, emphasis has been placed on mastery of these skills to achieve optimal outcomes.<sup>3,4</sup> Development of a strong therapeutic relationship between surgeon

and patient is vital to achieving this.<sup>2,5,6</sup> This relationship has evolved over decades and the quality of the interaction has likewise improved.<sup>7</sup> Despite this, there are still significant issues that need addressing. In a typical clinical encounter 40–80% of information presented to patients is immediately forgotten and of the information recalled >50% is inaccurate.<sup>8–10</sup> Certain factors such as

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**Research in context****Evidence before this study**

To date the review articles examining these tools primarily revolve around clinical outcomes such as adherence to guidelines. Of these the most recent publication is from 2018. There are no reviews, published or registered, examining the impact of patient focussed interventions on communication in surgery. This review searched MEDLINE (incl. PubMed), EMBASE, EMCARE, CINAHL, and the Cochrane Library for the period starting 01 February 1990 to 01 February 2022. Screening and reporting was conducted in accordance with PRISMA guidelines. Studies examining the impact of a patient focussed intervention on communication and patient centred care in the surgical outpatient setting were included in the analysis.

**Added value of this study**

This study is the first to quantify the impact patient mediated interventions have on improving communication. It demonstrates that use of these tools increase patient knowledge and reduce decisional conflict. It also suggests that anxiety decreases while satisfaction increases. These findings, together with the previous reviews support the use of patient focussed interventions in the outpatient setting. Prior literature demonstrates an improvement in clinician performance and this review reveals the direct benefit to the patient with little downside.

**Implications of all the available evidence**

Implementation of patient focussed interventions into clinical practice provides a pragmatic means to increase the quality medical care. This is still an evolving field which will continue to grow resulting in higher quality, more robust studies.

patient age, literacy, and cognitive impairment are inevitable and difficult to modify.<sup>11,12</sup> Other factors such as clinician approachability, patient anxiety, and stress can easily be modified by increasing patient participation in the consult. This is a simple practice that improves clinical outcomes.<sup>13</sup> This process of Shared Decision Making (SDM) challenges the traditional paternalistic model of care.<sup>7,13</sup> The 'Doctor Knows Best' approach results in clinicians being perceived as unapproachable and intimidating.<sup>14</sup> In addition to increasing patient anxiety and apprehension, this approach also raises many ethical concerns regarding informed consent and information delivery.<sup>14–16</sup> SDM encourages patients to take ownership of their health and work collaboratively with the clinician to achieve their healthcare goals.<sup>13,17,18</sup> Increasing patient involvement results in increased understanding and satisfaction.<sup>9</sup> This increases patient compliance and adherence to treatment resulting in improved healthcare outcomes.<sup>19</sup>

Promising results are being demonstrated in surgery as SDM practices are slowly being introduced.<sup>17</sup> These interventions usually focus on improving the communication skills of the clinician. They involve SDM training, workshops or use of collaborative tools to improve professional practice.<sup>20,21</sup> These interventions can be time intensive and uptake among health professionals has been limited despite extensive government and local policy endorsement.<sup>20,22,23</sup> To negate these drawbacks, multiple patient focused interventions have been developed. They can be categorised into three main groups: Patient Reported Outcome Measures (PROMs); Patient Decision Aids (PtDA); and, Question Prompt List's (QPL).<sup>24</sup>

PROMs are usually a survey provided to patients prior to a consultation. They seek to determine patient's view of their symptoms, functional status, and health

related quality of life.<sup>25</sup> These tools aim to facilitate collaborative decision making by increasing the amount of information available to the clinician about the patient's perspective of their disease. They promote individual tailoring of management plans and are associated with increased patient satisfaction.<sup>25–29</sup> Data suggests that use of PROMs improves treatment outcomes in surgery but little is known about the direct impact on outpatient communication.<sup>30,31</sup>

PtDA's are written, video based, or interactive tools administered to patients to assist them in making an informed decision.<sup>32</sup> They provide a summary of the available evidence and treatment options relevant to the medical condition of the patient.<sup>33</sup> They can elicit the patient's values and expectations to personalise care and increase participation in the decision-making process.<sup>33</sup> The most recent systematic review of PtDA's in surgery was conducted nine years ago and suggested that decision aids increase patient knowledge, reduce decisional conflict and direct patients to choose less invasive treatment options.<sup>32</sup> This systematic review focused specifically on the type of decision made based on degree of invasiveness of treatment options. Secondary analyses were conducted to identify the impact of PtDA's on communication but at that time only 5 articles were identified as relevant.<sup>32</sup>

QPL's involve provision of a set of predetermined questions to be asked by the patient during a consultation. They aim to foster engagement and collaboration in the decision-making process. Use of these interventions in non-surgical specialties demonstrate increased engagement, increased knowledge, and reduced anxiety.<sup>34</sup> There is a paucity of evidence regarding the impact of QPL's in the surgical outpatient clinic.

The objective of this systematic review is to determine how patient focussed interventions impact communication during surgical outpatient consultations.

## Methods

### Search strategy and terms

This systematic review was prospectively registered with PROSPERO (ID CRD42022311112) and reported in accordance with PRISMA guidelines.<sup>35</sup> Two reviewers independently searched MEDLINE (incl. PubMed), EMBASE, EMCARE, CINAHL, and the Cochrane Library for the period starting 01 February 1990 to 01 February 2022. Grey literature was also examined as were references of identified articles and conference proceedings. Filtration and screening was performed in accordance with PRISMA guidelines with the use of Covidence Web Based Systematic Review Management Platform.<sup>35–37</sup> Conflicts were resolved by discussion. Endpoints were gathered using a pre-formulated data extraction plan (Appendix 1). Data was extracted independently by two reviewers (M.H., J.R.) and checked and validated by third reviewer (Y.T.). Where data was missing reviewers attempted to contact authors via email.

Database searches were conducted by abstract with the following MeSH terms: Patient centred care OR Consumer Decision OR Decision Making, Shared OR Shared Decision OR Informed decision OR Informed choice OR Patient participation OR Consumer participation OR Patient empowerment OR Consumer empowerment OR Patient education OR Consumer education OR Patient involvement OR Consumer involvement AND Tool OR Checklist OR Device OR Prompt OR Aid OR Technique OR Strategy AND Referral OR Consultation. The search was limited to English Language and the adult population. Detailed database search strategy is listed in Appendix 2.

### Inclusion and exclusion criteria

Included studies were those examining the impact of a patient focussed intervention on communication and patient centred care in the surgical outpatient setting. Excluded studies were those based in the paediatric population, studies not available in English, conference abstracts, published methods, trial registrations, and incomplete or ongoing trials.

### Risk of bias assessment

Risk of bias was assessed independently by two reviewers using the Cochrane Risk of Bias 2 (RoB2) tool for RCTs and using the Newcastle-Ottawa Scale for non-randomised studies. Discrepancies were resolved by discussion.

### Data analysis

Data analyses were performed using Stata Statistical Software: Release 15.1 College Station, TX: StataCorp

LP. The  $I^2$  statistic was used to evaluate heterogeneity (with  $I^2 > 50\%$  indicating significant heterogeneity) as was Cochran's Q P value (with P value  $<0.05$  indicating significant heterogeneity). To account for heterogeneity, random-effects model was used throughout. A P value of  $<0.05$  denoted statistical significance. A variable was included in a Forest plot if at least 2 journal articles involved had sufficient values for that variable.

Standardised Mean Difference (SMD) and 95% confidence interval (CI) were calculated between anxiety in the intervention group and anxiety in the standard care group (the control), for each study and then all studies combined in a Forest plot. Forest plots were then created for SMD and 95% CI for knowledge, satisfaction and decisional conflict versus intervention and standard care groups.

Funnel plots (mean difference versus standard error of mean difference) and Egger Test P values are presented for Knowledge and Decisional conflict variables as there were at least 10 studies in these Forest plots. Funnel plots or Egger Test P values were not presented for those Forest plots with less than 10 studies because when there are fewer studies the power of the tests is too low to distinguish chance from real asymmetry.

Meta regression was performed for the variables: anxiety, knowledge, satisfaction and decisional conflict, and then for the covariate: number of females for each outcome. Sensitivity analysis was performed where only low to moderate bias studies were included, for anxiety, knowledge, satisfaction and decisional conflict.

Trim-and-fill graphs are presented for knowledge and decisional conflict (as these Forest plots had at least 10 studies included).

This study was a systematic review thus ethics approval was not required.

### Role of the funding source

There was no funding source for this study. All authors had access to the dataset. All contributed to the writing of this manuscript and decision to submit for publication. All authors accept responsibility for the decision to submit for publication.

## Results

Eleven thousand five hundred ninety-nine articles were screened by two reviewers in accordance with PRISMA guidelines (Fig. 1). Thirty-eight papers were included in the final analysis.<sup>38–75</sup> These involved 6392 patients with age ranges between 16 and 89. There was a 72% predominance of female sex (4610 patients). The publications consisted of 31 randomised controlled trials (RCT), one crossover RCT, three nonrandomised experimental studies, and three cohort studies. Twenty studies were conducted in the United States of America, eight in The Netherlands, four in Canada, two in the United Kingdom, and one in each of Australia, Finland,

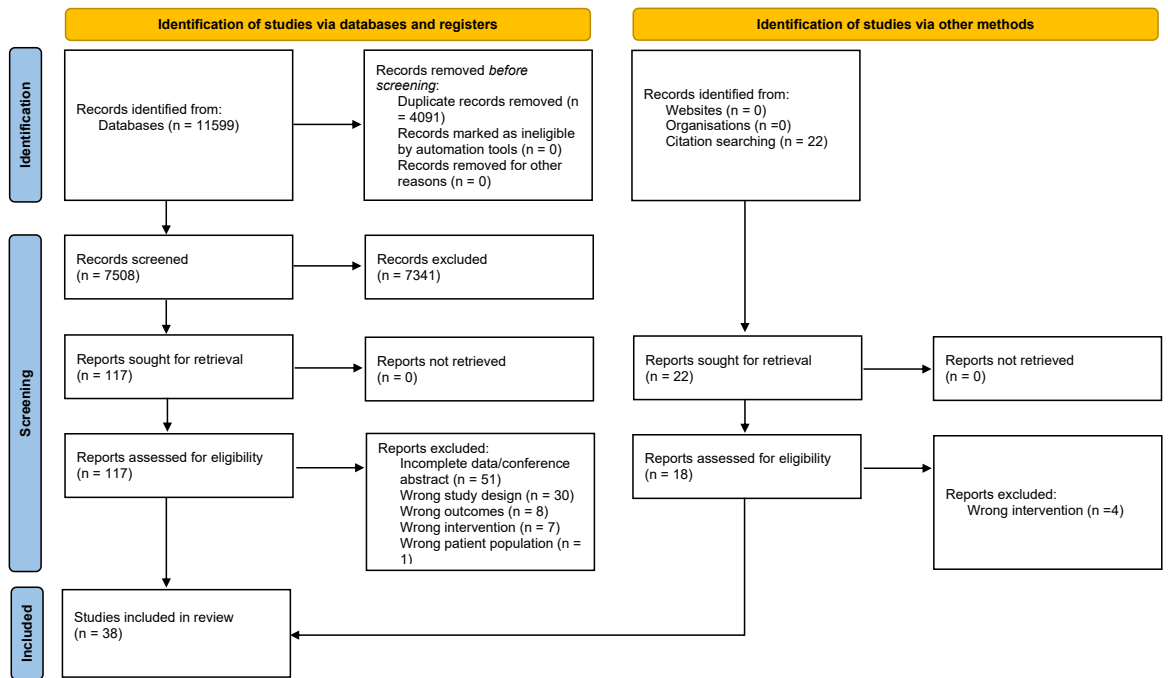


Fig. 1: PRISMA flow chart. Breakdown of screening performed by two reviewers.

Germany, and Italy. All articles were published between 1999 and 2022. English language versions were available for all articles screened.

Data extracted from 38 studies demonstrated that PtDA's were the commonest intervention (n = 21). Other interventions included QPL's (n = 6), Education tools (n = 6), Coaching + PtDA's (n = 2), PROM's (n = 1), Education tools + PROM's (n = 1), and Goal elicitation (n = 1). Based on endpoints specific to each study most patient focussed interventions demonstrated favourable outcomes (n = 24). Some studies failed to demonstrate any significant results (n = 11) and no studies favoured the control arm. In most studies the control arm was standard care or standard care with a placebo intervention. A summary of the trial results (cohort studies not

included) can be seen in Table 1. A detailed qualitative summary is provided in Appendix 3.

There was significant heterogeneity in outcome measures and results reported across the 38 publications. Many studies gathered data on multiple endpoints with the most common being knowledge (n = 18). Decisional conflict (n = 15), satisfaction (n = 12), anxiety (n = 8), shared decision making (n = 4), consult length (n = 4), quality of life (n = 4), treatment preference (n = 3), and informed consent (n = 2) were also reported. Patient participation in consult was also reported in 12 studies but methods used for reporting varied significantly.

The four consistently reported and directly comparable measures of communication: knowledge, decisional conflict, anxiety, and satisfaction were used to perform quantitative analysis.

**Meta-analysis**

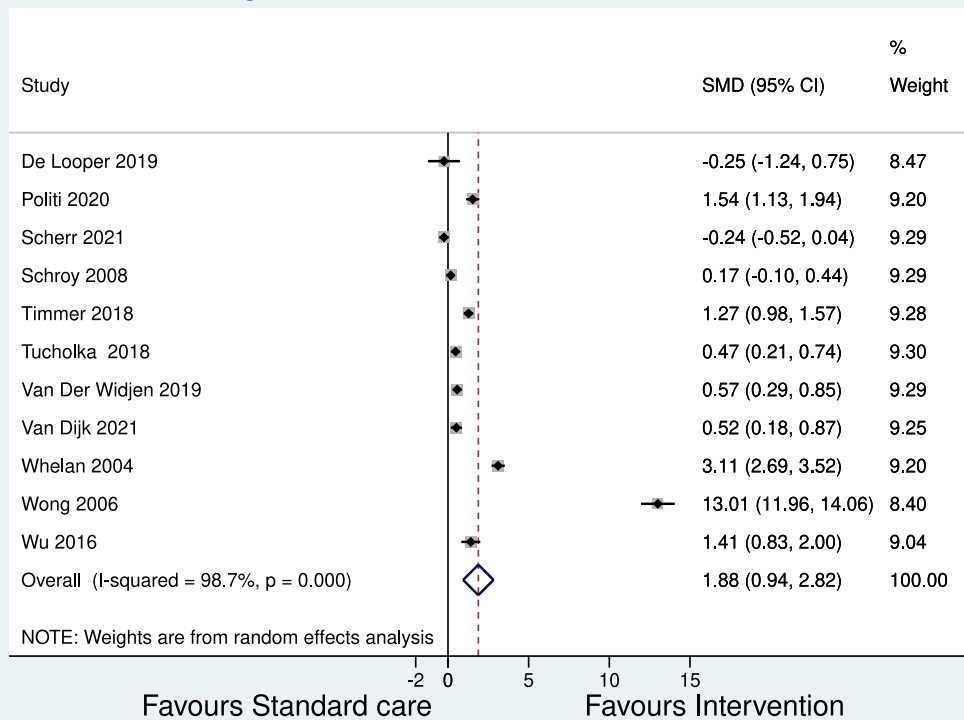
*Knowledge*

Eighteen studies reported patient knowledge, pre and post exposure to intervention or control, with 11 having sufficient data for inclusion in a meta-analysis. A standardised comparison of mean knowledge in intervention group patients and standard care patients was performed by pooling 11 studies using a random effects meta-analysis model (Fig. 2). Studies were heterogenous with the I-squared statistic = 98.7% and Cochran's Q P value <0.0001 however this was considered in the model used. The intervention group show significantly greater

Intervention	Total	Favours intervention	Favours control	No significant result
PtDA	19	14	0	5
QPL	6	3	0	3
Education tool	5	3	0	2
PROM	1	1	0	0
Coaching + PtDA	2	1	0	1
Education tool + PROM	1	1	0	0
Goal elicitation	1	1	0	0

Table 1: Summary of trial results (cohort studies not included).

## Knowledge: intervention versus standard care



**Fig. 2: Knowledge meta-analysis.** Forest plot comparing all studies reporting impact of patient focused interventions on knowledge. • Effect size of individual study (SMD). — 95% confidence interval. ◊ Combined effect estimate.

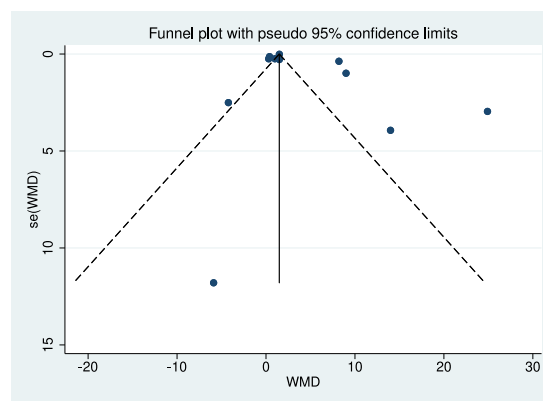
mean knowledge post intervention compared to the standard care group (SMD = 1.88, 95% CI: 0.94, 2.82). The Funnel plot (Fig. 3) and Egger test (Table 2) shows some possibility of publication bias. A trim-and-fill procedure was undertaken which did not show any marked change to the effect size estimate in the adjusted funnel plots. A Trim-and-fill graph is presented in Fig. 4.

### Decisional conflict

Fifteen studies analysed decisional conflict with 10 having sufficient data to include in a meta-analysis. The same statistical analysis was performed and heterogeneity in the study estimates was assessed using the I-squared statistic (97.2%) and Cochran's Q P value (<0.0001) which showed much heterogeneity. A random effects model (Fig. 5) shows that decisional conflict significantly decreases with intervention exposure (SMD = -1.56, 95% CI: -2.36, -0.75). A Funnel plot (Fig. 6) and Eggers test (Table 2) shows some possibility of publication bias. A trim-and-fill procedure was undertaken which did not show any marked change to the effect size estimate in the adjusted funnel plots. A trim-and-fill graph is presented in Fig. 7.

### Anxiety

Eight studies reported on patient anxiety, seven had sufficient data to include in a meta-analysis. A standardised comparison of mean anxiety in intervention group patients and standard care patients was performed



**Fig. 3: Knowledge funnel plot.** Funnel plot demonstrating possible risk of publication bias. • Individual study weighted mean difference. | Overall effect. - 95% Confidence interval.

Outcome variable	Egger test P value - slope	Egger Test P value - bias	Meta-regression P value - constant	Meta-regression coeff (95% CI)	Meta-regression P value - females	Females coeff (95% CI)	Meta-regression sensitivity P value - constant	Meta-regression sensitivity P value - females
Anxiety			0.494		0.241		0.822	0.158
Knowledge	<0.0001	0.429	0.117		0.009	0.032 (0.010, 0.053)	0.290	0.076
Satisfaction			0.340		0.820		0.845	N/A
Decisional conflict	0.031	0.086	0.005	-1.560 (-2.519, -0.602)	0.778		0.115	0.698

**Table 2: Egger test P values and meta-regression results.**

by pooling seven studies using a random effects meta-analysis model (Fig. 8). The I-squared statistic (43.7%) and Cochran’s Q P value (0.099) showed some heterogeneity. The overall SMD is 0.06 (95% CI: -0.10, 0.22) demonstrating no statistically significant difference in anxiety between the two groups.

**Satisfaction**

Twelve studies reported on patient satisfaction and five had sufficient data to include in a meta-analysis. A standardised comparison of mean satisfaction in intervention group patients and standard care patients was performed by pooling five studies using a random effects meta-analysis model (Fig. 9). The I-squared statistic (98.3%) and Cochran’s Q P value (<0.0001) showed much heterogeneity. The overall SMD is 0.77 (95% CI: -0.37, 1.90) demonstrating no statistically significant difference in satisfaction between the two groups.

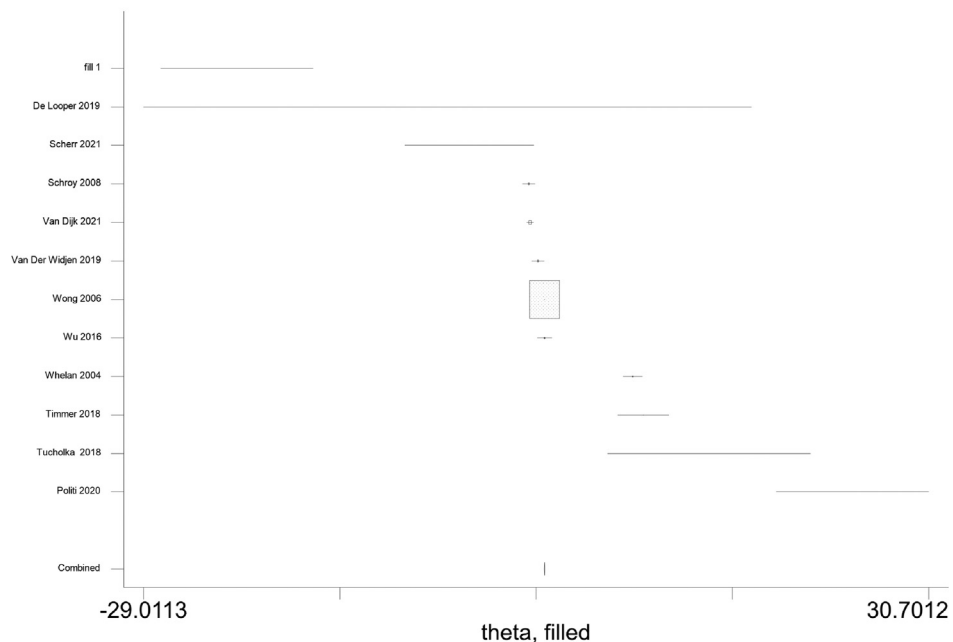
**Meta-regression**

Meta-regression results (for anxiety, knowledge, satisfaction, and decisional conflict, and then for the covariate: number of females for each outcome) are presented in Table 2. The only significant results are:

- (i) there is a statistically significant difference in decisional conflict between the 10 studies (P value = 0.005).
- (ii) there is a statistically significant difference between female and male numbers for the outcome: knowledge (P value = 0.009). Females have a mean knowledge value 0.032 units greater than males (coefficient = 0.032, 95% CI: 0.010, 0.053).

**Impact of sex on results**

There was a 72% predominance in female sex characteristics for the studies included in this review equating



**Fig. 4: Knowledge trim and fill graph.** Trim and fill graph demonstrating adjusted result for publication bias.

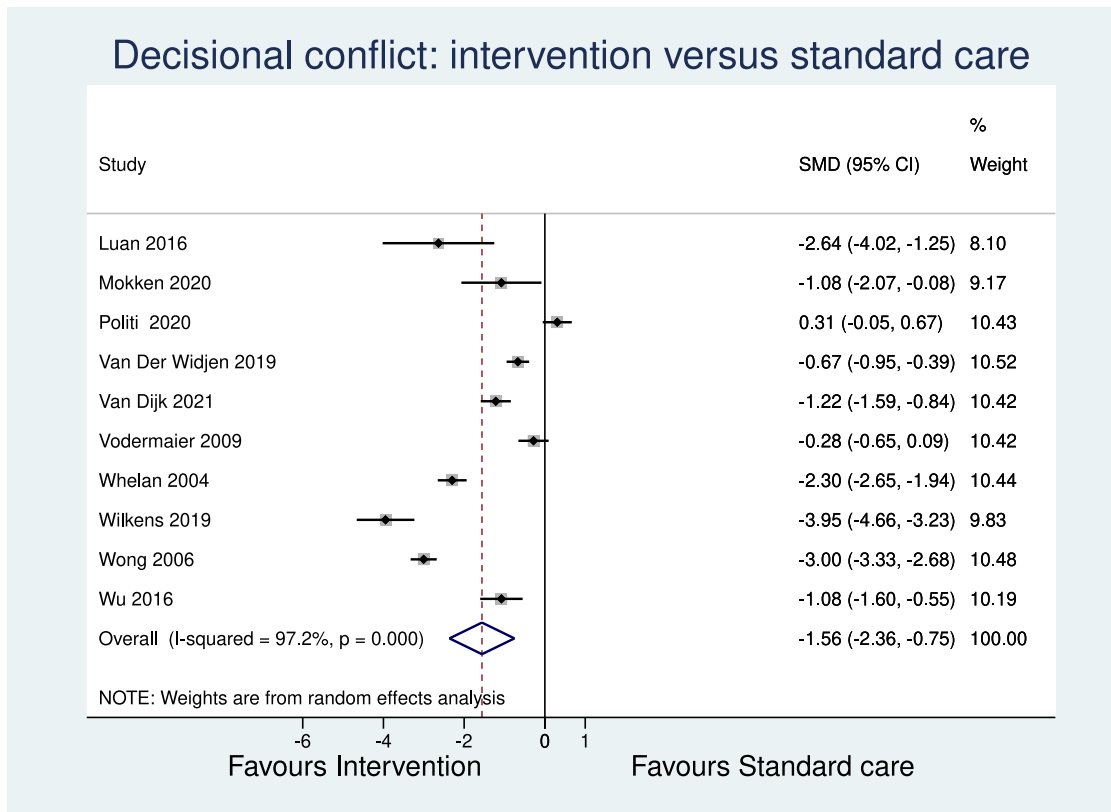


Fig. 5: Decisional conflict meta-analysis. A random effects model assessing intervention versus standard care. ■ Effect size of individual study (SMD). — 95% confidence interval. ◆ Combined effect estimate.

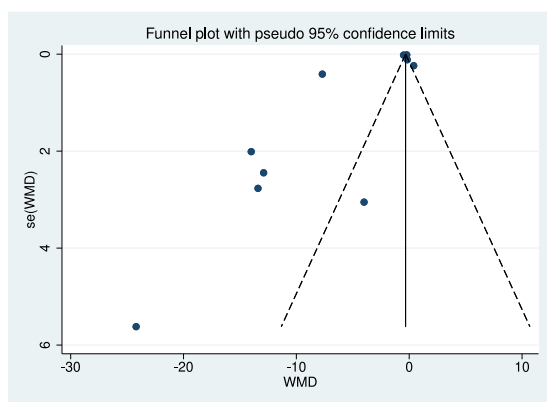


Fig. 6: Decisional conflict funnel plot. Funnel plot assessing publication bias. • Individual study weighted mean difference. | Overall effect. - 95% Confidence interval.

to 4610 patients. One publication did not provide sex or gender characteristics in their cohort of 40 patients,<sup>61</sup> and another reported gender rather than sex.<sup>54</sup> Twenty-five of the 38 papers involved female patient predominant specialties like obstetrics and gynaecology. None of

the interventions were tailored for individuals based on sex or gender.

**Bias assessment**

All 32 RCT studies were evaluated for risk of bias using the Cochrane Handbook RoB2 tool.<sup>38–42,44,45,47–54,56–60,62–74</sup> Of these five had low risk of bias, 12 had some concerns, and 15 were found to have a high risk of bias (Fig. 10). Of the 15 publications with high risk of bias, most were due to failing domain 1 – randomisation. The remaining studies were assessed using the Newcastle – Ottawa Scale.<sup>51,55,61,70,74,75</sup> Of these five had a high risk of bias<sup>51,55,61,70,75</sup> and one had very high risk.<sup>74</sup>

Sensitivity analysis was performed where only low to moderate bias studies were included, for anxiety, knowledge, satisfaction, and decisional conflict. The results demonstrated significant results favouring the intervention in the domains of knowledge and decisional conflict. There were no significant results with respect to satisfaction and anxiety. Results are provided in Appendix 4.

**Discussion**

This systematic review suggests that patient focused interventions increase patient knowledge and decrease

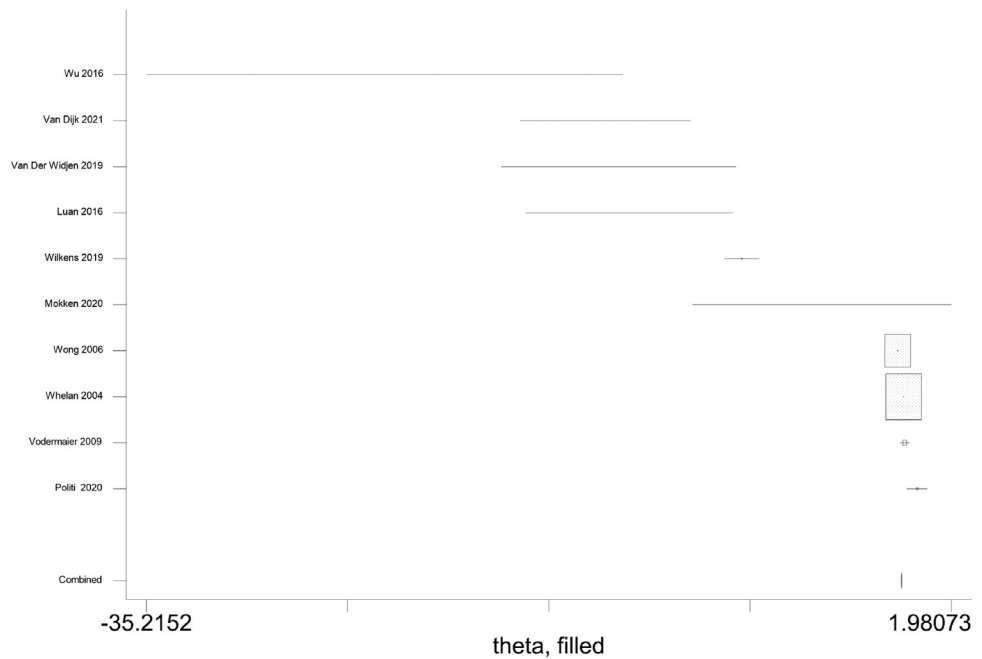


Fig. 7: Decisional conflict trim and fill graph. Trim and fill graph demonstrating adjusted result for publication bias.

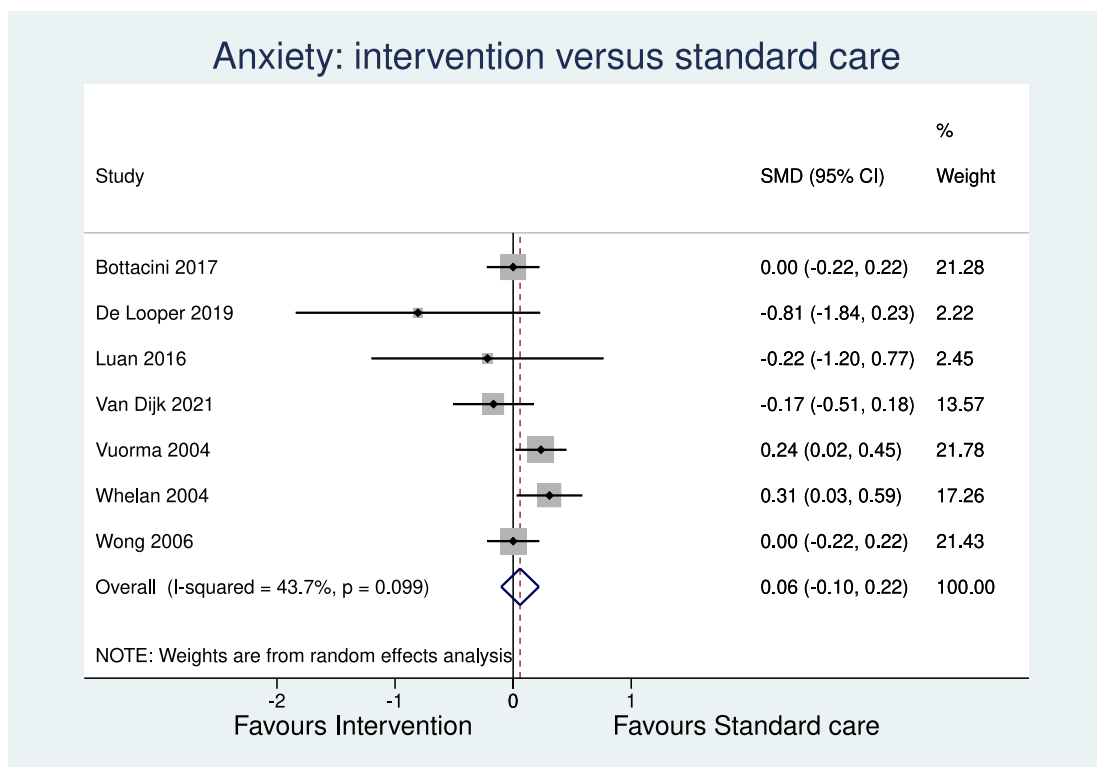
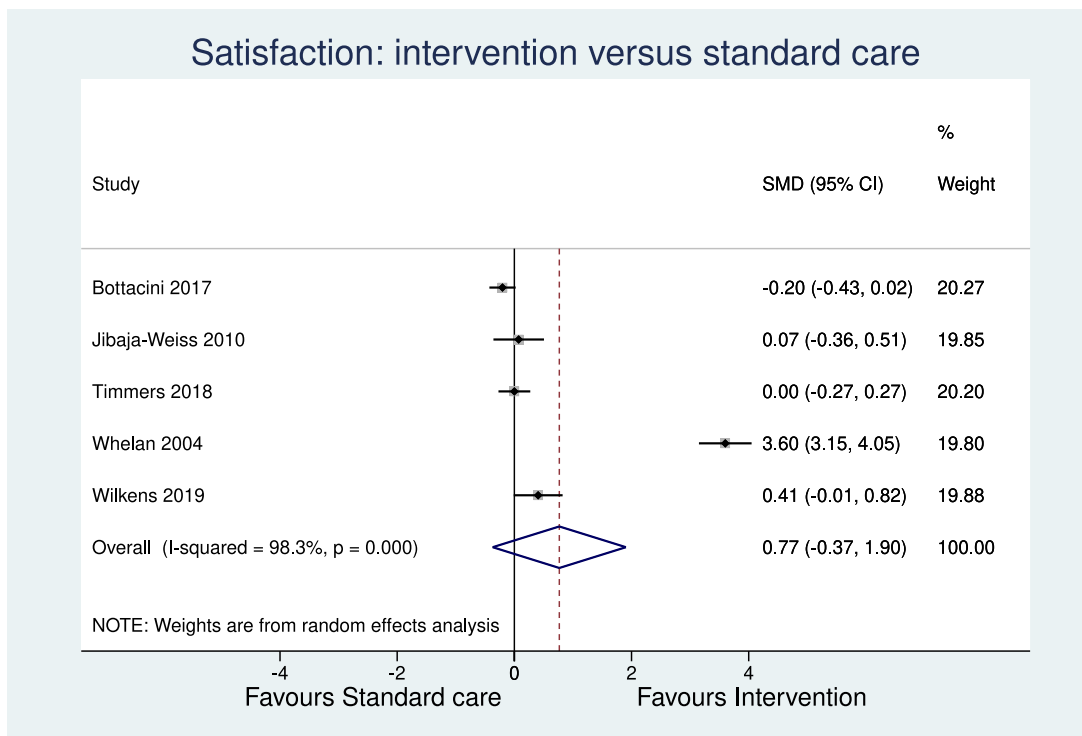


Fig. 8: Anxiety meta-analysis. Forest plot comparing all studies reporting impact of patient focused interventions on Anxiety. ■- Effect size of individual study (SMD). — 95% confidence interval. ◇- Combined effect estimate.





**Fig. 9: Satisfaction meta-analysis.** Forest plot comparing all studies reporting impact of patient focused interventions on Satisfaction. Effect size of individual study (SMD). — 95% confidence interval. ◊- Combined effect estimate.

decisional conflict. It highlights the heterogeneity of the research that has exists and reports that covariates may contribute to papers reporting decisional conflict. Patient focussed interventions also appear to have a significantly higher impact on females more than males. It can be inferred that patient focussed interventions improve the doctor patient interaction without many overt downsides. Strengthening the therapeutic relationship in the clinical consult increases satisfaction, reduces anxiety, and improves clinical outcomes.<sup>13</sup> These tools improve communication and encourage patients to take ownership of their health and work collaboratively with the clinician to achieve their healthcare goals.<sup>13,17,18</sup> This is vital as the human cost of medical error caused by miscommunication can be catastrophic.

The heterogeneity of the results reflects the emerging nature of this area of clinical practice. All studies aimed to identify the efficacy of their intervention, however, the chosen methods to validate or demonstrate effect vary because there is no gold standard measurement for patient communication and engagement.<sup>76</sup> This is largely because the bulk of research in this field is qualitative in nature.<sup>76-78</sup> Qualitative evidence provides a vital foundation to the development and refinement of communication interventions and the future appears to involve a

combination of both quantitative and qualitative methods.<sup>79,80</sup> Thematic analysis can be combined with validated ratings systems to improve professional practice. Similarly, as instruments and interventions are being refined, tools are being developed to ensure that quality of these novel innovations are maintained. The International Patient Decision Aid Standards (IPDAS) and Patient Educational Materials Assessment Tool (PEMAT) instruments are designed to evaluate and standardise the quality of instruments.<sup>81-83</sup> The development and implementation of these tools will mature in the future with the growth of evidence in this field.

As technology evolves and becomes more accessible it can be utilised to increase accuracy and objectivity in these types of trials. Three publications included in this review utilised audio recording as a means of data collection.<sup>40,41,57</sup> Compared to the paper-based surveys used in most studies, recording reduces an element of human error and subjectivity. Direct observation facilitates gathering of further markers of communication and patient engagement. Behavioural cues and non-verbal nuances can be ascertained if visual data is also included in a study. Use of a direct observer can create a “Hawthorne effect” and impact behaviour but use of small cameras can reduce this whilst gathering quality data.<sup>84,85</sup> Video recording can enable data gathering on further markers of patient engagement including eye

Study ID	D1	D2	D3	D4	D5	Overall
Bottacini et al. 2017	+	+	+	+	!	!
Bozic et al. 2013	+	!	+	-	+	-
Brandel et al. 2017	!	!	-	!	+	-
deLooper et al. 2022	!	+	+	+	+	!
Fleissig et al. 1999	+	+	+	+	+	+
Gyomber et al. 2010	-	+	+	+	!	-
Heller et al. 2008	!	!	+	+	-	-
Jibaja-Weiss et al. 2011	!	!	+	+	-	-
Klaassen et al. 2018	-	+	+	+	+	-
Luan et al. 2016	-	+	-	+	+	-
Mariano et al. 2021	!	+	+	+	+	!
Mertz et al. 2020	-	+	+	+	+	-
Phelan et al. 2001	+	+	+	+	!	!
Politi et al. 2020	+	+	+	+	+	+
Roe et al. 2021	-	+	+	+	+	-
Ruland et al. 2003	-	!	+	-	+	-
Schawrze et al. 2020	-	+	+	+	+	-
Scherr et al. 2021	!	+	+	+	+	!
Schroy et al. 2008	-	!	+	!	+	-
Schwartz et al. 2009	+	+	+	+	+	+
Smets et al. 2012	!	+	+	+	!	!
Stacey et al. 2014	+	+	+	+	+	+
Stankowski-Drengler et al. 2019	!	!	+	+	+	!
Stiggebout et al. 2008	-	+	+	+	+	-
Timmers et al. 2018	-	-	+	-	-	-
Tucholka et al. 2018	!	+	+	+	+	!
Van Dijk et al. 2021	+	+	+	+	!	!
Vodermaier et al. 2009	!	+	+	+	+	!
Vuorma et al. 2004	+	+	+	+	+	+
Whelan et al. 2004	-	!	+	+	+	-
Wilkins et al. 2019	!	+	+	+	+	!
Wong et al. 2006	+	+	+	!	+	!

	Low risk
	Some concerns
	High risk

D1 - Randomisation process  
D2 - Deviations from the intended interventions  
D3 - Missing outcome data  
D4 - Measurement of the outcome  
D5 - Selection of the reported result

Fig. 10: Risk of bias assessment. 32 RCT studies were evaluated for risk of bias using the Cochrane Handbook RoB2 tool.

contact, distractions, interruptions, non-verbal communication, and empathy. While there is currently no literature examining the use of small video cameras on patient behaviour, evidence suggests that covert surveillance does not impact on human behaviour.<sup>85</sup> Incorporation of video recording into future clinical trials has the potential to further improve quality of communication during the clinical encounter.

The cause for a significant difference between patients based on sex characteristics is difficult to determine and further analysis into this area is required to draw definitive conclusions. This is especially relevant because the evidence suggests that sex discordance between surgeon and patient results in increased likelihood of morbidity and mortality.<sup>86</sup> The use of these tools can play a significant role in improving healthcare outcomes for female patients.

Improving quality of communication reduces errors and subsequent adverse events.<sup>87,88</sup> Misunderstanding causes discrepancy of patient and clinician expectations. This creates rifts in the doctor patient relationship—especially in procedural specialties. Patients who have inaccurate expectations of a procedure and poor understanding of risk are often dissatisfied—even when the outcome is favourable.<sup>89,90</sup> This is the most common cause of litigation against medical professionals.<sup>91,92</sup> Of patients experiencing an adverse healthcare outcome in the developed world the majority (58%) are surgical.<sup>93</sup> Litigation costs the UK approximately £3.6 Billion annually.<sup>94</sup> Surgical specialists are responsible for the greatest number of claims, costs of litigation, and damages paid.<sup>94</sup> The results from this review would suggest that patients are more satisfied with surgical consultations when they were provided with tools to help them communicate better with surgeons which may lower litigation rates.

There is significant variance in the cost of patient focussed interventions. Some tools, such as QPL's, can be implemented for the cost of printing while others, such as a complex PtDA, can cost several thousand dollars in development.<sup>95</sup> It is suggested, even without taking into consideration the large cost of medical error, that these interventions reduce long term hospital costs.<sup>60,95</sup> The fact that these interventions improve patient's knowledge and reduce decisional conflict has an impact on reducing complaints, misunderstanding, and litigation. Any intervention that improves the health literacy of a population increases compliance, reduces complications, and can reduce patient suffering.<sup>96–98</sup>

Historically, implementing non-technical interventions in surgery has been challenging.<sup>99–102</sup> This was recently highlighted with the challenges to implement the World Health Organisation Safe Surgery Saves Lives Campaign.<sup>103</sup> Cultural attitudes towards this aspect of care are changing and resistance is reducing but there are still some barriers present – including resistance

from senior clinicians.<sup>101</sup> Shifting focus of the intervention from clinician to patient removes this barrier and has the added effect of making the clinical consultation easier. A more educated and informed patient results in appropriate coverage of relevant topics and reduced rates of repeat consultations.<sup>104,105</sup> These interventions can ultimately reduce the workload of the clinician when implemented successfully.

The sensitivity and specificity of the search strategy along with the vigorous screening, data extraction, assessment, and reporting process has resulted in a robust and thorough review. This would be the first systematic review that synthesises the current evidence of the impact of using patient-focussed interventions in surgical consultations on surgeon-patient communication. Unfortunately, the heterogeneity of reporting and missing datapoints limit the generalisability of the results. Furthermore, the high risk of bias in the included studies limit the strength of the evidence. It is difficult to determine why most studies were at high risk of bias. A large number having concerns in the randomisation section of the RoB2 tool could suggest issues with resource limitations and highlights the challenges of evaluating a communication-based intervention in a surgical setting. There is limited data to determine the long-term impact of these interventions on patient outcomes.

Patient focussed interventions provide a means to improve communication in the surgical outpatient clinic. The varied modes of intervention in the literature provide a good framework for further development and implementation of tools into clinical practice. Validation systems of these tools are being developed to improve quality of new instruments but more streamlined reporting measures to assess efficacy of these interventions is required. Overall, this field of research shows significant promise for future surgical practice, but more robust high-quality studies are required to fully assess the implications on patient care.

#### Contributors

All authors had access to the dataset. All contributed to the writing of this manuscript and decision to submit for publication. All authors accept responsibility for the decision to submit for publication. M.H., J.R., G.M., and M.B. devised the concept of the study. M.H. and J.R. designed the methodology and search strategy. The executed the search in collaboration with senior reference librarians. M.H. and J.R. extracted data and conducted the formal analysis. Data was validated by Y.T. and E.B. and formal statistical analysis was performed by S.E. M.H. wrote the original draft and all authors contributed to refinement. G.M. and M.B. are the senior authors who were responsible for supervision of this project.

#### Data sharing statement

Extracted data are available on request to the corresponding author.

#### Declaration of interests

Drs Herath and Ting received scholarships from The University of Adelaide and The South Australian Hospital Research Foundation. All other authors declare no competing interests.

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### Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.eclinm.2023.101893>.

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