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Title page

Title (Include study design)

Do consultants do what they say they do? An analysis of patient involvement in video-taped encounters between consultants and patients.

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Contributor information

EMD designed the study, collected data, analysed data, and was the principal author of the manuscript. AMS assisted in the design of the study, the interpretation of the data, and the

editing of the manuscript. PLPB designed the study, supervised data analysis and interpretation, and edited the manuscript. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

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Conflict of interest

All authors have completed the ICMJE uniform disclosure form and declare no conflict of interest; the grant from Isala Hospital Innovation and Research Fund covers the salary of the main researcher (EMD) through her PhD trajectory; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Data sharing statement

The data used and/or analysed during the current study are available from the corresponding author on reasonable request.

Abstract

Objectives

To assess consultants' ability to reliably judge their behaviour in reaching treatment decisions with their patients.

Design

Cross-sectional analysis of hospital outpatient encounters, comparing consultants' self-reported usual decision-making style to their actual observed decision-making behaviour in video-recorded encounters.

Setting

Large secondary care teaching hospital in the Netherlands.

Participants

41 consultants from 18 disciplines and 781 patients.

Primary and secondary outcome measure

With the control preference scale, the self-reported usual decision-making style was assessed (paternalistic, informative, or shared decisions making). Two independent raters assessed decision-making behaviour for each decision using the Observing Patient Involvement (OPTION)-5 instrument ranging from 0 (no SDM) to 100 (optimal SDM).

Results

Consultants reported their usual decision-making style as informative (n=11), shared (n=16) and paternalistic (n=14). Overall, patient involvement was low, with mean (SD) OPTION[5]

scores of 16.8 (17.1). In an unadjusted multilevel analysis, the reported usual decision-making style was not related to the OPTION5 score ($p>0.156$). After adjusting for patient, consultant and consultation characteristics, higher OPTION5 scores were only significantly related to the category of decisions (treatment versus the other categories) and to longer consultation duration ($p<0.001$).

Conclusions

The limited patient involvement that we observed was not associated with the consultants' self-reported usual decision-making style. Consultants appear to be unconsciously incompetent in shared decision making. This can hinder the transfer of this crucial communication skill to students and junior doctors.

Strengths and limitations of this study

- The main strength of our study was that we combined direct observations of consultants' SDM behaviour with their self-reported usual decision-making style in a large sample of routine clinical decisions across 18 different disciplines.
- The results of this study can be used to optimise health care professionals'SDM training and support further implementation of this crucial skill.
- The consultants were aware of being recorded, which may have affected their SDM behaviour.
- The cross-sectional design of this study precludes causal inference of the associations we observed.
- The study was performed in a single, large hospital in the Netherlands, which may have limited the generalizability of our results to other settings and countries.

Introduction

In Western societies, shared decision making (SDM) is increasingly championed by patients, clinician organizations and policy makers as the preferred model for making patient-centred healthcare decisions[1-5] and achieving value based health care.[6] The implementation of SDM in clinical practice, however, remains suboptimal.[7-9] Clinician-reported barriers to applying SDM include time constraints and the perceived incapability of patients to participate in decision making.[10] Advancing the implementation of SDM is also hindered by clinicians' perception that they already practise SDM.[10, 11] Several qualitative and quantitative studies in which clinicians were asked to report their usual decision-making style showed that clinicians feel that they already involve patients in decision making about their care.[10-12] This finding contradicts the results of a systematic review of 33 studies, which showed that the degree of patient involvement in actual medical decision making is low.[7] This raises the question of how reliable clinicians' judgments of their own decision-making behaviour are. This is important for several reasons. First, clinicians are role models for medical students and residents. They need to be aware of their role in the decision-making process and be competent in SDM to be able to demonstrate and teach this crucial communication skill to students and residents. Second, unreliable clinician self-reports of decision-making behaviours may undermine the accuracy and reliability of SDM research that is based on self-reported data. Third, the design of SDM training programs partly depends on participants' awareness of their SDM competency. Skills training may be particularly effective if participants are aware of their incompetence, become motivated to change their behaviour and are willing to repeatedly reflect on their behaviour when applying the newly acquired skill to become better at it.[13] To help advance the implementation of SDM and create awareness around personal biases, we sought to uncover/investigate a potential gap between clinicians' perceived and actual decision-making behaviour. Therefore, we studied how

reliable clinicians judge their behaviour in reaching treatment decisions with their patients. We compared their self-reported usual decision-making style with their actual decision-making behaviour in hospital-based consultations.

Methods

We analysed video-recorded outpatient encounters between medical consultants and their patients in Isala Hospital, a large general teaching hospital serving a population of approximately 600 000 people in a mixed urban-rural area in the Netherlands. We used a single camera with a fixed focus on the consultant only. The consultations were recorded between November 2018 and April 2019.

Participants and recruitment procedure

All participating medical consultants were recruited among participants of our previous cross-sectional survey.[11] We aimed to include a minimum of 30 consultants and 10 encounters per consultant, which is a requirement for multilevel analysis of nested observations at the level of the healthcare professional.[14] We enrolled consecutive outpatients of the participating consultants. To protect the patients' anonymity, we only captured them on audio. All participants, consultants and patients, provided written informed consent.

Coding

Usual style of decision making

We obtained the participating consultants' perceptions of their usual style of decision making in medical consultations from a cross-sectional survey among all clinicians of our hospital. Their responses to a question assessing their usual decision-making role style were classified as paternalistic (clinician decides), informative (patient decides) or shared decision making.[11]

Decision types

We distinguished the main decision – that related directly to the patient's chief complaint – from all other decisions in each consultation. Then we categorised the main decisions into three decision types: diagnostic (gathering additional information), treatment and follow-up. We chose the consultants' main decisions for our analyses because we assumed that they had taken their major decisions in mind when they reported their usual decision-making behaviour.

Observed patient involvement

We used the validated Observing Patient Involvement (OPTION [5]) instrument to assess the extent to which consultants involved patients in the decision-making process (for the items see supplementary material, Table A).[15] Each OPTION[5] item is scored on a 5-point Likert scale ranging from 0 (not observed) to 4 (executed to a high standard). The sum of these items is the total score (range 0-20), which is rescaled to a range of 0-100.[16] Two trained researchers (EMD and RH) independently scored the first 29 videotaped encounters using the OPTION[5]. Then they compared and discussed scoring differences until consensus was reached. In the next step, they independently scored 179 subsequent encounters to assess inter-observer reliability. After we found good interrater agreement (intraclass correlation coefficient = 0.938), the remaining consultations were scored by one researcher.

Statistical analysis

The OPTION[5] instrument is ordinal by design, which implies that nonparametric statistical analyses are required. In most studies, however, OPTION[5] scores have been analysed as a continuous variable using parametric statistical techniques.[14] Therefore, we assessed the

differences in OPTION[5] scores between groups using both nonparametric and parametric analyses. Since these analyses showed comparable results and to facilitate comparison with other studies, further data analysis was carried out using parametric tests only. Given the nested nature of the data, with multiple observations for each participating consultant, we selected multilevel modelling as the most appropriate method for analysis. We built random intercept models, with the self-reported usual decision-making style as the predictor and the OPTION[5] scores of the main decisions as outcomes. We adjusted for potential confounding variables such as decision type, consultants' and patients' age and gender, consultation duration, consultation type (new patient, or follow-up consultation) and discipline (medical, surgical or supportive, as described earlier.[17] For all analyses, the alpha level was set at 0.05. Univariate analyses were performed using SPSS (version 26). Multilevel analyses were performed using MLWIN (version 3.04).

Patient and public involvement

Neither study participants nor the public were involved in the study design or data analysis.

Results

Forty-one consultants (28 males, 68%) participated in our study with a mean age (SD) of 47.9 (8.0) years, from 18 specialties (22 from medical and 19 from surgical disciplines). 14 participants had reported paternalistic decision making, 16 SDM, and 11 informative decision making as their usual decision-making style in our previous study.[11] In total, 781 patients (15-24 per consultant) participated in our study. After excluding 36 consultations for analysis because of insufficient audio quality and 18 preoperative anaesthesiology consultations in which no decisions were made, we analysed 1564 decisions from 727 consultations. The median (range) number of decisions per consultation was two (1-6). Of the 727 patients, 347 were male (48%), and the mean (SD) age was 48.6 (24.6) years. There were 239 consultations with new patients (33%) and 488 follow-up consultations (67%). The mean (SD) duration of the consultations was 15 (9) minutes, with a minimum of 1 and maximum of 50 minutes.

OPTION[5] scores

Scores on the 5 items of the OPTION[5] (see supplementary material, Table A) were expressed on a scale ranging from 0 (no SDM) to 20 (optimal SDM) per item. The highest scores were found for item 1 (the consultant draws attention to, or confirms, that alternate management options exist, recognizing the need for a decision; mean (SD) score 5.1 (4.0)) and item 3 (the consultant gives information, or checks understanding, about the reasonable options that are available for the patient, including the choice of 'no action'; mean (SD) score 4.7 (5.0)). Intermediate scores were found for item 4 (the consultant elicits the patient's preferred option(s); mean (SD) scores 3.3 (4.4)) and item 5 (the consultant makes an effort to integrate the patient's elicited preferences in the decision-making process; mean (SD) score 2.9 (4.1)). The lowest scores were found for item 2 (the consultant supports the patient to become informed or deliberate about the options), mean (SD) score of 0.9 (2.4).

We found comparable results for nonparametric and parametric tests comparing OPTION[5] scores with consultants' self-reported usual decision-making style and with patient, consultant and consultation characteristics. Therefore, we only present parametric test results. The mean (SD) OPTION[5] score for the main decision was 16.8 (17.1). The OPTION[5] scores varied both within and between consultants, see Figures 1 and 2. Univariate analysis showed that the mean (SD) OPTION[5] scores on consultations of consultants who reported SDM (18.9 (17.3)) as their usual decision-making style were slightly higher than the mean scores on consultations of consultants who reported an informative (15.6(17.9)) or paternalistic style of decision making (15.0 (15.8), p = 0.016). In an unadjusted multilevel analysis, the reported usual decision-making style was not related to the OPTION[5] score (p>0.156). After adjusting for patient, consultant and consultation characteristics, higher OPTION[5] scores were only significantly related to the category of decisions (treatment versus the other categories) and longer consultation duration. Table 1 presents the model that best fitted the data. The full model including all patient and consultant characteristics is presented in the supplementary material, Table B. This full model showed similar results but provided a poorer overall fit to the data compared to the model presented in Table 1.

Discussion

Using self-reported statements of usual decision-making style and an independent assessment of consultants' actual decision-making behaviour in video-recorded consultations we sought to investigate a potential gap between consultants' perceived and actual decision-making behaviours in consultations. In a multilevel analysis of our data, the observed degree of patient involvement in video-recorded consultations was not associated with the consultants' self-reported usual decision-making style. Our results suggest that consultants are unconsciously incompetent in SDM, which is important because they are the role models for

medical students and junior doctors. To be able to demonstrate and teach this crucial communication skill, consultants need to be aware of their role in the decision-making process and be competent in SDM. To be receptive to SDM training, consultants need to be consciously aware of their limited skills in involving patients in treatment decisions. However, that only seemed to be the case for consultants who had reported paternalistic decision making as their usual style. Furthermore, the discrepancy between consultants' self-reported usual decision-making style and the observed patient involvement in their consultations undermines the validity of SDM research using self-reported measures.

Comparison with other studies

Patient involvement was limited, with mean OPTION[5] scores below the proposed cut-off value of 25,[7] which is comparable to several other studies.[9, 18] We found considerable differences in OPTION[5] scores between consultations of each individual consultant (Figure 2), suggesting that individual consultants' patient involvement behaviour is variable. Further research is needed to explore the reasons for this variation, which could be related to physician, patient or organizational factors. Limited patient involvement was associated with decision type (treatment versus diagnostic or follow-up decisions) and longer consultation duration (Table 1). The cross-sectional nature of our study did not allow us to identify what the cause is and what the effect. (Lack of) time is often reported as a key barrier to the application of SDM in clinical practice.[10, 19-21] The literature on the actual impact of applying SDM on consultation duration is too scant to allow a clear estimation of the effects.[21, 22] Patient and consultant characteristics such as age and gender were not related to the OPTION[5] scores in the multilevel model (Table 1 and Table B in the supplementary material). This is in accordance with a systematic review of 33 studies on OPTION[5] scores.[7]

The previous literature comparing clinicians' self-reported and actual decision-making style in medical consultations also showed that clinicians tend to overestimate the extent to which they apply SDM.[18, 23] These studies analysed simple decisions in primary care such as refills and routine testing[18] or were performed in specific breast cancer or renal failure clinics in which the staff had been extensively trained in the application of SDM.[23]

Strengths and limitations

The main strength of our study was that we combined direct observations of consultants' SDM behaviour in a large sample of routine clinical decisions across 18 different disciplines with their self-reported usual decision-making style. We acknowledge the following limitations of our study. Firstly, the consultants were aware of being recorded, which may have prompted them to show more SDM behaviour than they otherwise would. However, so far, there is no indication that videotaping consultations has an effect on clinicians' behaviour.[24, 25] Secondly, the cross-sectional design of this study precludes causal inference of the associations we observed. Thirdly, our study was performed in a single, large hospital in the Netherlands, which may have limited the generalizability of our results to other settings and countries.

Conclusion and practical implications

Our study shows that medical consultants are unable to reliably assess their own decision making-behaviour in medical encounters. This undermines the validity of SDM research using self-reported measures. Even more importantly, the consultants' unconscious incompetence in SDM hampers transfer of this crucial communication skill to students and junior doctors. In addition, consultants' motivation to participate in effective SDM training programs[26-28] is likely to increase when they are consciously aware of their incompetence in

practising SDM. Our results therefore support the use of video-recorded patient consultations to help consultants regularly review, reflect on, and increase their awareness of their own decision-making behaviours. This, in turn, may promote consultants' willingness to participate in SDM training programs, which is necessary for further implementation of SDM in clinical practice.

Ethics statement

The study was carried out in accordance with the Declaration of Helsinki and was approved by Isala Hospital's Ethical Review Board (file number 180706). All participants, consultants and patients, provided written informed consent.

Transparency statement

The lead author (the manuscript's guarantor) affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as originally planned (and, if relevant, registered) have been explained.

Funding source

This research was supported by a research grant from the Isala Hospital's Innovation and Research Fund (INO1602), they had no role in the study. We confirm the independence of researchers from funders and that all authors, external and internal, had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis is also required.

Acknowledgement

We thank the consultants and the patients who participated in this study, and we thank T. Bouwkamp-Timmer for editorial help.

Figure 1. Mean patient involvement (OPTION[5]) of 41 medical consultants (with 727 patients) by self-reported usual decision-making style: paternalistic, shared and informative decision making.

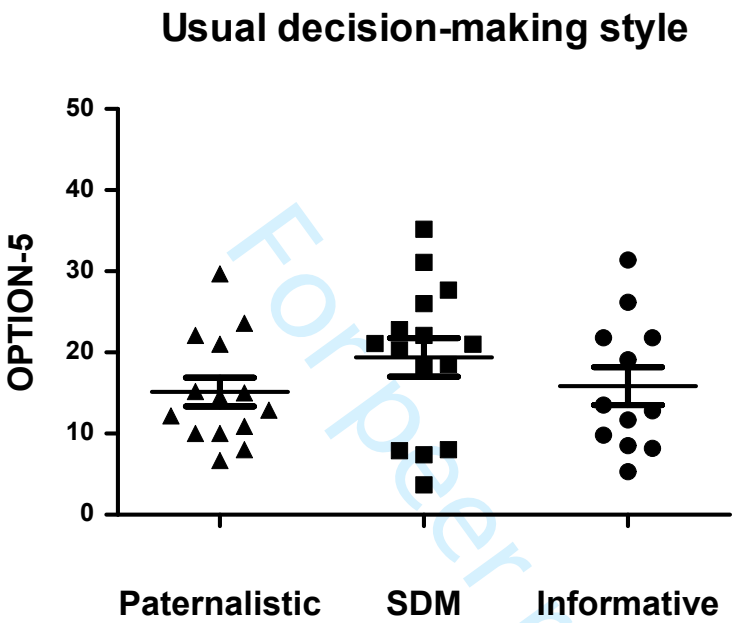

Figure 2. Mean and standard error of the mean of patient involvement (OPTION[5]) scores in consultation of 40 medical consultants (with 727 patients) by self-reported usual decision-making role: paternalistic, shared or informative decision making.

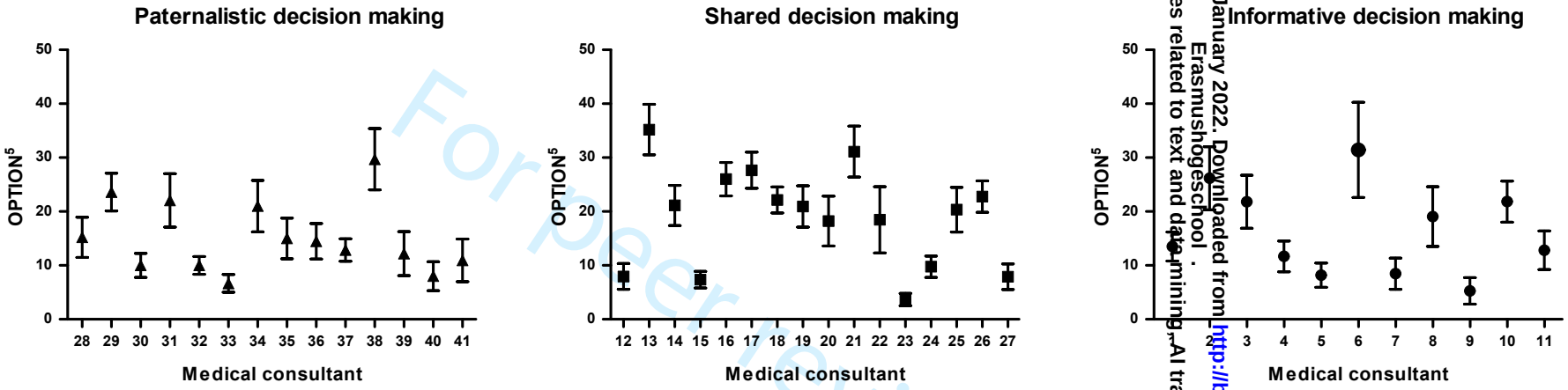

Table 1. Random-intercept regression models for the presence of patient involvement (OPTION-5) in 727 main decisions in encounters of 41 consultants with 727 patients.

Variable			Final model * Coefficient (SE)	p-value
Intercept †			19.17 (0.80)	<0.001
Consultant-level predictors				
	Self-reported usual role **	SDM	Reference	
		Paternalistic	-1.60 (2.84)	0.573
		Informative	-1.13 (3.05)	0.712
Patient-level predictors				
	Decision category	Treatment	Reference	
		Diagnostic	-5.59 (1.50)	<0.001
		Follow-up	-10.34 (1.75)	<0.001
	Consultation duration	Minutes	0.73 (0.07)	<0.001

* This final model fitted the data best. The model including all patient and consultant characteristics is presented in the supplementary material Table B. This full model showed similar results to the model presented in Table 1, but with lower overall fit.

† Intercept = The intercept can be interpreted as the average patient involvement of a (hypothetical) subject scoring 0 for each predictor in the model.

** Self-reported usual decision-making role in previous study.[11]

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Supplementary material

Table A. Observing Patient Involvement (OPTION)-5 scale to assess the extent to which physicians involve patients in decision making.[16]

Item	Content
1	For the health issue being discussed, the clinician draws attention to or confirms that alternate treatment or management options exist or that the need for a decision exists. If the patient rather than the clinician draws attention to the availability of options, the clinician responds by agreeing that the options need deliberation.
2	The clinician reassures the patient or re-affirms that the clinician will support the patient to become informed or deliberate about the options. If the patient states that they have sought or obtained information prior to the encounter, the clinician supports such a deliberation process.
3	The clinician gives information or checks understanding about the options that are considered reasonable (this can include taking no action), to support the patient in comparing alternatives. If the patient requests clarification, the clinician supports the process.
4	The clinician makes an effort to elicit the patient's preferences in response to the options that have been described. If the patient declares their preference(s), the clinician is supportive.
5	The clinician makes an effort to integrate the patient's elicited preferences as decisions are made. If the patient indicates how best to integrate their preferences as decisions are made, the clinician makes an effort to do so.

Table B. Random-intercept regression models for the presence of patient involvement (OPTION[5]) in 727 main decisions in encounters of 41 consultants with 727 patients.

Variable			Full model* (N=1564) Coefficient (SE)	p-value
Intercept†			19.17 (2.41)	<0.001
Consultant-level predictors				
	Reported usual role**	SDM	Reference	
		Paternalistic	-1.37 (2.87)	0.634
		Informative	-1.48 (3.11)	0.633
	Age	Years	-0.14 (0.16)	0.383
	Gender	Male	Reference	
		Women	-3.11 (2.67)	0.243
	Discipline	Medical	Reference	
		Surgical	1.89 (2.55)	0.457
Patient-level predictors				
	Age	Years	-0.03 (0.03)	0.270
	Gender	Male	Reference	
		Women	0.62 (1.09)	0.569
	Type of consultation	New patient	Reference	
		Follow-up	0.05 (1.30)	0.969
	Time of consultation	Minutes	0.74 (0.08)	<0.001
	Decision category decision	Treatment	Reference	
		Diagnostic	-5.61 (1.52)	<0.001
		Follow-up	-10.18 (1.75)	<0.001

* This full model, with patients' and consultants' characteristics showed similar results to the final model presented in Table 1, but with lower overall fit.
† Intercept = The intercept can be interpreted as the average patient involvement of a (hypothetical) subject scoring 0 for each predictor in the model.
** Self-reported usual decision-making role in previous study.[11]

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3-4
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	5-6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	8
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	8
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	8
		(*e*) Describe any sensitivity analyses	8
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	9
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9-10

		(*b*) Report category boundaries when continuous variables were categorized	-
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	10
Discussion			
Key results	18	Summarise key results with reference to study objectives	10-11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	12
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-13
Generalisability	21	Discuss the generalisability (external validity) of the study results	12
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	14

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Do consultants do what they say they do? Observational study of the extent to which clinicians involve their patients in the decision-making process.

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Title page

Title

Do consultants do what they say they do? Observational study of the extent to which clinicians involve their patients in the decision-making process.

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Contributor information

EMD designed the study, collected data, analysed data, and was the principal author of the manuscript. AMS assisted in the design of the study, the interpretation of the data, and the editing of the manuscript. PLPB designed the study, supervised data analysis and

interpretation, and edited the manuscript. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

License for publication

Conflict of interest

All authors have completed the ICMJE uniform disclosure form and declare no conflict of interest; the grant from Isala Hospital Innovation and Research Fund covers the salary of the main researcher (EMD) through her PhD trajectory; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Data sharing statement

The data used and/or analysed during the current study are available from the corresponding author on reasonable request.

Abstract

Objectives

To assess whether consultants do what they say they do in reaching decisions with their patients.

Design

Cross-sectional analysis of hospital outpatient encounters, comparing consultants' self-reported usual decision-making style to their actual observed decision-making behaviour in video-recorded encounters.

Setting

Large secondary care teaching hospital in the Netherlands.

Participants

41 consultants from 18 disciplines and 781 patients.

Primary and secondary outcome measure

With the control preference scale, the self-reported usual decision-making style was assessed (paternalistic, informative, or shared decision making). Two independent raters assessed decision-making behaviour for each decision using the Observing Patient Involvement (OPTION)[5] instrument ranging from 0 (no SDM) to 100 (optimal SDM).

Results

Consultants reported their usual decision-making style as informative (n=11), shared (n=16) and paternalistic (n=14). Overall, patient involvement was low, with mean (SD) OPTION[5] scores of 16.8 (17.1). In an unadjusted multilevel analysis, the reported usual decision-

making style was not related to the OPTION[5] score (p>0.156). After adjusting for patient, consultant and consultation characteristics, higher OPTION[5] scores were only significantly related to the category of decisions (treatment versus the other categories) and to longer consultation duration (p<0.001).

Conclusions

The limited patient involvement that we observed was not associated with the consultants' self-reported usual decision-making style. Consultants appear to be unconsciously incompetent in shared decision making. This can hinder the transfer of this crucial communication skill to students and junior doctors.

Strengths and limitations of this study

- The main strength of our study was that we combined direct observations of consultants' SDM behaviour with their self-reported usual decision-making style in a large sample of clinical decisions across 18 different disciplines.
- The results of this study can be used to optimise health care professionals'SDM training and support further implementation of this crucial skill.
- The consultants were aware of being recorded, which may have affected their SDM behaviour.
- The cross-sectional design of this study precludes causal inference of the associations we observed.
- The study was performed in a single, large hospital in the Netherlands, which may have limited the generalizability of our results to other settings and countries.

Introduction

In Western societies, shared decision making (SDM) is increasingly championed by patients, clinician organizations and policy makers as the preferred model for making patient-centred healthcare decisions[1-5] and achieving value based health care.[6] The implementation of SDM in clinical practice, however, remains suboptimal.[7-9] Clinician-reported barriers to applying SDM include time constraints and the perceived incapability of patients to participate in decision making.[10] Advancing the implementation of SDM is also hindered by clinicians' perception that they already practise SDM.[10, 11] Several qualitative and quantitative studies in which clinicians were asked to report their usual decision-making style showed that clinicians feel that they already involve patients in decision making about their care.[10-12] This finding contradicts the results of a systematic review of 33 studies, which showed that the degree of patient involvement in actual medical decision making is low.[7] This raises the question of how accurate clinicians' judgments of their own decision-making behaviour are. This is important for several reasons. First, clinicians are role models for medical students and residents. They need to be aware of their role in the decision-making process and be competent in SDM to be able to demonstrate and teach this crucial communication skill to students and residents. Second, unreliable clinician self-reports of decision-making behaviours may undermine the accuracy and reliability of SDM research that is based on self-reported data. Third, the design of SDM training programs partly depends on participants' awareness of their SDM competency. Skills training may be particularly effective if participants are aware of their incompetence, become motivated to change their behaviour and are willing to repeatedly reflect on their behaviour when applying the newly acquired skill to become better at it.[13] To help advance the implementation of SDM and create awareness around personal biases, we sought to uncover/investigate a potential gap between clinicians' perceived and actual decision-making behaviour. Therefore, we studied whether

consultants do what they say they do in reaching decisions with their patients. We compared their self-reported usual decision-making style with their actual decision-making behaviour in hospital-based consultations.

Methods

We analysed video-recorded outpatient encounters between medical consultants and their patients in Isala Hospital, a large general teaching hospital serving a population of approximately 600 000 people in a mixed urban-rural area in the Netherlands. We used a single camera with a fixed focus on the consultant only. The consultations were recorded between November 2018 and April 2019.

Participants and recruitment procedure

All participating medical consultants were recruited among participants of our previous cross-sectional survey.[11] The consultants were invited via e-mail by the main researcher (EMD) to participate in this observational study of video-taped encounters. There was no working relationship or power relation between the researchers and the consultants who were invited and we made it clear in the information for participants that participation was voluntary. Participants were not recruited based on specific characteristics.

We aimed to include a minimum of 30 consultants and 10 encounters per consultant, which is a requirement for multilevel analysis of nested observations at the level of the healthcare professional.[14] We enrolled consecutive outpatients of the participating consultants. To protect the patients' anonymity, we only captured them on audio. All participants, consultants and patients, provided written informed consent.

Coding

Usual style of decision making

In our previous study, we obtained the participating consultants' perceptions of their usual style of medical decision making with the modified Control Preference Scale (CPS). Their responses to the CPS questions, were classified as paternalistic (clinician decides), informative (patient decides) or shared decision making.[11]

Decision types

Two researchers (EMD and RH) distinguished the main decision from all other decisions in a consultation (decision type). The main decision was defined as the decision that was directly related to the patient's chief complaint as expressed during the consultation. Differences in decision type classification between researchers were resolved by discussion with an independend third researcher (PLPB) and consensus. Then we categorised the main decisions into three decision types: diagnostic (gathering additional information), treatment and follow-up. We chose the consultants' main decisions for our analyses because we assumed that they had the major decisions in mind when they reported their usual decision-making behaviour.

Observed patient involvement

Several instruments are available to asses SDM in medical consultations. The OPTION scale, developed by Elwyn and colleagues assesses the extent to which consultants involve patients in the decision-making process (for the items see supplementary material, Table A).[15] This instrument has been used frequently in SDM research. Because it focuses on clinician behavior, it appeared suitable for our research question. The OPTION[5] is the validated concise version of the OPTION instrument [15] and is considered to be more efficient with lower cognitive burden for raters than the original 12-item instrument[16] Following the

OPTION5 manual, each item was scored on a Likert-scale ranging from 0 (no effort) to 4 (exemplary effort). Following recommendation of the OPTION5 scoring manual, these items were rescaled by a factor 5 (resulting in items scores ranging from 0 to 20, and total scores ranging from 0 to 100.[17] Two trained researchers (EMD, a medical doctor and RH, a linguistics master student) independently scored the first 29 videotaped encounters using the OPTION[5]. Then they compared and discussed scoring differences until consensus was reached. In the next step, they independently scored 179 subsequent encounters to assess inter-observer reliability. After we found good interrater agreement (intraclass correlation coefficient = 0.938), the remaining consultations were scored by one researcher.

Statistical analysis

The OPTION[5] instrument is ordinal by design, which implies that nonparametric statistical analyses are required. In most studies, however, OPTION[5] scores have been analysed as a continuous variable using parametric statistical techniques.[14] Therefore, we assessed the differences in OPTION[5] scores between groups using both nonparametric and parametric analyses. Since these analyses showed comparable results and to facilitate comparison with other studies, further data analysis was carried out using parametric tests only. Given the nested nature of the data, with multiple observations for each participating consultant, we selected multilevel modelling as the most appropriate method for analysis. We built random intercept models, with the self-reported usual decision-making style as the predictor and the OPTION[5] scores of the main decisions as outcomes. We adjusted for potential confounding variables such as decision type, consultants' and patients' age and gender, consultation duration, consultation type (new patient, or follow-up consultation) and discipline (medical, or surgical, as described earlier.[18] For all analyses, the alpha level was set at 0.05. Univariate

analyses were performed using SPSS (version 26). Multilevel analyses were performed using MLWIN (version 3.04).

Patient and public involvement

Neither study participants nor the public were involved in the study design or data analysis.

Results

Forty-one consultants (28 males, 68%) participated in our study with a mean age (SD) of 47.9 (8.0) years, from 18 specialties (23 from medical and 18 from surgical discipline, see supplementary Table B). 14 participants had reported paternalistic decision making, 16 SDM, and 11 informative decision making as their usual decision-making style in our previous study.[11] In total, 781 patients (15-24 per consultant) participated in our study. After excluding 36 consultations from the analysis because of insufficient audio quality and 18 preoperative anaesthesiology consultations in which no decisions were made, we analysed 1564 decisions from 727 consultations. The median (range) number of decisions per consultation was two (1-6). Of the 727 patients, 347 were male (48%), and the mean (SD) age was 48.6 (24.6) years. There were 239 consultations with new patients (33%) and 488 follow-up consultations (67%). The mean (SD) duration of the consultations was 15 (9) minutes, with a minimum of 1 and maximum of 50 minutes.

OPTION[5] scores

Scores on the 5 items of the OPTION[5] (see supplementary material, Table A) were expressed on a scale ranging from 0 (no SDM) to 20 (optimal SDM) per item. The highest scores were found for item 1 (the consultant draws attention to, or confirms, that alternate management options exist, recognizing the need for a decision; mean (SD) score 5.1 (4.0) (on a 0 to 20 scale) and item 3 (the consultant gives information, or checks understanding, about the reasonable options that are available for the patient, including the choice of 'no action'; mean (SD) score 4.7 (5.0) on a 0 to 20 scale. Intermediate scores were found for item 4 (the consultant elicits the patient's preferred option(s); mean (SD) scores 3.3 (4.4)) and item 5 (the consultant makes an effort to integrate the patient's elicited preferences in the decision-making process; mean (SD) score 2.9 (4.1), each om a 0 to 20 scale. The lowest scores were

found for item 2 (the consultant supports the patient to become informed or deliberate about the options; mean (SD) score of 0.9 (2.4) on a 0 to 20 scale.

The mean (SD) total OPTION[5] score for the main decision was 16.8 (17.1) on a scale ranging from 0 (no SDM) to 100 (optimal SDM). The OPTION[5] scores varied both within and between consultants, see Figures 1 and 2. Univariate analysis showed that the mean (SD) OPTION[5] scores on consultations of consultants who reported SDM (18.9 (17.3) on a 0 to 100 scale). as their usual decision-making style were slightly higher than the mean scores on consultations of consultants who reported an informative (15.6(17.9)) or paternalistic style of decision making (15.0 (15.8), $p = 0.017$). In an unadjusted multilevel analysis, the reported usual decision-making style was not related to the OPTION[5] score ($p>0.156$). After adjusting for patient, consultant and consultation characteristics, higher OPTION[5] scores were only significantly related to the category of decisions (treatment versus the other categories) and longer consultation duration. Table 1 presents the model that best fitted the data. The full model including all patient and consultant characteristics is presented in the supplementary material, Table C. This full model showed similar results but provided a poorer overall fit to the data compared to the model presented in Table 1.

Discussion

Using self-reported statements of usual decision-making style and an independent assessment of consultants' actual decision-making behaviour in video-recorded consultations we sought to investigate a potential gap between consultants' perceived and actual decision-making behaviours in consultations. In a multilevel analysis of our data, the observed degree of patient involvement in video-recorded consultations was not associated with the consultants' self-reported usual decision-making style. In other words, the medical consultants in this study did not do what they said they did in reaching decisions with their patients. Following

Broadwell and Maslow's four stages of competence model that is commonly used in the training of clinical skills,[19] these consultants can be described as "unconsciously incompetent" in SDM. This is important because they are the role models for medical students and junior doctors. To be able to demonstrate and teach this crucial communication skill to medical learnes, consultants need to be aware of their role in the decision-making process and be competent in SDM. To be receptive to SDM training, consultants first need to be consciously aware of their limited skills in involving patients in treatment decisions ("conscious incompetence" in Broadwell's and Maslow's model). In our study, only the consultants who had reported paternalistic decision making as their usual style appeared to be "consciously incompetent" in the terminology of this model. In addition, the discrepancy between consultants' self-reported usual decision-making style and the observed patient involvement in their consultations undermines the validity of SDM research using self-reported measures.

Comparison with other studies

Patient involvement was limited, with mean OPTION[5] scores below the proposed cut-off value of 25,[7] which is comparable to several other studies.[9, 20] We found considerable differences in OPTION[5] scores between consultations of each individual consultant (Figure 2), suggesting that individual consultants' patient involvement behaviour is variable. Further research is needed to explore the reasons for this variation, which could be related to physician, patient or organizational factors. Limited patient involvement was associated with decision type (treatment versus diagnostic or follow-up decisions) and longer consultation duration (Table 1). The cross-sectional nature of our study did not allow us to identify what the cause is and what the effect. (Lack of) time is often reported as a key barrier to the application of SDM in clinical practice.[10, 21-23] The literature on the actual impact of applying

SDM on consultation duration is too scant to allow a clear estimation of the effects.[23, 24] Patient and consultant characteristics such as age and gender were not related to the OPTION[5] scores in the multilevel model (Table 1 and Table C in the supplementary material). This is in accordance with a systematic review of 33 studies on OPTION[5] scores.[7]

The previous literature comparing clinicians' self-reported and actual decision-making style in medical consultations also showed that clinicians tend to overestimate the extent to which they apply SDM.[20, 25] These studies analysed simple decisions in primary care such as refills and routine testing[20] or were performed in specific breast cancer or renal failure clinics in which the staff had been extensively trained in the application of SDM.[25]

Strengths and limitations

The main strength of our study was that we combined direct observations of consultants' SDM behaviour in a large sample of clinical decisions across 18 different disciplines with their self-reported usual decision-making style. We acknowledge the following limitations of our study. Firstly, the consultants were aware that their behaviour in the decision-making process was recorded and assessed, which may have prompted them to show more SDM behaviour than they otherwise would. However, so far, there is no indication that videotaping consultations has an effect on clinicians' behaviour.[26, 27] Secondly, the cross-sectional design of this study precludes causal inference of the associations we observed. Thirdly, it is possible that we only scored part of the decision-making process if decisions were distributed over more than one consultation. Our approach to analysis is comparable to that in earlier studies[7], so this does not affect comparison of our results to those found in the literature. Fourthly, our study was performed in a single, large hospital in the Netherlands, which may have limited the generalizability of our results to other settings and countries. Finally, like in

earlier studies using the OPTION5 instrument, our study focused on clinician behaviour and not on not on patients' experiences. Given the scant literature on the topic,[20, 28, 29] more studies are needed to assess how patients experience the decision-making process in medical consultations

Conclusion and practical implications

Our study shows that medical consultants are unable to assess their own decision making-behaviour in medical encounters. This undermines the validity of SDM research using self-reported measures. Even more importantly, the consultants' unconscious incompetence in SDM hampers transfer of this crucial communication skill to students and junior doctors. In addition, consultants' motivation to participate in effective SDM training programs[30-32] is likely to increase when they are consciously aware of their incompetence in practising SDM. Our results therefore support the use of video-recorded patient consultations to help consultants regularly review, reflect on, and increase their awareness of their own decision-making behaviours. This, in turn, may promote consultants' willingness to participate in SDM training programs, which is necessary for further implementation of SDM in clinical practice.

Ethics statement

The study was carried out in accordance with the Declaration of Helsinki and was approved by Isala Hospital's Ethical Review Board (file number 180706). All participants, consultants and patients, provided written informed consent.

Transparency statement

The lead author (the manuscript's guarantor) affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as originally planned (and, if relevant, registered) have been explained.

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Table 1. Random-intercept regression models for the presence of patient involvement (OPTION[5]) in 727 main decisions in encounters of 41 consultants with 727 patients.

Variable			Final model * Coefficient (SE)	p-value
Intercept †			19.17 (0.80)	<0.001
Consultant-level predictors				
	Self-reported usual role **	SDM	Reference	
		Paternalistic	-1.60 (2.84)	0.573
		Informative	-1.13 (3.05)	0.712
Patient-level predictors				
	Decision category	Treatment	Reference	
		Diagnostic	-5.59 (1.50)	<0.001
		Follow-up	-10.34 (1.75)	<0.001
	Consultation duration	Minutes	0.73 (0.07)	<0.001

* This final model fitted the data best. The model including all patient and consultant characteristics is presented in the supplementary material Table C. This full model showed similar results to the model presented in Table 1, but with lower overall fit.
† Intercept = The intercept can be interpreted as the average patient involvement of a (hypothetical) subject scoring 0 for each predictor in the model.
** Self-reported usual decision-making role in previous study.[11]

Figure 1. Mean patient involvement (OPTION[5]) (on a scale 0-100) of 41 medical consultants (with 727 patients) by self-reported usual decision-making style assessed with modified Control Preference Scale (CPS): paternalistic, shared and informative decision making.

Figure 2. Mean and standard error of the mean of patient involvement (OPTION[5]) scores (scale 0-100) in consultation of 41 medical consultants (with 727 patients) by self-reported usual decision-making role: paternalistic, shared or informative decision making.

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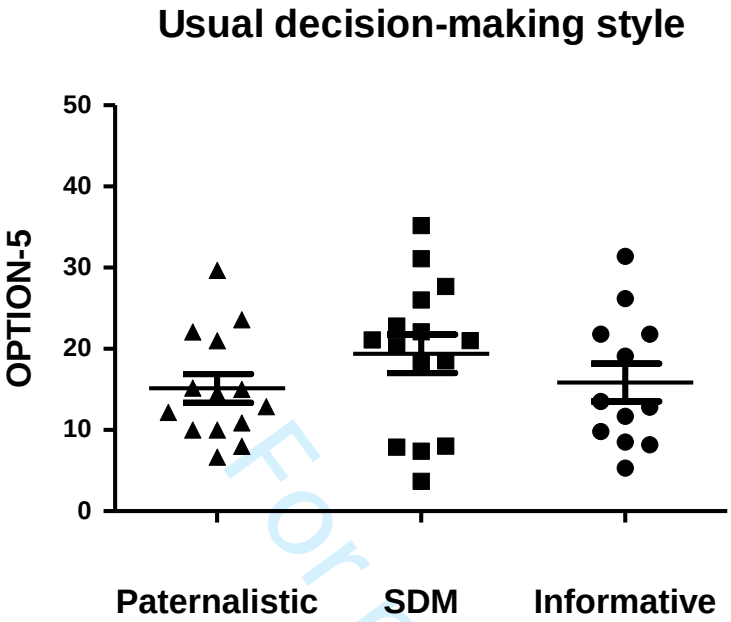

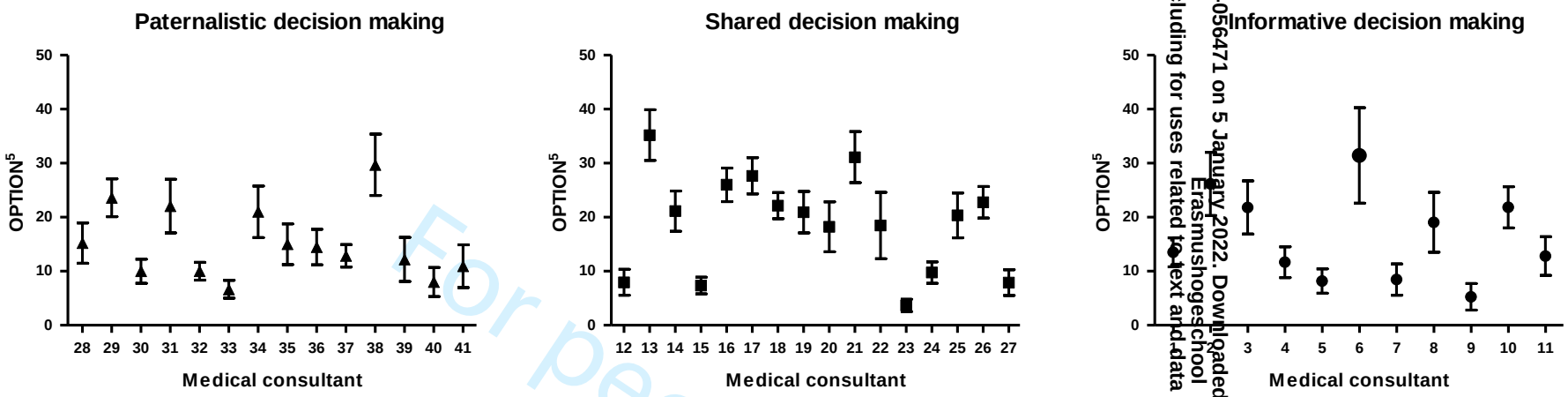

Table A. Observing Patient Involvement (OPTION)[5] scale to assess the extent to which physicians involve patients in decision making.[17]

Item	Content
1	For the health issue being discussed, the clinician draws attention to or confirms that alternate treatment or management options exist or that the need for a decision exists. If the patient rather than the clinician draws attention to the availability of options, the clinician responds by agreeing that the options need deliberation.
2	The clinician reassures the patient or re-affirms that the clinician will support the patient to become informed or deliberate about the options. If the patient states that they have sought or obtained information prior to the encounter, the clinician supports such a deliberation process.
3	The clinician gives information or checks understanding about the options that are considered reasonable (this can include taking no action), to support the patient in comparing alternatives. If the patient requests clarification, the clinician supports the process.
4	The clinician makes an effort to elicit the patient's preferences in response to the options that have been described. If the patient declares their preference(s), the clinician is supportive.
5	The clinician makes an effort to integrate the patient's elicited preferences as decisions are made. If the patient indicates how best to integrate their preferences as decisions are made, the clinician makes an effort to do so.

Table B. Participating consultants (n=41) from several specialties (n=18).

Medical (n=23)	Internal medicine	1
	Cardiology	1
	Paediatric	6
	Pulmonology	2
	Gastroenterology	2
	Neurology	3
	Radiotherapy	2
	Rheumatology	2
	Sport medicine	2
	Anaesthesiology	2
Surgical (n=18	Surgery	1
	Gynaecology	3
	Otolaryngology	3
	Neurosurgery	3
	Orthopaedic surgery	2
	Plastic surgery	2
	Urology	2
	Ophthalmology	2

Table C. Random-intercept regression models for the presence of patient involvement (OPTION[5]) in 727 main decisions in encounters of 41 consultants with 727 patients.

Variable			Full model* (N=1564) Coefficient (SE)	p-value
Intercept†			19.17 (2.41)	<0.001
Consultant-level predictors				
	Reported usual role**	SDM	Reference	
		Paternalistic	-1.37 (2.87)	0.634
		Informative	-1.48 (3.11)	0.633
	Age	Years	-0.14 (0.16)	0.383
	Gender	Male	Reference	
		Women	-3.11 (2.67)	0.243
	Discipline	Medical	Reference	
		Surgical	1.89 (2.55)	0.457
Patient-level predictors				
	Age	Years	-0.03 (0.03)	0.270
	Gender	Male	Reference	
		Women	0.62 (1.09)	0.569
	Type of consultation	New patient	Reference	
		Follow-up	0.05 (1.30)	0.969
	Time of consultation	Minutes	0.74 (0.08)	<0.001
	Decision category decision	Treatment	Reference	
		Diagnostic	-5.61 (1.52)	<0.001
		Follow-up	-10.18 (1.75)	<0.001

* This full model, with patients' and consultants' characteristics showed similar results to the final model presented in Table 1, but with lower overall fit.
† Intercept = The intercept can be interpreted as the average patient involvement of a (hypothetical) subject scoring 0 for each predictor in the model.
** Self-reported usual decision-making role in previous study.[11]

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3-4
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	5-6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	8
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	8
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	8
		(*e*) Describe any sensitivity analyses	8
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	9
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9-10

		(*b*) Report category boundaries when continuous variables were categorized	-
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	10
Discussion			
Key results	18	Summarise key results with reference to study objectives	10-11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	12
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-13
Generalisability	21	Discuss the generalisability (external validity) of the study results	12
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	14

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.