BMJ Open

Assessing medical student knowledge and attitudes about shared decision making across the curriculum: Protocol for an international online survey and stakeholder analysis

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-015945
Article Type:	Protocol
Date Submitted by the Author:	11-Jan-2017
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Primary Subject Heading:	Patient-centred medicine
Secondary Subject Heading:	Communication
Keywords:	Shared Decision Making, MEDICAL EDUCATION & TRAINING, Patient-Centered Care

Title: Assessing medical student knowledge and attitudes about shared decision making across the curriculum: Protocol for an international online survey and stakeholder analysis

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Word count: 4,084

Target Journal: BMJ open

Abstract

Introduction: Shared decision-making (SDM) is a goal of modern medicine, however, it is not currently embedded in routine care. Barriers include clinicians' attitudes, lack of knowledge and training, and time constraints. Our goal is to support the development and delivery of a robust SDM curriculum in medical education. Our objective is to assess undergraduate medical students' knowledge of and attitudes towards SDM in four countries.

Methods and analysis: The first phase of the study involves a web-based cross-sectional survey of undergraduate medical students from all years in selected schools across the United States (US), Canada, and undergraduate and graduate students in the Netherlands. In the United Kingdom (UK), the survey will be circulated to all medical schools through the UK Medical School Council. We will sample students equally in all years of training and assess attitudes towards SDM, knowledge of SDM, and participation in related training. Medical students of ages 18 and older in the four countries will be eligible. The second phase of the study will involve semi-structured interviews with a subset of students from phase 1 and a convenience sample of medical school curriculum experts or stakeholders. Data will be analyzed using multivariable analysis in phase 1 and thematic content analysis in phase 2. Method, data source, and investigator triangulation will be performed. Online survey data will be reported according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES). We will use the COnsolidated criteria for REporting Qualitative research (COREQ) for all qualitative data.

Ethics and dissemination: The study has been approved for dissemination in the US, the Netherlands, Canada, and the UK. The study is voluntary with an informed consent process. The results will be published in a peer-reviewed journal and will help inform the inclusion of SDM-specific curriculum in medical education worldwide.

Article Summary

- International web-based cross-sectional survey of undergraduate medical students
- Stakeholder analysis of students and curriculum experts
- Data reported according to CHERRIES and COREQ
- Convenience sample of medical schools in the US, Canada, and the Netherlands

Introduction

Involving patients in medical decision-making is considered an ethical imperative and a goal of modern medicine.[1,2] Over the past decade, shared decision making (SDM) has demonstrated effectiveness in controlled contexts and garnered policy support worldwide.[3] In the United States, the Patient Protection and Affordable Care Act encourages health organizations and healthcare professionals to promote patient engagement in health care and provide accessible, evidence-based information about the options' harms, benefits, and outcome probabilities.[4,5] According to the Institute of Medicine, patient participation in decision making should be promoted to improve the quality of health care.[6] Since 2010, shared decision making has been featured prominently on the United Kingdom's policy agenda and actively promoted by the National Institute for Health and Care Excellence (NICE).[7,8] In Canada, SDM initiatives are taking place in several provinces with health research funding available to support SDM research.[3,9] In the Netherlands, the healthcare system has been reformed to promote patient-centered care, and various SDM research projects are underway.[10]

Despite proven benefits in controlled contexts, widespread adoption of SDM and related interventions is rare in routine clinical practice.[3,11] Various barriers to the implementation of SDM have been identified.[12–14] Time constraints, doctors' attitudes, and lack of understanding about the relevance and applicability of SDM are major obstacles to widespread adoption. Time constraint was the most commonly reported concern preventing health professionals from practicing SDM.[12] Eliciting patients' preferences and sharing decisions are often perceived to be more complex and time consuming than making a single treatment or screening recommendation.[15,16] here is no evidence, however, that shared decision making systematically increases consultation length.[17,18] Elwyn et al. also described health professionals' indifference to decision support interventions and associated organizational inertia.[16]

In brief, SDM cannot become widespread unless clinicians fully understand the principles and benefits of SDM, are trained in communicating risks, and engageing patients and significant others (caregivers, family) in deciding about their care. Research suggests that implementing SDM successfully in clinical practice will require interventions targeting the clinicians, the patients, and in the best of worlds, both. Effective interventions targeting clinicians include SDM training.[19] SDM training thus needs to be increasingly embedded in continuing medical education. However, there is little evidence as to which strategies are most effective.[20–22] Yet, continuing medical education is the tip of the iceberg. Training medical students in healthcare communication and SDM seems essential in facilitating routine adoption of SDM in the long term. However, to the best of our knowledge, there is no evidence that the principles of SDM are routinely taught in medical school curricula. Research into the knowledge and attitudes of medical students with regard to SDM is scarce. We have searched the literature, and evidence is also lacking as to when and how to teach SDM principles and skills in medical schools.

Studies of the attitudes of doctors' in training towards patient-centered care (without a specific

focus on SDM) suggest that patient-centeredness tends to decline with medical education. In short, the more experienced medical students become, the less patient-centered they are.[23–28] Although SDM is considered the pinnacle of patient-centered care,[29] it is unclear whether this apparent decline in patient-centeredness also applies to SDM. A recent study of senior medical students in Peru revealed that the majority of students assessed their current consultation approach as 'paternalistic' or 'clinician-as-perfect agent'.[30] Only 12% of the students reported adopting a SDM approach.[30] The study did not assess students' knowledge of SDM, and whether knowledge and attitudes about SDM differed according to medical education level. As far as can be determined, this is the only published study of medical students' attitudes towards SDM.[30] Further, there are no studies that have assessed SDM among medical students in English-speaking countries, or in countries where SDM has been promoted at the policy level. Consequently, our objectives are to:

1) Investigate medical students' knowledge of and attitudes towards SDM across the medical curriculum in four countries, as well as their preferred consultation style;
2) Investigate the factors that may influence medical students' knowledge of and attitudes towards SDM;
3) Determine when and how to best deliver SDM training to medical students.

Methods and Analysis

Design and setting

This is a multipronged study with two phases. Phase 1 will be a cross-sectional online survey of medical students across all years of medical education to determine their knowledge of and attitudes towards SDM conducted in the US, UK, Canada, and the Netherlands. We will report online survey data according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES).[31]

Phase 2 will consist of semi-structured telephone interviews with a purposive sample of medical students across the curriculum who have participated in phase 1 and with medical school curriculum experts or other relevant stakeholders (e.g., education leads) [32] to understand:

- Whether there are specific needs for SDM training;
- Perceived barriers and facilitators to teaching SDM in the medical curriculum;
- Optimal format and timing of such training; and
- Curriculum experts' knowledge of SDM.

We will report all qualitative data collected in phase 2 using the COnsolidated criteria for REporting Qualitative research (COREQ).[33]

Participants

Students

All undergraduate medical students registered at participating medical schools in the US, UK, Canada, and the Netherlands will be eligible for participation in phase 1 of this study. In Canada, we will include both French-speaking and English-speaking medical students. In the Netherlands, we will also include graduate medical students within the first six years of medical training. Students will be excluded if they are under the age of 18. We will also exclude residency programs and foundation training in the UK. Including residents in this study would require a different recruitment strategy and additional time and resources. It is beyond the scope of the present study.

Curriculum Experts

Curriculum experts or education leads are typically responsible for designing training programs, developing and updating course content as well as coordinating learning curricula. Curriculum experts, education leads or other relevant stakeholders will be eligible for inclusion if they function in this role at one of the participating medical schools. In Canada, we will include French-speaking and English-speaking curriculum experts and will conduct the interviews in French or in English, according to each participant's preferred language.

Recruitment

For phase 1, all participants will be recruited via their medical school (e.g., listservs, newsletters) or online advertisements (e.g., student forums, Twitter, Facebook or student social media networks). In Canada, the recruitment messages and survey will be available in French and in English. Participants will have the opportunity to take the survey in French or in English.

We will aim to recruit a minimum of 50 medical students per year of medical training, across all years of undergraduate medical education, per country. Given that the proposed survey is innovative, with no prior studies in a similar population using the same questionnaire and no prior validation, there is no known effect size on which to base the sample size calculation. We have therefore used rules of thumbs and existing literature indicating that 50 students per year of medical education is a reasonable and pragmatic sample size.[34] This corresponds to 200 medical students recruited in the US (i.e., four years of undergraduate medical education), 250 recruited in the UK (i.e., five years of undergraduate medical education), up to 250 in Canada (i.e., up to five years of undergraduate medical education), and 300 recruited in the Netherlands (i.e., six years of undergraduate medical education). In total, we aim to collect 1,000 completed surveys. In order to facilitate recruitment, respondents will have the opportunity, at the end of the survey, to enter a prize draw for a $20 Amazon gift card (1 in 50 students entered into the prize draw will receive a gift card).

For phase 2, we aim to recruit both students and curriculum experts. Student participants will be a purposive sample from the phase 1 survey respondents who have indicated their willingness to take part in telephone semi-structured interviews by providing their email addresses. We will aim to interview students of different gender and ages from each participating country, in all years of medical education, with varying knowledge and attitudes of SDM, and with or without prior SDM training. Telephone interviews will be conducted in English or French, according to the

participant's preference. We will aim to recruit a representative sample of 6 to 12 students per country (up to 48 in total), or until data saturation is reached. We will also contact a convenience sample of curriculum experts in each country, asking them to take part in a telephone semi-structured interview. We will aim to recruit a sample of 6 to 12 curriculum experts per country (up to 48 in total). The interview guide has already been drafted but will be revised and finalized building on the answers collected in phase 1.

Data collection

The following research questions will guide the data collected in phases 1 and 2 of the study:

1) What are medical students' knowledge of and attitudes towards SDM across the medical curriculum?

2) Do knowledge of and attitudes towards SDM change with medical education?

3) What are the potential factors that influence SDM during medical education?

4) How and when should SDM training be delivered during medical education?

Survey development

The student survey (see supplemental file A and B for English and French versions) comprises five sections:

1) Demographics;

2) Attitudes towards SDM derived from existing literature and the OPTION instrument;[35]

3) Clinical scenarios where each participant has to indicate: a) how they see other clinicians (e.g., attending physicians, residents, interns) make healthcare decisions and b) how the student would react should they face this situation tomorrow (see Table 1). The clinical scenarios were initially drafted by a Dartmouth fourth year medical student (MW). The first iteration was then revised and reworded by five of the authors, including two clinicians. The clinical scenarios section also includes one question on risk communication.

4) Knowledge of SDM derived from existing literature;

5) Previous SDM training.

Table 1. Clinical scenarios embedded in the survey

Clinical Scenarios
A. A 45-year-old female presents to the Emergency Department. She requires an urgent emergency surgical intervention but is capable of giving consent.
B. A 53-year-old male presents to his primary care physician for an annual physical exam. The patient asks his provider about the need to screen for colorectal cancer.
C. A 40-year-old male with a family history of Cancer A visits his physician to discuss undergoing a scheduled screening for Cancer A. What is considered the most effective way of communicating how screening changes his risk of mortality from Cancer A?

The first iteration of the online survey was initially developed in 2013 and piloted in a small-scale online study conducted in the UK, recruiting medical students through online forums (n=40). It was subsequently refined and reworded.

The second iteration of the survey was designed using Qualtrics software (Copyright © 2016 Qualtrics, LLC). Qualtrics is an online survey platform that facilitates the creation and distribution of web-based surveys. Qualtrics maintains a high level of data security by using Transport Layer Security (TLS) encryption for all transmitted data and servers protected with high-end firewall systems.[36] We have set up a forced response for most questions in the survey, requiring that participants answer every content-based question in the survey with the option of "I prefer not to say" for sensitive demographics questions. We have purposefully randomized the order of presentation of two sections of the survey, as highlighted in Table 2. The clinical scenario questions were randomized with the attitude questions to test if students' responses would change if they saw attitude questions before being presented with clinical-based questions. The survey uses skip logic (also known as adaptive questioning) to present information relevant to each country (e.g., ethnicity categories, glossary of terms for non-native English speakers) according to the country selected by the participant in the demographics section. The number of questions per page varies from 1 to 4. Table 2 provides additional detail on the survey outline. Each student completing the survey will see 19 to 23 questions. The approximate completion time is 10 minutes.

Table 2. Outline of survey questions per webpage

Page 1	Language Selection	1 question
Page 2	Information Sheet	No questions
Page 3	"How do you think healthcare decisions should be made?"	1 question
Page 4-5	Demographics	2-4 questions
Page 6	Glossary of Terms for Netherlands-based students	No questions
Page 7-10	Clinical Scenarios, Attitudes towards SDM (*randomization*)	1-2 questions per page, 1 page of 6 statements with Likert-style response options
Page 11-14	Knowledge of SDM (*randomization*)	4 True/False statements per page
Page 15-17	Awareness of SDM	0-2 questions per page*

Page 18-19	Time Needed for SDM	0-1 question per page*
Page 20	"How do you think healthcare decisions should be made?"	1 question
Page 21-22	Email Address / Interview Request	0-1 question per page*

*0 questions indicates that this page would be skipped as a result of the respondents selection to previous questions.

The survey was piloted with a small convenience sample (n=20) of medical students in years 1 to 4, recruited at Geisel School of Medicine, Dartmouth College, in the spring of 2016. We used focus groups, brief interviews, and online surveys to collect feedback about the usability and acceptability of the online survey, as well as the completion time. In accordance with CHERRIES, both the usability and technical functionality of the online survey were assessed. Changes made in this pilot phase included decreasing the number of clinical scenarios from five to three, changing the phrasing of some clinical scenario questions, adding additional questions regarding the length required to employ SDM, shortening and standardizing the length of each answer choice for certain questions, adding the progress bar, and adding the lottery-based monetary incentive for participation. In the Netherlands, the English survey was pilot-tested by a group of ten Dutch medical students (from years 3 to 6) for usability and applicability. The only major change arising from the pilot data collected in the Netherlands was the addition of a glossary defining potentially complex terms.

The first page of the survey asks the respondent to indicate their language of choice to complete the survey (English or French). The second page consists of a brief information sheet describing the study, its purpose, and data protection policy. The information sheet intentionally does not mention SDM, but uses the term "health communication" to reduce potential respondent and desirability biases. The survey was translated from English to French by PS and reviewed by two authors (M-A D and GPG), who are both bilingual French/English speakers.

Survey dissemination

The survey is open but exclusively distributed to our target audience. No password-protection is necessary to access the content. The initial contact with survey respondents is typically made on the Internet (i.e., using individual emails, a listserv, or a webpage).

In the UK, dissemination of the survey was initiated on 1 September 2016 to all 32 undergraduate medical schools through the UK Medical Schools Council. We will also advertise the survey on online forums and Facebook pages that are popular with medical students (e.g., The Student Room, Student Doctor Network (UK & Ireland), medstudent.org).

In the US and Canada, we have made direct contact with a convenience sample of four medical schools in each country. We were unable to distribute the survey to all US and Canadian medical schools using the Association of American Medical Colleges. Given our sample size requirements and the need to obtain ethical approval at school level in Canadian medical schools and in many American medical schools, we limited our sample to four schools in each country. Those medical schools were selected on the basis of existing contacts and school sizes. We will also advertise the web-based survey on online forums and social media pages that are popular

with medical students (e.g., Student Doctor Network, Student Doc Forum, doctorhangout.com, Canadian Federation of Medical Students and relevant Facebook groups). Data collection in those countries was initiated on 11 October 2016. One medical school in the US and three schools in Canada have not started data collection as of January 2017.

In the Netherlands, we followed the approach outlined for North America. Recruitment is occurring at four Dutch medical schools conveniently selected on the basis of existing contacts and geographical distribution. In addition, we will circulate the survey link to a National medical student association ('de Geneeskundestudent'). We will also advertise the online survey on popular student forums, relevant Facebook groups, Twitter, and student networks. In the Netherlands, data collection was initiated on 1 October 2016.

We anticipate that data will be collected for six months in each country.

Analysis

We will include unique respondents only and will screen for the same respondent completing the survey multiple times using IP addresses.

For phase 1, we will use multivariable analysis to assess differences in knowledge and attitudes about SDM across the curriculum, within each country and between countries. In order to make the cross-country comparison equitable and meaningful, and given that undergraduate medical education ranges from four to six years in the included countries, with variants regarding when the same content is taught or learned, we will use the first year and the last year of medical education only. However, the within country analysis will enable us to compare differences across all years of undergraduate medical education (up to six years), for each participating country.

We will also use an analysis of covariance (ANCOVA) to evaluate the influence of specific factors such as country, demographics, education level on knowledge and attitudes about SDM. To account for any changes in course contents over time we will also include survey month as a control covariate in this analysis.

We plan to perform an analysis of the data after six months of online recruitment in each participating country. We hope that the primary findings will be based on this analysis. However, for practical reasons, should recruitment be slower than expected, we will continue data collection to obtain additional observations in which to test the validity of modeling assumptions and possibly obtain more precise inferences.

For phase 2, we will use a thematic analysis derived from descriptive phenomenology,[37–39] assisted by the computer software, ATLAS-ti (ATLAS-ti 5.2). The transcripts will be coded according to all the themes discussed in the interviews, including spontaneously emerging themes. Similar codes will be merged and subsequently grouped into families of codes and networks. A proportion of transcripts chosen for being representative of the overall sample will be coded by two independent raters (M-A D and RY) in order to ensure reliability of coding and

to obtain consensus on the themes and family of codes for all remaining interview transcripts. Discrepancies among raters will be discussed until consensus is reached. Method, data source and investigator triangulation will be used.[40] Method triangulation involves the use of multiple methods of data collection. In the context of the proposed study, we are collecting data using an online survey and semi-structured interviews. Investigator triangulation consists of involving two or more researchers in the analysis of study data, thus bringing different perspectives to limit potential observers' bias and add breadth to the study findings.[41] At least three researchers (M-A D, RY and AJO) will be involved in data analysis. Finally, data source triangulation involves collecting data from different types of people: medical students across different levels of medical education and curriculum experts.

Ethics and dissemination

Ethics

This study is considered of minimal risk. The survey will be completed anonymously, and disclosure of sensitive personal information is not required of participants. The data obtained from the survey and interview will focus on participants' knowledge and opinions regarding SDM. We will ensure that all participants understand that the data we collect will remain anonymous and that their responses will be summarized without any identifying information.

In the US, the study has been approved by Dartmouth College Committee for the Protection of Human Subjects (CPHS) for recruitment in all four countries (STUDY00029369). In the Netherlands, the Dartmouth CPHS approval was considered sufficient, given the minimal risk nature of the study and no other ethics application process was required. In the UK, the study has been approved by the Brighton and Sussex Medical School Research Governance and Ethics Committee. In Canada, the study has been reviewed and approved by the ethics committee of the Université Laval, University of Toronto, University of Ottawa, and McGill University. Université Laval was the multi-centric evaluation committee, but ethics approval still needed to be sought from each participating medical school. In the US, University of California, San Francisco (UCSF) requested that the study be reviewed and approved by their ethics board. Washington University in St. Louis and Yale University accepted the Dartmouth CPHS approval as sufficient.

Dissemination

Results of the survey and semi-structured interviews will be reported in a peer-reviewed journal. The research will also be presented at conferences and disseminated via social media. We also intend to share results with the AAMC and UK Medical School Council in order to influence the development of SDM curricula in medical education in those countries.

Discussion

This study is the first to measure medical students' knowledge and attitudes about SDM in English-speaking countries, where SDM has been actively promoted but where clinician

resistance and lack of understanding of SDM tenets and benefits have significantly limited its widespread adoption.

Understanding the factors that may influence knowledge and attitudes towards SDM to make SDM training particularly beneficial in the undergraduate medical curriculum will be invaluable. Understanding the perspective of the individuals who manage and coordinate medical education will contribute to determining how to increase the usability, acceptability and effectiveness of future SDM training, in order to make a lasting positive impact on medical practice, and in turn, on patients. Collecting data in four countries will help increase the potential applicability and generalizability of those findings to medical education worldwide. Although adaptations are likely to be necessary in each country, we anticipate that the study findings will help determine the optimal content, format, and timing of shared decision making training in medical education curricula worldwide.

Acknowledgements

We would like to thank Matthew Wesley for his contribution to the development of the clinical scenarios and support in recruiting medical students for the pilot study. We would also like to thank Tim Lahey, Brendin R. Beaulieu-Jones, and the Geisel School of Medicine students who took part in the pilot study. We would also like to thank Drs. Politi and Bussières for circulating the survey to medical students in their medical schools, and Drs. Mills and Fortin for their help with ethics approval at University of California, San Francisco and Yale University.

Authors' Contributions

M-A D planned the study and designed the initial iteration of the survey. RY and M-A D developed the second iteration of the survey, in collaboration with PB, NC and GE. RY obtained ethical approval in the USA and piloted the survey. JA facilitated the recruitment of Medical Schools in the Netherlands. MR obtained ethical approval in the UK and facilitated the recruitment of medical schools in partnership with the UK Medical School Council. FL and GPG facilitated the recruitment of medical schools in Canada and related ethical approval process, and translated materials into French. PS supported the ethical approval process in Canada and translation of materials into French. AJO provided guidance on the statistical analysis. M-A D and RY drafted the manuscript. All authors contributed to writing the manuscript and approved the final draft.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. France Légaré is Tier 1 Canada Research Chair in Shared Decision Making and Knowledge Translation.

Competing Interests

Financial

Marie-Anne Durand is a consultant to Access Community Health Network, Chicago.

Glyn Elwyn has been a consultant to: 1) Emmi Solutions LLC who develop patient knowledge tools; 2) National Quality Forum on certification of patient knowledge tools; 3) Washington State Health Department on certification of patient knowledge tools; 4) PatientWisdom LLC, 5) SciMentum, Amsterdam, and 5) Access Community Health Network, Chicago.

Glyn Elwyn has edited / published books that provide royalties on sales by the publishers: the books have been on *Shared Decision Making* (Oxford University Press) and *Groups* (Radcliffe Press).

Non-Financial

Many authors are authors of SDM and communication training programs in medical schools. However, they get no financial benefits from it.

Glyn Elwyn initiated and leads the Option Grid ™ patient decision aids Collaborative, which produces and publishes patient knowledge tools in the form of comparison tables (http://optiongrid.org/), and has part ownership of the registered trademark.

Glyn Elwyn owns copyright in CollaboRATE, IntegRATE, and Observer OPTION measures of shared decision making and care integration. These measures are freely available for use.

Paul J. Barr owns copyright in CollaboRATE.

Ethics Approval

Dartmouth College Committee for the Protection of Human Subjects, USA
University of California, San Francisco Committee for the Protection of Human Subjects, USA
Yale University Committee for the Protection of Human Subjects, USA (under review at the time of submitting this manuscript).
Committee for the Protection of Human Subjects of the Universities of Ottawa, Toronto, Laval and McGill, Canada (under review at McGill university and the University of Ottawa at the time of submitting this manuscript).
Brighton and Sussex Medical School Research Governance and Ethics Committee.

Data sharing statement
No additional data available

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Appendix A

Link to survey in test environment (used in all areas except Quebec province in Canada).

Link to survey in test environment (used in Quebec province in Canada).

Medical School Student Survey on Shared-Decision Making [English]

NOTES:

- An * indicates skip logic, which will cause some participants to see a different version of the question for country-based clarification.
- Page break in document does not equate to page break in online survey.

(Q1 Language Selection – English or French)

Q2 How do you think healthcare decisions should be made?

❍ The patient should make the final decision about which treatment she/he would receive.
❍ The patient should make the final decision about which treatment she/he would receive after seriously considering my opinion.
❍ As the physician, I should share responsibility with the patient for making the final decision about the treatment she should receive.
❍ As the physician, I should make the final decision about which treatment the patient should receive after seriously considering the patient's opinion.
❍ As the physician, I should make the final decision about which treatment the patient should receive.

Q3 Please indicate your age using the dropdown menu.

Response choices in drop-down range from 18 years to over 65 years.

Q4 How do you self-identify? Please choose from the options below.

❍ Female
❍ Male
❍ Transgender
❍ Other identity, please specify: _____
❍ I prefer not to say

Q5 Please indicate where you currently are in your medical education (medical school) using the dropdown menu below.

❍ Year 1
❍ Year 2
❍ Year 3
❍ Year 4
❍ Year 5
❍ Year 6

Q6 In what country are you currently receiving your medical school training?

- ❍ United States of America
- ❍ United Kingdom
- ❍ Canada
- ❍ The Netherlands
- ❍ Other, please specify: _____

Q7* Which group or groups do you most closely identify with? Please choose all that apply.

- ❑ American Indian or Alaska Native
- ❑ Asian
- ❑ Black or African American
- ❑ Native Hawaiian or Other Pacific Islander
- ❑ White or Caucasian
- ❑ Other: _____
- ❑ I prefer not to say

Q8* Are you Spanish, Hispanic, or Latino?

- ❍ Yes
- ❍ No
- ❍ I prefer not to say

Q11 What medical school do you attend? Please provide the full institution name, no abbreviations.

Fill in the blank.

Q12 Please indicate how much you agree or disagree with the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Shared decision making can only be done with patients who are sufficiently educated and confident to discuss treatment or screening options with their clinician.	❍	❍	❍	❍
Doing shared decision making is unrealistic because it takes too much time.	❍	❍	❍	❍
Doing shared decision making is low on my priority list.	❍	❍	❍	❍
Physician payment should be based on how well they do shared decision making.	❍	❍	❍	❍
Having resources which summarize the risks and benefits of clinical decisions would be helpful (e.g. patient decision aid).	❍	❍	❍	❍
Patients should trust clinicians to make all decisions on their behalf.	❍	❍	❍	❍

Q13 Read the following scenario. Please indicate: (A) what you notice experienced clinicians do (e.g., attending physicians, residents, interns), and (B) which decision style you would adopt if you were in this situation. There are no right or wrong answers. Assume consent is obtained for each patient.

Q14 A 45-year-old female presents to the Emergency Department. She requires an urgent emergency surgical intervention but is capable of giving consent.

Q15* A. What do you notice experienced clinicians do (e.g., attending physicians, residents, interns)?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q18 B. Imagine that you are the clinician in this situation, how would you react?

- I would use evidence-based information to decide on the best course of action for the patient and inform the patient of my decision.
- I would share evidence-based information with the patient, and elicit the patient's preferences, so the patient and I can make an informed decision together.
- I would share evidence-based information with the patient and allow the patient to make the decision on their own.
- I would share evidence-based information with the patient and choose the best course of action for the patient.

Q19 Read the following scenario. Please indicate: (A) what you notice experienced clinicians do (e.g., attending physicians, residents, interns), and (B) which decision style you would adopt if you were in this situation. There are no right or wrong answers. Assume consent is obtained for each patient.

Q20 A 53-year-old male presents to his primary care physician for an annual physical exam. The patient asks his provider about the need to screen for colorectal cancer.

Q21* A. What do you notice experienced clinicians do (e.g., attending physicians, residents, interns)?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q24 B. Imagine that you are the clinician in this situation, how would you react?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q25 A 40-year-old male with a family history of Cancer A visits his physician to discuss undergoing a scheduled screening for Cancer A. What is considered the most effective way of communicating how screening changes his risk of mortality from Cancer A?

- ❍ Screening results in a 50% reduction in mortality.
- ❍ Screening reduces mortality from 6 out of 10,000 people to 3 out of 10,000 people.
- ❍ Screening reduces mortality by 0.02%.
- ❍ Screening dramatically decreases his mortality from Cancer A.

Q26 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
Shared decision making is a process in which clinicians and patients work together, sharing information about options and preferred outcomes, in order to reach a mutual agreement on the best course of action.	❍	❍
Shared decision making causes patients to feel uncertain about their decisions.	❍	❍
Shared decision making increases patient decision regret.	❍	❍
Shared decision making results in fewer patients choosing major surgery.	❍	❍

Q27 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
When communicating information about risks, it is best to use relative risk (e.g., there is double the risk of developing thrombosis when using oral contraceptives).	❍	❍
Evidence shows that involving patients in making important healthcare decisions increases knowledge.	❍	❍
To promote shared decision making, the clinician will indicate that alternative treatment or management options exist.	❍	❍

Q28 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
To promote shared decision making, the clinician will give information about the pros and cons of options that are considered reasonable (including taking 'no action')	❍	❍
To promote shared decision making, the clinician will support the patient in becoming informed and comparing options.	❍	❍
There is no need for the clinician to check the patient's understanding.	❍	❍
In the shared decision making process, it is necessary to elicit the patient's preferences.	❍	❍

Q29 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
Whenever possible, the clinician should integrate the patient's preferences in deciding what to do next.	❍	❍
Most people will understand natural frequency (e.g., 1 in every 100 people) better than a percentage.	❍	❍
A majority of patients do not want to engage in shared decision making with their clinician.	❍	❍
Even if the patient does not wish to be involved in the decision making process, it is the clinician's role to encourage the patient to make a decision.	❍	❍

Q30 Had you heard of shared decision making before completing this survey?

❍ Yes
❍ No

Q31 Have you received training in shared decision making?

	Yes	No
I have received formal theoretical shared decision making training (e.g., didactic learning).	❍	❍
I have received formal practical shared decision making training (e.g., using role plays and simulated patients).	❍	❍

Q32 Roughly how many hours of training (combined theoretical and practical) have you received in shared decision making?

❍ 0 to 1 hours
❍ Between 1 to 2 hours
❍ Between 2 to 5 hours
❍ Greater than 5 hours

OR

Automatically directed to Q33 if the answer to both statements in Q31 were 'No'.

OR

Automatically directed to Q33 if answer to statement in Q30 was 'No'.

Q33 Please indicate how much you agree or disagree with the following statement.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I would like to know more about how to do shared decision with patients.	❍	❍	❍	❍

Q34 In a clinical encounter, how do you think engaging in shared decision making would affect the length of the visit?

- ❍ Decrease the overall length of the visit.
- ❍ The length of the visit would remain the same.
- ❍ Increase the overall length of the visit.

Q35 You selected "Decrease the overall length of the visit." How much shorter would the clinical visit be when engaging in shared decision making?

- ❍ About 5 minutes shorter, or more
- ❍ About 2 minutes shorter
- ❍ About 1 minute shorter

OR

Q36 You selected "Increase the overall length of the visit." How much longer would the clinical visit be when engaging in shared decision making?

- ❍ About 1 minute longer
- ❍ About 2 minutes longer
- ❍ About 5 minutes longer, or more

OR

Automatically directed to Q37 if answer to statement in Q34 was 'The length of the visit would remain the same.'

Q37 How do you think healthcare decisions should be made?

- ❍ The patient should make the final decision about which treatment she would receive.
- ❍ The patient should make the final decision about which treatment she would receive after seriously considering my opinion.
- ❍ As the physician, I should share responsibility with the patient for making the final decision about the treatment she should receive.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive after seriously considering the patient's opinion.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive.

Q38* Please indicate your interest in the following (select ALL that apply):

- ❑ YES, I am interested in taking part in a 10-minute telephone interview on shared decision making.
- ❑ YES, I would like to be entered into the prize drawing for a gift card where 1 in 50 respondents will receive a $20 USD Amazon gift card.

Q39 You indicated interest in either the prize drawing or the telephone interview. Please enter a valid email address below to be eligible:

Fill in the blank.

Medical School Student Survey on Shared-Decision Making [French]

NOTES:

- An * indicates skip logic, which will cause some participants to see a different version of the question for country-based clarification.
- Page break in document does not equate to page break in online survey.

(Q1 Language Selection – English or French)

Q2 Comment pensez-vous que les décisions de santé devraient être prises ?

- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit après avoir considéré mon opinion.
- ❍ En tant que médecin, je dois partager les responsabilités avec le ou la patient(e) pour prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement après avoir considéré l'opinion du patient.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement pour le patient.

Q3 Veuillez s'il vous plait indiquer votre âge en utilisant le menu déroulant.

- ❍ 18 ans
- ❍ Plus de 65 ans

Response choices in drop-down range from '18 ans' to over 'Plus de 65 ans'.

Q4 Comment souhaitez-vous être identifié ? Merci de choisir parmi les options ci-dessous.

- ❍ Femme
- ❍ Homme
- ❍ Transgenre
- ❍ Autre identité, veuillez préciser : _____
- ❍ Je préfère ne pas répondre

Q5 Veuillez s'il vous plait indiquer quelle année vous êtes en train de compléter dans votre éducation médicale en utilisant le menu déroulant ci-dessous.

- ❍ Année 1
- ❍ Année 2
- ❍ Année 3
- ❍ Année 4
- ❍ Année 5
- ❍ Année 6

Q6 Dans quel pays étudiez-vous la médecine ?
- ❍ États-Unis
- ❍ Royaume-Uni
- ❍ Canada
- ❍ Pays-Bas
- ❍ Autre, veuillez préciser : _____

Q7* Veuillez s'il vous plait indiquer à quel groupe vous appartenez (choisissez s'il vous plait tout ce qui est applicable) :
- ❑ Amérindien ou autochtone de l'Alaska
- ❑ Asiatique
- ❑ Noir ou afro-américain
- ❑ Originaire d'Hawaï ou d'autres iles du Pacifique
- ❑ Blanc ou caucasien
- ❑ Autre, veuillez préciser : _____
- ❑ Je préfère ne pas répondre

Q8* Êtes-vous espagnol, hispanique ou latino ?
- ❍ Oui
- ❍ Non
- ❍ Je préfère ne pas répondre

Q12 Dans quelle école de médecine étudiez-vous ? S'il vous plait indiquer le nom complet de l'institution, sans abréviation.

Fill in the blank.

Q12 Veuillez s'il vous plait indiquer à quel point vous êtes en accord ou en désaccord avec les énoncés suivants.

	Tout à fait d'accord	D'accord	Désaccord	Fortement en désaccord
La prise de décision partagée est possible seulement quand les patients sont bien informés et confiants pour discuter le traitement ou les options de dépistage avec leur médecin.	❍	❍	❍	❍
La prise de décision partagée est irréaliste, car cela prend trop de temps.	❍	❍	❍	❍
La prise de décision partagée est au bas de ma liste de priorités.	❍	❍	❍	❍
La rémunération des médecins devrait être basée sur la façon dont ils font la prise de décision partagée.	❍	❍	❍	❍
Avoir des ressources qui résument les risques et les avantages des décisions cliniques serait utile (p. ex. outil d'aide à la décision).	❍	❍	❍	❍
Les patients doivent avoir confiance en leur cliniciens afin qu'ils prennent toutes les décisions pour leurs patients.	❍	❍	❍	❍

Q13 Veuillez s'il vous plait lire le scénario suivant. Merci d'indiquer : (A) ce que vous remarquez en observant les cliniciens qui vous encadrent et vous enseignent la médecine, et (B) quel style de décision adopteriez-vous si vous étiez dans cette situation. Il n'y a pas de bonnes ou mauvaises réponses. Supposons que le consentement est obtenu au préalable pour chaque patient.

Q14 Une femme de 45 ans se présente au service des urgences. Elle a besoin d'une intervention chirurgicale urgente. Elle est capable de donner son consentement.

Q15 A. Selon-vous, que font les cliniciens expérimentés ?

- Les cliniciens utilisent des informations fondées sur des données probantes) afin de choisir la meilleure option pour le patient et l'informer de leur décision.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient afin de connaitre les préférences du patient et de prendre une décision éclairée ensemble.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient et permettent au patient de prendre sa propre décision.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient et choisissent la meilleure option pour le patient.

Q16 B. Imaginez que vous êtes le clinicien dans cette situation, comment réagiriez-vous ?

- J'utiliserais l'information fondée sur des données probantes afin de choisir la meilleure option pour le patient et de l'informer de ma décision.
- Je partagerais des informations fondées sur des données probantes avec le patient afin de connaître les préférences du patient et de prendre une décision éclairée ensemble.
- Je partagerais des informations fondées sur des données probantes avec le patient afin de lui permettre de prendre sa propre décision.
- Je partagerais des informations fondées sur des données probantes avec le patient et choisirais la meilleure option pour le patient.

Q17 Veuillez s'il vous plait lire le scénario suivant. Merci d'indiquer : (A) ce que vous remarquez en observant les cliniciens qui vous encadrent et vous enseignent la médecine, et (B) quel style de décision adopteriez-vous si vous étiez dans cette situation. Il n'y a pas de bonnes ou mauvaises réponses. Supposons que le consentement est obtenu au préalable pour chaque patient.

Q18 Un homme de 53 ans se présente à son médecin de famille pour un examen physique annuel.

Q19 A. Selon-vous, que font les cliniciens expérimentés ?

- Les cliniciens utilisent des informations fondées sur des données scientifiques ('evidence-based medicine') afin de choisir la meilleure option pour les patient et de les informer de leur décision.
- Les cliniciens partagent des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin d'obtenir les préférences du patient et prendre une décision ensemble.
- Les cliniciens partagent des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient et permettent au patient de prendre leur propre décision.
- Les cliniciens partagent des informations fondées fondées sur des données scientifiques ('evidence-based medicine') avec le patient et choisissent la meilleure option pour le patient.

Q20 B. Imaginez que vous êtes le clinicien dans cette situation, comment réagiriez-vous ?

- J'utiliserai l'information fondée sur des données scientifiques ('evidence-based medicine') afin de choisir la meilleure option pour le patient et de l'informer de ma décision.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin d'obtenir les préférences du patient et prendre une décision ensemble.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin de permettre au patient de prendre sa propre décision.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient et choisirai la meilleure option pour le patient.

Q21 Un homme de 40 ans avec une histoire familiale de cancer A visite son clinicien pour discuter de la possibilité d'un test de dépistage du cancer A. Veuillez s'il vous plait indiquer ce qui est considéré comme le moyen le plus efficace de communiquer la façon dont le dépistage change le risque de mortalité lié au cancer A ?

- ❍ Le dépistage résulte en une réduction de 50% de la mortalité.
- ❍ Le dépistage réduit la mortalité de 6 sur 10 000 à 3 sur 10 000 personnes.
- ❍ Le dépistage réduit la mortalité de 0,02%.
- ❍ Le dépistage diminue considérablement la mortalité liée au cancer A.

Q22 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
La prise de décision partagée est un processus dans lequel les cliniciens et les patients travaillent ensemble, partagent les informations sur les options et leurs conséquences, afin de parvenir à un accord mutuel sur le meilleur plan d'action.	❍	❍
La prise de décision partagée provoque de l'indécision chez les patients.	❍	❍
La prise de décision partagée augmente les sentiments de regret en ce qui concerne la décision.	❍	❍
La prise de décision partagée diminue le nombre de patient qui décident d'avoir une intervention chirurgicale majeure.	❍	❍

Q23 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Lors de la communication d'information sur les risques, il est préférable d'utiliser le risque relatif (par exemple, le risque de développer une thrombose lors de l'utilisation des contraceptifs oraux est doublé).	❍	❍
Les études montrent que quand les patients participent aux décisions importantes de santé, leur niveau de connaissance augmente.	❍	❍
Afin de promouvoir la prise de décision partagée, le clinicien indiquera que des traitements alternatifs existent.	❍	❍

Q24 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Afin de promouvoir la prise de décision partagée, le clinicien donnera des informations sur les avantages et les désavantages des options possibles (cela inclut l'option de 'ne rien faire').	❍	❍
Afin de promouvoir la prise de décision partagée, le clinicien va soutenir le patient pour l'aider à obtenir l'information et comparer les options.	❍	❍
Le clinicien n'a pas besoin de vérifier si le patient comprend les options disponibles.	❍	❍
Dans le processus de prise de décision partagée, il est nécessaire de connaitre les préférences du patient.	❍	❍

Q25 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Si possible, le clinicien doit intégrer les préférences du patient pour décider de la suite des choses.	❍	❍
La plupart des gens comprendront la fréquence naturelle (par exemple, 1 personne sur 100) mieux qu'un pourcentage.	❍	❍
La majorité des patients ne veulent pas participer à la prise de décision partagée avec leur médecin.	❍	❍
Même si le patient ne souhaite pas être impliqué dans le processus de prise de décision, c'est le rôle du clinicien d'encourager le patient à prendre une décision.	❍	❍

Q26 Avez-vous entendu parler de la prise de décision partagée avant ce sondage ?

- ❍ Oui
- ❍ Non

Q27 Avez-vous suivi des cours sur la prise de décision partagée ?

	Oui	Non
J'ai suivi des cours théoriques sur la prise de décision partagée.	❍	❍
J'ai reçu une formation pratique sur la prise de décision partagée (par exemple, en utilisant des jeux de rôle et des patients comédiens).	❍	❍

Q28 Combien d'heures de formation avez-vous reçues (approximativement) sur la prise de décision partagée ?

- ❍ 0 à 1 heure
- ❍ Entre 1 et 2 heures
- ❍ Entre 2 et 5 heures
- ❍ Plus de 5 heures

OR

Automatically directed to Q29 if the answer to both statements in Q27 was 'Non'.

OR

Automatically directed to Q29 if answer to statement in Q26 was 'No'.

Q29 Veuillez s'il vous plait indiquer si vous êtes en accord ou en désaccord avec la déclaration suivante.

	Tout à fait d'accord	D'accord	Désaccord	Fortement en désaccord
Je voudrais en savoir plus sur la pratique de la décision partagée avec mes patients.	❍	❍	❍	❍

Q30 Dans le cadre d'une consultation, comment pensez-vous que la prise de décision partagée affecte la durée de la visite ?

- ❍ Diminue la durée totale de la visite.
- ❍ La durée de la visite demeure la même.
- ❍ Augmente la durée totale de la visite.

Q31 Vous avez choisi « Diminue la durée totale de la visite. » De combien de temps la visite serait-elle diminuée en s'engageant dans la prise de décision partagée ?

- ❍ 5 minutes ou moins
- ❍ À peu près 2 minutes
- ❍ À peu près 1 minute

OR

Q32 Vous avez choisi « Augmente la durée totale de la visite. » De combien de temps la visite serait-elle augmentée en s'engageant dans la prise de décision partagée ?

- ❍ 5 minutes ou plus
- ❍ À peu près 2 minutes
- ❍ À peu près 1 minute

OR

Automatically directed to Q333 if answer to statement in Q34 was 'La durée de la visite demeure la même.'

Q33 Comment pensez-vous que les décisions de santé devraient être prises ?

- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit après avoir considéré mon opinion.
- ❍ En tant que médecin, je dois partager les responsabilités avec le ou la patient(e) pour prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement après avoir considéré l'opinion du patient.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement pour le patient.

Q34 Veuillez s'il vous plait indiquer votre intérêt dans ce qui suit (cochez TOUT ce qui est applicable) :

- ❑ OUI, je souhaiterais participer à un entretien téléphonique de 10 minutes sur la prise de décision partagée.
- ❑ OUI, je souhaiterais participer au tirage pour une carte-cadeau Amazon où 1 participant sur 50 recevra 20$USD.

Q35 Vous avez indiqué votre intérêt à participer à un entretien téléphonique ou au tirage. S'il vous plait entrez une adresse courriel valide ci-dessous pour être éligible :

Fill in the blank.

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Item Category	Checklist Item	Described on page #*
Design	Describe study design	4
IRB approval and informed consent process	IRB approval	10
	Informed consent	1, 10
	Data protection	8
Development and pre-testing	Development and testing	7
Recruitment process and description of the sample having access to the questionnaire	Open survey versus closed survey	4
	Contact mode	5,6
	Advertising the survey	5,6
Survey administration	Web/E-mail	4
	Context	10
	Mandatory/voluntary	2
	Incentives	5
	Time/Date	8,9
	Randomization of items or questionnaires	7,8
	Adaptive questioning	7
	Number of items	7
	Number of screens (pages)	7
	Completeness check	N/A
	Review step	N/A
Response rates	Unique site visitor	N/A
	View rate (Ratio unique site visitors/unique survey visitors)	N/A
	Participation rate (Ratio Unique survey page visitors/agreed to participate)	N/A
	Completion rate (ratio agreed to participate/finished survey)	N/A
	Cookies used	N/A
	IP check	N/A
	Log file analysis	N/A
Analysis	Handling of incomplete questionnaires	N/A
	Questionnaires submitted with an atypical timestamp	N/A
	Statistical correction	N/A

*We are not reporting data in this manuscript as this is a protocol.

BMJ Open

Assessing medical student knowledge and attitudes about shared decision making across the curriculum: Protocol for an international online survey and stakeholder analysis

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-015945.R1
Article Type:	Protocol
Date Submitted by the Author:	11-Apr-2017
Complete List of Authors:	Durand, Marie-Anne; The Dartmouth Institute for Health Policy & Clinical Practice, Yen, Renata; Dartmouth College, The Dartmouth Institute for Health Policy and Clinical Practice Barr, Paul; Dartmouth College, The Dartmouth Center for Health Care Delivery Science Cochran, Nan; Dartmouth College, The Dartmouth Institute for Health Policy & Clinical Practice Aarts, Johanna; Radboudumc, Department of Obstetrics & Gynecology Legare, France; CHU de Quebec and Universite Laval, Reed, Malcolm; Brighton and Sussex Medical School, O'Malley, A. James ; Geisel School of Medicine at Dartmouth , Scalia, Peter; Dartmouth College, The Dartmouth Institute for Health Policy and Clinical Practice Painchaud Guérard, Geneviève; CHU de Quebec Research Center Elwyn, Glyn; Dartmouth College,
Primary Subject Heading:	Patient-centred medicine
Secondary Subject Heading:	Communication
Keywords:	Shared Decision Making, MEDICAL EDUCATION & TRAINING, Patient-Centered Care

Title: Assessing medical student knowledge and attitudes about shared decision making across the curriculum: Protocol for an international online survey and stakeholder analysis

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Word count: 4,311

Target Journal: BMJ open

Abstract

Introduction: Shared decision-making (SDM) is a goal of modern medicine, however, it is not currently embedded in routine care. Barriers include clinicians' attitudes, lack of knowledge and training, and time constraints. Our goal is to support the development and delivery of a robust SDM curriculum in medical education. Our objective is to assess undergraduate medical students' knowledge of and attitudes towards SDM in four countries.

Methods and analysis: The first phase of the study involves a web-based cross-sectional survey of undergraduate medical students from all years in selected schools across the United States (US), Canada, and undergraduate and graduate students in the Netherlands. In the United Kingdom (UK), the survey will be circulated to all medical schools through the UK Medical School Council. We will sample students equally in all years of training and assess attitudes towards SDM, knowledge of SDM, and participation in related training. Medical students of ages 18 and older in the four countries will be eligible. The second phase of the study will involve semi-structured interviews with a subset of students from phase 1 and a convenience sample of medical school curriculum experts or stakeholders. Data will be analyzed using multivariable analysis in phase 1 and thematic content analysis in phase 2. Method, data source, and investigator triangulation will be performed. Online survey data will be reported according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES). We will use the COnsolidated criteria for REporting Qualitative research (COREQ) for all qualitative data.

Ethics and dissemination: The study has been approved for dissemination in the US, the Netherlands, Canada, and the UK. The study is voluntary with an informed consent process. The results will be published in a peer-reviewed journal and will help inform the inclusion of SDM-specific curriculum in medical education worldwide.

Strenghts and Limitations of the Study

- We will conduct an international web-based, cross-sectional survey of undergraduate medical students following CHERRIES and COREQ guidelines.
- We followed a comprehensive, iterative survey development process that included several pilot phases.
- In order to determine when and how to deliver SDM training to medical students, this study will also include a stakeholder analysis of medical students and curriculum experts.
- Using convenience samples of medical schools in the US, Canada, and the Netherlands may introduce selection biases.
- Completion of the survey in English by Dutch undergraduate medical students may introduce biases and affect our ability to compare those data across participating countries.

Introduction

Involving patients in medical decision-making is considered an ethical imperative and a goal of modern medicine.[1,2] Over the past decade, shared decision making (SDM) has demonstrated effectiveness in controlled contexts and garnered policy support worldwide.[3] In the United States, the Patient Protection and Affordable Care Act encourages health organizations and healthcare professionals to promote patient engagement in health care and provide accessible, evidence-based information about the options' harms, benefits, and outcome probabilities.[4,5] According to the Institute of Medicine, patient participation in decision making should be promoted to improve the quality of health care.[6] Since 2010, shared decision making has been featured prominently on the United Kingdom's policy agenda and actively promoted by the National Institute for Health and Care Excellence (NICE).[7,8] In Canada, SDM initiatives are taking place in several provinces with health research funding available to support SDM research.[3,9] In the Netherlands, the healthcare system has been reformed to promote patient-centered care, and various SDM research projects are underway.[10]

Despite proven benefits in controlled contexts, widespread adoption of SDM and related interventions is rare in routine clinical practice.[3,11] Various barriers to the implementation of SDM have been identified.[12–14] Time constraints, doctors' attitudes, and lack of understanding about the relevance and applicability of SDM are major obstacles to widespread adoption. Time constraint was the most commonly reported concern preventing health professionals from practicing SDM.[12] Eliciting patients' preferences and sharing decisions are often perceived to be more complex and time consuming than making a single treatment or screening recommendation.[15,16] here is no evidence, however, that shared decision making systematically increases consultation length.[17,18] Elwyn et al. also described health professionals' indifference to decision support interventions and associated organizational inertia.[16]

In brief, SDM cannot become widespread unless clinicians fully understand the principles and benefits of SDM, are trained in communicating risks, and engaging patients and significant others (caregivers, family) in deciding about their care. Research suggests that implementing SDM successfully in clinical practice will require interventions targeting the clinicians, the patients, and in the best of worlds, both. Effective interventions targeting clinicians include SDM training.[19] SDM training thus needs to be increasingly embedded in continuing medical education. However, there is little evidence as to which strategies are most effective.[20–22] Yet, continuing medical education is the tip of the iceberg. Training medical students in healthcare communication and SDM seems essential in facilitating routine adoption of SDM in the long term. However, to the best of our knowledge, there is no evidence that the principles of SDM are routinely taught in medical school curricula. Research into the knowledge and attitudes of medical students with regard to SDM is scarce. We have searched the literature, and evidence is also lacking as to when and how to teach SDM principles and skills in medical schools.

Studies of the attitudes of doctors' in training towards patient-centered care suggest that patient-

centeredness tends to decline with medical education. Those studies assessed patient-centered care but did not specifically examine shared decision making. Patient-centered care can be defined as 'the importance of better understanding the experience of illness and of addressing patients' needs'[23], and may or may not include SDM. SDM is: "The process by which the optimal decision may be reached for a patient at a fateful health crossroads […] and involves, at minimum, a clinician and the patient, although other members of the health care team or friends and family members may be invited to participate.[23]" Research focusing on patient-centered care suggests that the more experienced medical students become, the less patient-centered they are.[24–29] Although SDM is considered the pinnacle of patient-centered care,[30] it is unclear whether this apparent decline in patient-centeredness also applies to SDM. A recent study of senior medical students in Peru revealed that the majority of students assessed their current consultation approach as 'paternalistic' or 'clinician-as-perfect agent'.[31] Only 12% of the students reported adopting a SDM approach.[31] The study did not assess students' knowledge of SDM and whether knowledge and attitudes about SDM differed according to medical education level. As far as can be determined, this is the only published study of medical students' attitudes towards SDM.[31] Further, there are no studies that have assessed SDM among medical students in English-speaking countries, or in countries where SDM has been promoted at the policy level. Consequently, our objectives are to:

1) Investigate medical students' knowledge of and attitudes towards SDM across the medical curriculum in four countries, as well as their preferred consultation style (data primarily collected in phase 1);
2) Investigate the factors that may influence medical students' knowledge of and attitudes towards SDM (data collected in phases 1 and 2);
3) Determine when and how to best deliver SDM training to medical students (data primarily collected in phase 2).

Methods and Analysis

Design and setting

This is a multipronged study with two phases. Phase 1 will be a cross-sectional online survey of medical students across all years of medical education to determine their knowledge of and attitudes towards SDM conducted in the US, UK, Canada, and the Netherlands. We will report online survey data according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES).[32]

Phase 2 will consist of semi-structured telephone interviews with a purposive sample of medical students across the curriculum who have participated in phase 1 and with medical school curriculum experts or other relevant stakeholders (e.g., education leads) [33] to understand:

- Whether there are specific needs for SDM training;
- Perceived barriers and facilitators to teaching SDM in the medical curriculum;
- Optimal format and timing of such training; and
- Curriculum experts' knowledge of SDM.

We will report all qualitative data collected in phase 2 using the COnsolidated criteria for REporting Qualitative research (COREQ).[34]

Participants

Students

All undergraduate medical students registered at participating medical schools in the US, UK, Canada, and the Netherlands will be eligible for participation in phase 1 of this study. In Canada, we will include both French-speaking and English-speaking medical students. In the Netherlands, we will also include graduate medical students within the first six years of medical training. Students will be excluded if they are under the age of 18. We will also exclude residency programs and foundation training in the UK. Including residents in this study would require a different recruitment strategy and additional time and resources. It is beyond the scope of the present study.

Curriculum Experts

Curriculum experts or education leads are typically responsible for designing training programs, developing and updating course content as well as coordinating learning curricula. Curriculum experts, education leads or other relevant stakeholders will be eligible for inclusion if they function in this role at one of the participating medical schools. In Canada, we will include French-speaking and English-speaking curriculum experts and will conduct the interviews in French or in English, according to each participant's preferred language.

Recruitment

For phase 1, all participants will be recruited via their medical school (e.g., listservs, newsletters) or online advertisements (e.g., student forums, Twitter, Facebook, or student social media networks). Recruitment started in September 2016 and will end in May 2017. At some schools in Canada, the recruitment messages and survey will be available in French and in English. Participants will have the opportunity to take the survey in French or in English.

We will aim to recruit a minimum of 50 medical students per year of medical training, across all years of undergraduate medical education, per country. Given that the proposed survey is innovative, with no prior studies in a similar population using the same questionnaire and no prior validation, there is no known effect size on which to base the sample size calculation. We have therefore used rules of thumbs and existing literature indicating that 50 students per year of medical education is a reasonable and pragmatic sample size.[35] This corresponds to 200 medical students recruited in the US (i.e., four years of undergraduate medical education), 250 recruited in the UK (i.e., five years of undergraduate medical education), up to 250 in Canada (i.e., up to five years of undergraduate medical education), and 300 recruited in the Netherlands (i.e., six years of undergraduate medical education). In total, we aim to collect 1,000 completed surveys. In order to facilitate recruitment, respondents will have the opportunity, at

the end of the survey, to enter a prize drawing for a $20 gift card (1 in 50 students entered into the prize draw will receive a gift card).

For phase 2, we aim to recruit both students and curriculum experts. Student participants will be a purposive sample from the phase 1 survey respondents who have indicated their willingness to take part in telephone semi-structured interviews by providing their email addresses. Interviews are being conducted between March and June 2017. We will aim to interview students of different gender and ages from each participating country, in all years of medical education, with varying knowledge and attitudes of SDM, and with or without prior SDM training. Telephone interviews will be conducted in English or French, according to the participant's preference. We will aim to recruit a representative sample of up to 12 students per country (up to 48 in total), or until data saturation is reached.[33] Students will be offered a $10 gift card for their participation in these interviews. We will also contact a convenience sample of curriculum experts in each country and ask them to take part in a telephone semi-structured interview. We will aim to recruit a sample of up to 12 curriculum experts per country (up to 48 in total). The interview guide has already been drafted but will be revised and finalized building on the answers collected in phase 1 (see draft interview guide in supplementary file).

Data collection

The following research questions will guide the data collected in phases 1 and 2 of the study:

1) What are medical students' knowledge of and attitudes towards SDM across the medical curriculum? (data primarily collected in phase 1)

2) Do knowledge of and attitudes towards SDM change with medical education? (data primarily collected in phase 1)

3) What are the potential factors that influence SDM during medical education? (data collected in phases 1 and 2)

4) How and when should SDM training be delivered during medical education? (data primarily collected in phase 2)

Survey development

The student survey (see supplementary file for English and French versions) comprises five sections:

1) Demographics;

2) Attitudes towards SDM derived from existing literature and the OPTION instrument;[36]

3) Clinical scenarios where each participant has to indicate: a) how they see other clinicians (e.g., attending physicians, residents, interns) make healthcare decisions and b) how the student would

react should they face this situation tomorrow (see Table 1). The clinical scenarios were initially drafted by a Dartmouth fourth year medical student (MW). The first iteration was then revised and reworded by five of the authors, all experts in shared decision making, including two clinicians. The clinical scenarios section also includes one question on risk communication.

4) Knowledge of SDM derived from existing literature;

5) Previous SDM training.

As far as could be determined from our review of the literature, there are no existing validated scales of students' attitudes towards and knowledge of shared decision making available in English. We therefore developed the items presented in the survey (see supplementary file) using published literature, and discussion and consensus between study authors. The validated OPTION instrument was initially designed to assess the extent to which practitioners involve patients in decision making processes. We used some of the OPTION items to assess students' attitudes to SDM as well as published studies about clinicians' attitudes to SDM.

Table 1. Clinical scenarios embedded in the survey

Clinical Scenarios
A. A 45-year-old female presents to the Emergency Department. She requires an urgent emergency surgical intervention but is capable of giving consent.
B. A 53-year-old male presents to his primary care physician for an annual physical exam. The patient asks his provider about the need to screen for colorectal cancer.
C. A 40-year-old male with a family history of Cancer A visits his physician to discuss undergoing a scheduled screening for Cancer A. What is considered the most effective way of communicating how screening changes his risk of mortality from Cancer A?

The first iteration of the online survey was initially developed in 2013 and piloted in a small-scale online study conducted in the UK, recruiting medical students through online forums (n=40). It was subsequently refined and reworded.

The second iteration of the survey was designed using Qualtrics software (Copyright © 2016 Qualtrics, LLC). Qualtrics is an online survey platform that facilitates the creation and distribution of web-based surveys. Qualtrics maintains a high level of data security by using Transport Layer Security (TLS) encryption for all transmitted data and servers protected with high-end firewall systems.[37] We have set up a forced response for most questions in the survey, requiring that participants answer every content-based question with the option of "I prefer not to say" for sensitive demographics questions. We have purposefully randomized the order of presentation of two sections of the survey, as highlighted in Table 2. The clinical scenario questions were randomized with the attitude questions to test if students' responses would change if they saw attitude questions before being presented with clinical-based questions. The survey uses skip logic (also known as adaptive questioning) to present information relevant to each country (e.g., ethnicity categories, glossary of terms for non-native English speakers) according to the country selected by the participant in the demographics section. The number of questions per page varies from one to four. Table 2 provides additional detail on the survey

outline. Each student completing the survey will see 19 to 23 questions. The approximate completion time is 10 minutes.

Table 2. Outline of survey questions per webpage

Page 1	Language Selection	1 question
Page 2	Information Sheet	No questions
Page 3	"How do you think healthcare decisions should be made?"	1 question
Page 4-5	Demographics	2-4 questions
Page 6	Glossary of Terms for Netherlands-based students	No questions
Page 7-10	Clinical Scenarios, Attitudes towards SDM (*randomization*)	1-2 questions per page, 1 page of 6 statements with Likert-style response options
Page 11-14	Knowledge of SDM (*randomization*)	4 True/False statements per page
Page 15-17	Awareness of SDM	0-2 questions per page*
Page 18-19	Time Needed for SDM	0-1 question per page*
Page 20	"How do you think healthcare decisions should be made?"	1 question
Page 21-22	Email Address / Interview Request	0-1 question per page*

*0 questions indicates that a page would be skipped as a result of the respondents selection to previous questions.

The survey was piloted with a small convenience sample (n=20) of medical students in years one to four, recruited at Geisel School of Medicine, Dartmouth College, in the spring of 2016. We used focus groups, brief interviews, and online surveys to collect feedback about the usability and acceptability of the online survey, as well as the completion time. In accordance with CHERRIES, both the usability and technical functionality of the online survey were assessed. Changes made in this pilot phase included decreasing the number of clinical scenarios from five to three, changing the phrasing of some clinical scenario questions, adding additional questions regarding the length required to employ SDM, shortening and standardizing the length of each answer choice for certain questions, adding the progress bar, and adding the lottery-based monetary incentive for participation. In the Netherlands, the English survey was pilot-tested by a group of ten Dutch medical students (from years three to six) for usability and applicability. The only major change arising from the pilot data collected in the Netherlands was the addition of a glossary defining potentially complex terms.

The first page of the survey asks the respondent to indicate their language of choice to complete the survey (English or French). The second page consists of a brief information sheet describing the study, its purpose, and data protection policy. The information sheet intentionally does not mention SDM, but uses the term "health communication" to reduce potential respondent and desirability biases on the first question about healthcare decision making and scenarios. For questions assessing knowledge and attitudes towards SDM, we were forced to use the term SDM. The survey was translated from English to French by PS and reviewed by two authors (M-A D and GPG), who are both bilingual French/English speakers.

Survey dissemination

The survey is open but exclusively distributed to our target audience. No password-protection is necessary to access the content. The initial contact with survey respondents is typically made on the Internet (i.e., using individual emails, a listserv, or a webpage).

In the UK, dissemination of the survey was initiated on 1 September 2016 to all 32 undergraduate medical schools through the UK Medical Schools Council. We will also advertise the survey on online forums and Facebook pages that are popular with medical students (e.g., The Student Room, Student Doctor Network (UK & Ireland), medstudent.org).

In the US and Canada, we have made direct contact with a convenience sample of four medical schools in each country. We were unable to distribute the survey to all US and Canadian medical schools using the Association of American Medical Colleges. Given our sample size requirements and the need to obtain ethical approval at school level in Canadian medical schools and in many American medical schools, we limited our sample to four schools in each country. Those medical schools were selected on the basis of existing contacts and school sizes. We will also advertise the web-based survey on online forums and social media pages that are popular with medical students (e.g., Student Doctor Network, Student Doc Forum, doctorhangout.com, Canadian Federation of Medical Students and relevant Facebook groups). Data collection in those countries was initiated on 11 October 2016. One medical school in the US and three schools in Canada started data collection between January and March 2017.

In the Netherlands, we followed the approach outlined for North America. Recruitment is occurring at four Dutch medical schools conveniently selected on the basis of existing contacts and geographical distribution. In addition, we will circulate the survey link to a national medical student association ('de Geneeskundestudent'). We will also advertise the online survey on popular student forums, relevant Facebook groups, Twitter, and student networks. In the Netherlands, data collection was initiated on 1 October 2016.

We anticipate that data will be collected for six months in each country.

Analysis

We will include unique respondents only and will screen for the same respondent completing the survey multiple times using IP addresses.

For phase 1, we will use multivariable analysis to assess differences in knowledge and attitudes about SDM across the curriculum, within each country and between countries. Depending on the total number of completed surveys at each institution within each country, we will also attempt to assess differences in knowledge and attitudes about SDM between institutions. This might be possible in the US, Canada, and the Netherlands as four large medical schools have been approached but is unlikely to be achieved in the UK given all medical schools in the country have been approached.

In order to make the cross-country comparison equitable and meaningful, and given that undergraduate medical education ranges from four to six years in the included countries, with variants regarding when the same content is taught or learned, we will use the first year and the last year of medical education only. However, the within country analysis will enable us to compare differences across all years of undergraduate medical education (up to six years), for each participating country. Depending on the total number of completed surveys at each institution within each country, we will also attempt to assess differences in knowledge and attitudes about SDM between institutions. This might be possible in the US, Canada and the Netehrlands as four large medical schools have been approached but is unlikely to be achieved in the UK given all medical schools in the country have been approached. For Canada, data collected in French will be analyzed and reported separately.

We will also use an analysis of covariance (ANCOVA) to evaluate the influence of specific factors such as country, demographics, education level, and previous training on knowledge and attitudes about SDM. To account for any changes in course contents over time we will also include survey month as a control covariate in this analysis.

We plan to perform an analysis of the data after six months of online recruitment in each participating country. We hope that the primary findings will be based on this analysis. However, for practical reasons, should recruitment be slower than expected, we will continue data collection to obtain additional observations in which to test the validity of modeling assumptions and possibly obtain more precise inferences.

For phase 2, we will use a thematic analysis derived from descriptive phenomenology,[38–40] assisted by the computer software, ATLAS-ti (ATLAS-ti 5.2). The transcripts will be coded according to all the themes discussed in the interviews, including spontaneously emerging themes. Similar codes will be merged and subsequently grouped into families of codes and networks. A proportion of transcripts chosen for being representative of the overall sample will be coded by two independent raters (M-A D and RY) in order to ensure reliability of coding and to obtain consensus on the themes and family of codes for all remaining interview transcripts. Discrepancies among raters will be discussed until consensus is reached. Method, data source and investigator triangulation will be used.[41] Method triangulation involves the use of multiple methods of data collection. In the context of the proposed study, we are collecting data using an online survey and semi-structured interviews. Investigator triangulation consists of involving two or more researchers in the analysis of study data, thus bringing different perspectives to limit potential observers' bias and add breadth to the study findings.[42] At least three researchers (M-A D, RY and AJO) will be involved in data analysis. Finally, data source triangulation involves collecting data from different types of people: medical students across different levels of medical education and curriculum experts.

Ethics and dissemination

Ethics

This study is considered of minimal risk. The survey will be completed anonymously, and disclosure of sensitive personal information is not required of participants. The data obtained from the survey and interview will focus on participants' knowledge and opinions regarding SDM. We will ensure that all participants understand that the data we collect will remain anonymous and that their responses will be summarized without any identifying information.

In the US, the study has been approved by Dartmouth College Committee for the Protection of Human Subjects (CPHS) for recruitment in all four countries (STUDY00029369). In the Netherlands, the Dartmouth CPHS approval was considered sufficient, given the minimal risk nature of the study and no other ethics application process was required. In the UK, the study has been approved by the Brighton and Sussex Medical School Research Governance and Ethics Committee. In Canada, the study has been reviewed and approved by the ethics committee of the Université Laval, University of Ottawa, and McGill University. Université Laval was the multi-centric evaluation committee, but ethics approval still needed to be sought from each participating medical school. In the US, University of California, San Francisco (UCSF) requested that the study be reviewed and approved by their ethics board. University of Toronto, Washington University in St. Louis, and Yale University accepted the Dartmouth CPHS approval as sufficient.

Dissemination

Results of the survey and semi-structured interviews will be reported in a peer-reviewed journal. The research will also be presented at conferences and disseminated via social media. We also intend to share results with the AAMC and UK Medical School Council in order to influence the development of SDM curricula in medical education in those countries.

This study is the first to measure medical students' knowledge and attitudes about SDM in English-speaking countries, where SDM has been actively promoted but where clinician resistance and lack of understanding of SDM tenets and benefits have significantly limited its widespread adoption.

Understanding the factors that may influence knowledge and attitudes towards SDM to make SDM training particularly beneficial in the undergraduate medical curriculum will be invaluable. Understanding the perspective of the individuals who manage and coordinate medical education will contribute to determining how to increase the usability, acceptability and effectiveness of future SDM training.

Acknowledgements

We would like to thank Matthew Wesley for his contribution to the development of the clinical scenarios and support in recruiting medical students for the pilot study. We would also like to thank Tim Lahey, Brendin R. Beaulieu-Jones, and the Geisel School of Medicine students who took part in the pilot study. We would also like to thank Drs. Politi and Bussières for circulating the survey to medical students in their medical schools, and Drs. Mills and Fortin for their help with ethics approval at University of California, San Francisco and Yale University.

Authors' Contributions

M-A D planned the study and designed the initial iteration of the survey. RY and M-A D developed the second iteration of the survey, in collaboration with PB, NC, and GE. RY obtained ethical approval in the USA and piloted the survey. JA facilitated the recruitment of Medical Schools in the Netherlands. MR obtained ethical approval in the UK and facilitated the recruitment of medical schools in partnership with the UK Medical School Council. FL and GPG facilitated the recruitment of medical schools in Canada and related ethical approval process, and translated materials into French. PS supported the ethical approval process in Canada and translation of materials into French. AJO provided guidance on the statistical analysis. M-A D and RY drafted the manuscript. All authors contributed to writing the manuscript and approved the final draft.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. France Légaré is Tier 1 Canada Research Chair in Shared Decision Making and Knowledge Translation.

Competing Interests

Financial

Marie-Anne Durand is a consultant to Access Community Health Network, Chicago.

Glyn Elwyn has been a consultant to: 1) Emmi Solutions LLC who develop patient knowledge tools; 2) National Quality Forum on certification of patient knowledge tools; 3) Washington State Health Department on certification of patient knowledge tools; 4) PatientWisdom LLC, 5) SciMentum, Amsterdam, and 5) Access Community Health Network, Chicago.

Glyn Elwyn has edited / published books that provide royalties on sales by the publishers: the books have been on *Shared Decision Making* (Oxford University Press) and *Groups* (Radcliffe Press).

Non-Financial

Many authors are authors of SDM and communication training programs in medical schools. However, they get no financial benefits from it.

Glyn Elwyn initiated and leads the Option Grid ™ patient decision aids Collaborative, which produces and publishes patient knowledge tools in the form of comparison tables (http://optiongrid.org/), and has part ownership of the registered trademark.

Glyn Elwyn owns copyright in CollaboRATE, IntegRATE, and Observer OPTION measures of shared decision making and care integration. These measures are freely available for use.

Paul J. Barr owns copyright in CollaboRATE.

Ethics Approval

Institutional Review Boards at Dartmouth College (US), University of California San Francisco (US), McGill University (Canada), Université Laval (Canada), and University of Ottawa (Canada)

Brighton and Sussex Medical School Research Governance and Ethics Committee (UK)

Data sharing statement
No additional data available

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Medical School Student Survey on Shared-Decision Making [English]

NOTES:

- An * indicates skip logic, which will cause some participants to see a different version of the question for country-based clarification.
- Page break in document does not equate to page break in online survey.

(Q1 Language Selection – English or French)

Q2 How do you think healthcare decisions should be made?

- ❍ The patient should make the final decision about which treatment she/he would receive.
- ❍ The patient should make the final decision about which treatment she/he would receive after seriously considering my opinion.
- ❍ As the physician, I should share responsibility with the patient for making the final decision about the treatment she should receive.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive after seriously considering the patient's opinion.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive.

Q3 Please indicate your age using the dropdown menu.

Response choices in drop-down range from 18 years to over 65 years.

Q4 How do you self-identify? Please choose from the options below.

- ❍ Female
- ❍ Male
- ❍ Transgender
- ❍ Other identity, please specify: _____
- ❍ I prefer not to say

Q5 Please indicate where you currently are in your medical education (medical school) using the dropdown menu below.

- ❍ Year 1
- ❍ Year 2
- ❍ Year 3
- ❍ Year 4
- ❍ Year 5
- ❍ Year 6

Q6 In what country are you currently receiving your medical school training?

- ❍ United States of America
- ❍ United Kingdom
- ❍ Canada
- ❍ The Netherlands
- ❍ Other, please specify: _____

Q7* Which group or groups do you most closely identify with? Please choose all that apply.

- ❑ American Indian or Alaska Native
- ❑ Asian
- ❑ Black or African American
- ❑ Native Hawaiian or Other Pacific Islander
- ❑ White or Caucasian
- ❑ Other: _____
- ❑ I prefer not to say

Q8* Are you Spanish, Hispanic, or Latino?

- ❍ Yes
- ❍ No
- ❍ I prefer not to say

Q11 What medical school do you attend? Please provide the full institution name, no abbreviations.

Fill in the blank.

Q12 Please indicate how much you agree or disagree with the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Shared decision making can only be done with patients who are sufficiently educated and confident to discuss treatment or screening options with their clinician.	❍	❍	❍	❍
Doing shared decision making is unrealistic because it takes too much time.	❍	❍	❍	❍
Doing shared decision making is low on my priority list.	❍	❍	❍	❍
Physician payment should be based on how well they do shared decision making.	❍	❍	❍	❍
Having resources which summarize the risks and benefits of clinical decisions would be helpful (e.g. patient decision aid).	❍	❍	❍	❍
Patients should trust clinicians to make all decisions on their behalf.	❍	❍	❍	❍

Q13 Read the following scenario. Please indicate: (A) what you notice experienced clinicians do (e.g., attending physicians, residents, interns), and (B) which decision style you would adopt if you were in this situation. There are no right or wrong answers. Assume consent is obtained for each patient.

Q14 A 45-year-old female presents to the Emergency Department. She requires an urgent emergency surgical intervention but is capable of giving consent.

Q15* A. What do you notice experienced clinicians do (e.g., attending physicians, residents, interns)?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q18 B. Imagine that you are the clinician in this situation, how would you react?

- I would use evidence-based information to decide on the best course of action for the patient and inform the patient of my decision.
- I would share evidence-based information with the patient, and elicit the patient's preferences, so the patient and I can make an informed decision together.
- I would share evidence-based information with the patient and allow the patient to make the decision on their own.
- I would share evidence-based information with the patient and choose the best course of action for the patient.

Q19 Read the following scenario. Please indicate: (A) what you notice experienced clinicians do (e.g., attending physicians, residents, interns), and (B) which decision style you would adopt if you were in this situation. There are no right or wrong answers. Assume consent is obtained for each patient.

Q20 A 53-year-old male presents to his primary care physician for an annual physical exam. The patient asks his provider about the need to screen for colorectal cancer.

Q21* A. What do you notice experienced clinicians do (e.g., attending physicians, residents, interns)?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q24 B. Imagine that you are the clinician in this situation, how would you react?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q25 A 40-year-old male with a family history of Cancer A visits his physician to discuss undergoing a scheduled screening for Cancer A. What is considered the most effective way of communicating how screening changes his risk of mortality from Cancer A?

- ❍ Screening results in a 50% reduction in mortality.
- ❍ Screening reduces mortality from 6 out of 10,000 people to 3 out of 10,000 people.
- ❍ Screening reduces mortality by 0.02%.
- ❍ Screening dramatically decreases his mortality from Cancer A.

Q26 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
Shared decision making is a process in which clinicians and patients work together, sharing information about options and preferred outcomes, in order to reach a mutual agreement on the best course of action.	❍	❍
Shared decision making causes patients to feel uncertain about their decisions.	❍	❍
Shared decision making increases patient decision regret.	❍	❍
Shared decision making results in fewer patients choosing major surgery.	❍	❍

Q27 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
When communicating information about risks, it is best to use relative risk (e.g., there is double the risk of developing thrombosis when using oral contraceptives).	❍	❍
Evidence shows that involving patients in making important healthcare decisions increases knowledge.	❍	❍
To promote shared decision making, the clinician will indicate that alternative treatment or management options exist.	❍	❍

Q28 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
To promote shared decision making, the clinician will give information about the pros and cons of options that are considered reasonable (including taking 'no action')	❍	❍
To promote shared decision making, the clinician will support the patient in becoming informed and comparing options.	❍	❍
There is no need for the clinician to check the patient's understanding.	❍	❍
In the shared decision making process, it is necessary to elicit the patient's preferences.	❍	❍

Q29 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
Whenever possible, the clinician should integrate the patient's preferences in deciding what to do next.	❍	❍
Most people will understand natural frequency (e.g., 1 in every 100 people) better than a percentage.	❍	❍
A majority of patients do not want to engage in shared decision making with their clinician.	❍	❍
Even if the patient does not wish to be involved in the decision making process, it is the clinician's role to encourage the patient to make a decision.	❍	❍

Q30 Had you heard of shared decision making before completing this survey?

❍ Yes
❍ No

Q31 Have you received training in shared decision making?

	Yes	No
I have received formal theoretical shared decision making training (e.g., didactic learning).	❍	❍
I have received formal practical shared decision making training (e.g., using role plays and simulated patients).	❍	❍

Q32 Roughly how many hours of training (combined theoretical and practical) have you received in shared decision making?

❍ 0 to 1 hours
❍ Between 1 to 2 hours
❍ Between 2 to 5 hours
❍ Greater than 5 hours

OR

Automatically directed to Q33 if the answer to both statements in Q31 were 'No'.

OR

Automatically directed to Q33 if answer to statement in Q30 was 'No'.

Q33 Please indicate how much you agree or disagree with the following statement.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I would like to know more about how to do shared decision with patients.	❍	❍	❍	❍

Q34 In a clinical encounter, how do you think engaging in shared decision making would affect the length of the visit?

- ❍ Decrease the overall length of the visit.
- ❍ The length of the visit would remain the same.
- ❍ Increase the overall length of the visit.

Q35 You selected "Decrease the overall length of the visit." How much shorter would the clinical visit be when engaging in shared decision making?

- ❍ About 5 minutes shorter, or more
- ❍ About 2 minutes shorter
- ❍ About 1 minute shorter

OR

Q36 You selected "Increase the overall length of the visit." How much longer would the clinical visit be when engaging in shared decision making?

- ❍ About 1 minute longer
- ❍ About 2 minutes longer
- ❍ About 5 minutes longer, or more

OR

Automatically directed to Q37 if answer to statement in Q34 was ‘The length of the visit would remain the same.’

Q37 How do you think healthcare decisions should be made?

- ❍ The patient should make the final decision about which treatment she would receive.
- ❍ The patient should make the final decision about which treatment she would receive after seriously considering my opinion.
- ❍ As the physician, I should share responsibility with the patient for making the final decision about the treatment she should receive.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive after seriously considering the patient’s opinion.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive.

Q38* Please indicate your interest in the following (select ALL that apply):

- ❑ YES, I am interested in taking part in a 10-minute telephone interview on shared decision making.
- ❑ YES, I would like to be entered into the prize drawing for a gift card where 1 in 50 respondents will receive a $20 USD Amazon gift card.

Q39 You indicated interest in either the prize drawing or the telephone interview. Please enter a valid email address below to be eligible:

Fill in the blank.

Medical School Student Survey on Shared-Decision Making [French]

NOTES:

- An * indicates skip logic, which will cause some participants to see a different version of the question for country-based clarification.
- Page break in document does not equate to page break in online survey.

(Q1 Language Selection – English or French)

Q2 Comment pensez-vous que les décisions de santé devraient être prises ?

- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit après avoir considéré mon opinion.
- ❍ En tant que médecin, je dois partager les responsabilités avec le ou la patient(e) pour prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement après avoir considéré l'opinion du patient.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement pour le patient.

Q3 Veuillez s'il vous plait indiquer votre âge en utilisant le menu déroulant.

- ❍ 18 ans
- ❍ Plus de 65 ans

Response choices in drop-down range from '18 ans' to over 'Plus de 65 ans'.

Q4 Comment souhaitez-vous être identifié ? Merci de choisir parmi les options ci-dessous.

- ❍ Femme
- ❍ Homme
- ❍ Transgenre
- ❍ Autre identité, veuillez préciser : _____
- ❍ Je préfère ne pas répondre

Q5 Veuillez s'il vous plait indiquer quelle année vous êtes en train de compléter dans votre éducation médicale en utilisant le menu déroulant ci-dessous.

- ❍ Année 1
- ❍ Année 2
- ❍ Année 3
- ❍ Année 4
- ❍ Année 5
- ❍ Année 6

Q6 Dans quel pays étudiez-vous la médecine ?
- ❍ États-Unis
- ❍ Royaume-Uni
- ❍ Canada
- ❍ Pays-Bas
- ❍ Autre, veuillez préciser : _____

Q7* Veuillez s'il vous plait indiquer à quel groupe vous appartenez (choisissez s'il vous plait tout ce qui est applicable) :
- ❑ Amérindien ou autochtone de l'Alaska
- ❑ Asiatique
- ❑ Noir ou afro-américain
- ❑ Originaire d'Hawaï ou d'autres iles du Pacifique
- ❑ Blanc ou caucasien
- ❑ Autre, veuillez préciser : _____
- ❑ Je préfère ne pas répondre

Q8* Êtes-vous espagnol, hispanique ou latino ?
- ❍ Oui
- ❍ Non
- ❍ Je préfère ne pas répondre

Q12 Dans quelle école de médecine étudiez-vous ? S'il vous plait indiquer le nom complet de l'institution, sans abréviation.

Fill in the blank.

Q12 Veuillez s'il vous plait indiquer à quel point vous êtes en accord ou en désaccord avec les énoncés suivants.

	Tout à fait d'accord	D'accord	Désaccord	Fortement en désaccord
La prise de décision partagée est possible seulement quand les patients sont bien informés et confiants pour discuter le traitement ou les options de dépistage avec leur médecin.	❍	❍	❍	❍
La prise de décision partagée est irréaliste, car cela prend trop de temps.	❍	❍	❍	❍
La prise de décision partagée est au bas de ma liste de priorités.	❍	❍	❍	❍
La rémunération des médecins devrait être basée sur la façon dont ils font la prise de décision partagée.	❍	❍	❍	❍
Avoir des ressources qui résument les risques et les avantages des décisions cliniques serait utile (p. ex. outil d'aide à la décision).	❍	❍	❍	❍
Les patients doivent avoir confiance en leur cliniciens afin qu'ils prennent toutes les décisions pour leurs patients.	❍	❍	❍	❍

Q13 Veuillez s'il vous plait lire le scénario suivant. Merci d'indiquer : (A) ce que vous remarquez en observant les cliniciens qui vous encadrent et vous enseignent la médecine, et (B) quel style de décision adopteriez-vous si vous étiez dans cette situation. Il n'y a pas de bonnes ou mauvaises réponses. Supposons que le consentement est obtenu au préalable pour chaque patient.

Q14 Une femme de 45 ans se présente au service des urgences. Elle a besoin d'une intervention chirurgicale urgente. Elle est capable de donner son consentement.

Q15 A. Selon-vous, que font les cliniciens expérimentés ?

- Les cliniciens utilisent des informations fondées sur des données probantes) afin de choisir la meilleure option pour le patient et l'informer de leur décision.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient afin de connaitre les préférences du patient et de prendre une décision éclairée ensemble.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient et permettent au patient de prendre sa propre décision.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient et choisissent la meilleure option pour le patient.

Q16 B. Imaginez que vous êtes le clinicien dans cette situation, comment réagiriez-vous ?

- J'utiliserais l'information fondée sur des données probantes afin de choisir la meilleure option pour le patient et de l'informer de ma décision.
- Je partagerais des informations fondées sur des données probantes avec le patient afin de connaître les préférences du patient et de prendre une décision éclairée ensemble.
- Je partagerais des informations fondées sur des données probantes avec le patient afin de lui permettre de prendre sa propre décision.
- Je partagerais des informations fondées sur des données probantes avec le patient et choisirais la meilleure option pour le patient.

Q17 Veuillez s'il vous plait lire le scénario suivant. Merci d'indiquer : (A) ce que vous remarquez en observant les cliniciens qui vous encadrent et vous enseignent la médecine, et (B) quel style de décision adopteriez-vous si vous étiez dans cette situation. Il n'y a pas de bonnes ou mauvaises réponses. Supposons que le consentement est obtenu au préalable pour chaque patient.

Q18 Un homme de 53 ans se présente à son médecin de famille pour un examen physique annuel.

Q19 A. Selon-vous, que font les cliniciens expérimentés ?

- Les cliniciens utilisent des informations fondées sur des données scientifiques ('evidence-based medicine') afin de choisir la meilleure option pour les patient et de les informer de leur décision.
- Les cliniciens partagent des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin d'obtenir les préférences du patient et prendre une décision ensemble.
- Les cliniciens partagent des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient et permettent au patient de prendre leur propre décision.
- Les cliniciens partagent des informations fondées fondées sur des données scientifiques ('evidence-based medicine') avec le patient et choisissent la meilleure option pour le patient.

Q20 B. Imaginez que vous êtes le clinicien dans cette situation, comment réagiriez-vous ?

- J'utiliserai l'information fondée sur des données scientifiques ('evidence-based medicine') afin de choisir la meilleure option pour le patient et de l'informer de ma décision.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin d'obtenir les préférences du patient et prendre une décision ensemble.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin de permettre au patient de prendre sa propre décision.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient et choisirai la meilleure option pour le patient.

Q21 Un homme de 40 ans avec une histoire familiale de cancer A visite son clinicien pour discuter de la possibilité d'un test de dépistage du cancer A. Veuillez s'il vous plait indiquer ce qui est considéré comme le moyen le plus efficace de communiquer la façon dont le dépistage change le risque de mortalité lié au cancer A ?

- ❍ Le dépistage résulte en une réduction de 50% de la mortalité.
- ❍ Le dépistage réduit la mortalité de 6 sur 10 000 à 3 sur 10 000 personnes.
- ❍ Le dépistage réduit la mortalité de 0,02%.
- ❍ Le dépistage diminue considérablement la mortalité liée au cancer A.

Q22 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
La prise de décision partagée est un processus dans lequel les cliniciens et les patients travaillent ensemble, partagent les informations sur les options et leurs conséquences, afin de parvenir à un accord mutuel sur le meilleur plan d'action.	❍	❍
La prise de décision partagée provoque de l'indécision chez les patients.	❍	❍
La prise de décision partagée augmente les sentiments de regret en ce qui concerne la décision.	❍	❍
La prise de décision partagée diminue le nombre de patient qui décident d'avoir une intervention chirurgicale majeure.	❍	❍

Q23 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Lors de la communication d'information sur les risques, il est préférable d'utiliser le risque relatif (par exemple, le risque de développer une thrombose lors de l'utilisation des contraceptifs oraux est doublé).	❍	❍
Les études montrent que quand les patients participent aux décisions importantes de santé, leur niveau de connaissance augmente.	❍	❍
Afin de promouvoir la prise de décision partagée, le clinicien indiquera que des traitements alternatifs existent.	❍	❍

Q24 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Afin de promouvoir la prise de décision partagée, le clinicien donnera des informations sur les avantages et les désavantages des options possibles (cela inclut l'option de 'ne rien faire').	❍	❍
Afin de promouvoir la prise de décision partagée, le clinicien va soutenir le patient pour l'aider à obtenir l'information et comparer les options.	❍	❍
Le clinicien n'a pas besoin de vérifier si le patient comprend les options disponibles.	❍	❍
Dans le processus de prise de décision partagée, il est nécessaire de connaitre les préférences du patient.	❍	❍

Q25 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Si possible, le clinicien doit intégrer les préférences du patient pour décider de la suite des choses.	❍	❍
La plupart des gens comprendront la fréquence naturelle (par exemple, 1 personne sur 100) mieux qu'un pourcentage.	❍	❍
La majorité des patients ne veulent pas participer à la prise de décision partagée avec leur médecin.	❍	❍
Même si le patient ne souhaite pas être impliqué dans le processus de prise de décision, c'est le rôle du clinicien d'encourager le patient à prendre une décision.	❍	❍

Q26 Avez-vous entendu parler de la prise de décision partagée avant ce sondage ?

❍ Oui
❍ Non

Q27 Avez-vous suivi des cours sur la prise de décision partagée ?

	Oui	Non
J'ai suivi des cours théoriques sur la prise de décision partagée.	❍	❍
J'ai reçu une formation pratique sur la prise de décision partagée (par exemple, en utilisant des jeux de rôle et des patients comédiens).	❍	❍

Q28 Combien d'heures de formation avez-vous reçues (approximativement) sur la prise de décision partagée ?

❍ 0 à 1 heure
❍ Entre 1 et 2 heures
❍ Entre 2 et 5 heures
❍ Plus de 5 heures

OR

Automatically directed to Q29 if the answer to both statements in Q27 was 'Non'.

OR

Automatically directed to Q29 if answer to statement in Q26 was 'No'.

Q29 Veuillez s'il vous plait indiquer si vous êtes en accord ou en désaccord avec la déclaration suivante.

	Tout à fait d'accord	D'accord	Désaccord	Fortement en désaccord
Je voudrais en savoir plus sur la pratique de la décision partagée avec mes patients.	❍	❍	❍	❍

Q30 Dans le cadre d'une consultation, comment pensez-vous que la prise de décision partagée affecte la durée de la visite ?

- ❍ Diminue la durée totale de la visite.
- ❍ La durée de la visite demeure la même.
- ❍ Augmente la durée totale de la visite.

Q31 Vous avez choisi « Diminue la durée totale de la visite. » De combien de temps la visite serait-elle diminuée en s'engageant dans la prise de décision partagée ?

- ❍ 5 minutes ou moins
- ❍ À peu près 2 minutes
- ❍ À peu près 1 minute

OR

Q32 Vous avez choisi « Augmente la durée totale de la visite. » De combien de temps la visite serait-elle augmentée en s'engageant dans la prise de décision partagée ?

- ❍ 5 minutes ou plus
- ❍ À peu près 2 minutes
- ❍ À peu près 1 minute

OR

Automatically directed to Q333 if answer to statement in Q34 was 'La durée de la visite demeure la même.'

Q33 Comment pensez-vous que les décisions de santé devraient être prises ?

- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit après avoir considéré mon opinion.
- ❍ En tant que médecin, je dois partager les responsabilités avec le ou la patient(e) pour prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement après avoir considéré l'opinion du patient.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement pour le patient.

Q34 Veuillez s'il vous plait indiquer votre intérêt dans ce qui suit (cochez TOUT ce qui est applicable) :

- ❑ OUI, je souhaiterais participer à un entretien téléphonique de 10 minutes sur la prise de décision partagée.
- ❑ OUI, je souhaiterais participer au tirage pour une carte-cadeau Amazon où 1 participant sur 50 recevra 20$USD.

Q35 Vous avez indiqué votre intérêt à participer à un entretien téléphonique ou au tirage. S'il vous plait entrez une adresse courriel valide ci-dessous pour être éligible :

Fill in the blank.

Phase 2 semi-structured interview guide

SDM in Medical School Education
Phase 2: Semi-Structured Interview Guide

Questions for Students

1. Could you please define SDM?
2. Tell me about any shared decision making training you have received thus far.
    a. If they HAVE received training:
        i. What did you think of it?
        ii. If not mentioned: where (i.e., class vs. special session vs. other) did you learn about shared decision making?
        iii. If not mentioned: how many hours? Integrated in other modules (e.g., communication skills, breaking bad news) or a standalone shared decision making module?
        iv. If not mentioned: when (i.e., what year) did you learn this skill?
        v. Has it been beneficial/unhelpful? Why?
        vi. Would you have liked to have learned this skill at a different time during your medical school education? If yes, why?
    b. If they HAVE NOT received training:
        i. Do you know whether you will receive such training in the remaining year(s) or months of your undergraduate medical education?
        i. If NO, would you have liked to receive such training? Why? When (e.g., what year) in the curriculum do you think it would be most beneficial to have SDM training in medical schools? why?
3. Should SDM training be completed through specific SDM classes/training or ; incorporated into all appropriate classes or other?
4. What do you think would be the barriers to having SDM training during medical school?
5. What would make SDM training successful in medical schools?
6. Who would you like to learn SDM training from?
    a. Probe: fellow students, residents, attending physicians, regular professors, etc.?
7. What would an ideal SDM training session look like?
    a. Probe: lecture based, interactive, etc.?
8. What excites you about SDM?

Questions for Curriculum Specialists

1. Have you heard of SDM before?
    a. Depending on response: Where have you heard of it?
    b. Could you please define SDM?

c. How important do you think it is for a physician to know how to promote SDM and engage their patients in medical decision making?

2. Tell me about the efforts the administration is making at _____ medical school to promote training in SDM?
    3. If answer is essentially 'no efforts':
        a. Have you considered integrating SDM training in the curriculum?
        b. Are there any other modules that you currently offer that teach similar skills?
4. When (e.g., what year) in the curriculum do you think it would be most beneficial to have SDM training in medical school?
    a. Probe: specific SDM classes/training; incorporated into all appropriate classes?
5. Where (e.g., which classes) in the curriculum do you think it would be most beneficial to have SDM training in medical school?
6. What do you think would be the barriers to having SDM training at _____ medical school?
7. What are the factors that would make SDM training successful?
8. What resources would _____ need to incorporate SDM training into the curriculum?
9. What would an ideal SDM training look like?
    a. Probe: lecture based, interactive, etc.?

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Item Category	Checklist Item	Described on page #*
Design	Describe study design	4
IRB approval and informed consent process	IRB approval	10
	Informed consent	1, 10
	Data protection	8
Development and pre-testing	Development and testing	7
Recruitment process and description of the sample having access to the questionnaire	Open survey versus closed survey	4
	Contact mode	5,6
	Advertising the survey	5,6
Survey administration	Web/E-mail	4
	Context	10
	Mandatory/voluntary	2
	Incentives	5
	Time/Date	8,9
	Randomization of items or questionnaires	7,8
	Adaptive questioning	7
	Number of items	7
	Number of screens (pages)	7
	Completeness check	N/A
	Review step	N/A
Response rates	Unique site visitor	N/A
	View rate (Ratio unique site visitors/unique survey visitors)	N/A
	Participation rate (Ratio Unique survey page visitors/agreed to participate)	N/A
	Completion rate (ratio agreed to participate/finished survey)	N/A
	Cookies used	N/A
	IP check	N/A
	Log file analysis	N/A
Analysis	Handling of incomplete questionnaires	N/A
	Questionnaires submitted with an atypical timestamp	N/A
	Statistical correction	N/A

*We are not reporting data in this manuscript as this is a protocol.

BMJ Open

Assessing medical student knowledge and attitudes about shared decision making across the curriculum: Protocol for an international online survey and stakeholder analysis

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-015945.R2
Article Type:	Protocol
Date Submitted by the Author:	09-May-2017
Complete List of Authors:	Durand, Marie-Anne; The Dartmouth Institute for Health Policy & Clinical Practice, Yen, Renata; Dartmouth College, The Dartmouth Institute for Health Policy and Clinical Practice Barr, Paul; Dartmouth College, The Dartmouth Center for Health Care Delivery Science Cochran, Nan; Dartmouth College, The Dartmouth Institute for Health Policy & Clinical Practice Aarts, Johanna; Radboudumc, Department of Obstetrics & Gynecology Legare, France; CHU de Quebec and Universite Laval, Reed, Malcolm; Brighton and Sussex Medical School, O'Malley, A. James ; Geisel School of Medicine at Dartmouth , Scalia, Peter; Dartmouth College, The Dartmouth Institute for Health Policy and Clinical Practice Painchaud Guérard, Geneviève; CHU de Quebec Research Center Elwyn, Glyn; Dartmouth College,
Primary Subject Heading:	Patient-centred medicine
Secondary Subject Heading:	Communication
Keywords:	Shared Decision Making, MEDICAL EDUCATION & TRAINING, Patient-Centered Care

Title: Assessing medical student knowledge and attitudes about shared decision making across the curriculum: Protocol for an international online survey and stakeholder analysis

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Word count: 4,074

Abstract

Introduction: Shared decision-making (SDM) is a goal of modern medicine, however, it is not currently embedded in routine care. Barriers include clinicians' attitudes, lack of knowledge and training, and time constraints. Our goal is to support the development and delivery of a robust SDM curriculum in medical education. Our objective is to assess undergraduate medical students' knowledge of and attitudes towards SDM in four countries.

Methods and analysis: The first phase of the study involves a web-based cross-sectional survey of undergraduate medical students from all years in selected schools across the United States (US), Canada, and undergraduate and graduate students in the Netherlands. In the United Kingdom (UK), the survey will be circulated to all medical schools through the UK Medical School Council. We will sample students equally in all years of training and assess attitudes towards SDM, knowledge of SDM, and participation in related training. Medical students of ages 18 and older in the four countries will be eligible. The second phase of the study will involve semi-structured interviews with a subset of students from phase 1 and a convenience sample of medical school curriculum experts or stakeholders. Data will be analyzed using multivariable analysis in phase 1 and thematic content analysis in phase 2. Method, data source, and investigator triangulation will be performed. Online survey data will be reported according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES). We will use the COnsolidated criteria for REporting Qualitative research (COREQ) for all qualitative data.

Ethics and dissemination: The study has been approved for dissemination in the US, the Netherlands, Canada, and the UK. The study is voluntary with an informed consent process. The results will be published in a peer-reviewed journal and will help inform the inclusion of SDM-specific curriculum in medical education worldwide.

Strengths and Limitations of the Study

- We will conduct an international web-based, cross-sectional survey of undergraduate medical students following CHERRIES and COREQ guidelines.
- We followed a comprehensive, iterative survey development process that included several pilot phases.
- In order to determine when and how to deliver SDM training to medical students, this study will also include a stakeholder analysis of medical students and curriculum experts.
- Using convenience samples of medical schools in the US, Canada, and the Netherlands may introduce selection biases.
- Completion of the survey in English by Dutch undergraduate medical students may introduce biases and affect our ability to compare those data across participating countries.

Introduction

Involving patients in medical decision-making is considered an ethical imperative and a goal of modern medicine.[1,2] Over the past decade, shared decision making (SDM) has demonstrated effectiveness in controlled contexts and garnered policy support worldwide.[3] In the United States, the Patient Protection and Affordable Care Act encourages health organizations and healthcare professionals to promote patient engagement in health care and provide accessible, evidence-based information about the options' harms, benefits, and outcome probabilities.[4,5] According to the Institute of Medicine, patient participation in decision making should be promoted to improve the quality of health care.[6] Since 2010, shared decision making has been featured prominently on the United Kingdom's policy agenda and actively promoted by the National Institute for Health and Care Excellence (NICE).[7,8] In Canada, SDM initiatives are taking place in several provinces with health research funding available to support SDM research.[3,9] In the Netherlands, the healthcare system has been reformed to promote patient-centered care, and various SDM research projects are underway.[10]

Despite proven benefits in controlled contexts, widespread adoption of SDM and related interventions is rare in routine clinical practice.[3,11] Various barriers to the implementation of SDM have been identified.[12–14] Time constraints, doctors' attitudes, and lack of understanding about the relevance and applicability of SDM are major obstacles to widespread adoption. Time constraint was the most commonly reported concern preventing health professionals from practicing SDM.[12] Eliciting patients' preferences and sharing decisions are often perceived to be more complex and time consuming than making a single treatment or screening recommendation.[15,16] here is no evidence, however, that shared decision making systematically increases consultation length.[17,18] Elwyn et al. also described health professionals' indifference to decision support interventions and associated organizational inertia.[16]

In brief, SDM cannot become widespread unless clinicians fully understand the principles and benefits of SDM, are trained in communicating risks, and engaging patients and significant others (caregivers, family) in deciding about their care. Research suggests that implementing SDM successfully in clinical practice will require interventions targeting the clinicians, the patients, and in the best of worlds, both. Effective interventions targeting clinicians include SDM training.[19] SDM training thus needs to be increasingly embedded in continuing medical education. However, there is little evidence as to which strategies are most effective.[20–22] Yet, continuing medical education is the tip of the iceberg. Training medical students in healthcare communication and SDM seems essential in facilitating routine adoption of SDM in the long term. However, to the best of our knowledge, there is no evidence that the principles of SDM are routinely taught in medical school curricula. Research into the knowledge and attitudes of medical students with regard to SDM is scarce. We have searched the literature, and evidence is also lacking as to when and how to teach SDM principles and skills in medical schools.

Studies of the attitudes of doctors' in training towards patient-centered care suggest that patient-

centeredness tends to decline with medical education. Those studies assessed patient-centered care but did not specifically examine shared decision making. Patient-centered care can be defined as 'the importance of better understanding the experience of illness and of addressing patients' needs'[23], and may or may not include SDM. SDM is: "The process by which the optimal decision may be reached for a patient at a fateful health crossroads […] and involves, at minimum, a clinician and the patient, although other members of the health care team or friends and family members may be invited to participate.[23]" Research focusing on patient-centered care suggests that the more experienced medical students become, the less patient-centered they are.[24–29] Although SDM is considered the pinnacle of patient-centered care,[30] it is unclear whether this apparent decline in patient-centeredness also applies to SDM. A recent study of senior medical students in Peru revealed that the majority of students assessed their current consultation approach as 'paternalistic' or 'clinician-as-perfect agent'.[31] Only 12% of the students reported adopting a SDM approach.[31] The study did not assess students' knowledge of SDM and whether knowledge and attitudes about SDM differed according to medical education level. As far as can be determined, this is the only published study of medical students' attitudes towards SDM.[31] Further, there are no studies that have assessed SDM among medical students in English-speaking countries, or in countries where SDM has been promoted at the policy level. Consequently, our objectives are to:

1) Investigate medical students' knowledge of and attitudes towards SDM across the medical curriculum in four countries, as well as their preferred consultation style (data primarily collected in phase 1);
2) Investigate the factors that may influence medical students' knowledge of and attitudes towards SDM (data collected in phases 1 and 2);
3) Determine when and how to best deliver SDM training to medical students (data primarily collected in phase 2).

Methods and Analysis

Design and setting

This is a multipronged study with two phases. Phase 1 will be a cross-sectional online survey of medical students across all years of medical education to determine their knowledge of and attitudes towards SDM conducted in the US, UK, Canada, and the Netherlands. We will report online survey data according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES).[32]

Phase 2 will consist of semi-structured telephone interviews with a purposive sample of medical students across the curriculum who have participated in phase 1 and with medical school curriculum experts or other relevant stakeholders (e.g., education leads) [33] to understand:

- Whether there are specific needs for SDM training;
- Perceived barriers and facilitators to teaching SDM in the medical curriculum;
- Optimal format and timing of such training; and
- Curriculum experts' knowledge of SDM.

We will report all qualitative data collected in phase 2 using the COnsolidated criteria for REporting Qualitative research (COREQ).[34]

Participants

Students

All undergraduate medical students registered at participating medical schools in the US, UK, Canada, and the Netherlands will be eligible for participation in phase 1 of this study. In Canada, we will include both French-speaking and English-speaking medical students. In the Netherlands, we will also include graduate medical students within the first six years of medical training. Students will be excluded if they are under the age of 18. We will also exclude residency programs and foundation training in the UK. Including residents in this study would require a different recruitment strategy and additional time and resources. It is beyond the scope of the present study.

Curriculum Experts

Curriculum experts or education leads are typically responsible for designing training programs, developing and updating course content as well as coordinating learning curricula. Curriculum experts, education leads or other relevant stakeholders will be eligible for inclusion if they function in this role at one of the participating medical schools. In Canada, we will include French-speaking and English-speaking curriculum experts and will conduct the interviews in French or in English, according to each participant's preferred language.

Recruitment

For phase 1, all participants will be recruited via their medical school (e.g., listservs, newsletters) or online advertisements (e.g., student forums, Twitter, Facebook, or student social media networks). Recruitment started in September 2016 and will end in May 2017. At some schools in Canada, the recruitment messages and survey will be available in French and in English. Participants will have the opportunity to take the survey in French or in English.

We will aim to recruit a minimum of 50 medical students per year of medical training, across all years of undergraduate medical education, per country. Given that the proposed survey is innovative, with no prior studies in a similar population using the same questionnaire and no prior validation, there is no known effect size on which to base the sample size calculation. We have therefore used rules of thumbs and existing literature indicating that 50 students per year of medical education is a reasonable and pragmatic sample size.[35] This corresponds to 200 medical students recruited in the US (i.e., four years of undergraduate medical education), 250 recruited in the UK (i.e., five years of undergraduate medical education), up to 250 in Canada (i.e., up to five years of undergraduate medical education), and 300 recruited in the Netherlands (i.e., six years of undergraduate medical education). In total, we aim to collect 1,000 completed surveys. In order to facilitate recruitment, respondents will have the opportunity, at

the end of the survey, to enter a prize drawing for a $20 gift card (1 in 50 students entered into the prize draw will receive a gift card).

For phase 2, we aim to recruit both students and curriculum experts. Student participants will be a purposive sample from the phase 1 survey respondents who have indicated their willingness to take part in telephone semi-structured interviews by providing their email addresses. Interviews are being conducted between March and June 2017. We will aim to interview students of different gender and ages from each participating country, in all years of medical education, with varying knowledge and attitudes of SDM, and with or without prior SDM training. Telephone interviews will be conducted in English or French, according to the participant's preference. We will aim to recruit a representative sample of up to 12 students per country (up to 48 in total), or until data saturation is reached.[33] The following stopping rule will used: if no new information emerges after three consecutive interviews, no further interviews will be conducted. Students will be offered a $10 gift card for their participation in these interviews. We will also contact a convenience sample of curriculum experts in each country and ask them to take part in a telephone semi-structured interview. We will aim to recruit a sample of up to 12 curriculum experts per country (up to 48 in total). The same stopping rule, as mentioned above, will be applied for these interviews. The interview guides have already been drafted but will be revised and finalized building on the answers collected in phase 1 (see draft interview guide in supplementary file).

Data collection

The following research questions will guide the data collected in phases 1 and 2 of the study:

1) What are medical students' knowledge of and attitudes towards SDM across the medical curriculum? (data primarily collected in phase 1)

2) Do knowledge of and attitudes towards SDM change with medical education? (data primarily collected in phase 1)

3) What are the potential factors that influence SDM during medical education? (data collected in phases 1 and 2)

4) How and when should SDM training be delivered during medical education? (data primarily collected in phase 2)

Survey development

The student survey (see supplementary file for English and French versions) comprises five sections:

1) Demographics;

2) Attitudes towards SDM derived from existing literature and the OPTION instrument;[36]

3) Clinical scenarios where each participant has to indicate: a) how they see other clinicians (e.g., attending physicians, residents, interns) make healthcare decisions and b) how the student would react should they face this situation tomorrow (see Table 1). The clinical scenarios were initially drafted by a Dartmouth fourth year medical student (MW). The first iteration was then revised and reworded by five of the authors, all experts in shared decision making, including two clinicians. The clinical scenarios section also includes one question on risk communication.

4) Knowledge of SDM derived from existing literature;

5) Previous SDM training.

As far as could be determined from our review of the literature, there are no existing validated scales of students' attitudes towards and knowledge of shared decision making available in English. We therefore developed the items presented in the survey (see supplementary file) using published literature, and discussion and consensus between study authors. The validated OPTION instrument was initially designed to assess the extent to which practitioners involve patients in decision making processes. We used some of the OPTION items to assess students' attitudes to SDM as well as published studies about clinicians' attitudes to SDM.

Table 1. Clinical scenarios embedded in the survey

Clinical Scenarios
A. A 45-year-old female presents to the Emergency Department. She requires an urgent emergency surgical intervention but is capable of giving consent.
B. A 53-year-old male presents to his primary care physician for an annual physical exam. The patient asks his provider about the need to screen for colorectal cancer.
C. A 40-year-old male with a family history of Cancer A visits his physician to discuss undergoing a scheduled screening for Cancer A. What is considered the most effective way of communicating how screening changes his risk of mortality from Cancer A?

The first iteration of the online survey was initially developed in 2013 and piloted in a small-scale online study conducted in the UK, recruiting medical students through online forums (n=40). It was subsequently refined and reworded.

The second iteration of the survey was designed using Qualtrics software (Copyright © 2016 Qualtrics, LLC). Qualtrics is an online survey platform that facilitates the creation and distribution of web-based surveys. Qualtrics maintains a high level of data security by using Transport Layer Security (TLS) encryption for all transmitted data and servers protected with high-end firewall systems.[37] We have set up a forced response for most questions in the survey, requiring that participants answer every content-based question with the option of "I prefer not to say" for sensitive demographics questions. We have purposefully randomized the order of presentation of two sections of the survey, as highlighted in Table 2. The clinical scenario questions were randomized with the attitude questions to test if students' responses would change if they saw attitude questions before being presented with clinical-based questions. The survey uses skip logic (also known as adaptive questioning) to present information relevant

to each country (e.g., ethnicity categories, glossary of terms for non-native English speakers) according to the country selected by the participant in the demographics section. The number of questions per page varies from one to four. Table 2 provides additional detail on the survey outline. Each student completing the survey will see 19 to 23 questions. The approximate completion time is 10 minutes.

Table 2. Outline of survey questions per webpage

Page 1	Language Selection	1 question
Page 2	Information Sheet	No questions
Page 3	"How do you think healthcare decisions should be made?"	1 question
Page 4-5	Demographics	2-4 questions
Page 6	Glossary of Terms for Netherlands-based students	No questions
Page 7-10	Clinical Scenarios, Attitudes towards SDM (*randomization*)	1-2 questions per page, 1 page of 6 statements with Likert-style response options
Page 11-14	Knowledge of SDM (*randomization*)	4 True/False statements per page
Page 15-17	Awareness of SDM	0-2 questions per page*
Page 18-19	Time Needed for SDM	0-1 question per page*
Page 20	"How do you think healthcare decisions should be made?"	1 question
Page 21-22	Email Address / Interview Request	0-1 question per page*

*0 questions indicates that a page would be skipped as a result of the respondents selection to previous questions.

The survey was piloted with a small convenience sample (n=20) of medical students in years one to four, recruited at Geisel School of Medicine, Dartmouth College, in the spring of 2016. We used focus groups, brief interviews, and online surveys to collect feedback about the usability and acceptability of the online survey, as well as the completion time. In accordance with CHERRIES, both the usability and technical functionality of the online survey were assessed. Changes made in this pilot phase included decreasing the number of clinical scenarios from five to three, changing the phrasing of some clinical scenario questions, adding additional questions regarding the length required to employ SDM, shortening and standardizing the length of each answer choice for certain questions, adding the progress bar, and adding the lottery-based monetary incentive for participation. In the Netherlands, the English survey was pilot-tested by a group of ten Dutch medical students (from years three to six) for usability and applicability. The only major change arising from the pilot data collected in the Netherlands was the addition of a glossary defining potentially complex terms.

The first page of the survey asks the respondent to indicate their language of choice to complete the survey (English or French). The second page consists of a brief information sheet describing the study, its purpose, and data protection policy. The information sheet intentionally does not mention SDM, but uses the term "health communication" to reduce potential respondent and desirability biases on the first question about healthcare decision making and scenarios. For questions assessing knowledge and attitudes towards SDM, we were forced to use the term

SDM. The survey was translated from English to French by PS and reviewed by two authors (M-A D and GPG), who are both bilingual French/English speakers.

Survey dissemination

The survey is open but exclusively distributed to our target audience. No password-protection is necessary to access the content. The initial contact with survey respondents is typically made on the Internet (i.e., using individual emails, a listserv, or a webpage).

In the UK, dissemination of the survey was initiated on 1 September 2016 to all 32 undergraduate medical schools through the UK Medical Schools Council. We will also advertise the survey on online forums and Facebook pages that are popular with medical students (e.g., The Student Room, Student Doctor Network (UK & Ireland), medstudent.org).

In the US and Canada, we have made direct contact with a convenience sample of four medical schools in each country. We were unable to distribute the survey to all US and Canadian medical schools using the Association of American Medical Colleges. Given our sample size requirements and the need to obtain ethical approval at school level in Canadian medical schools and in many American medical schools, we limited our sample to four schools in each country. Those medical schools were selected on the basis of existing contacts and school sizes. We will also advertise the web-based survey on online forums and social media pages that are popular with medical students (e.g., Student Doctor Network, Student Doc Forum, doctorhangout.com, Canadian Federation of Medical Students and relevant Facebook groups). Data collection in those countries was initiated on 11 October 2016. One medical school in the US and three schools in Canada started data collection between January and March 2017.

In the Netherlands, we followed the approach outlined for North America. Recruitment is occurring at four Dutch medical schools conveniently selected on the basis of existing contacts and geographical distribution. In addition, we will circulate the survey link to a national medical student association ('de Geneeskundestudent'). We will also advertise the online survey on popular student forums, relevant Facebook groups, Twitter, and student networks. In the Netherlands, data collection was initiated on 1 October 2016.

We anticipate that data will be collected for six months in each country.

Analysis

We will include unique respondents only and will screen for the same respondent completing the survey multiple times using IP addresses.

For phase 1, we will use multivariable analysis to assess differences in knowledge and attitudes about SDM across the curriculum, within each country and between countries. Depending on the total number of completed surveys at each institution within each country, we will also attempt to assess differences in knowledge and attitudes about SDM between institutions. This might be possible in the US, Canada, and the Netherlands as four large medical schools have been

approached but is unlikely to be achieved in the UK given all medical schools in the country have been approached.

In order to make the cross-country comparison equitable and meaningful, and given that undergraduate medical education ranges from four to six years in the included countries, with variants regarding when the same content is taught or learned, we will use the first year and the last year of medical education only. However, the within country analysis will enable us to compare differences across all years of undergraduate medical education (up to six years), for each participating country. Depending on the total number of completed surveys at each institution within each country, we will also attempt to assess differences in knowledge and attitudes about SDM between institutions. This might be possible in the US, Canada and the Netherlands as four large medical schools have been approached but is unlikely to be achieved in the UK given all medical schools in the country have been approached. For Canada, data collected in French will be analyzed and reported separately.

We will also use an analysis of covariance (ANCOVA) to evaluate the influence of specific factors such as country, demographics, education level, and previous training on knowledge and attitudes about SDM. To account for any changes in course contents over time we will also include survey month as a control covariate in this analysis.

We plan to perform an analysis of the data after six months of online recruitment in each participating country. We hope that the primary findings will be based on this analysis. However, for practical reasons, should recruitment be slower than expected, we will continue data collection to obtain additional observations in which to test the validity of modeling assumptions and possibly obtain more precise inferences.

For phase 2, we will use a thematic analysis derived from descriptive phenomenology,[38–40] assisted by the computer software, ATLAS-ti (ATLAS-ti 5.2). The transcripts will be coded according to all the themes discussed in the interviews, including spontaneously emerging themes. Similar codes will be merged and subsequently grouped into families of codes and networks. A proportion of transcripts chosen for being representative of the overall sample will be coded by two independent raters (M-A D and RY) in order to ensure reliability of coding and to obtain consensus on the themes and family of codes for all remaining interview transcripts. Discrepancies among raters will be discussed until consensus is reached. Method, data source and investigator triangulation will be used.[41] Method triangulation involves the use of multiple methods of data collection. In the context of the proposed study, we are collecting data using an online survey and semi-structured interviews. Investigator triangulation consists of involving two or more researchers in the analysis of study data, thus bringing different perspectives to limit potential observers' bias and add breadth to the study findings.[42] At least three researchers (M-A D, RY and AJO) will be involved in data analysis. Finally, data source triangulation involves collecting data from different types of people: medical students across different levels of medical education and curriculum experts.

Ethics and dissemination

Ethics

This study is considered of minimal risk. The survey will be completed anonymously, and disclosure of sensitive personal information is not required of participants. The data obtained from the survey and interview will focus on participants' knowledge and opinions regarding SDM. We will ensure that all participants understand that the data we collect will remain anonymous and that their responses will be summarized without any identifying information.

In the US, the study has been approved by Dartmouth College Committee for the Protection of Human Subjects (CPHS) for recruitment in all four countries (STUDY00029369). In the Netherlands, the Dartmouth CPHS approval was considered sufficient, given the minimal risk nature of the study and no other ethics application process was required. In the UK, the study has been approved by the Brighton and Sussex Medical School Research Governance and Ethics Committee. In Canada, the study has been reviewed and approved by the ethics committee of the Université Laval, University of Ottawa, and McGill University. Université Laval was the multi-centric evaluation committee, but ethics approval still needed to be sought from each participating medical school. In the US, University of California, San Francisco (UCSF) requested that the study be reviewed and approved by their ethics board. University of Toronto, Washington University in St. Louis, and Yale University accepted the Dartmouth CPHS approval as sufficient.

Dissemination

Results of the survey and semi-structured interviews will be reported in a peer-reviewed journal. The research will also be presented at conferences and disseminated via social media. We also intend to share results with the AAMC and UK Medical School Council in order to influence the development of SDM curricula in medical education in those countries.

This study is the first to measure medical students' knowledge and attitudes about SDM in English-speaking countries, where SDM has been actively promoted but where clinician resistance and lack of understanding of SDM tenets and benefits have significantly limited its widespread adoption.

Understanding the factors that may influence knowledge and attitudes towards SDM to make SDM training particularly beneficial in the undergraduate medical curriculum will be invaluable. Understanding the perspective of the individuals who manage and coordinate medical education will contribute to determining how to increase the usability, acceptability and effectiveness of future SDM training.

Acknowledgements

We would like to thank Matthew Wesley for his contribution to the development of the clinical scenarios and support in recruiting medical students for the pilot study. We would also like to thank Tim Lahey, Brendin R. Beaulieu-Jones, and the Geisel School of Medicine students who took part in the pilot study. We would also like to thank Drs. Politi and Bussières for circulating

the survey to medical students in their medical schools, and Drs. Mills and Fortin for their help with ethics approval at University of California, San Francisco and Yale University. Finally, we would like to thank Julia Song for her help formatting and submitting the manuscript.

Authors' Contributions

M-A D planned the study and designed the initial iteration of the survey. RY and M-A D developed the second iteration of the survey, in collaboration with PB, NC, and GE. RY obtained ethical approval in the USA and piloted the survey. JA facilitated the recruitment of Medical Schools in the Netherlands. MR obtained ethical approval in the UK and facilitated the recruitment of medical schools in partnership with the UK Medical School Council. FL and GPG facilitated the recruitment of medical schools in Canada and related ethical approval process, and translated materials into French. PS supported the ethical approval process in Canada and translation of materials into French. AJO provided guidance on the statistical analysis. M-A D and RY drafted the manuscript. All authors contributed to writing the manuscript and approved the final draft.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. France Légaré is Tier 1 Canada Research Chair in Shared Decision Making and Knowledge Translation.

Competing Interests

Financial

Marie-Anne Durand is a consultant to Access Community Health Network, Chicago and EBSCO Health.

Glyn Elwyn has been a consultant to: 1) Emmi Solutions LLC who develop patient knowledge tools; 2) National Quality Forum on certification of patient knowledge tools; 3) Washington State Health Department on certification of patient knowledge tools; 4) PatientWisdom LLC, 5) SciMentum, Amsterdam, and 5) Access Community Health Network, Chicago.

Glyn Elwyn has edited / published books that provide royalties on sales by the publishers: the books have been on *Shared Decision Making* (Oxford University Press) and *Groups* (Radcliffe Press).

Non-Financial

Many authors are authors of SDM and communication training programs in medical schools. However, they get no financial benefits from it.

Glyn Elwyn initiated and leads the Option Grid ™ patient decision aids Collaborative, which produces and publishes patient knowledge tools in the form of comparison tables (http://optiongrid.org/), and has part ownership of the registered trademark.

Glyn Elwyn owns copyright in CollaboRATE, IntegRATE, and Observer OPTION measures of shared decision making and care integration. These measures are freely available for use.

Paul J. Barr owns copyright in CollaboRATE.

Ethics Approval

Institutional Review Boards at Dartmouth College (US), University of California San Francisco (US), McGill University (Canada), Université Laval (Canada), and University of Ottawa (Canada)

Brighton and Sussex Medical School Research Governance and Ethics Committee (UK)

Data sharing statement
No additional data available

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Medical School Student Survey on Shared-Decision Making [English]

NOTES:

- An * indicates skip logic, which will cause some participants to see a different version of the question for country-based clarification.
- Page break in document does not equate to page break in online survey.

(Q1 Language Selection – English or French)

Q2 How do you think healthcare decisions should be made?

- ❍ The patient should make the final decision about which treatment she/he would receive.
- ❍ The patient should make the final decision about which treatment she/he would receive after seriously considering my opinion.
- ❍ As the physician, I should share responsibility with the patient for making the final decision about the treatment she should receive.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive after seriously considering the patient's opinion.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive.

Q3 Please indicate your age using the dropdown menu.

Response choices in drop-down range from 18 years to over 65 years.

Q4 How do you self-identify? Please choose from the options below.

- ❍ Female
- ❍ Male
- ❍ Transgender
- ❍ Other identity, please specify: _____
- ❍ I prefer not to say

Q5 Please indicate where you currently are in your medical education (medical school) using the dropdown menu below.

- ❍ Year 1
- ❍ Year 2
- ❍ Year 3
- ❍ Year 4
- ❍ Year 5
- ❍ Year 6

Q6 In what country are you currently receiving your medical school training?

- ❍ United States of America
- ❍ United Kingdom
- ❍ Canada
- ❍ The Netherlands
- ❍ Other, please specify: _____

Q7* Which group or groups do you most closely identify with? Please choose all that apply.

- ❑ American Indian or Alaska Native
- ❑ Asian
- ❑ Black or African American
- ❑ Native Hawaiian or Other Pacific Islander
- ❑ White or Caucasian
- ❑ Other: _____
- ❑ I prefer not to say

Q8* Are you Spanish, Hispanic, or Latino?

- ❍ Yes
- ❍ No
- ❍ I prefer not to say

Q11 What medical school do you attend? Please provide the full institution name, no abbreviations.

Fill in the blank.

Q12 Please indicate how much you agree or disagree with the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Shared decision making can only be done with patients who are sufficiently educated and confident to discuss treatment or screening options with their clinician.	❍	❍	❍	❍
Doing shared decision making is unrealistic because it takes too much time.	❍	❍	❍	❍
Doing shared decision making is low on my priority list.	❍	❍	❍	❍
Physician payment should be based on how well they do shared decision making.	❍	❍	❍	❍
Having resources which summarize the risks and benefits of clinical decisions would be helpful (e.g. patient decision aid).	❍	❍	❍	❍
Patients should trust clinicians to make all decisions on their behalf.	❍	❍	❍	❍

Q13 Read the following scenario. Please indicate: (A) what you notice experienced clinicians do (e.g., attending physicians, residents, interns), and (B) which decision style you would adopt if you were in this situation. There are no right or wrong answers. Assume consent is obtained for each patient.

Q14 A 45-year-old female presents to the Emergency Department. She requires an urgent emergency surgical intervention but is capable of giving consent.

Q15* A. What do you notice experienced clinicians do (e.g., attending physicians, residents, interns)?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q18 B. Imagine that you are the clinician in this situation, how would you react?

- I would use evidence-based information to decide on the best course of action for the patient and inform the patient of my decision.
- I would share evidence-based information with the patient, and elicit the patient's preferences, so the patient and I can make an informed decision together.
- I would share evidence-based information with the patient and allow the patient to make the decision on their own.
- I would share evidence-based information with the patient and choose the best course of action for the patient.

Q19 Read the following scenario. Please indicate: (A) what you notice experienced clinicians do (e.g., attending physicians, residents, interns), and (B) which decision style you would adopt if you were in this situation. There are no right or wrong answers. Assume consent is obtained for each patient.

Q20 A 53-year-old male presents to his primary care physician for an annual physical exam. The patient asks his provider about the need to screen for colorectal cancer.

Q21* A. What do you notice experienced clinicians do (e.g., attending physicians, residents, interns)?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q24 B. Imagine that you are the clinician in this situation, how would you react?

- Experienced clinicians use evidence-based information to decide on the best course of action for the patient and inform the patient of their decision.
- Experienced clinicians share evidence-based information with the patient, and elicit the patient's preferences, so the clinician and patient can make an informed decision together.
- Experienced clinicians share evidence-based information with the patient and allow the patient to make the decision on their own.
- Experienced clinicians share evidence-based information with the patient and choose the best course of action for the patient.

Q25 A 40-year-old male with a family history of Cancer A visits his physician to discuss undergoing a scheduled screening for Cancer A. What is considered the most effective way of communicating how screening changes his risk of mortality from Cancer A?

- ❍ Screening results in a 50% reduction in mortality.
- ❍ Screening reduces mortality from 6 out of 10,000 people to 3 out of 10,000 people.
- ❍ Screening reduces mortality by 0.02%.
- ❍ Screening dramatically decreases his mortality from Cancer A.

Q26 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
Shared decision making is a process in which clinicians and patients work together, sharing information about options and preferred outcomes, in order to reach a mutual agreement on the best course of action.	❍	❍
Shared decision making causes patients to feel uncertain about their decisions.	❍	❍
Shared decision making increases patient decision regret.	❍	❍
Shared decision making results in fewer patients choosing major surgery.	❍	❍

Q27 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
When communicating information about risks, it is best to use relative risk (e.g., there is double the risk of developing thrombosis when using oral contraceptives).	❍	❍
Evidence shows that involving patients in making important healthcare decisions increases knowledge.	❍	❍
To promote shared decision making, the clinician will indicate that alternative treatment or management options exist.	❍	❍

Q28 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
To promote shared decision making, the clinician will give information about the pros and cons of options that are considered reasonable (including taking 'no action')	❍	❍
To promote shared decision making, the clinician will support the patient in becoming informed and comparing options.	❍	❍
There is no need for the clinician to check the patient's understanding.	❍	❍
In the shared decision making process, it is necessary to elicit the patient's preferences.	❍	❍

Q29 Please indicate whether you feel each of the following statements is TRUE or FALSE.

	True	False
Whenever possible, the clinician should integrate the patient's preferences in deciding what to do next.	❍	❍
Most people will understand natural frequency (e.g., 1 in every 100 people) better than a percentage.	❍	❍
A majority of patients do not want to engage in shared decision making with their clinician.	❍	❍
Even if the patient does not wish to be involved in the decision making process, it is the clinician's role to encourage the patient to make a decision.	❍	❍

Q30 Had you heard of shared decision making before completing this survey?

❍ Yes
❍ No

Q31 Have you received training in shared decision making?

	Yes	No
I have received formal theoretical shared decision making training (e.g., didactic learning).	❍	❍
I have received formal practical shared decision making training (e.g., using role plays and simulated patients).	❍	❍

Q32 Roughly how many hours of training (combined theoretical and practical) have you received in shared decision making?

❍ 0 to 1 hours
❍ Between 1 to 2 hours
❍ Between 2 to 5 hours
❍ Greater than 5 hours

OR

Automatically directed to Q33 if the answer to both statements in Q31 were 'No'.

OR

Automatically directed to Q33 if answer to statement in Q30 was 'No'.

Q33 Please indicate how much you agree or disagree with the following statement.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I would like to know more about how to do shared decision with patients.	❍	❍	❍	❍

Q34 In a clinical encounter, how do you think engaging in shared decision making would affect the length of the visit?

- ❍ Decrease the overall length of the visit.
- ❍ The length of the visit would remain the same.
- ❍ Increase the overall length of the visit.

Q35 You selected "Decrease the overall length of the visit." How much shorter would the clinical visit be when engaging in shared decision making?

- ❍ About 5 minutes shorter, or more
- ❍ About 2 minutes shorter
- ❍ About 1 minute shorter

OR

Q36 You selected "Increase the overall length of the visit." How much longer would the clinical visit be when engaging in shared decision making?

- ❍ About 1 minute longer
- ❍ About 2 minutes longer
- ❍ About 5 minutes longer, or more

OR

Automatically directed to Q37 if answer to statement in Q34 was ‘The length of the visit would remain the same.’

Q37 How do you think healthcare decisions should be made?

- ❍ The patient should make the final decision about which treatment she would receive.
- ❍ The patient should make the final decision about which treatment she would receive after seriously considering my opinion.
- ❍ As the physician, I should share responsibility with the patient for making the final decision about the treatment she should receive.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive after seriously considering the patient’s opinion.
- ❍ As the physician, I should make the final decision about which treatment the patient should receive.

Q38* Please indicate your interest in the following (select ALL that apply):

- ❑ YES, I am interested in taking part in a 10-minute telephone interview on shared decision making.
- ❑ YES, I would like to be entered into the prize drawing for a gift card where 1 in 50 respondents will receive a $20 USD Amazon gift card.

Q39 You indicated interest in either the prize drawing or the telephone interview. Please enter a valid email address below to be eligible:

Fill in the blank.

Medical School Student Survey on Shared-Decision Making [French]

NOTES:

- An * indicates skip logic, which will cause some participants to see a different version of the question for country-based clarification.
- Page break in document does not equate to page break in online survey.

(Q1 Language Selection – English or French)

Q2 Comment pensez-vous que les décisions de santé devraient être prises ?

- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit après avoir considéré mon opinion.
- ❍ En tant que médecin, je dois partager les responsabilités avec le ou la patient(e) pour prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement après avoir considéré l'opinion du patient.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement pour le patient.

Q3 Veuillez s'il vous plait indiquer votre âge en utilisant le menu déroulant.

- ❍ 18 ans
- ❍ Plus de 65 ans

Response choices in drop-down range from '18 ans' to over 'Plus de 65 ans'.

Q4 Comment souhaitez-vous être identifié ? Merci de choisir parmi les options ci-dessous.

- ❍ Femme
- ❍ Homme
- ❍ Transgenre
- ❍ Autre identité, veuillez préciser : _____
- ❍ Je préfère ne pas répondre

Q5 Veuillez s'il vous plait indiquer quelle année vous êtes en train de compléter dans votre éducation médicale en utilisant le menu déroulant ci-dessous.

- ❍ Année 1
- ❍ Année 2
- ❍ Année 3
- ❍ Année 4
- ❍ Année 5
- ❍ Année 6

Q6 Dans quel pays étudiez-vous la médecine ?
- ❍ États-Unis
- ❍ Royaume-Uni
- ❍ Canada
- ❍ Pays-Bas
- ❍ Autre, veuillez préciser : _____

Q7* Veuillez s'il vous plait indiquer à quel groupe vous appartenez (choisissez s'il vous plait tout ce qui est applicable) :
- ❑ Amérindien ou autochtone de l'Alaska
- ❑ Asiatique
- ❑ Noir ou afro-américain
- ❑ Originaire d'Hawaï ou d'autres iles du Pacifique
- ❑ Blanc ou caucasien
- ❑ Autre, veuillez préciser : _____
- ❑ Je préfère ne pas répondre

Q8* Êtes-vous espagnol, hispanique ou latino ?
- ❍ Oui
- ❍ Non
- ❍ Je préfère ne pas répondre

Q12 Dans quelle école de médecine étudiez-vous ? S'il vous plait indiquer le nom complet de l'institution, sans abréviation.

Fill in the blank.

Q12 Veuillez s'il vous plait indiquer à quel point vous êtes en accord ou en désaccord avec les énoncés suivants.

	Tout à fait d'accord	D'accord	Désaccord	Fortement en désaccord
La prise de décision partagée est possible seulement quand les patients sont bien informés et confiants pour discuter le traitement ou les options de dépistage avec leur médecin.	❍	❍	❍	❍
La prise de décision partagée est irréaliste, car cela prend trop de temps.	❍	❍	❍	❍
La prise de décision partagée est au bas de ma liste de priorités.	❍	❍	❍	❍
La rémunération des médecins devrait être basée sur la façon dont ils font la prise de décision partagée.	❍	❍	❍	❍
Avoir des ressources qui résument les risques et les avantages des décisions cliniques serait utile (p. ex. outil d'aide à la décision).	❍	❍	❍	❍
Les patients doivent avoir confiance en leur cliniciens afin qu'ils prennent toutes les décisions pour leurs patients.	❍	❍	❍	❍

Q13 Veuillez s'il vous plait lire le scénario suivant. Merci d'indiquer : (A) ce que vous remarquez en observant les cliniciens qui vous encadrent et vous enseignent la médecine, et (B) quel style de décision adopteriez-vous si vous étiez dans cette situation. Il n'y a pas de bonnes ou mauvaises réponses. Supposons que le consentement est obtenu au préalable pour chaque patient.

Q14 Une femme de 45 ans se présente au service des urgences. Elle a besoin d'une intervention chirurgicale urgente. Elle est capable de donner son consentement.

Q15 A. Selon-vous, que font les cliniciens expérimentés ?

- Les cliniciens utilisent des informations fondées sur des données probantes) afin de choisir la meilleure option pour le patient et l'informer de leur décision.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient afin de connaitre les préférences du patient et de prendre une décision éclairée ensemble.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient et permettent au patient de prendre sa propre décision.
- Les cliniciens partagent des informations fondées sur des données probantes avec le patient et choisissent la meilleure option pour le patient.

Q16 B. Imaginez que vous êtes le clinicien dans cette situation, comment réagiriez-vous ?

- J'utiliserais l'information fondée sur des données probantes afin de choisir la meilleure option pour le patient et de l'informer de ma décision.
- Je partagerais des informations fondées sur des données probantes avec le patient afin de connaître les préférences du patient et de prendre une décision éclairée ensemble.
- Je partagerais des informations fondées sur des données probantes avec le patient afin de lui permettre de prendre sa propre décision.
- Je partagerais des informations fondées sur des données probantes avec le patient et choisirais la meilleure option pour le patient.

Q17 Veuillez s'il vous plait lire le scénario suivant. Merci d'indiquer : (A) ce que vous remarquez en observant les cliniciens qui vous encadrent et vous enseignent la médecine, et (B) quel style de décision adopteriez-vous si vous étiez dans cette situation. Il n'y a pas de bonnes ou mauvaises réponses. Supposons que le consentement est obtenu au préalable pour chaque patient.

Q18 Un homme de 53 ans se présente à son médecin de famille pour un examen physique annuel.

Q19 A. Selon-vous, que font les cliniciens expérimentés ?

- Les cliniciens utilisent des informations fondées sur des données scientifiques ('evidence-based medicine') afin de choisir la meilleure option pour les patient et de les informer de leur décision.
- Les cliniciens partagent des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin d'obtenir les préférences du patient et prendre une décision ensemble.
- Les cliniciens partagent des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient et permettent au patient de prendre leur propre décision.
- Les cliniciens partagent des informations fondées fondées sur des données scientifiques ('evidence-based medicine') avec le patient et choisissent la meilleure option pour le patient.

Q20 B. Imaginez que vous êtes le clinicien dans cette situation, comment réagiriez-vous ?

- J'utiliserai l'information fondée sur des données scientifiques ('evidence-based medicine') afin de choisir la meilleure option pour le patient et de l'informer de ma décision.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin d'obtenir les préférences du patient et prendre une décision ensemble.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient afin de permettre au patient de prendre sa propre décision.
- Je partagerai des informations fondées sur des données scientifiques ('evidence-based medicine') avec le patient et choisirai la meilleure option pour le patient.

Q21 Un homme de 40 ans avec une histoire familiale de cancer A visite son clinicien pour discuter de la possibilité d'un test de dépistage du cancer A. Veuillez s'il vous plait indiquer ce qui est considéré comme le moyen le plus efficace de communiquer la façon dont le dépistage change le risque de mortalité lié au cancer A ?

- ❍ Le dépistage résulte en une réduction de 50% de la mortalité.
- ❍ Le dépistage réduit la mortalité de 6 sur 10 000 à 3 sur 10 000 personnes.
- ❍ Le dépistage réduit la mortalité de 0,02%.
- ❍ Le dépistage diminue considérablement la mortalité liée au cancer A.

Q22 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
La prise de décision partagée est un processus dans lequel les cliniciens et les patients travaillent ensemble, partagent les informations sur les options et leurs conséquences, afin de parvenir à un accord mutuel sur le meilleur plan d'action.	❍	❍
La prise de décision partagée provoque de l'indécision chez les patients.	❍	❍
La prise de décision partagée augmente les sentiments de regret en ce qui concerne la décision.	❍	❍
La prise de décision partagée diminue le nombre de patient qui décident d'avoir une intervention chirurgicale majeure.	❍	❍

Q23 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Lors de la communication d'information sur les risques, il est préférable d'utiliser le risque relatif (par exemple, le risque de développer une thrombose lors de l'utilisation des contraceptifs oraux est doublé).	❍	❍
Les études montrent que quand les patients participent aux décisions importantes de santé, leur niveau de connaissance augmente.	❍	❍
Afin de promouvoir la prise de décision partagée, le clinicien indiquera que des traitements alternatifs existent.	❍	❍

Q24 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Afin de promouvoir la prise de décision partagée, le clinicien donnera des informations sur les avantages et les désavantages des options possibles (cela inclut l'option de 'ne rien faire').	❍	❍
Afin de promouvoir la prise de décision partagée, le clinicien va soutenir le patient pour l'aider à obtenir l'information et comparer les options.	❍	❍
Le clinicien n'a pas besoin de vérifier si le patient comprend les options disponibles.	❍	❍
Dans le processus de prise de décision partagée, il est nécessaire de connaitre les préférences du patient.	❍	❍

Q25 Veuillez s'il vous plait indiquer si vous pensez que les énoncés suivants sont VRAI ou FAUX.

	VRAI	FAUX
Si possible, le clinicien doit intégrer les préférences du patient pour décider de la suite des choses.	❍	❍
La plupart des gens comprendront la fréquence naturelle (par exemple, 1 personne sur 100) mieux qu'un pourcentage.	❍	❍
La majorité des patients ne veulent pas participer à la prise de décision partagée avec leur médecin.	❍	❍
Même si le patient ne souhaite pas être impliqué dans le processus de prise de décision, c'est le rôle du clinicien d'encourager le patient à prendre une décision.	❍	❍

Q26 Avez-vous entendu parler de la prise de décision partagée avant ce sondage ?

❍ Oui
❍ Non

Q27 Avez-vous suivi des cours sur la prise de décision partagée ?

	Oui	Non
J'ai suivi des cours théoriques sur la prise de décision partagée.	❍	❍
J'ai reçu une formation pratique sur la prise de décision partagée (par exemple, en utilisant des jeux de rôle et des patients comédiens).	❍	❍

Q28 Combien d'heures de formation avez-vous reçues (approximativement) sur la prise de décision partagée ?

❍ 0 à 1 heure
❍ Entre 1 et 2 heures
❍ Entre 2 et 5 heures
❍ Plus de 5 heures

OR

Automatically directed to Q29 if the answer to both statements in Q27 was 'Non'.

OR

Automatically directed to Q29 if answer to statement in Q26 was 'No'.

Q29 Veuillez s'il vous plait indiquer si vous êtes en accord ou en désaccord avec la déclaration suivante.

	Tout à fait d'accord	D'accord	Désaccord	Fortement en désaccord
Je voudrais en savoir plus sur la pratique de la décision partagée avec mes patients.	❍	❍	❍	❍

Q30 Dans le cadre d'une consultation, comment pensez-vous que la prise de décision partagée affecte la durée de la visite ?

- ❍ Diminue la durée totale de la visite.
- ❍ La durée de la visite demeure la même.
- ❍ Augmente la durée totale de la visite.

Q31 Vous avez choisi « Diminue la durée totale de la visite. » De combien de temps la visite serait-elle diminuée en s'engageant dans la prise de décision partagée ?

- ❍ 5 minutes ou moins
- ❍ À peu près 2 minutes
- ❍ À peu près 1 minute

OR

Q32 Vous avez choisi « Augmente la durée totale de la visite. » De combien de temps la visite serait-elle augmentée en s'engageant dans la prise de décision partagée ?

- ❍ 5 minutes ou plus
- ❍ À peu près 2 minutes
- ❍ À peu près 1 minute

OR

Automatically directed to Q333 if answer to statement in Q34 was 'La durée de la visite demeure la même.'

Q33 Comment pensez-vous que les décisions de santé devraient être prises ?

- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ Le ou la patient(e) doit prendre la décision finale au sujet du traitement qu'il ou elle reçoit après avoir considéré mon opinion.
- ❍ En tant que médecin, je dois partager les responsabilités avec le ou la patient(e) pour prendre la décision finale au sujet du traitement qu'il ou elle reçoit.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement après avoir considéré l'opinion du patient.
- ❍ En tant que médecin, je dois prendre la décision finale en ce qui concerne le traitement pour le patient.

Q34 Veuillez s'il vous plait indiquer votre intérêt dans ce qui suit (cochez TOUT ce qui est applicable) :

- ❑ OUI, je souhaiterais participer à un entretien téléphonique de 10 minutes sur la prise de décision partagée.
- ❑ OUI, je souhaiterais participer au tirage pour une carte-cadeau Amazon où 1 participant sur 50 recevra 20$USD.

Q35 Vous avez indiqué votre intérêt à participer à un entretien téléphonique ou au tirage. S'il vous plait entrez une adresse courriel valide ci-dessous pour être éligible :

Fill in the blank.

Phase 2 semi-structured interview guide

SDM in Medical School Education
Phase 2: Semi-Structured Interview Guide

Questions for Students

1. Could you please define SDM?
2. Tell me about any shared decision making training you have received thus far.
    a. If they HAVE received training:
        i. What did you think of it?
        ii. If not mentioned: where (i.e., class vs. special session vs. other) did you learn about shared decision making?
        iii. If not mentioned: how many hours? Integrated in other modules (e.g., communication skills, breaking bad news) or a standalone shared decision making module?
        iv. If not mentioned: when (i.e., what year) did you learn this skill?
        v. Has it been beneficial/unhelpful? Why?
        vi. Would you have liked to have learned this skill at a different time during your medical school education? If yes, why?
    b. If they HAVE NOT received training:
        i. Do you know whether you will receive such training in the remaining year(s) or months of your undergraduate medical education?
        i. If NO, would you have liked to receive such training? Why? When (e.g., what year) in the curriculum do you think it would be most beneficial to have SDM training in medical schools? why?
3. Should SDM training be completed through specific SDM classes/training or ; incorporated into all appropriate classes or other?
4. What do you think would be the barriers to having SDM training during medical school?
5. What would make SDM training successful in medical schools?
6. Who would you like to learn SDM training from?
    a. Probe: fellow students, residents, attending physicians, regular professors, etc.?
7. What would an ideal SDM training session look like?
    a. Probe: lecture based, interactive, etc.?
8. What excites you about SDM?

Questions for Curriculum Specialists

1. Have you heard of SDM before?
    a. Depending on response: Where have you heard of it?
    b. Could you please define SDM?

c. How important do you think it is for a physician to know how to promote SDM and engage their patients in medical decision making?

2. Tell me about the efforts the administration is making at _____ medical school to promote training in SDM?
    3. If answer is essentially 'no efforts':
        a. Have you considered integrating SDM training in the curriculum?
        b. Are there any other modules that you currently offer that teach similar skills?
4. When (e.g., what year) in the curriculum do you think it would be most beneficial to have SDM training in medical school?
    a. Probe: specific SDM classes/training; incorporated into all appropriate classes?
5. Where (e.g., which classes) in the curriculum do you think it would be most beneficial to have SDM training in medical school?
6. What do you think would be the barriers to having SDM training at _____ medical school?
7. What are the factors that would make SDM training successful?
8. What resources would _____ need to incorporate SDM training into the curriculum?
9. What would an ideal SDM training look like?
    a. Probe: lecture based, interactive, etc.?

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Item Category	Checklist Item	Described on page #*
Design	Describe study design	4
IRB approval and informed consent process	IRB approval	10
	Informed consent	1, 10
	Data protection	8
Development and pre-testing	Development and testing	7
Recruitment process and description of the sample having access to the questionnaire	Open survey versus closed survey	4
	Contact mode	5,6
	Advertising the survey	5,6
Survey administration	Web/E-mail	4
	Context	10
	Mandatory/voluntary	2
	Incentives	5
	Time/Date	8,9
	Randomization of items or questionnaires	7,8
	Adaptive questioning	7
	Number of items	7
	Number of screens (pages)	7
	Completeness check	N/A
	Review step	N/A
Response rates	Unique site visitor	N/A
	View rate (Ratio unique site visitors/unique survey visitors)	N/A
	Participation rate (Ratio Unique survey page visitors/agreed to participate)	N/A
	Completion rate (ratio agreed to participate/finished survey)	N/A
	Cookies used	N/A
	IP check	N/A
	Log file analysis	N/A
Analysis	Handling of incomplete questionnaires	N/A
	Questionnaires submitted with an atypical timestamp	N/A
	Statistical correction	N/A

*We are not reporting data in this manuscript as this is a protocol.