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Master of Public Health Program

Practice, knowledge and attitudes of physicians towards shared decision- making in their healthcare practice in the National scientific center of oncology and transplantology CF "UMC" in Astana, Kazakhstan: Pilot study

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Abstract

Introduction

Despite the importance of shared decision-making in clinical practice, it is not widely implemented in health care systems in the world, including Kazakhstan. In order to develop an effective implementation strategy for shared decision-making to be practiced in hospitals in Kazakhstan, it is necessary to identify and understand physician's knowledge, practices, attitudes and barriers towards shared decision-making.

Methods

A cross –sectional study among physicians was conducted at the National Scientific Center of Oncology and Transplantology CF "University Medical Center" using convenient sampling. A study instrument was a self-reported questionnaire. Data analysis included descriptive univariate and bivariate analysis, as well as multivariate logistic regression.

Results

The sample size included 49 participants. Most of the respondents were in the range of 30-40 years old, the mean age was 35 years. The mean working experience of participants was 11 years. The study found an adequate level of knowledge (48%) regarding shared decision- making, positive attitudes and high level of practice. The most frequently reported barriers were «Difficulty finding enough time», «Difficulty in being honest without depressing patient», «Difficulty in handling one's own negative feelings», «Offer a treatment not likely to work to not destroy hope». Age, position, number of patients per week and marital status were associated with practice towards shared – decision making ($p<0.1$).

Conclusion

This pilot study is the first study conducted in Kazakhstan accessing the level of knowledge, attitudes, practice and barriers towards shared decision –making from physician's

perspectives. Further research with larger sample size is needed to further explore the found trends for the associations with soco-demographic variables.

List of abbreviations

SDM	Shared decision-making
ACA	Affordable Care Act
USA	United States of America
NSCOT	National Scientific Center of Oncology and Transplantation
CF "UMC"	Corporate Fund "University Medical Center"

1.Introduction

Shared decision-making (SDM) is "a process in which patients are involved as active partners with the clinician in clarifying acceptable medical options and in choosing a preferred course of clinical care" (Sheridan, 2004).

De las Cuevas (2013) identifies SDM as an interactive process of the clinical decision-making model that ensures patient and physician both are equally and actively involved and share information in order to come to an agreement, for which they are jointly responsible.

The concept of shared decision - making appeared in healthcare in the early 1980s, along with the concept of patient-centered care. Later, in the 1990s, a number of researchers highlighted its significant role in the clinical practice; however, it is not widely used in practice. The department of Health in the UK set up a document 'Liberating the NHS: no decision about me, without me' to increase patient involvement in treatment process. Only in 2010, the term shared decision-making was mentioned in the Affordable Care Act (ACA) in the USA that led to the initiating of policy and encouraging health care specialists to use shared decision-making in their practice (Elwyn, 2017).

In theory, decision-making has three models: paternalistic, a consumer-oriented, and an intermediate. Paternalistic is when the main role plays physician and the patient has a passive role; in the consumer –oriented model, physicians gives all information to patient and the patient decides a treatment plan; an intermediate model is when the decision is made between the patient and a doctor. Both are responsible for the outcome (Hillyer, 2013).

According to the international studies, patients prefer to share decision with their doctors. For instance, a study in Switzerland (Briel, 2018) aimed to identify whether patients

wish to be involved in the treatment, had concluded that 66% of patients would like a doctor-centered model. Another study in Europe (Coulter, 2005) identified that 51% of patients would like to have an approach of shared decision-making. A cross-sectional study in Malaysia determined that majority of patients preferred active and shared roles in decision-making (Ambigapathy, 2017).

With the developing of health information and treatment options, the process of decision-making appeared more difficult. More treatment options carry more risk of outcome for patients. Thus, active participation of patients in their treatment process is significant. Although SDM is actively discussed in the past years, it is not well implemented. Researchers think that it is due to barriers doctors have, such as lack of time, their perception that patients do not want to be involved in the treatment, or some options are unacceptable to share with patients (Pollard, 2015). Pollard also discusses the importance of SDM in patient satisfaction, indicating that patients who involved in SDM are more satisfied with care and treatment decision. Moreover, implementation of SDM can reduce healthcare expenses and increase additional income.

Frerichs (2016) characterized shared decision-making by decreased fear and depression, increased patient and treatment satisfaction and improved quality of life. He also mentioned that SDM is especially important in cases of medical uncertainty considering disease and treatment outcomes, for example in cancer care.

Other studies showed that by using the principle of shared decision-making, physicians could influence patient's quality of life, life expectancy, side effects from treatment and the process of care (Flynn, 2006; Stacey, 2017). Ernst (2013) highlights that involving patient into their health care makes them happier with their health care decisions and more willing to follow treatment plan that definitely will lead to better outcomes. In a study about patients undergoing radiation treatment, researchers found an association

between patient satisfaction and shared decision-making. Moreover, they found increased levels of anxiety, depression and fatigue among patients who were not feeling being involved in treatment (Gulay, 2016).

Shared decision-making allows patients to be more engaged in their healthcare; it can reduce health disparities, improve patient satisfaction and health outcomes, and promote evidence-based care (Coulter, 2005). In the long term, having SDM process in the health care will increase patient and treatment satisfaction, improve quality of life, decrease fear and depression (Frerichs, 2016).

1.1. Rationale and significance

Currently, one of the key directions in developing health care system in Kazakhstan is patient- centered care, where SDM plays an important role. Despite the importance of the SDM and well-documented principles, health care professionals in the world, including Kazakhstan, do not widely implement it. For SDM to be practiced in hospitals in Kazakhstan, it is necessary to identify and understand physician's practice, attitudes and knowledge regarding SDM and to consider their opinions while developing an implementation strategy.

1.2 Aims and Research questions of the study

The study aims:

1. To access practices, knowledge and attitudes of shared decision-making among physicians of the National Scientific Center of Oncology and Transplantation Corporate fund "University Medical Center " in Astana;
2. To access barriers for practicing SDM that physicians face during interaction with patients;

The research questions are:

1.What is the level of practices of physicians towards SDM?

2.What is the level of knowledge of physicians towards SDM?

3.What is the level of attitudes of physicians towards SDM?

4.What are the barriers of SDM?

2. Methods

2.1 Study design and settings

As the study aims are to access the knowledge, attitudes and practice (KAP), a quantitative cross-sectional design was chosen. This design is appropriate to measure the prevalence of health related characteristics of study population, and to provide baseline information for developing an intervention. This survey is a pilot study that has been conducted at the National scientific center of oncology and transplantation (NSCOT) Corporate Fund "University Medical Center" (CF "UMC") in Astana city, Kazakhstan.

2.2 Study population and Sampling

For this pilot study, participants were selected from the physicians working at the NSCOT. Convenient sampling method was used to collect the study sample of 49 physicians. Inclusion criteria were: to be a doctor or resident of the NSCOT working directly with patients. Exclusion criteria were: Doctor or residents, who are not treating patients (e.g. ultrasound or radiation diagnostic doctor).

2.3 Study Instrument

Self-reported structured questionnaire was used during data collection and was given directly to participants. The questionnaire was developed based on several standardized scales, and consisted of four parts, including 40 questions. All questions were close-ended, except one that was open-ended.

The first part of survey included socio-demographic and SDM related knowledge questions. The second part was aimed to assess physician's practices towards shared decision-making. The 9-item Shared Decision Making Questionnaire physician version, with 6-point Likert response scale (from 1 – completely disagree to 6- completely agree), was administered to physicians. This scale was widely validated and is a reliable instrument (Cronbach's α of .88) aimed to evaluate to which extent patients are involved in the process of decision-making from the physician's perspective (Scholl, 2012). The third part of the survey was about physician's attitudes towards patient involvement in treatment decisions. 10-item questionnaire with 5-point Likert scale (from 1- strongly agree to 5- strongly disagree) was used (Liberati, 1991). The first five statements were negatively worded, the last five were positively worded. The last part of the questionnaire was about barriers that physicians may face during interaction with patients. Physicians were asked about difficulties in discussing diagnosis, dealing with patients' family, responding to patients' emotions and other issues. This scale was adopted from the study by Baile (2002).

Before starting data collection, the developed survey was translated into Russian language and was pre-tested in the National center of oncology and transplantation CF «UMC» among physicians of surgery department. After the pre-test, several questions were corrected.

2.4 Data collection

Data collection lasted for one and half month during the February-March, 2018. Paper based survey (paper-pencil) was chosen as the primary method for data collection. This method was chosen due to convenient sampling and in order to increase the response rate. In total 49 participants completed the survey. Physicians and residents were from the following departments: cardiology, kidney transplantation and urology, vascular surgery, liver transplantation, multidisplinary surgery, oncohemaotlogy and bone marrow transplantation, orthopedics surgery.

2.5 Data entry, cleaning and analysis

Data was entered into Excel from hard copies of questionaries' by one person. Each question was double-checked. Open-ended question was entered with word text into the data. After that data was cleaned to find any entry errors and imported into STATA 14.0 statistical package for statistical analysis. P-value less than 0.1 was considered as statistically significant. Means and standard deviation were used to describe continuous variables. Outcome variables such as attitudes, practice and barriers were dichotomized in two categories using cut-points from their medians. Data analysis included descriptive analysis, bivariate analysis using chi-square test and multivariate logistic regression analysis. The open-ended question was analyzed as a qualitative data.

2.6 Study Variables

The dependent variables of this study (outcomes) were knowledge, attitudes, practice and barriers of SDM. The independent variables were: gender, age, specialty, marital status, an average monthly income, nationality, working experience, position, patients per week, and awareness about shared-decision making.

2.7 Ethical considerations

Research Ethics Committee of the Nazarbayev Unviersity School of Medicine has approved the research. The study did not have any risks to participants. In case if participants felt uncomfortable talking about some of the questions, they could skip those questions without asking the reason for not answering.

Anonymity and confidentiality of all answers was provided. There were no direct benefits to participants. An oral consent form was taken from physicians. The study aim and procedures were discussed with each participant before filling the survey.

3. Results

3.1. Descriptive characteristics

In total 49 participants, including physicians and residents completed the survey (31% females, 69% males). Socio-demographics and work experience related characteristics of the study sample are presented in Table1. Most of the respondents were in the range of 30-40 years old, the mean age was 35 years. The mean working experience of participants was 11 years. Thirteen specialties were identified: cardiologists, endoscopysts, gynecologists, hetobiliary, orthopedics, plastic, onco, vascular and thoracoabdominal surgeons, urologists,

transplantation doctors, oncohematologisits. As for the position in hospital, 71% were doctors, 29% - residents.

Table 1. Distribution of physicians' sociodemographic and work experience characteristics

	Total n=-49	
Gender	**n**	**%**
Female	15	30.6
Male	34	69.4
Age		
0-29	17	34.7
30-39	18	36.7
40-49	10	20.4
≥50	4	8.5
Specialty		
Cardiologist	9	18.4
Urologist	8	16.3
Vascular surgeons	6	12.2
Onco surgeons	4	8.2
Thoracoabdominal surgeon	4	8.2
Transplantologist	3	6.1
Orthopedic surgeon	3	6.1
Oncohematologist	3	6.1
Gynecologist	3	6.1
Endoscopyst	2	4.1
Hepatobiliary surgeon	2	4.1
Other surgeon	1	2.0
Plastic surgeon	1	2.0
Marital status		
Married	36	73.5
Single	13	26.5
Income (tenge)		
less than 100	12	24.5
100-199	20	40.8
200-299	11	22.5
300-399	3	6.1
400 and more	3	6.1
Nationality		
Kazakh	44	89.80

Other	1	2.04
Russian	4	8.1
Work experience		
0-5	24	49
6-10	7	14.3
11-15	3	6.1
16-20	8	16.3
>20	7	14.3
Position		
Doctor	35	71.4
Resident	14	28.6
Patients per week		
1-5	20	40.8
5-10	18	36.7
10-15	5	10.2
15-20	6	12.2
Heard about SDM		
No	13	26.5
Yes	36	73.5
From what sources		
Conferences	5	19
Internet	4	17
Colleagues	19	30
Newspapers, journals	5	8
Other	3	5
Missing	13	21

3.2 Knowledge

Three questions were used to analyze the knowledge and awareness about shared decision - making among physicians. 73% of participants responded «yes», and 27% - «no» to the question "Have you ever heard about term- shared decision-making?" (Figure 1). Out of 73%, 30% of participants heard about SDM from colleagues (Figure 2).

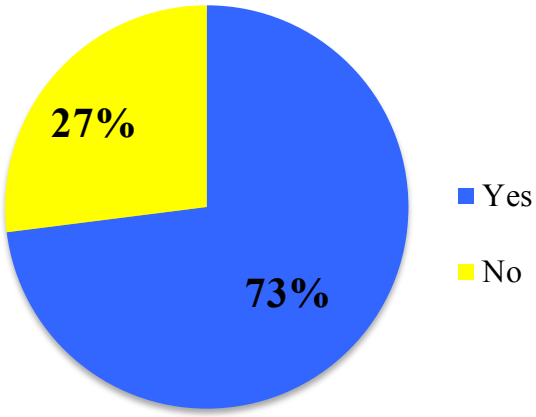

Figure 1. Awareness about SDM

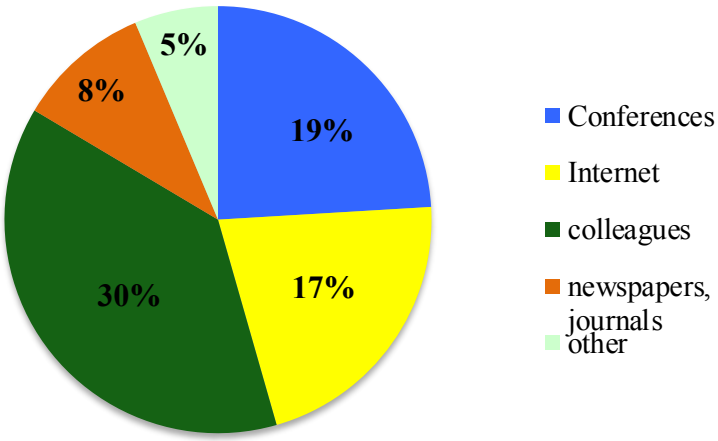

Figure 2. Sources of SDM

The open-ended question: «What do you think a term - shared decision-making stands for?» was analyzed as a qualitative question by identifying themes. In total, 35 participants (71%) responded for this question.

Three themes were identified:

1) 28, 5 % of participants considered shared decision - making as a medical consultation (concilium), meaning that an attending physician together with other physicians from all departments come together, discuss, and make a decision about patient's treatment.

2) 48,5 % of participants found SDM as a decision with patient. Physicians gave different answers with the main idea that SDM is when patient is involved in the process.

3) 23% of participants gave various responses not related to each other, like SDM is "communication skills, discussion, consent to treatment or a solution in partnership and others."

3.3 Practice

The 9- item shared decision-making questionnaire showed that all participants have been practicing SDM in their working experience (Table 2). The lowest percentage (78%) was for the question «My patient and I selected a treatment option together».

Table 2. Practice of respondents. 9-item Shared Decision - Making Questionnaire

#	Questions	Max	Min	Mean	SD	Agree	Disagree
1	I made clear to my patient that a decision needs to be made	5	1	3,5	1,2	84%	16%
2	I wanted to know exactly from my patient how he/she wants to be involved in making the decision	5	1	3,9	1,00	90%	10%
3	I told my patient that there are different options for treating his/her medical condition	5	1	4,1	1,02	92%	8%
4	I precisely explained the advantages and disadvantages of the treatment options to my patient	4	1	3,3	0,8	96%	4%
5	I helped my patient understand all the information	4	1	3,3	0.86	96%	4%
6	I asked my patient which treatment option he/she prefers	6	1	4,6	1,43	86%	14%
7	My patient and I thoroughly weighed the different treatment options	6	1	4,7	1,4	82%	18%
8	My patient and I selected a treatment option together	6	1	4,4	1,67	78%	22%
9	My patient and I reached an agreement on how to proceed	6	1	4,6	1,4	80%	20%

3.4 Attitudes

The results regarding attitudes to involve patients in treatment decision showed mostly positive attitudes (Table 3). However, there are several questions that revealed some negative attitudes. For instance, majority of respondents agreed with the statements "Patients may lose confidence in their physician if they believe that he/she has no firm opinion about the best treatment" (73%) and "Even if they receive enough information most patients are too upset to make a decision"(60%). On the other hand, 76% of physicians have disagreed with the statement that "Patients should have a greater influence on treatment decisions than their doctor", while 51% of them don't think that "Patients who participate in treatment decisions are less anxious and depressed".

Table 3. Attitudes of respondents to shared decision –making

#	Questions	Max	Min	Mean	SD	Agree	Disagree
1	Patients may lose confidence in their physician if they believe that he/she has no firm opinion about the best treatment	5	0	3,73	1,18	73%	27%
2	Encouraging patients to participate may do more harm than good	5	1	2,74	1,27	29%	71%
3	Patients can't possibly make good decisions because they don't understand information	5	1	2,75	1,31	37%	63%
4	Asking patients to participate in treatment decisions produces unnecessary stress	5	1	2,8	1,07	27%	73%
5	Even if they receive enough information most patients are too upset to make a decision	5	1	3,3	1.19	60%	40%
6	Patients who participate in treatment decisions make a better adjustment to the disease	5	1	3,73	0.97	69%	31%
7	Patients should have a greater influence on treatment decisions than their doctor	5	1	2.5	1.28	24%	76%
8	Patients who participate in treatment decisions are less anxious and depressed	5	1	3.26	1.13	49%	51%

9	If given comprehensive medical information pts.can make good decisions about treatment	5	1	3.7	1.13	71%	29%
10	Most patients want to be involved in treatment decisions	5	1	3.3	1.05	57%	43%

3.5 Barriers

Barriers that physicians have during discussion diagnosis and treatment process with patients are given in Table 4. The most frequently reported barriers were «Difficulty finding enough time» (53%), «Difficulty in being honest without depressing patient» (53%), «Difficulty in handling one's own negative feelings» (53%), and «Offer a treatment not likely to work to not destroy hope» (55%).

Table 4. Barriers of respondents for doctor-patient interactions

Barrier	**Not difficult at all**	**Very difficult**
Difficulty in discussing diagnosis	38 (78%)	11 (22%)
Difficulty in discussing treatment failure	30 (61%)	19 (39%)
Difficulty finding enough time	23 (47%)	26 (53%)
Difficulty in responding to patients' emotions	29 (59%)	20 (41%)
Difficulty in being honest without depressing patient	23 (47%)	26 (53%)
Difficulty in handling one's own negative feelings	23 (47%)	26 (53%)
Frequency of withholding prognosis from patient at family's request	27 (55%)	22 (45%)
Use euphemisms in discussing prognosis to keep hope	28 (57%)	21 (43%)
Offer a treatment not likely to work to not destroy hope	22 (45%)	27 (55%)

3.6 Bivariate analysis

To evaluate the level of practice (high or low) and attitudes (positive or negative) towards shared decision –making, the scoring system of the scales was used. The 9-item

questionnaire assessing the practice of SDM had 6-point Likert scale, where responses such as "completely agree", "strongly agree" and "somewhat agree" were categorized as agree, while "completely disagree", "strongly disagree" and "somewhat disagree" were categorized as disagree. The cut-point was equal to 16.8, which was a mean score for the level of practice. Thus, having score of practice above or equal 16.8 was considered as high level of practice, and the score less to 16.8 - low level of practice. In order to find positive or negative attitudes towards SDM, 5-point Likert scale from 10-item questionnaire assessing attitudes was first categorized as agree and disagree. "Strongly agree" and "agree" were categorized as agree, and "strongly disagree", "disagree" and "neither agree, no disagree" as "disagree". The cut-point for positive attitudes of SDM was 14.9. As barriers of SDM were already categorized as "very difficult" and "not difficult at all", cut-point for difficult barriers was 13.

The results of bivariate analysis using chi-square test between each independent and dependent variables to check for association found some statistically significant associations (Table 5). Marital status was associated with SDM practice, such as that married physicians had higher level of practice than unmarried (p=0.000). Older physicians were more likely to practice SDM, compared to younger physicians (p=0.060). Position in the hospital, whether participant is a doctor or a resident, was associated with patient involvement in decision making and participant's opinion regarding the SDM; doctors were more likely to practice SDM compared to residents (p=0.014). Furthermore, a number of patients per week that each physician has wasassociated with practice of SDM as well (p=0.108). The level of practice of SDM was higher in the group of physicians having 15-20 patients per week compared to physicians having 5-10 patients The results of the bivariate analysis on SDM practice, attitudes and barriers with other sociodemographic and work experience characteristics of

physicians did not show statistical significance (see the supplementary Tables S1, S2 and S3 in the appendix).

Table 5. Practice and attitudes towards shared decision-making by socio-demographic variables of physicians (bivariate analysis using chi-square test).

	n=-49 (%)	**Practice (%)**			**Attitudes (%)**		
		High	**Low**	**p-value**	**Positive**	**Negative**	**p-value**
Age				0.060*			
0-30	35	65	35				
>30	65	88	12				
Marital status				0.000*			
Married	73	92	8				
Single	27	46	54				
Position				0.014*			0.035*
					69	31	
Doctor	71	79	21				
Resident	29	40	60		36	64	
Patients per week				0.108*			
1-5	41	65	35				
5-10	37	89	11				
10-20	22	91	9				

*p≤0.1

The results of multivariate logistic analysis showed that only marital status and patients per week remained having a trend for statistical significance after adjusting for other confounding variables. Based on these results, single physicians had on average 94% less odds of practicing shared decision-making compared to married colleagues. Physicians having 5-10 patients per week had 7 times higher odds of practicing shared decision-making, compared to physicians who had less number of patients seen per week (Table 6).

Table 6. Practice of shared decision-making by physicians' characteristics (Multivariate logistic regression analysis)

Variable	SDM Practice		
	Adj. OR*	**95% CI**	**p-value**
Marital status			
Married	Ref.		
Single	0.06	0.009-0.374	0.003
Patients per week			
1-5	Ref.		
5-10	7.05	0.846-58.74	0.071
10-20	6.17	0.458-83.178	0.170

*adjusted for physician's age and position

4. Discussion

This study assessed the knowledge, attitudes, practice and barriers of physicians to the shared decision-making with patients. The majority of participants were doctors (71%).

Participants had to describe what is a SDM, and only two of them described SDM fully as it stands in the international literature. Most of physicians reported that SDM is about involving patient in the treatment decision and explaining the diagnosis. Despite a high level of awareness about SDM (73%), the level of knowledge regarding shared decision- making among physicians was barely adequate. Less than half of participants (48%) described the SDM correctly, which is similar to the study conducted in Germany (Frerichs, 2016).

Our results showed that all items of practice scale were significantly above of the 0-5 scale, varying from 3.3 to 4.7. This findings are are even higher than in the study conducted in Netherlands, using the SDM-Q-Doc scale. They showed the range from 3.3 to 4.5, and they also found the highest mean score for an item «My patient and I thoroughly weighed the

different treatment options» (Rodenburg-Vandenbussche, 2015). The similar results can be explained by the fact that more than 80% of physicians in the National scientific center of oncology and transplantation CF «UMC» underwent internship abroad and gained international experience.

Based on the results, physician's attitude towards shared decision-making was positive. They agree that majority of patients wants to be involved in the treatment process, however they do not think that patients should have more influence than doctors.This finding is close to the results of the study that was conducted in Sweden, Russia and Germany, investigating relationship between culture and end-of-life decision. They found that physicians from Russia do not take into account patients' wishes and have authoritarian attitudes (Richter, 2001). As the health care management system in Kazakhstan and Russia very similar, it is assumed that these paternalistic views may present a barrier to adopting a shared decision-making approach byphysicians in our country.

"Finding enough time", "Being honest without depressing patient", "Handling one's own negative feelings", and "Offering a treatment not likely to work to not destroy hope" were found to be the most difficult barriers in their practice for physicians in our study. Interestingly, that discussing diagnosis and treatment failure were reported as the least difficult barriers by respondents in our study. This is a little different from previous studies about barriers where they found the failure of treatment as the most difficult task. However, discussing diagnosis was also not hard to follow in some previous studies (Baile, 2002). Other study about SDM in orthopedics surgery found that finding enough time is also the main difficulty (Slover, 2018). Our findings are totally different compared to the study of Hillyer in the USA (2013), where physicians were faced difficulties with not disclosing poor prognosis at the request of the family, and responding to the patient's emotions. On the other hand, handling one's own negative feelings was not a barrier for them. Physicians in

Kazakhstan are so overloaded not only with patients but also with a great amount of paper work, meetings and other numerous responsibilities, so that there is a risk to get burned out. In general, time frame was the most common barrier among physician in more than thirty-eight studies (Legare, 2013).

Despite the small sample size, the results of the bivariate analysis allowed us to make a comparison between doctors' and residents' views. Our study findings showed that residents were significantly less likely to practice SDM compared to doctors. Association between age and SDM practice showed that younger specialists practice SDM less than their older peers, who are older than 30 years old. These findings confirm that position influences the level of practice and attitudes. It could be explained by the fact, that residents are young, they are not experienced well yet and are not allowed to make decision by themselves. They still need to be trained in order to understand what SDM is, how to practice it and why it is important. Study in Spain (Calderon, 2017) showed similar results regarding the age and SDM practice.

Interestingly, a significant association was found between marital status and practice of shared decision-making. None of the previous researches had reported similar findings. This may be a reflection of having a family and experience of interacting and sharing responsibilities with family members, accounting for their opinions in decision-making related to various family matters. Thus, married physicians may be more willing to account for patient perspectives while making decision on treatment.

Finally, in the multivariate logistic regression analysis the association of the SDM practice with only two variables remained close to statistical significance. The lack of the study power to detect statisticaly significant associations could be explained by small sample size. Therefore these interesting findings on the association of SDM practice and attitudes with marital status and patients per week need further investigation with bigger sample size.

Study limitations

This study has several limitations. The biggest one is a small number of participants that led to low power. The pre-test and content validity analysis was performed to the questionnaire scales without thourough validity and reliability testing. The level of knowledge was limited to three open-ended questions that may underestimate its validity. Self-response bias is another potential limitation of this study, as physicians may overestimate their SDM related behaviors. Finally, not representative sample and absence of randomization within the sample may leadto the selection bias and limit the generalizability of study findings to other health care settings in the city and country.

5. Conclusion and recommendations

To the best of author's knowledge, this pilot study is a first quantitative research about shared decision- making among physicians in Kazakhstan and nearby countries. Although less than half of participants had adequate level of knowledge about SDM, majority of them had reported high level of practice and positive attitudes towards SDM. The study found that age, marital status, position and number of patients per week were significantly associated with practice of shared decision-making. Key difficulties that physicians face in Kazakhstan include lack of time, being honest without depressing patient, and handling one's own negative feelings.

Further researchis needed with larger sample size to test the found associations in the multivariate models to have a true picture of physician's view and practices about shared decision-making. Qualitative and quantitative studiesinterviewing both patients and doctors will give more insight into this question. In addition, further research is needed to find the most effective interventions to implement shared decision-making into practice.

To make an intervention in the healthcare organization, certain steps are suggested. Firstly, all students should have training or workshops in shared decision-making before graduating from medical school. Secondly, graduated students and working physicians should attend a training for SDM. Therefore, an employer has to organize or provide their employees a SDM training, where physician would get knowledge and skills. Training can include power point presentations, educational videos, consultations with standardized patients, group discussions. Program can consist of two parts: 1) general information of SDM, pros and cons, theoretical framework; 2) skills developing, communication with difficult patients, partnership building (Bieber, 2009).

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7. Appendix

7.1 Supplementary table S1. Bivariate analysis of SDM and practice

	Total n=-49	Practice (%)		
	%	High	Low	p-value
Gender				0.414
Female	30.6	86.7	13.3	
Male	69.4	76.5	23.5	
Age				**0.060***
0-30	34.7	64.7	35.3	
>30	65.3	87.5	12.5	
Specialty				0.450
Cardiologist	18.4	88.89	11.11	
Urologist	22.5	63.64	36.36	
Onco surgeons	26.5	84.62	15.38	
Vascular surgeons	12.2	66.67	33.33	
Others	20.4	90.00	10.00	
Marital status				**0.000***
Married	73.5	91.67	8.33	
Single	26.5	46.15	53.85	
Income				0.190
less than 100	24.5	58.33	41.67	
100-199	40.8	90.00	10.00	
200-299	22.5	81.82	18.18	
300 or more	12.2	83.33	16.67	
Nationality				0.981
Kazakh	89.8	79.55	20.45	
Others	10.2	80.00	20.00	
Work experience				0.989
0-9	61.2	80.00	20.00	
10-20	18.4	77.78	22.22	
>20	20.4	80.00	20.00	
Position				**0.014***
Doctor	71.4	79	21	
Resident	28.6	40	60	
Patients per week				**0.108***
1-5	40.8	65.00	35.00	
5-10	36.7	88.89	11.11	
10-20	22.5	90.91	9.09	

Heard about SDM				0.280
No	26.5	69.23	30.77	
Yes	73.5	83.33	16.67	

*p≤0.1

7.2 Supplementary table S2. Bivariate analysis of SDM and attitudes

	Total n=-49	**Attitudes (%)**		
	(%)	**Positive**	**Negative**	**P-value**
Gender				0.236
Female	30.6	46.7	53.3	
Male	69.4	64.7	35.3	
Age				0.208
0-30	34.7	47.1	52.9	
>30	65.3	65.6	34.4	
Specialty				0.146
Cardiologist	18.4	45.5	54.5	
Urologist	22.5	54.5	45.5	
Onco surgeons	26.5	76.9	23.1	
Vascular surgeons	12.2	16.7	83.3	
Others	20.4	70.0	30.0	
Marital status				0.840
Married	73.5	58.3	41.7	
Single	26.5	61.5	38.5	
Income				0.363
less than 100	24.5	50.0	50.0	
100-199	40.8	65.0	35.0	
200-299	22.5	72.7	27.2	
300 or more	12.2	33.3	66.7	
Nationality				0.969
Kazakh	89.8	59.1	40.9	
Others	10.2	60.0	40.0	
Work experience				0.572
0-9	61.2	53.3	46.7	
10-20	18.4	66.7	33.3	
>20	20.4	70.0	30.0	
Position				**0.035***
Doctor	71.4	68.6	31.4	

Resident	28.6	35.7	64.3	
Patients per week				0.719
1-5	40.8	45.0	55.0	
5-10	36.7	33.3	66.7	
10-20	22.5	45.5	54.5	
Heard about SDM				0.265
No	26.5	46.1	53.9	
Yes	73.5	63.9	36.1	

*p≤0.1

7.3 Supplementary table S3. Bivariate analysis of SDM and barriers

	Total n=-49	**Barriers (%)**		
	(%)	**Difficult**	**Not difficult**	**p-value**
Gender				
Female	30.6	53.3	46.7	0.165
Male	69.4	32.3	67.6	
Age				0.801
0-30	34.7	41.2	58.8	
>30	65.3	37.5	62.5	
Specialty				0.356
Cardiologist	18.4	55.6	44.4	
Urologist	22.5	45.5	54.5	
Onco surgeons	26.5	23.1	76.9	
Vascular surgeons	12.2	16.7	83.3	
Others	20.4	50.0	50.0	
Marital status				0.978
Married	73.5	38.9	61.1	
Single	26.5	38.5	61.5	
Income				0.326
less than 100	24.5	25.0	75.0	
100-199	40.8	50.0	50.0	
200-299	22.5	45.5	54.5	
300 or more	12.2	16.7	83.3	
Nationality				0.304
Kazakh	89.8	36.4	63.6	
Others	10.2	60.0	40.0	
Work experience				0.485
0-9	61.2	36.7	63.3	

10-20	18.4	55.6	44.4	
>20	20.4	30.0	70.0	
Position				0.781
Doctor	71.4	40.0	60.0	
Resident	28.6	35.7	64.3	
Patients per week				0.801
1-5	40.8	40.0	60.0	
5-10	36.7	33.3	66.7	
10-20	22.5	45.4	54.6	
SDM				0.489
No	26.5	30.0	70.0	
Yes	73.5	21.1	78.9	

7.4 Questionnaire in English

Part1:Demogrpahic Information

1. What is your gender?

□ Male
□ Female

2. What is your age? *(please write in)*

_____

3. What is your specialty?

□ Vascular surgeon
□ Gynecologists
□ Thoracoabdominal surgeon
□ Onco-surgeon
□ Transplantologist
□ Orthopedic surgeon
□ Hepatobiliary surgeon
□ Urologist
□ Otolaryngologist
□ Oncohematologist
□ Cardiologist
□ Therapist
□ Other _____

4. What is your marital status?

□ Married
□ Single
□ Divorced

5. What is your average family monthly income (in tenge)?

□ Less than 100 000
□ 100 000 – 199 000
□ 200 000 – 299 000
□ 300 000 –399 000
□ 400 000 – 499 000
□ 500 000 and above

6. What is your nationality?

□ Kazakh
□ Russian
□ Other_____

7. What is your working experience? (in years) (please write in)

_____

8. What is you position in hospital?

□ Doctor
□ Resident

9. How many patients do you treat per week?

□ 1-5
□ 5-10
□ 10-15
□ 15-20

10. Have you ever heard about term- shared decision-making?

□ Yes
□ No

11. If yes, where? (please write in)

□ from colleagues
□ from the Internet
□ from newspapers, journals
□ from seminars
□ others

12. What do you think a term - shared decision-making stands for? (please write in)

_____

Part 2. Practice towards shared decision-making

For questions 13-21, please rate your agreement or disagreement with following statements:

	Completely Disagree	*Strongly disagree*	*Somewhat disagree*	*Somewhat agree*	*Strongly agree*	*Completely agree*
13. I made clear to my patient that a decision needs to be made	□	□	□	□	□	□

14. I wanted to know exactly from my patient how he/she wants to be involved in making the decision	□	□	□	□	□	□
15. I told my patient that there are different options for treating his/her medical condition	□	□	□	□	□	□
16. I precisely explained the advantages and disadvantages of the treatment options to my patient	□	□	□	□	□	□
17. I helped my patient understand all the information	□	□	□	□	□	□
18. I asked my patient which treatment option he/she prefers	□	□	□	□	□	□
19. My patient and I thoroughly weighed the different treatmentoptions	□	□	□	□	□	□
20. My patient and I selected a treatment option together	□	□	□	□	□	□
21. My patient and I reached an agreement on how to proceed	□	□	□	□	□	□

Part 3. Attitudes towards shared decision -making

For questions 21-30, please rate your agreement or disagreement with following statements:

	Strongly agree	*Agree*	*Neither agree, no disagree*	*Disagree*	*Strongly disagree*
21. Patients may lose confidence in their physician if they believe that he/she has no firm opinion about the best treatment	□	□	□	□	□
22. Encouraging patients to participate may do more harm than good	□	□	□	□	□
23. Patients can't possibly make good decisions because they don't understand information	□	□	□	□	□

24. Asking patients to participate in treatment decisions produces unnecessary stress	□	□	□	□	□
25. Even if they receive enough information most patients are too upset to make a decision	□	□	□	□	□
26. Patients who participate in treatment decisions make a better adjustment to the disease	□	□	□	□	□
27. Patients should have a greater influence on treatment decisions than their doctor	□	□	□	□	□
28. Patients who participate in treatment decisions are less anxious and depressed	□	□	□	□	□
29. If given comprehensive medical information patients can make good decisions about treatment	□	□	□	□	□
30. Most patients want to be involved in treatment decisions	□	□	□	□	□

Part 4. Barriers in the process of shared decision making

For question 31-39 please rate your agreement or disagreement with following statements:

	Not difficult at all	*Very difficult*
31. Difficulty in discussing diagnosis	□	□
32. Difficulty in discussing treatment failure	□	□
33. Difficulty finding enough time	□	□
34. Difficulty in responding to patients' emotions	□	□
35. Difficulty in being honest without depressing patient	□	□
36. Difficulty in handling one's own negative feelings	□	□
37. Frequency of withholding prognosis from patient at family's request	□	□
38. Use euphemisms in discussing prognosis to keep hope s	□	□
39. Offer a treatment not likely to work to not destroy hope	□	□

7.5 Questionnaire in Russian

Часть 1: Демографические данные

1.Укажите ваш пол

□ Мужской
□ Женский

2.Укажите ваш возраст
_____

3. Укажите вашу специальность

□ Сосудистый хирург
□ Гинеколог
□ Торакоабдоминальный хирург
□ Онкохирург
□ Трансплантолог
□ Ортохирург
□ Гепатобиллиярный хирург
□ Уролог
□ Отоларинголог
□ Онкогематолог
□ Кардиолог
□ Терапевт
□ Другие _____

4. Укажите ваш семейный статус

□ Женат / Замужем
□ Холост / Не замужем
□ Разведен(а)

5. Укажите среднемесячный доход вашей семьи (в тенге)

□ меньше чем 100 000
□ 100 000 – 199 000
□ 200 000 – 299 000
□ 300 000 –399 000
□ 400 000 – 499 000
□ 500 000 и более

6. Укажите вашу национальность

□ Казах
□ Русский
□ Другие _____

7. Укажите ваш стаж работы (в годах)
_____

8. Укажите вашу должность в клинике

□ Доктор
□ Резидент

9. Сколько у вас пролеченных пациентов в неделю?

□ 1-5
□ 5-10
□ 10-15
□ 15-20

10. Слышали ли вы о термине “совместное принятие решения”?

□ Да
□ Нет

11. Если да, то где?

□ от коллег
□ интернет
□ газеты, журналы
□ конференции
□ другие _____

12. Как вы думаете, что означает термин “совместное принятие решения”? (впишите)

_____

Часть 2. Практика для совместного принятия решения

Для вопросов 13-21 оцените, пожалуйста, свое согласие либо несогласие со следующими утверждениями:

	Абсолютно не согласен	*Полностью не согласен*	*Отчасти не согласен*	*Отчасти согласен*	*Полностью согласен*	*Абсолютно согласен*
13. Я дал понять своему пациенту, что решение должно быть принято им	□	□	□	□	□	□

14. Я хотел бы точно знать от моего пациента, на сколько он / она хочет быть вовлеченным в принятии решения	□	□	□	□	□	□
15. Я сказал своему пациенту, что существуют различные варианты лечения его заболевания	□	□	□	□	□	□
16. Я четко объяснил преимущества и недостатки лечения своему пациенту	□	□	□	□	□	□
17. Я помог своему пациенту понять всю информацию	□	□	□	□	□	□
18. Я спросил у своего пациента какое лечение он/она предпочитает	□	□	□	□	□	□
19. Я и мой пациент тщательно взвесили различные методы лечения	□	□	□	□	□	□
20. Я и мой пациент совместно выбрали метод лечения	□	□	□	□	□	□
21. Я и мой пациент согласовали дальнейшие действия лечебного процесса	□	□	□	□	□	□

Часть 3. Убеждения к совместному принятию решения

Для вопросов 21-30 оцените, пожалуйста, свое согласие либо несогласие со следующими утверждениями:

	Полностью согласен	*Согласен*	*Затрудняюсь ответить*	*Не согласен*	*Полностью не согласен*
21. Пациенты могут потерять доверие к своему врачу, если они считают, что у них (у врачей) нет твердого мнения о наилучшем методе лечения	□	□	□	□	□
22. Стимулирование пациентов участвовать в лечении может принести больше вреда, чем пользы.	□	□	□	□	□
23. Пациенты не могут принимать соответствующих решений, потому что они не понимают информацию	□	□	□	□	□

24. Просить пациентов принять участие в принятии лечебных решений создает ненужный стресс	□	□	□	□	□
25. Даже если они получают достаточно информации, большинство пациентов не способны принять решения	□	□	□	□	□
26. Пациенты, принимающие участие в принятии лечебных решений, лучше адаптируются к заболеванию	□	□	□	□	□
27. Пациенты должны иметь большее влияние на принятие решения касательно их дальнейшего лечения, чем врач	□	□	□	□	□
28. Пациенты, принимающие участие в принятии лечебных решений, менее обеспокоены и депрессивны	□	□	□	□	□
29. Если медицинская информация дана всесторонне, то пациент может принять правильное решение о лечении	□	□	□	□	□
30. Большинство пациентов хотят быть вовлеченными в принятии лечебных решений	□	□	□	□	□

Часть 4. Барьеры в процессе совместного принятия решений

Для вопросов 31-39 оцените, пожалуйста, свое согласие либо несогласие со следующими утверждениями:

	Совсем не трудно	*Очень трудно*
31. Трудности в обсуждении диагноза	□	□
32. Трудности в обсуждении о неэффективном лечении	□	□
33. Трудности находить достаточное количество времени	□	□
34. Трудности в реагировании на эмоции пациентов	□	□

35. Трудности оставаться честным не травмируя пациента	□	□
36. Трудности справляться со своими негативными чувствами	□	□
37. Частота скрытия информации от пациента по просьбе семьи	□	□
38. Использование эвфемизмов (нейтральное слово) в обсуждении прогноза для сохранения надежды	□	□
39. Предложить маловероятное лечение чтобы не разрушить надежду	□	□

7.6 Oral informed consent in English and Russian

Oral consent form for the research study: Practice, knowledge and attitudes towards shared decision –making among physicians in Astana.

You are being invited to take part in this research because your experience as a physician can contribute much to the assessing the level of practices, knowledge and attitudes towards shared decision-making between physicians and their patients.

There are no immediate, direct benefits to you in participating in this research project. But, the results may help physicians and researchers understand the current views of shared decision-making from doctor's perspective. I believe there is no risk to you in participating in this project. If, however, you are uncomfortable or stressed by answering any of the survey questions, you can skip it.

During this research, data from surveys will be kept in a secure location. Only research team will have access to the data. Participation in this research project is voluntary. You can choose freely to participate or not to participate. In addition, at any point during this project, you can withdraw your permission without penalty.

If you have any questions, please contact Meruyet Mukhamedyarova, +7 771 1081411

NAZARBAYEV UNIVERSITY

Устная форма согласия на проведение исследования: “Практика, знания и убеждения к совместному принятию решений среди врачей г.Астаны в их медицинской деятельности”.

Вы приглашены принять участие в этом исследовании, потому что ваш опыт работы может внести большой вклад в оценку уровня практики, знаний и убеждений к совместному принятию решений между врачами и их пациентами.

Нет никаких непосредственных, прямых выгод для вас в участии в этом исследовании. Тем не менее, результаты могут помочь врачам и исследователям понять современные взгляды на совместное принятие решений с точки зрения врача. Также, вы не подвержены никаким рискам. Если, однако, вам неудобно отвечать на любой вопрос из опросника, Вы можете пропустить этот вопрос.

В ходе этого исследования полученные данные будут храниться в безопасном месте. Доступ к данным будет иметь только исследовательская группа. Участие в этом исследовательском проекте является добровольным. Вы можете свободно участвовать или не участвовать. Кроме того, в любой момент Вы можете прекратить участие в исследовании.

Если у вас есть какие-либо вопросы, Вы можете обратиться к Меруерт Мухамедьяровой, +7 771 1081411