Pilot Survey of Shared Decision-Making Between Orthopaedic Surgeons and Their Patients in Guatemala

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Background: Shared decision-making (SDM) is widely accepted as an essential feature of patient-centered care. However, to our knowledge, there has been no empirical research on the factors that influence orthopaedic surgeons' use of SDM in Guatemala.

Methods: Questions about physician attributes and SDM were included in a 2016 electronic survey distributed to the 221 members of the Asociación Guatemalteca de Ortopedia y Traumatología (AGOT).

Results: A total of 114 (52%) of the AGOT-registered orthopaedic surgery residents and orthopaedic surgeons who were sent surveys returned them, and 79 of these surveys contained complete responses to study variables of interest. Of the 79 participants with complete responses, 73% reported that they discussed treatment options most of the time or always with their patients and 81% reported that they explained the reasons for treatment choices. Compared with residents, surgeons who had completed their residency in orthopaedic surgery or had subspecialty training had greater odds (odds ratio [OR] = 9.62; 95% confidence interval [CI] = 1.35, 68.53; $p < 0.05$) of explaining the reasons for their decisions rather than using other strategies when patients expressed different preferences. Residents and surgeons who discussed treatment choices with their patients were more likely to allow their patients to participate in treatment decisions than those who did not (OR = 2.88; 95% CI = 1.90, 4.36; $p < 0.001$).

Conclusions: While findings from this exploratory study are limited by its small sample size and its narrow focus on physicians rather than on both patients and physicians, they nonetheless establish a roadmap for future study, particularly with respect to challenges in Guatemala to meaningful SDM that arise from context-specific cultural norms and practices.

Clinical Relevance: SDM as a tool of practice remains underutilized by orthopaedic surgeons in clinical practice in Guatemala. This study may encourage more discussions regarding SDM in orthopaedic surgery elsewhere in Central America and prompt discussion in the region on the value of and need for postgraduate training in this area.

Shared decision-making (SDM) in health care involves communication between the provider and patient that results, on one end of the spectrum, in patient-directed decision-making and, on the opposite end, in physician-directed decision-making¹. SDM requires an information exchange between physicians and patients intended to reach a treatment decision; physicians present the range of options and make a recommendation that reflects consideration of patients' own values, preferences, and beliefs²⁻⁵. In 2001, the Institute of Medicine identified informed participation by patients in

clinical decision-making as an essential feature of high-quality care⁶. Since 2004, SDM has been endorsed by leading health-care organizations in Europe and the United States, including the American Medical Association and the American College of Critical Care Medicine⁷⁻⁹.

Empowering patients with information regarding treatment has been linked to positive patient outcomes, better physician-patient communication, lower decisional conflict, and more realistic patient expectations about treatment options¹⁰. Although empirical data on physician attributes associated with

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SDM are limited, studies involving patients have suggested that minority status, training, volume of patients seen in practice, and physician satisfaction with professional autonomy may influence the extent to which their physicians engage in SDM¹¹.

More research is needed on SDM in the context of orthopaedic surgery and its impact on practice^{4,12,13}. There is a notable scarcity of research on the extent to which orthopaedic surgeons in Latin America engage in SDM or its utility in that setting. Central American health-care systems have been dominated largely by a physician-elite trained in medical skills with limited emphasis on community or socially oriented health care¹⁴. We are not aware of any data specific to SDM in Guatemala. The purpose of this exploratory study was to assess the extent to which orthopaedic surgeons in Guatemala engage in SDM with their patients and to identify physician attributes that may be associated with such practices. Although it is widely recognized in the literature that patient attributes are important factors that influence both the feasibility and the quality of SDM, this study focused exclusively on physicians as a first step in understanding the phenomenon in Guatemala.

At the time of this study, Guatemala's professional society of orthopaedic surgeons, the Asociación Guatemalteca de Ortopedia y Traumatología (Guatemalan Association of Orthopedics and Traumatology, or AGOT), reported having 221 members. Orthopaedic surgery residents are registered in AGOT and participate in its activities. Undergraduate medical education consists of 3 years of preclinical and 3 years of clinical training. Graduates receive a medical license from the Colegio de Médicos y Cirujanos (College of Physicians); those who wish to pursue a career in orthopaedic surgery must complete a 5-year residency in orthopaedic surgery (referred to in Central America as *general trauma and orthopaedic surgery [GTOS]*); orthopaedic surgery residents regularly perform surgical procedures under supervision as part of their training. Such supervision only occurs when the patient is in the operating room; emergency departments in Guatemala are not staffed by emergency medicine physicians or specialty residents. Orthopaedic surgery residents are usually alone in emergency rooms and handle all interactions with patients and families regarding diagnosis and treatment. While, in theory, only physicians licensed as orthopaedic surgeons can perform orthopaedic procedures, in practice, particularly in rural areas where health-care resources are often limited, general physicians frequently perform orthopaedic procedures on patients in need of orthopaedic care. Residency graduates receive a diploma from the national university, Universidad de San Carlos de Guatemala (USAC), which allows them to perform any type of orthopaedic procedure, regardless of subspecialty training. There is no board-certification process. Surgeons who complete a fellowship in a surgical subspecialty can register as orthopaedic surgeons with subspecialty training.

The availability of treatment options for hip fractures varies depending on the location of the facility and the availability of surgeons and equipment. Throughout Guatemala, most private hospitals are better staffed and equipped than public ones, and hospitals in the capital city are generally better

resourced than those located outside of Guatemala City (the "interior"). The choice of orthopaedic care of a hip fracture in an elderly patient is often surgery or no surgery. Whether or not there is an array of choices of the *type* of surgery to be performed may be determined by the availability of surgical supplies and equipment, physician preferences, ability of patients and their families to pay, and pressure from families who feel that costly procedures are wasted on elderly relatives near the end of their lives.

Materials and Methods

Data were collected as part of a 2016 survey conducted in Guatemala on orthopaedic surgeons' preferences in the management of intertrochanteric fractures as illustrated in 2 hypothetical scenarios involving elderly patients. A 23-question online survey in Spanish using SurveyMonkey included questions regarding respondent age, sex, terminal level of surgical training, years in practice, number of hip fracture operations performed each year as lead surgeon, and type of hospital facility (public or private) and geographic location in which they primarily operated. The survey included images of 2 different hip fractures and asked respondents to indicate the procedures that they would use for their repair. Intertrochanteric fractures were selected for the survey given widespread anecdotal reports of poor treatment decisions by surgeons in Guatemala, particularly when the fractures occurred in elderly patients.

This survey presented an opportunity to collect preliminary data on surgeon practices regarding SDM in Guatemala. For this purpose, the authors added 3 questions about SDM. Respondents were asked to rate on 5-point Likert scales (never, hardly ever, sometimes, the majority of the time, and always) how often they discussed treatment options with their patients ("discussion") and how often they allowed patients to participate in treatment decision-making ("participation"). Respondents were also asked how they handled situations in which their patients preferred an alternative treatment ("preferences"). The protocol was approved by the institutional review board at the Universidad Francisco Marroquín (UFM). The survey was distributed via e-mail in May 2016 by AGOT to its membership. Responses to the survey were anonymous. Four rounds of reminders were sent before closing the survey in August 2016.

Statistical Analyses

This analysis of SDM used only the physician attributes included in the primary survey and the responses to the 3 SDM questions that we had added. Findings from the primary survey regarding surgeon management of intertrochanteric fractures were not included. Data were analyzed using Stata statistical software (version 14.0; StataCorp). Descriptive statistics were calculated for all study variables. To simplify both the bivariate and the multivariate analysis, 2 categorical variables were collapsed into dichotomous variables: "geographic location" (in Guatemala City/outside Guatemala City) and "level of training" (residents/licensed GTOS surgeons and surgeons with a subspecialty). The 5-level variable "preferences" was collapsed into the dichotomous variable "explains" (explains reasons underlying treatment

TABLE I Descriptive Statistics for All Respondents and for Respondents Included in the Analytic Sample

Variables	All Respondents (N = 114)		Analytic Sample (N= 79)	
	No.	%	No.	%
Sex				
Female	7	6	6	8
Male	85	75	73	92
No response	22	19		
Age in years				
20-30	15	13	12	15
31-40	46	40	38	48
≥41	31	27	29	37
No response	22	19		
Primary location of practice				
Guatemala City	58	51	53	67
Interior (outside Guatemala City)	34	30	26	33
No response	22	19		
Level of training				
Orthopaedic surgery resident	20	18	15	19
GTOS	41	36	36	46
Orthopaedic surgery with subspecialty	31	27	28	35
No response	22	19		
Years of practice				
≤5	43	38	34	43
>5 to ≤10	20	18	17	22
>10 to ≤20	13	11	13	16
>20	16	14	15	19
No response	22	19		
No. of intertrochanteric fractures operated on per year				
1-5	20	18	15	19
6-10	24	21	18	23
11-20	26	23	24	30
>20	22	19	22	28
No response	22	19		
Patient population				
Public institution	45	39	35	44
Private practice	47	41	44	56
No response	22	19		
Discusses treatment options with patients				
Never	2	2	2	3
Hardly ever	5	4	5	6
Sometimes	14	12	14	18
Majority of the time	20	18	20	25

*continued***TABLE I (continued)**

Variables	All Respondents (N = 114)		Analytic Sample (N= 79)	
	No.	%	No.	%
Always	38	33	38	48
No response	35	31		
Allows patients to participate in treatment decisions				
Never	7	6	7	9
Hardly ever	13	11	13	16
Sometimes	18	16	18	23
Majority of the time	17	15	17	22
Always	24	21	24	30
No response	35	31		
Situations in which patient prefers alternative treatment				
Takes patient preferences into account	9	8	9	11
Explains reason for choice of treatment	64	56	64	81
Refuses to treat unless physician decision accepted	1	1	1	1
Offers to refer patient to another specialist	2	2	2	3
Other	3	3	3	4
No response	35	31		

choice/uses another approach to handle patient preferences). Tests of significance were performed to examine the relationship between each of the SDM variables (“discussion,” “participation,” and “explains”) and physician attributes. Attributes that correlated with SDM variables at $p < 0.15$ in the bivariate analyses were included in the multivariate analyses; age was included in all models given its strong correlation with the level-of-training variable (chi square [16, $n = 79$] = 39.94, $p < 0.001$). Ordered logistic regression models were used to examine factors associated with the 2 multilevel outcome variables “discussion” and “participation.” A logistic regression model was run to examine factors associated with the dichotomous outcome variable “explains.” Only findings in the multivariate analysis with p values of <0.05 were considered significant.

Results

Table I shows descriptive statistics for all survey respondents as well as the subset of respondents included in the analytical sample. A total of 114 (52%) of the AGOT-registered orthopaedic surgery residents and orthopaedic surgeons who were sent surveys returned them, and 79 of these surveys contained responses to all study variables of interest for this analysis.

TABLE II Results of Bivariate Analysis

	Chi-Square	Discusses Treatment Options with Patients				
		Never	Hardly Ever	Sometimes	Majority of the Time	Always
Sex	0.749					
Female		0	0	1	2	3
Male		2	5	13	18	35
Age in years	1.872					
20-30		0	1	3	3	5
31-40		1	2	5	10	20
≥41		1	2	6	7	13
Primary location of practice	5.72					
Guatemala City		1	2	12	11	27
Interior (outside Guatemala City)		1	3	2	9	11
Level of training*	2.173					
Resident		0	0	3	5	7
More than residency		2	5	11	15	31
Years of practice	9.216					
≤5		0	2	7	8	17
>5 to ≤10		1	1	2	5	8
>10 to ≤20		1	0	1	5	6
>20		0	2	4	2	7
No. of intertrochanteric fractures operated on per year	12.6					
1-5		1	3	3	3	5
6-10		1	1	1	4	11
11-20		0	1	5	7	11
>20		0	0	5	6	11
Patient population	7.301†					
Public institution		0	1	7	13	14
Private practice		2	4	7	7	24
Discusses treatment option with patients						
Never						
Hardly ever						
Sometimes						
Majority of the time						
Always						
Allows patients to participate in treatment decisions	52.203§					
Never		1	1	1	2	2
Hardly ever		0	4	4	4	1
Sometimes		1	0	6	5	6
Majority of the time		0	0	2	8	7
Always		0	0	1	1	22
Situations in which patient prefers alternative treatment*	3.375					
Explains		1	5	12	17	29
Other		1	0	2	3	9

*Collapsed variable used for bivariate analysis. †P ≤ 0.15. ‡P < 0.05. §P < 0.001.

TABLE II (continued)

Allows Patients to Participate in Treatment Decisions						Explains Treatment Decisions		
Chi-Square	Never	Hardly Ever	Sometimes	Majority of the Time	Always	Chi-Square	Other	Explains
2.516	1	0	1	1	3	0.869	2	4
	6	13	17	16	21		13	60
11.299	0	1	6	3	2	0.896	3	9
	4	5	8	6	15		8	30
	3	7	4	8	7		4	25
0.339	5	8	12	12	16	0.421†	9	44
	2	5	6	5	8		6	20
7.68†	0	0	6	3	6	5.315†	6	9
	7	13	12	14	18		9	55
10.052	2	4	11	5	12	1.373	7	27
	2	2	3	4	6		4	13
	2	3	1	5	2		1	12
	1	4	3	3	4		3	12
13.467						1.363		
	2	4	2	2	5		4	11
	2	1	2	7	6		4	14
	2	5	5	6	6		3	21
	1	3	9	2	7		4	18
5.137	3	4	12	7	9	0.042	7	28
	4	9	6	10	15		8	36
52.203§	1	0	1	0	0	3.375	1	1
	1	4	0	0	0		0	5
	1	4	6	2	1		2	12
	2	4	5	8	1		3	17
	2	1	6	7	22		9	29
						6.729		
							1	6
							1	12
							1	17
							4	13
							8	16
6.729	6	12	17	13	16			
	1	1	1	4	8			

TABLE III Logistic Regression Models Showing “Discussion,” “Participation,” and “Explains” Domains Regressed on Sociodemographic Factors, Training, and Experience of Physicians (N = 79)

Variables	OR (95% CI)		
	Model 1: “Discussion”	Model 2: “Participation”	Model 3: “Explains”
Age (ref. 20-30 yr)			
31-40 yr	1.86 (0.476, 7.268)	3.08 (0.637, 14.893)	0.26 (0.030, 2.166)
≥41 yr	1.88 (0.412, 8.584)	2.28 (0.409, 12.710)	0.25 (0.020, 3.247)
Patient population (ref. public institution)	0.74 (0.256, 2.147)	—	—
Allows patients to participate in treatment decisions	2.88* (1.899, 4.363)	—	—
Licensed GTOS surgeons/surgeons with subspecialty (ref. orthopaedic surgery resident)	—	0.247 (0.053, 1.153)	9.62† (1.350, 68.527)
Discusses treatment options with patients	—	3.24* (2.040, 5.153)	—
Primary location of practice (ref. Guatemala City)	—	—	0.65 (0.185, 2.263)

*P < 0.001. †P < 0.05.

The 2 samples are proportionately similar, suggesting that the analytic sample is an adequate representation of the larger sample. When answering the surveys, 73% of the respondents reported that they discussed treatment options most of the time or always with their patients, 9% reported that they never or hardly ever did so, 25% reported that they never or hardly ever permitted their patients to participate in treatment decision-making, 52% reported that they permitted them to do so the majority of the time or always, 11% reported considering patients' preferences when deciding on treatment, and 81% reported that they explained the reasons for their treatment recommendations when patients indicated a preference for an alternative treatment.

Bivariate Analyses

The results of the bivariate analyses are reported in Table II. Only 2 relationships between variables were significant at the $p < 0.05$ level. The level of training was significantly correlated with the “explains” variable (chi square [16, $n = 79$] = 5.315, $p < 0.05$), and the “discussion” variable was positively correlated with the “participation” variable (chi square [16, $n = 79$] = 52.20, $p < 0.001$). The latter finding suggests that the more often physicians discuss treatment options with their patients, the more they also allow them to participate in treatment decisions.

Multivariate Analyses

The results of the multivariate analyses are shown in Table III. No physician attributes were significantly associated with the frequency with which surgeons discussed treatment options with their patients at the $p < 0.05$ level (Table III, Model 1). Surgeons and residents who discussed treatment options with their patients had 2.88 times greater odds of allowing their patients to participate in decision-making than those who did not (95% confidence interval [CI] = 1.90, 4.36; $p < 0.001$). The odds that licensed GTOS surgeons and those with subspecialties would choose to explain the reasons behind a treatment decision over

another approach were more than 9 times greater than those of residents (Table III, Model 3). Interestingly, surgeons who had completed GTOS training and surgeons with subspecialties appear to be less likely to allow their patients to participate in treatment decisions, although this finding was not significant.

Discussion

We believe that this study is the first attempt to understand the extent to which orthopaedic surgeons in Guatemala practice SDM. As a result of the small sample size and the narrow focus on surgeons rather than on both surgeons and patients, it is not possible to form a complete picture of the practice. Several findings from this study are nonetheless of interest and identify avenues for future inquiry.

In this study, physician training was associated with how orthopaedic surgeons utilized SDM. Surgeons with more advanced training had lower (although not significantly lower) odds of allowing their patients to participate in decision-making about treatment than residents. There are a number of possible explanations for this. Surgeons with advanced training may have received their training in an era when medical practice was based on a paternalistic model of patient care without the emphasis on SDM currently taught in many residency programs today¹⁵. While surgeons may have been exposed to SDM during training elsewhere, SDM is not formally included in the medical training curricula in Guatemala. Another important consideration is that there is currently no requirement for surgical consent in Guatemala. Treating physicians, as a general rule, do ask patients and/or their family members for surgical consent but this process is unstructured and inconsistently utilized. To the extent that surgeons in Guatemala engage in SDM, it is an entirely elective, not mandated, process.

Surgeons with advanced training have higher odds of explaining the reasons behind their treatment choice to patients than residents. This finding may be linked to the same issues identified above, but may also reflect the difference in levels of professional

autonomy between practicing surgeons and residents. The latter may feel less certain about their choices of treatment and be less confident in fielding questions or demands from patients or their family members regarding alternative approaches.

Patient attributes are known to be important factors in the willingness of both physicians and patients to engage in SDM, particularly in settings where cultural and social norms may conflict with such a practice^{16,17}. Previous research has identified such attributes as patient sex, age, ethnicity, level of education, and socioeconomic status as exerting an influence not only on patients' willingness to participate in SDM, but also on their ability to do so in a meaningful way. While more research is needed to understand the role of particular patient characteristics with respect to SDM in Guatemala, it is likely that such attributes influenced those surgeons who indicated that they would not allow the patients to participate in treatment decision-making.

In general, Guatemalans adopt a family-centered decision-making model in health care and other aspects of daily life. Surgeons in this setting may have a tendency to turn to the family rather than to a patient in pain or distress to discuss treatment decisions. This would very likely be the case with elderly patients. In Guatemala, elderly family members are traditionally considered the responsibility of their adult children and often reside in their homes under their care¹⁸. Given this, it is common for physicians in Guatemala to speak with family members about medical treatment options rather than directly with the patient. Elderly patients may present with or be assumed to have limited cognitive ability to make informed decisions about their own care¹⁹.

Although Spanish is the official language of Guatemala and is spoken by 93% of the population, there are 23 indigenous languages used in various subpopulations, particularly those treated in public hospitals or in medical settings in the interior of the country. Surgeons may be unable to communicate with such patients because of language barriers as well as different cultural meanings ascribed to illness, risk, and treatment²⁰. Elderly patients from indigenous communities may not have had any formal schooling, which is taught in Spanish, and are therefore less able to communicate with surgeons for whom Spanish and possibly English are their only languages. Studies elsewhere have also shown that lower literacy rates may be associated with a lack of interest on the part of patients to take part in decision-making about their care²¹.

Even though the perception is not supported by the literature, many physicians feel that SDM requires more time than they can devote to decision-making for individual patients¹³. Surgeons

in Guatemala may well assume that the aforementioned challenges (family decision-making, age, language, and differing conceptions of illness and treatment) would make the practice of SDM unwieldy and unduly long in busy orthopaedic surgical settings where human and physical resources are already constrained.

Another important dimension of orthopaedic surgery in Guatemala that should be explored in future research on SDM is the extent to which surgeon willingness to engage with patients in SDM is constrained by the ubiquitous lack of treatment options for most people in Guatemala due to a lack of surgical equipment and supplies and well-equipped operating theaters. In public hospitals, for example, patients with a hip fracture may have to wait for weeks for prosthetic devices and other surgical supplies to become available; the surgical device covered by insurance or provided free by the government may not be the appropriate "choice" for a patient and recommended prosthetics may be beyond their financial reach. In such situations, surgeons may perceive that there are no "choices" available and therefore see no reason for discussing treatment decisions with a patient or his/her family.

Despite the growing evidence about the benefits of shared decision-making and the widespread acceptance of SDM in clinical practice elsewhere in the world, we are not aware of any studies of this practice among orthopaedic surgeons in Guatemala. While findings from this exploratory study are limited by the low response rate and its narrow focus on physicians rather than on characteristics of physicians, patients, and the medical environment, it does offer a roadmap for further research in this critical area, particularly with respect to the value and role of physician training in decision-making practices. ■

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