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Factors Influencing Physicians' Patient-centered Communication Behavior in Medical Encounters

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ABSTRACT

This study examines the factors associated with physicians' patient-centered communication behavior in medical consultation in primary care settings in the Chittagong Hill Tracts (CHT) area of Bangladesh. A cross-sectional study was conducted among the patients who visited the physician in six district/Upazila hospitals. A structured and facilitator-administered questionnaire was used to collect data. The independent-samples t-test, Pearson correlation and the one-way between-groups analysis of variance (ANOVA) were conducted to find the relationship between independent variables and the outcome variable. Linear regression analyses were run to determine the factors influencing physicians' patient-centered communication behavior in primary medical consultations. This study explored that, patients' age, being the Bengali, patients' perception of the severity of the condition, pre-plan about the content of medical encounter, the ambiance of physicians' room, and appointment length were positively associated with facilitative patient-centered communication behavior from the physicians. Besides, patients' active participation, for example, seeking more information about their physical condition to the physician and participating in making decisions about the health problems were also resulted in effective patient-centered communication behavior. This study suggests providing physicians with adequate training for enhancing patient-centered skills and ensuring patients receive high-quality healthcare, regardless of inequality in patients' socioeconomic status.

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Introduction

Physicians' patient-centered communication behavior is a crucial aspect of the relationship between two parties. It is considered to be an important way for effective interaction between physicians and patients and better health outcomes. The core concepts of physicians' patient-centered communication behavior include "(1) eliciting and understanding patient perspectives (e.g., concerns, ideas, expectations, needs, feelings, and functioning), (2) understanding the patient within his or her unique psychosocial and cultural contexts, and (3) reaching a shared understanding of patient problems and the treatments that are concordant with patient values" (Epstein & Street, 2007). For

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over 30 years, Physicians' patient-centered communication behavior has become a research subject in the area of health communication and the fields of medicine, nursing and public health (Ahmed, 2012; Ong et al., 1995; Rao et al., 2007; Roter et al., 1997). Studies (Beckman & Frankel, 1984; Marvel et al., 1999) showed that just a small number of patients were given the opportunity to finish initial explanations of their concerns. Research also show that physicians' patient-centeredness can contribute to enhancing patient safety, adherence to medication and health outcomes, decreased costs of medical malpractice and increased physicians' job satisfaction--indeed, it can upsurge patient satisfaction across the health care spectrum (Brown et al., 2003; Gupta & Carr, 2008).

Physicians' patient-centeredness is therefore a key aspect of the physician-patient relationship because it allows good interpersonal relationships to be established and maintained, information exchanges and shared medical decision-making (Ong et al., 1995). From the medical point of view, to establish a proper diagnosis and treatment plan, physicians must obtain information from patients. From the patents' perspective, they need to learn and understand about their health problem, and feel recognized as a person and understood by the physician. To satisfy both needs, the two parties must alternate between giving and finding information. Finally, Ong et al. (1995) defined another function of communication as being medical decision making. It requires the practitioner to use strong communication skills, attempting to consider the point of view of the patient and collaborating with patients to find common ground in care management.

Despite the copious scholarly attempts to understand and elucidate the different aspects of physician-patient communication behavior and to explore associated factors, this body of study attempts to add the literature in Bangladesh's perspective. In addition to this, reviewing the studies conducted in Bangladesh on physicians and patients, it can be concluded that there is a dearth of scholarly works that addressed the communication behavior between physicians and patients. This study is an attempt to fill up this gap. Findings from this study may underscore the importance of providing the appropriate initiatives and interventions that account for the needs of poor patients. Therefore, this study aims to examine the predictors of physicians' patient-centered communication behavior in primary care medical consultation in district and Upazila (sub-district) hospitals in the Chittagong Hill Tracts (CHT) of Bangladesh.

Methodology

This study used a quantitative research approach designed with a hospital-based cross-sectional survey. It was conducted in different district hospitals and Upazila health complexes (UHC) in the Chittagong Hill Tracts (CHT) area. The CHT is an area within the Chittagong Division in southeastern Bangladesh, bordering India and Myanmar (Burma). The area of the CHT is about 13,184 km^2, which is approximately one-tenth of the total area of Bangladesh (Wikipedia, 2020). The CHT consists of three hilly districts of Bangladesh--*Rrangamati*, *Khagrachhari*, and *Bandarban* districts. The population of the three districts totaled 1,587,000 in the provisional returns of the census of 2011 (Wikipedia, 2020).

Purposive and random sampling methods are used to select the research area for this district hospital/health complex-based cross-sectional study, while study participants are chosen using a convenient sampling process. Three district hospitals from three districts (*Rangamati, Bandarban*, and *Khagrachori*) in the CHT region are chosen for hospital patients because they serve a more diverse population than that of Upazilas. The lottery approach is used to choose three Upazilas from three districts to obtain data from the UHC.

The sample size is determined using single population proportion formula considering the following assumption: $p = 50\%$, significance level 5% ($\alpha = 0.05$), $Z\frac{\alpha}{2} = 1.96$, margin of error 3% ($d = 0.05$), a design effect of two (as stratified multistage sampling is used) and 10 % non-response rate. Assuming 10% nonresponse rate, the sample size was: $n = n + 10\% = 770+77 = 847$. Finally, a total of 850 patients participated in the survey.

Study data are collected using a pretested, structured, and self-administered questionnaire. Physicians' communication behavior with the patients is the dependent variable of this study. It is assessed using a scale consists of 19 items developed by Wachira et al. (2013). The internal consistency was also measured. The reliability test produced an acceptable Cronbach's Alpha (α) value (0.757), confirming that the tool is valid for this particular sample. Six facilitators, trained by the principal researcher, administered the questionnaire survey. Before entering the physicians' room, study participants were given some information about the questionnaire and were asked to complete the post-consultation questionnaire shortly after the medical consultation ended that was used in previous studies (Gordon & Street, 2016). Data collectors have checked the filled questionnaire. Before being included in the study, each participant gave written informed consent. Participation was entirely voluntary, and participants had the option to decline or withdraw at any time during the study.

The data, which are gathered using a structured questionnaire, is coded and entered into IBM SPSS version 24.0. Comparisons among study participants' multiple categories of socio-demographic and other background characteristics regarding the overall mean score of patient-centered communication behavior received from physicians were made using appropriate inferential tests such as a two-tailed *t*-test, Pearson correlation and one-way analysis of variance (ANOVA). To estimate the proportion of variance in patient-centered communication behavior that can be accounted for by socio-demographic, patients' cognitive factors, and physicians' predisposing and organizational factors, linear regression analyses were performed. The variables with a $p < .05$ in the t-test and ANOVA were included in the linear regression models to identify the predictors of physicians'patient-centered communication behavior. In total, four models were fitted to predict the determinants of physicians' patient-centered communication behavior. Model 1 assessed background-related predictors of the outcome variable. Model 2 explored the effects of patients' cognitive factors, while Model 3 examined the physicians' predisposing and organizational factors. In the final model, all variables were included to explore the relative contributions of each factor for better patient-centered communication behavior. Variables are having *p*-value < .05 in the linear regression analysis were considered as significant predictors.

Conceptual Framework

The conceptual foundation for this investigation to explore the factors affecting physician-patient communication was adapted from Street's ecological framework of communication in medical encounters (Street, 2003). Street's ecological communication model paradigm indicates that the relationship between physicians and patients is situated within and affected by various social contexts, including personal, interpersonal, media, organizational, and cultural contexts.

Firstly, organizational context is associated with the setting in which the medical interview took place that includes appointment length, the amount of time patients wait to see a physician, clinic type, and whether or not patients are experienced with communication skills training (Street, 2003).

Secondly, cultural context is associated with the physician's race/ethnicity, patient's race/ethnicity, and patient-physician ethnic concordance (Street, 2003).

Thirdly, the interpersonal context is represented by a number of variables. Patients' predisposing variables include sex, age, education, status (i.e., new to the doctor or a returning patient), and perceived medical condition, whereas doctors' predisposing variables include sex, years past residency, and patient-centered communication style (Street, 2003). Physicians' perceptions of the seriousness of the patient's medical condition and the difficulty of medical decision making, as well as the doctor's understanding of the patient's need for knowledge and participation in decision making, are cognitive-affective factors (Street, 2003). The patient's appetite for knowledge and participation in decision-making, on the other hand, is a variable of cognitive-affective factors for patients (Street, 2003). We took 12 variables from the model and adapted some new variables.

Findings

The mean of the education years of the respondents was 7.01 (*SD* ± 5.26). Regards to the respondents' occupation, 170 (20%) were housewives/no job, 105 (12.4%) were business-men, 220 (25.9%) were in agriculture, 95 (11.2%) were in service and labor and 260 (30.6%) were a student. The mean age of the respondents was 30.95 (*SD* ±13.35) years old and among them 499 (58.7%) were male. Regarding the respondents' ethnic identity, 400 (47.1%) were *Bengali* followed by *Chakma* (183, 21.5%), *Marma* (173, 20.4%), *Tripura* (72, 8.5%) and other ethnic minority groups (22, 2.6%). Among the study participants, 228 (26.8%) had monthly household income of BDT >10000-20000, followed by BDT >5000-10000 (228, 26.8%), up to BDT 5000 (165, 19.4%), BDT >2000-3000 (105, 12.4%) and BDT >30000 (97, 11.4%). Regards to the district, 278 (32.7%) were from *Rangamati* district, 268 (31.5%) were from *Bandarban* district, and 304 (35.8%) were from *Khagrachari* district.

The independent-samples *t*-test, Pearson correlation and one-way between-groups analysis of variance (ANOVA) are conducted to explore the relationship between the respondents' socio-demographic factors and the physicians' patient-centered communication behavior score. Table 1 demonstrates that the study participants' education years ($r = .23$, $p < .001$), occupation ($F = 13.74$, $p < .001$), age ($r = -.11$, $p = .002$), ethnicity ($F = 88.19$, $p < .001$), monthly household income ($F = 24.51$, $p < .001$), area of residence ($F = 26.24$, $p < .001$), marital status ($F = 14.93$, $p < .001$), TV viewing ($t = 5.26$, $p < .001$), mobile use ($t = 4.07$, $p < .001$), Internet use ($t = 6.93$, $p < .001$) are significantly associated with patient-centered behavior from the physicians.

Using the independent-samples *t*-test, Pearson correlation and the one-way between-groups analysis of variance (ANOVA), Table 2 depicts that the patient type ($t = 3.36$, $p = .001$), patients' perception of having knowledge on the health problem they affected ($F = 18.62$, $p < .001$), perception of the severity of the problem ($F = 3.97$, $p = .003$), gender of the physicians ($t = 3.09$, $p = .002$), the ambience of the physicians' room ($F =$

13.05, $p < .001$), appointment length ($r = .365$, $p < .001$) and plan about the content of medical encounter prior visit the physicians' room ($t = 6.76$, $p < .001$), patents' asking questions about their physical condition ($t = 4.66$, $p < .001$) are significantly associated with patient-centered communication behavior score.

Table 1 Socio-demographic Related Predictors of Physicians' Patient-centered Communication Behavior

Variables	Categories	*M*	*SD*	Test (*F/t/r*)	*p*
Education years				.23[c]	<.001
Occupation	Housewife/no job	62.23	9.03	13.74[a]	<.001
	Agriculture	61.15	9.60		
	Student	65.80	8.78		
	Labor/service	64.85	7.90		
	Business	67.17	7.50		
Age (years)				-.11[c]	.002
Gender	Female	64.22	8.88	1.04[b]	.299
	Male	63.56	9.36		
Ethnicity	Bengali	69.10	6.10	88.19[a]	<.001
	Chakma	60.11	8.80		
	Marma	59.67	8.55		
	Tripura	56.89	9.23		
	Others	58.95	9.27		
Income (BDT)	Up to 5000	59.12	9.42	24.51[a]	<.001
	> 5000 - 10000	63.51	9.04		
	> 10001 - 20000	64.49	8.35		
	> 20001 - 30000	66.25	6.47		
	> 30000	69.28	8.85		
Area of residence	Urban	69.90	6.80	26.24[a]	<.001
	Sub-urban	64.10	8.93		
	Rural	62.82	9.09		
Marital Status	Married	62.85	9.24	14.93[a]	<.001
	Single	65.16	8.58		
	Unmarried (widow/divorced)	69.45	7.16		
TV viewing	Yes	64.48	8.83	5.26[b]	<.001
	No	59.05	9.92		
Mobile use	Yes	64.48	8.99	4.07[b]	<.001
	No	60.96	9.04		
Internet use	Yes	66.16	8.46	6.93[b]	<.001
	No	61.97	9.16		

Notes: [a] ANOVA-based one-way analysis of variance
[b] Two-tailed *t*-test
[c] Pearson correlation

Table 2 Patients' Cognitive and Physician Gender and Organizational Predictors of Physicians' Patient-centered Communication Behavior

Variables	Categories	*M*	*SD*	Test (*F/t/r*)	*p*
Perception of problem's severity	Not at all	64.48	9.80	3.97[a]	.003
	Slightly	65.38	8.42		
	Moderately	62.84	9.16		
	Very	64.09	10.24		
	Extremely	60.50	8.11		
Knowledge of the health problem	Very poor	60.34	10.42	18.62[a]	<.001
	Poor	63.54	8.33		
	Moderate	67.18	8.24		
	Good	71.35	4.18		
	Very good	74.50	2.12		
The amount of time patients waits				.013	.699
Plan about the content of encounter	Yes	65.83	8.59	6.76[b]	<.001
	No	61.71	9.14		
Patients' asking questions	Yes	66.28	8.91	4.66[b]	<.001
	No	63.09	8.68		
Patients' involvement in decision-making	Yes	65.48	8.35	6.79[b]	<.001
	No	61.14	9.09		
Physicians' gender	Female	65.45	8.27	3.09[b]	.002
	Male	63.40	9.30		
Number of patients waiting	0-10	63.56	9.66	.76[a]	.469
	11-20	64.18	8.75		
	> 20	64.47	8.14		
Atmosphere of the physician's room	Noisy	63.55	8.97	13.05[a]	<.001
	Moderate	63.00	9.34		
	Quiet	67.90	7.81		
Patient type	Old	65.58	8.66	3.36[b]	.001
	New	63.28	9.16		
Appointment length				.365[c]	<.001
Quality of health complex	Very dissatisfied	64.63	10.01	.70[a]	.555
	Dissatisfied	63.63	8.27		
	Neither	63.92	9.22		
	Satisfied	66.45	10.86		

Notes: [a] ANOVA-based one-way analysis of variance
[b] Two-tailed *t*-test
[c] Pearson correlation

The results of the linear regression analysis reporting factors associated with the physicians' patient-centered communication behavior score are reported in Table 3. We applied four models to explore the relative strength of the covariates. However, results of multiple linear regression in Table 3, model 4 (socio-demographic, patient cognitive and behavioral factors, and physicians' predisposing and organizational variables) revealed that respondents' education years (β = .10, t = 2.51, p = .012), age (β = .11, t = 3.15, p = .002), being the Bengali (β = .46, t = 16.91, p < .001), Internet use (β = .07, t = 2.07, p = .038), perception of affecting a less severe problem (β = .07, t = 2.79, p = .005), having a pre-plan about the content of medical encounter (β = .14, t = 5.24, p < .001), asking more questions about health problem (β = .07, t = 2.73, p = .006) and patients' participation in medication-related decision making process (β = .11, t = 4.38, p < .001), female physicians (β = .05, t = 2.04, p = .041), appointment length (β = .18, t = 6.66, p < .001) and soundless atmosphere of the physician's room (β = .06, t = 2.35, p = .019) are the important

predictors of better patient-centered communication behavior score.

Findings in Table 4, model summary, explored the comparison of R^2 values of different models. With better patient-centered communication behavior as the dependent variable, for model 1, socio-demographic variables were statistically significant predictors (R^2 = .39). For model 2, after controlling for the demographic covariates, patients' cognitive variables were positively predictive of patient-centered communication behavior (R^2 = .17). For model 3, after controlling for the demographic covariates and patients' cognitive variables, physicians' predisposing and organizational covariates are significantly predictive of better patient-centered communication behavior (R^2 = .17). A comparison of R^2 values for different models showed significant improvement with socio-demographic variables. ANOVA values of Model 1 for overall patient-centered communication behavior (F = 75.30, p < .001), Model 2 (F = 41.74, p < .001), Model 3 (F = 35.21, p < .001) and Model 4 (F = 49.32, p < .001) report that our multiple linear regression models performed well and would be good predictors of better patient-centered communication behavior. Besides, R^2 value of the final model is .49 which indicates that 49% of the variance in the outcome variable (patient-centered communication behavior score) has been predicted or affected by predictable variables.

Table 3 Multiple Linear Regression Analysis Showing Factors Associated with Physicians' Patient-centered Communication Behavior

Variables	Model 1		Model 2		Model 3		Model 4	
	β	*t*	β	*t*	β	*t*	β	*t*
Education years[a]	.13**	3.05					.10*	2.51
Occupation[b]	.03	0.74					.05	1.23
Age[a]	.09*	2.38					.11**	3.15
Ethnicity[c]	.56**	20.35					.46***	16.91
Area of Residence[d]	.01	0.52					.04	1.56
Marital status[e]	.10*	2.53					.06	1.47
Internet use[f]	.12**	3.07					.07*	2.07
Problem's severity[g]			.20***	4.06			.07**	2.79
knowledge on problem[h]			.13***	6.43			.04	1.64
Plan about encounter[f]			.18***	5.48			.14***	5.24
Patients' asking questions[f]			.16***	4.93			.07**	2.73
Involvement in decision-making[f]			.18***	5.48			.11***	4.38
Gender of the physician[i]					.06*	2.05	.05*	2.04
Patient type[j]					.06*	2.03	.03	1.32
Appointment length[a]					.35***	10.87	.18***	6.66
Atmosphere of the physician's room[k]					.12***	3.93	.06*	2.35

Notes: *p < .05, **p < .01, ***p < .001

[a] Continuous variable; [b]1= House wife/no job/agriculture, 2 = Student/labor/service/ business; [c]1 = Ethnic minority, 2 = Bengali; [d]1 = Rural, 2 = Urban/sub-urban; [e]1 = Married, 2 = Single/widow/divorced; [f]1 = No, 2 = Yes; [g]1 = Minor problem, 2 = Major problem; [h]1 = Poor knowledge, 2 = Good knowledge; [i]1 = Male, 2 = Female; [j]1 = New, 2 = Old; [k]1 = Noisy, 2 = Quiet.

Table 4 Results of Model Summaries and ANOVA Depicting the Fitness of the Model for Linear Regression

Models	R^2	Adjusted R^2	*df*	*F*	*p*
Model 1 (Socio-economic factors)	.39	.38	7	75.30	<.001
Model 2 (Patients' cognitive factors)	.17	.17	5	35.21	<.001
Model 3 (Physicians' predisposing and organizational factors)	.17	.16	4	41.74	<.001
Model 4 (Multiple factors)	.49	.48	16	49.32	<.001

Discussion

The study findings revealed that the patients' judgment of having favorable communication behavior from the physician was significantly higher among the patients who had more years of education. In general, education and knowledge are intertwined with each other. This study also found a significant positive correlation between education level and knowledge on the health problem they are affected ($r = .26$, $p < .01$). In Bangladesh's perspective, educated persons have more access to mass media and interaction in social networks; accordingly, they are more knowledgeable about health and able to participate actively in expressing their anxiety, preferences and opinions that contribute to more effective communication between the physician and patients. Our findings are similar to previous studies (Matusitz & Spear, 2014; Street et al., 2005; Wachira et al., 2013).

The age of the patients was found as a predictor of having better communication behavior from the physicians. It can be explained by that the aging people usually are suffering from different chronic diseases that required to be adequately addressed. Consequently, older people often receive more effective patient-centered behavior from physicians. Our findings agree with a previous study (Fox & Stein, 1991).

In Bangladesh, some cross-cultural or cross-ethnic literature shows that ethnic minority groups cannot manage their livelihood according to the social goals and resources of the country because of their low socioeconomic status and suffer deprivation and health problems in the country (Uddin, 2015). Because of the language difficulties that the ethnic minority people encounter when admitted to a hospital and visit doctors, they are frequently unable to obtain necessary help with their daily living requirements. Literature also reports that receiving patient-centered communication behavior from physicians is difficult when patients are from dissimilar racial/ethnic groups (Cooper et al., 2003). Concordant ethnicity between physician and patient contributed most for better patient-centered behavior in our study, illustrating the ethnic minority patients were less likely to receive better communication behavior from the discordant Bengali physicians. Our finding is supported by abundant studies (Cooper et al., 2003; Gupta & Carr, 2008; Kaplan et al., 1995; Street et al., 2005; Matusitz & Spear, 2014).

In our study, patients' Internet use has appeared as a predictor of effective communication behavior between physician and patient. Access to the Internet and media is one of the determining factors for being conscious. Nowadays, regardless the ethnicity, people can be more knowledgeable through Internet use that leads to more effective interactive behavior with the physician. Our findings are similar to previous studies (Matusitz & Spear, 2014; Wachira et al., 2013).

As regards patients' perception of the severity of the health problem, the respondents who realized that they were affected by a major problem were more likely to receive patient-centered communication behavior from the physician. It can be explained that the patients who had a perception of suffering from severe problem were anxious and tensed that leads them more active to communicate with physicians.

A growing body of literature indicates that patients who are more involved in communication process received more facilitation from the physician (Street et al., 2005). The patients who are actively involved in the medical encounter by expressing their anxieties and seeking more information provide the physician with essential information for diagnosis and medications (Marvel et al., 1999; Roter, 2000). Our findings also are consonant with the literature reporting that the patients who asked for more information and expressed their opinions, choices, and objections on making decisions concerning their health problems, were received more supportive communication from physicians.

Physician's characteristics can also affect interaction. For example, gender has triggered much interest as a potential source of difference in the interpersonal aspects of medical practice, with speculation that female physicians tend to use more patient-centered communication and facilitate more open and equal exchange and a satisfying ambiance than that of male physicians (Lurie et al., 1997; Roter et al., 2002). The present study also reports that female physicians were more likely to provide patient-centered commu-nication behavior than that of the male counterpart. Our findings are consonant with previous studies (Roter et al., 2002; Weisman & Teitelbaum, 1989).

Longer appointments with physicians can be associated with a better quality of care and greater patient capacity (Howie et al., 1991). Usually, the longer the appointment last, the more patients have a higher likelihood to involve in communication process, resulting in better consultation outcomes. Similar to previous studies, our findings also attested the relationship between appointment length and physicians' patient-centered communication behavior (Dugdale et al., 1999; Richard et al., 2014; Sampson et al., 2013).

Our study found that the quiet ambiance of physicians' rooms was associated with better communication outcomes between physician and patient. Environmental noise impedes smooth interpersonal communication (Devito, 2013). Any type of noise may prevent a message from getting the source to the receiver, patient to the physician, and vice-versa.

A comparison of ANOVA and R^2 values for different models showed that patients' socio-demographic variables appeared as the most significant factors influencing the outcome variable. ANOVA (F = 75.30) and R^2 value (R^2 = .39) suggests that the model which examined the predictors of better patient-centered communication behavior explained by 39% of the variability. In other words, 39% of the variance in the outcome variable has been predicted or affected by predictable variables. These findings are similar to previous studies (Fox & Stein, 1991; Gupta & Carr, 2008; Matusitz & Spear, 2014).

Limitations of the Study

Our study has some limitations. Firstly, in similar studies performed in other nations, each medical interview was audiotaped and timed with a stopwatch. In Bangladesh, collecting data on medical consultations is difficult because physicians refuse to allow audiotape or video camera recording of patient consultations. Second, all of the district hospitals and UHCs in this study were of the same kind. A broader, more diversified sample of patients, as well as a more diverse sample of medical centers, including private medical centers, would help generalize results.

Conclusion

More patient-centered communication behavior is influenced by multiple factors, such as patients' socioeconomic factors, cognitive and participation-related factors, and physician characteristics and organizational context, while patients' socioeconomic characteristics were identified as the strongest predictor. In our analysis, individuals' level of education, age, residential status, Internet use; patients' perception of the severity of the condition, plan about the content of medical encounter prior entering into physician's room, patients' type, the atmosphere of physicians' room and physicians' gender contributed to satisfactory patient-centered communication behavior from the physicians. Besides, active patient participation, for example, seeking more information about the health condition to the physician and participating in making decisions concerning the health problems were also resulted in effective physician-patient communication.

Evidence from this study may play a key role in providing policymakers research-based evidence in their continuous effort to incorporate social inequality in medical practice and to develop a patient-centered communication behavior framework, so that it can contribute to decreases in socio-economic discrimination; and better health outcomes.

This study suggests teaching healthcare providers how to use patient-centered communication skills to involve their patients is one strategy for enhancing equality in healthcare delivery and ensuring patients receive high quality healthcare, regardless of their socioeconomic inequality and ethnic discordance.

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