

# Evaluation of Patient-Centered Communication in the Dental Practice of Kazakhstan

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## Research

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# Abstract

**Background:** The number of patients' complaints based on dissatisfaction with dental care in the Republic of Kazakhstan remains high and is steadily increasing [1,2,3,4,5]. This study aims to evaluate the level of perception of patient-centered care among participants and find possible contributing factors that result in the high dissatisfaction among the patients.

**Methods:** The cross-sectional study of 400 dentists and 400 patients from private dental clinics in the city of Nur-Sultan was conducted using a survey which contained PPOS by age and sex, dentists' job satisfaction, job effort, job reward levels, and scales measuring the patients' life satisfaction and communication assessment. The number of all respondents were 400 of dentists and 400 of patients, correspondingly with an overall response rate of 80%. The middle-age (31-50 years) people have composed the major part of all the respondents, or 66.3% of the total.

**Results:** According to the study, the patient-centered orientation of patients negatively correlated with life satisfaction ( $R=-0.201$ ,  $P=0.000050$ ) and communication assessment ( $P=0.230$ ), while negatively correlated with age ( $P=0.379$ ). Meanwhile, for dentists, or care providers, the patient-centered orientation also negatively correlated with life satisfaction ( $R=-0.204$ ,  $P=0.000038$ ).

**Conclusions:** It was revealed that the majority of dentists and patients are doctor oriented. This study showed that all respondents associate the patient-centered approach with life satisfaction levels. Age is another important factor: the older proportion of the respondents mostly prefer doctor-centered attitudes.

## Background

A 2016 online article titled "Where does the US rank internationally in patient satisfaction?" revealed the top ten countries that had scored the highest in the positive feedback ranking, in which Sweden occupied the first place with 92.37 percent of satisfied patients and the U.K. was number 10 with 81.6 percent [6]. The typical questions administered to patients included information on wait times, overall patient experience and the quality of communication in regard to patient concerns. The global average patient satisfaction level benchmark during March was 88.02 percent. At the same time, according to statista.com, one country on the Arabian Peninsula – Yemen – and nine other countries that are all located in Africa were reported as the worst in healthcare satisfaction in the whole world in 2013, some of which had as many as 80 percent of all patients unhappy with overall patient experience and the quality of communication in regards to patient concerns [6].

Therefore, as demonstrated by this ranking, the income level of a country is correlated with the level of satisfaction of patients which is an outcome of a quality healthcare system [6].

Despite the numerous advances that the Republic of Kazakhstan has made since the well-known collapse of the Soviet Union, the number of complaints of patients based on dissatisfaction with dental care in the Republic of Kazakhstan remains high and is steadily increasing [1, 2, 3, 4, 5]. According to "Trends in Health Systems in the Former Soviet Countries" issued by the European Observatory on Health Systems and Policies," following the collapse of what is known to be the last communist economy of the 20th century, every single Soviet state experienced a drastic decline in the quality of healthcare [7]. Scarce finances, brain drain, the absence of any sort of stable authority, soaring numbers of unemployment, and many other hefty reasons contributed to the enormous growth of instability in every single sector, and medical care was not an exception. However, it has been almost thirty years since those dramatic events unfolded, and the recent changes in the healthcare system have been evolving towards a higher quality system. This system of care places the patients as the main decision-makers and puts their well-being and optimal health as an important goal to achieve [1]. The Dental Quality Outcomes Framework has set three indicators of quality such as clinical effectiveness, patient-centeredness, and safety [3]. The Institute of Medicine has set six aims for the quality health care system: safe,

equitable, evidence-based, timely, efficient and patient-centered [2, 4]. Nevertheless, being respectful of the needs, preferences, and values of patients is a brief definition of patient-oriented care [3]. The development and need for quality have led to the widespread adoption of patient-centered care in medicine, management, politics and service sectors. The main reason is that healthcare providers are not able to provide full assistance without having communicative, collaborative patients. If patients share their state of wellbeing, dentists can accurately discern the health needs of the patient. Therefore, patient satisfaction is a commonly used indicator for measuring patient-centered care and health care quality. Research in health services has consistently demonstrated that patient-centered health care produces higher levels of satisfaction of patients, more preferable clinical outcomes and a boosted healthcare system [2, 4]. Thus, dental communication has maintained its importance [3].

The increase in the number of private dental clinics might have an impact on the healthcare system. According to BISAM (Business information, sociological and marketing research center) Central Asia, the researches, over 3 years, 40 percent of the population contacted dental centers more than once in cities as well as in villages in Kazakhstan [5]. The development of the dental market in Kazakhstan began in the 1990s with the wave of privatization when the country perceived its independence in 1991[5]. The transition of dental clinics away from state ownership led to the growth of private dentistry, as well as the introduction of innovative methods and technologies [8]. Since then, the dental care needs continue to remain high in the country. The dental sector is the largest segment of Kazakhstani private medicine and comprises approximately 60% of the private medicine in the country [8]. This shows a high demand for the dental services and its accessibility which leads to high competitiveness for the best quality which can be achieved through the professional development and continuing education of dental personnel [8]. Accumulating professional experience and introducing modern treatment technologies into practice are features of some dental clinics while other smaller clinics are not able to afford these innovations.

Although the industry has been developing steadily, the aggressive entry of private dental clinics into the market have revealed a poorly regulated health system. According to reports of Damu Research, the dental sector lacks the system of a unified plan for treating patients [5]. For instance, the sharp rise in the quantity of private clinics has led to poorly managed health systems and non-compliance with the general rules in some developing countries [9]. The poorly regulated healthcare system in the country, in turn, negatively affects the quality of the provided medical service in general. The provider-centeredness might be one of the factors affected by this phenomenon. Therefore, the vast increase in the number of private dental clinics has been determined as one of the variables of the level of patient-centeredness.

The requirements for the dentists and the level of dental care by the patients have greatly increased [8]. The medical sector, particularly, the dentistry sector in Kazakhstan, still retains the doctor-centered approach. Disorganized steps towards the patient-centered approach are one of the important reasons that keep a doctor-oriented approach in countries. The Soviet legacy had its consequences in terms of backward medicine in Kazakhstan [8]. The economic lag, which persisted during the Soviet period, continued and did not show the inclination to patient-centered care. The insufficient budget allocated to medicine, medical facility without quality have been noted as one of the indicators of the disorganization [10, 11]. We do not have any publicly available data and research studies about the nature of patients' complaints about dental care. Occasionally, individual cases which resulted in negative consequences of dental care are published in the newspapers and web news. The Department of Medical Quality of the Republic of Kazakhstan keeps all data confidential, reviews each complaint before a final decision which is followed by punishing measures rather than reporting some statistics about the nature of complaints which could be used as measures for professional trainings to solve and reduce such dental issues.

Even though dentistry is a private sphere in the Kazakhstan and the government does not directly finance the purchase of facilities, it could affect the regulation of health systems and training of the dentists. Damu Research highlighted that there is a weak postgraduate training system in Kazakhstan, which demonstrates weak professional qualification and

practical knowledge including dental communication leading to the failure of overall dental care including mistrust by patients and further negative consequences.

Effective verbal communication is necessary for successful dental treatment. According to Wener et al, oral health providers have to be good communicators able to meet the patients' expectations [12]. The providers should show empathy and patients should feel valued. Thus, providers communicating their concerns efficiently, affect the better health results of patients. While investigating teaching communication skills, Levinson et al have identified that all medical schools have communication classes but only during the first and second years [13]. During the most important third and fourth years, the students do not have communication classes, otherwise, this class receives relatively low priority. There are some other barriers such as inadequately trained clinical faculty, the cost of resources and lack of the ability to balance the time spent on communicating and providing medical care [12–16]. It was revealed that the progress of students through their postgraduate education makes them patient-centered [14]. Further education makes dental graduates more aware of patient-oriented care. Testing extensive training programs to teach patient-centered communication skills has demonstrated progress in patient satisfaction [12].

These, in turn, were the potential indicators and associated variables of persisting paternalistic model of the doctor-patient relationship, doctor centeredness of dentistry in Kazakhstan, which might be the direct reason for the patient's dissatisfaction with medical service. Furthermore, good doctor-patient interaction, the loyalty of doctors and patient education, which are factors for patient-centeredness might affect the overall performance of hospitals [15]. Therefore, a level of patient-centeredness might be a proxy variable for overall hospitals' performance. In a previous pilot study, we have discussed that medical care is affected by the **miscommunication** between a health provider and a patient [17]. The objective of this study is, providing evidence-based research, to determine the degree of dental communication in Kazakhstan. Persisting doctor-orientedness in this field shows the conforming dentistry performance in Kazakhstan.

Through an investigation of patient-centredness of dentists and patients, we can examine the perceptions and expectations of dentists and patients and how these may be contributing to patient dissatisfaction. Our hypothesis was that the majority of dentists and patients are not patient-oriented whereas patients are likely to be patient-oriented.

RQ1: What are the orientations of dentists and patients towards patient-centered care in the dentist visit?

H1: Dentists in the private dental clinics in Nur-Sultan, Kazakhstan are primarily doctor-oriented rather than patient-oriented.

H2: Patients visiting these clinics will primarily report a patient-orientation rather than a doctor-orientation.

## Methods

### Participants and study design

500 dentists and 500 patients were invited to participate in this study. 400 dentists and 400 patients agreed to fill out the questionnaire (80% response rate). All participants were randomly selected from 10 private clinics practicing general dentistry in the city of Nur-Sultan, Kazakhstan. All participants were asked to complete a survey which included the Patient-Practitioner Orientation Scale (PPOS) and scales assessing life and job satisfaction, effort-reward balance of healthcare professionals, and the patients' perceptions of communication. In the responses, there was no missing data.

### Ethical consideration

Consent and approval were obtained from the head of dental clinics. Full ethical approval was received from the Institutional Research Ethics Committee at Nazarbayev University, Nur-Sultan, Kazakhstan, and was conformed to the Declaration of Helsinki Ethical Principles for Medical Research. Written consent was obtained for each participant. Before the participation in the study, all participants were provided with detailed information about the investigation in Kazakh and Russian languages. To ensure confidentiality, respondents were asked to complete the survey and submit their answers in envelopes to a locked box in the clinics.

## **Questionnaires**

As the Provider-Patient Orientation Scale (PPOS) can provide the comparison between dentist and patient orientations using the same scale, we used it to check for its compatibility and consistency. The questionnaire was translated from English to Kazakh and Russian and then back into English to ensure clarity of meaning was kept. The PPOS consisted of 18 questions and participants could choose one answer from a 6-point scale. The higher score overall means the participant is more patient-oriented.

The characteristics such as age and sex were included in the data. In addition, some other variables such as Life Satisfaction, Job Satisfaction, and Job Effort-reward Ratio level were calculated for dentists. We measured Effort-Reward ratio to identify the scale of imbalance between effort and reward, by taking the effort level on the numerator, the reward level on the denominator multiplied by the correction factor, which allowed having an unequal number of questions in numerators and denominators.

The correlation between provider-patient orientation and variables for patients comprised factors like Life Satisfaction and Communication Assessment. The scale Communication Assessment measured the reflection of the general experience of the patients in being provided with dental care, but not with a specific dentist.

## **Data analyses**

In the survey, the answers for questions were interpreted such that the higher score meant the participant was more patient-centered. We calculated the binary variable using the categories: strongly disagree, somewhat disagree, and disagree on the one hand which assigned to value 1, and categories strongly agree, somewhat agree, and agree on the other hand (value 2). The cutoff point out of this is 3.5 points, which is a midpoint between agree and disagree. The PPOS mean, calculated by dividing the sum of responses by its number, was dichotomized with the above-mentioned cutoff-point at 3.5 points.

The Pearson correlation coefficients and linear regression methods helped construct congruency table of the provider-patient orientation. Cross tabulations, chi-square tests and calculation of percentage were used in making descriptive analyses of revealed binary measures. The mean score differences were investigated by the analysis of variance (or ANOVA), and other analyses were made using SPSS software.

# **Results**

## **Demographic Characteristics**

The distribution of participants was not even. Most of the respondents, for both categories of dentists and patients, were from 30 to 50 years old. One fifth (~22-25%) of the participants refers to the youngest category, meanwhile only 12% of

dentists and 13% of patients are those who are 50 years old and older. The sex distribution of patients was similar to dentists. The distribution information is shown in the Table 1.

### **Valid data on PPOS for dentists and Patients**

Table 2 shows the proportions of providers who could be characterized as patient-oriented or doctor-oriented. The vast majority of dentists were not patient-centered. Only 12.5 % of dentists identified themselves through the PPOS as patient-oriented. Similarly, 12% of patients were found to be patient-oriented from their PPOS score. Furthermore, the patient-centered providers' proportion is higher among the respondents of ages 31-40 years old (16.2%), younger than 30 years old (11.8%) and 41-50 years old (10.8%) years old compared to the respondents who are older than 50 years old (6.4%). The patients of the middle-age category such as 31-40 years old (13.8%), 41-50 years old (14.7%) constitute the 67% of all patients who chose the patient-centered approach. The respondents younger than 30 and older than 50 had less proportion of such choice for patient-centered approach.

### **Other Variables for Dentists and Patients**

Table 3 shows the correlation coefficient between PPOS and the factors measured in dentists. We used other variables such as life satisfaction, job satisfaction, job effort, job reward, and job effort-reward ratio. The correlation coefficients evaluated the direction and relationship strength between two continuous factors. The square of correlation coefficient shows the rate of variation of dependent variables which is explained by independent variables.

The life satisfaction is a considerably associated factor in the regression. There is a negative correlation between PPOS and life satisfaction ( $R -0.204$ ,  $P$  value 0.000038). (Table 3).

There is a negative correlation between PPOS and life satisfaction in patients, and the higher score of this variable indicates the patients' inclination to being less patient-oriented ( $R -0.201$ ,  $P$  value 0.000050). The factors age and sex did not show significant association with PPOS ( $R -0.044$   $P$  value 0.379 for age, and  $R 0.023$ ,  $P$  value 0.649 for sex). (Table 4).

### **Comparing the PPOS between Dentists and Patients**

The PPOS scale was dichotomized with a cutoff of more than 3.5 points. In the analysis with multiple variables, age, sex and life satisfaction (SLS) were used to explain the difference between patients and dentists. The adjustment for age resulted in OR: 0.98 (95%CI 0.95-1.02),  $P$  value 0.375 – for dentists, while it showed OR: 1.01 (95%CI 0.99-1.04) and  $P$  value 0.339 – for patients. The adjustment for SLS showed OR: 1.03 (95%CI 0.81-1.31) and  $P$  value 0.817 – for dentists, and OR: 0.74 (95%CI 0.54-1.03) and  $P$  value 0.073 – for patients. For the next variable sex, female sex was set as an indicator. It demonstrated OR: 1.47 (95%CI 0.80-2.69) and  $P$  value of 0.212 – for dentists, and for patients it showed OR: 0.77(95%CI 0.42-1.42) with  $P$  value 0.408.

## **Discussion**

In our study, we have found social determinants of the phenomenon of doctor-orientedness among dentists and patients in Kazakhstan. Determining the age and life satisfaction levels of both dentists and patients has shown that these variables considerably associated with the PPOS. According to the results of the study, dentists with a low level of life satisfaction tend to be less patient-oriented and more focused on the healthcare provider. Even though age is not a significant independent variable affecting patient-orientedness, it has a positive correlation with PPOS, so that the middle-age respondents have been more patient-oriented than younger respondents. The respondents who are older than 50 and younger than 30 had less share of choices for a patient-centered approach. This tendency maintains for both patients and dentists. In general, the study has confirmed that the prevalence of dentist-oriented patients and dentist-oriented medical providers was higher compared to patient-oriented providers and patients.

One of the important variables discussed in the study was Life Satisfaction Level. Among respondents, the life satisfaction variable is mostly related to preferring patient-centered care. Still, it showed different results for dentists and patients, depending on other variables. The correlation between PPOS and life satisfaction was negative in patients and dentists. For dentists, the level of life satisfaction was different depending on age, which affected their choices. Younger people tend to choose a patient-centered approach more often, compared to older people. More importantly, the survey determined that younger people with high life satisfaction levels are more likely to be inclined to patient-centered care, rather than opposite groupings. For patients, preferring patient-centered care was connected to higher satisfaction in life.

Despite dentistry being a private sector in Kazakhstan, this study showed a similar level of patient dissatisfaction as has been shown in a study on the public sector of medicine [5, 7, 17]. The results showed that the level of patient dissatisfaction had been still high, and one of the reasons for that is that the practice of a patient-centered approach is new in the medical care of Kazakhstan. Before, as one of the Soviet countries, Kazakhstan has passed through many fundamental changes in economic, social and health spheres. At this period, the concept of patient rights, which included patient choice, was not recognized in practice. After the independence of these countries as well as Kazakhstan, the empowerment of patients was delayed because of the absence of effective methods in its implementation [16]. Only in 2018, the Minister of Health of the Republic of Kazakhstan Yelzhan Birtanov underlined the importance of the principle of integrated healthcare based on values around the interests of the patient for the first time. A paternalistic doctor-patient culture still remains predominant in Kazakhstan [7].

Medical assistance given by all clinical faculty should be convincing, qualified, acceptable, and oriented towards the patients [18]. Of course not all medical assistance can meet these requirements in every situation. It is difficult to identify the actual reasons and nature of doctor-oriented medicine, but different ways of improvements have been applied towards presumptive variables affecting the phenomenon. In such countries where a provider-centered medicine persists, according to the study in the UK, sometimes providers might “allow” patients to make their choice and be happy with that, based on the basic sense of “being nice to patients” [19].

According to the report of the Ministry of Health of the Republic of Kazakhstan, the problems associated with the quality of medical service organization and qualification of medical personnel have negatively affected and exacerbated the problem of miscommunication and doctor-oriented medicine [20]. This is mostly because the Kazakhstani medical sector along with the dental sector lacks the system of a unified plan for treating patients. The absence of such a plan and communication education affects persisting doctor-oriented care in Kazakhstani dental clinics. Recently, there are many approaches aimed to teach proper communication skills between doctors and patients, such as motivational training and workshops that teach how to manage emotions [20]. Nevertheless, miscommunication remains only one of many reasons for such results of the study.

Furthermore, the level of the patients’ involvement in the treatment process has been low, which can be another possible variable that causes doctor-centered results. As this approach of patient-orientedness is recent in Kazakhstani medicine, switching from the old tradition, provider-centered care might take time. Healthcare emphasizes the importance of a team

approach, where the important issue is the involvement of all players in the healthcare system – consumers of medical services and practitioners. [22] Thus, it is important to involve patients in their treatment, meet their needs and aspirations, as long as they are reasonable and practicable by the clinicians involved [23]. In the western world, during the last thirty years, the patient involvement over the delivery of oral health and treatment process has enhanced. In their study, Röing and Holmström focus on the topic of oral health care in the social welfare state of Sweden [24]. The patient education as well as dentists training based on shared decision-making model proposed by the authors as a part of a patient-centered approach, which needs both health-care professionals and patients to agree mutually on decisions, made Swedish patients more independent in relation to dental professionals and strengthened them as consumers of dental care. The National Dental Service Act gave patients such an opportunity to benefit from the dialogues with their dentists by taking an active role in decisions regarding treatment [24]. According to the Swedish dentists, this practice of patient involvement requires adopting a more consumerist approach, which helps admit that patients understand their needs better than anyone else. These studies have shown that the increase in patient involvement affects the patient-centered care system favorably.

It is quite unlikely that changes in the dental care system will immediately revert the situation in the sphere of dentistry in Kazakhstan. Nevertheless, dental practice worldwide shows a favorable shift toward patient-centered care. The funding for communication education between patients and dentists may serve as a starting point for the more patient-centered approach. In addition, patient-centered care should be embedded within the 5-year bachelor dentist degree as a separate class. The theory and implementation of patient-centered care should be practically taught as an inherent part of clinical, diagnostic, and communication work.

## Limitations

The limitations of this study include the relatively small sample size of less than 200 of both providers and patients even all participants were from 10 different private dental clinics. Also, dentists in the city of Nur-Sultan may be more educated and more liberal in their attitudes than the national average due to the emphasis on modernity in the urban setting. Patients who participated in this study were not paired with their providers, so we were not able to make any conclusions based on specific participants' orientations to care and how such orientations are received by their providers in an actual visit. Another important limitation is that the health conditions of patients were not accounted for. The health condition could influence the orientation of the patient towards their dentists in interactions.

Another important limitation is the lack of cultural explanation this data has given us as researchers. Though it is an important step in examining dentists-patient communication in this particular context, there is much more that needs to be explained as to why these findings are different than previous research in other contexts. As we did not have the means to validate the PPOS scale in Kazakhstan, further research might seek to use this scale on a broader level given the significant findings. Additionally, future research should explore these orientations of both providers and patients using qualitative research methods to uncover the expectations and explanations of these actors involved from their own perspectives.

## Interpretation Of Findings

We expected to find a high percentage of doctors and nurses to be more doctor-oriented, but we did not expect that an even higher percentage of patients would also be doctor-oriented. The high percentage of both patients and medical professionals that can be considered to be doctor-oriented is different than previous research findings supporting an overall preference for patient-centred care.

Also, such proportions of doctor orientation in providers and patients in our study reflect the lack of communication education. A weak postgraduate training system of dentists in Kazakhstan, mentioned by Damu Research, is one of the



many determinants of the weak communication education between patients and dentists [25]. The need for clear verbal and written communication using accessible, appropriate language and providing information in different formats is important in providing patient-centered care. According to Prakash, health providers, patients, and organizations are service excellence factors [26]. He lists many “house rules” of communicating with the clients. Being able to break the ice, show courtesy to patients, share responsibility and quickly answer to the patients’ questions are important to attain satisfied patients. In addition to understanding the patient and professional job, providers are expected to establish good interaction with patients. Prakash also noted that patients, as well as providers, have to be educated to higher the level of patient satisfaction because his study showed that 96% of patients prefer explaining things [26]. Using audiotapes, computer-based training, internet, written brochures, and books help patients know more about their diseases and better communicate with dentists. The study conducted in the UK in the form of semi-structured interviews, where participants were from one local dental school and comprised qualified dentists, revealed that dentists had acquired their “patient-centered care” skills on the job and they had little or no formal teaching on this skill [27]. It is striking that providers “allow” patients to make their choice and be happy with that, based on the basic sense of “being nice to patients”. This is mostly because the dental sector lacks the system of a unified plan for treating patients. The absence of such a plan and communication education affects persisting doctor-oriented care in Kazakhstani dental clinics [20].

Despite the dentistry is a private sector in the economics of Kazakhstan, the study showed a similar level of patient dissatisfaction like in the public sector of medicine. Dentistry is one of the fast-growing industries in Kazakhstan. Besides dental materials and new technologies, which are successful factors in the treatment of dental diseases, dental care providers play a major role in determining overall satisfaction of patients [25]. Most of the dental clinic are private with variety of prices from high to average offer corresponding higher-level services considering more patient-centered care compared to free of charge public hospitals. Nevertheless, the results showed that the level of patient dissatisfaction had been still high. Moreover, this study showed similar results of the low level of patient-centered care perception compared to previously conducted study in general hospitals.

## Conclusions

The main finding of this study is the very small percentage of dentists and patients who believe that the doctor-patient interaction should be patient-oriented. These results highlight the necessity of improvement of communication among health care providers towards patient-oriented approach in order to decrease miscommunication and dissatisfaction with patients. The fact that most patients report the dentist visit should be dentist-oriented may reflect societal beliefs and perceptions about who is responsible for managing health. Furthermore, an expectation that the dentist is the centre of the dentist visit may explain high levels of dissatisfaction with care among patients and even among providers when the status of health of patients is not improved.

## Abbreviations

H  
Hypothesis;  
RQ  
Research question;  
PPOS  
Provider-Patient Orientation Scale;  
SLS  
Satisfaction with Life Scale;  
JSS  
Job Satisfaction Scale;

## Declarations

## Ethics approval and consent to participate

This study and consent form was approved by Institutional Research Ethical Committee on Feb.20, 2013. Nazarbayev University, Kazakhstan, Nur-Sultan city. All participants were provided with detailed information about the study in Kazakh and Russian languages. Written informed consent was obtained from all participants.

### Consent for publication

Not applicable

### Availability of data and material

Data are available on request due to privacy or other restrictions. The data that support the findings of this study are available on request from the corresponding author A.Z. The data are not publicly available due to them containing information that could compromise research participant privacy/consent.

### Competing interests

The authors declare that they have no competing interests.

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## Author's contributions

A.Z., B.J.C. – conception and design of study, A.K.-acquisition of data, A.Z., A.K. -analysis and interpretation of data, literature review and data collection – A.Y., M.K., A.S. All authors have read and approved the final manuscript.

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## Tables

Table 1. Distribution of respondents with valid data on the provider-patient orientation scale by age and sex.

Variable	Dentists N=400	Patients N=400
Age group		
25≤30 years	85 (21.3%)	99 (24.8%)
31-40 years	136 (34.0%)	116 (29.0%)
41-50 years	129 (32.3%)	109 (27.3%)
51-60 years	47 (11.8%)	52 (13.0%)
60>65 years	3 (0.8%)	24 (6.0%)
Sex		
Male	205 (51.3%)	197 (49.3%)
Female	195 (48.7%)	203 (50.7%)

Table 2. Patients-oriented dentists and patients with valid data on the provider-patient orientation scale.

Variable	Dentists N=400	Patients N=400
Overall	50/400 (12.5%)	48/400 (12.0%)
Sex		
Male	30/205 (14.6%)	21/197 (10.6%)
Female	20/195 (10.2%)	27/203 (13.3%)
Age group		
25≤30 years	10/85 (11.8%)	7/99 (7.1%)
31-40 years	22/136 (16.2%)	16/116 (13.8%)
41-50 years	14/129 (10.8%)	16/109 (14.7%)
51-60 years	3/47 (6.4%)	6/52 (11.5%)
>60 years	1/3 (33.3%)	3/24 (12.5%)

Table 3. Correlation between provider-patient orientation scale and covariates for dentists (n=400).

Variable	Correlation coefficient	P value
Age	0.008	0.872
Sex	0.020	0.692
Life satisfaction	-0.204	0.000038
Job satisfaction	-0.013	0.796
Job effort	-0.017	0.740
Job reward	0.003	0.958
Job effort-reward ratio	-0.034	0.495

Table 4. Correlation between provider-patient orientation scale and covariates for patients (n=400).

Variable	Correlation Coefficient	P value
Age	0.044	0.379
Sex	0.023	0.649
Life satisfaction	-0.201	0.000050
Communication assessment	-0.060	0.230

Table 5. Effects of covariates age, sex and life satisfaction (SLS) on the PPOS\* in dentists and patients.

Covariate	Dentists N=400		Patients N=400	
	OR (95%CI)	P Value	OR (95%CI)	P Value
Age	0.98 (0.95-1.02)	0.375	1.01 (0.99-1.04)	0.339
Sex**	1.47 (0.80-2.69)	0.212	0.77 (0.42-1.42)	0.408
SLS	1.03 (0.81-1.31)	0.817	0.74 (0.54-1.03)	0.073

\*PPOS scale was dichotomized with a cutoff of >3.5 points

\*\*Female sex was set as an indicator

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