Original Article

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Psychometric Utility in Determining Dental Organizational Attribute: A Cross Sectional Study in Ghaziabad, India

Dentistry Section

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ABSTRACT

Introduction: Psychometrics is the field of research involved with the objective measurement of finesse and intelligence, skills, temperament, personality traits, and educational success and technique of psychological measurement. Oral healthcare along with patient satisfaction and quality of care are main factors responsible for organizational attribute. Patient safety is relatively emerging domain which will result in improving patient's conditions without causing harm to them.

Aim: To assess the psychometric behaviours as well as organization attribute with the help of modified version of Survey of Organizational Attributes for Primary Care (SOAPC) instrument among the dental care practitioners in Ghaziabad city, Uttar Pradesh, India.

Materials and Methods: A cross-sectional study was conducted among 268 dental practitioner of Ghaziabad city to determine psychometric behaviours and organizational attributes using SOADC instrument. Data was analysed using SPSS software version 18.0 and was subjected to descriptive and Mann-Whitney U test.

Results: Of the 268 dental practitioner, only 249 completed questionnaires. In communication, 70.3% agreed that they have constructive work relationship with staff with an overall mean score of 3.54±0.15, whereas in the subscale decision making, stress/chaos and history of change, the mean score of 2.77±0.98, 2.56±0.80 and 3.25±0.21 respectively were obtained. A statistical significant difference was noted between all the dimensions except stress/chaos and history of change ($p \leq 0.05$).

Conclusion: SOADC can be used to assess psychometric behaviours and organizational attributes of dental care practice. Preference should be given to dentist's communication and reducing stress to enhance the service quality and improving safety of patient.

Keywords: Decision, Dentist, Oral Health, Patient satisfaction, Psychological

INTRODUCTION

Oral diseases qualify as a major public health problem all over the world due to their high prevalence and incidence and the main goal of healthcare providers is to preserve, restore, and promote the oral health [1]. Positive health outcome can be achieved by the dental practitioners with improvement of the level of service capacity and accessibility. Patient satisfaction, quality of care and healthcare provider are the main factors responsible for organizational attribute. But the provision of safe and high quality care purely depends upon organizational structure which consists of attitudes, values and norms of behaviour of various dental practitioners and dental staff [2].

Satisfaction has been defined as: "a person's feeling of pleasure or disappointment resulting from comparing a product's perceived performance or outcome, in relation to his or her expectations" [3]. Among the healthcare professionals, satisfaction of job is an essential factor which is associated with healthcare and delivery system. The work force which is basically in shortage in accordance with rising health problems also leads to poor quality care and is gradually becoming a general problem in most of the countries [4]. So, it's important to maintain the progress in medicine system as well as in demographic variables so that quality of care can be enhanced. It has already been started in many of the countries like in the United Kingdom quality, indicators were produced for the new National Health Service (NHS) dental contract which aims at measuring the level of patient care and performance; in 2005 in Scotland, the "Action Plan for Improving Oral Health and Modernizing NHS Dental Services" was declared [5] and since 1997, in the United States, an assessment instrument established and introduced by MetLife has been applied for dental care providers [6].

Psychometrics is the field of research involved with the speculation and technique of psychological measurement [7]. Organizational culture appears from that which is shared between friends in an organization, including shared faith, approach, values, and norms of attitude [8]. Furthermore, to improve the dental care practice, patient's safety should be the priority of dental practitioner. Patient safety is relatively emerging domain which is multifactorial and complex in nature. Its main aim is to improve the quality of care, deprecating the treatment flaws, and advancing the safety of patients. Its main objective is to avoid avertable events like accidents, entanglements, and obstacles etc., [9]. Bailey E et al., in their study has stated that the aim of the dental care practitioners should be patient's safety with reduction and prevention of unnecessary harm to patient. Patient safety is not only dependent upon the work of dental practitioners but also on his work or job experiences and the other aspects such as stress, family breakdown and grief etc,. So it's necessary to know about the behavioural aspects of dental practitioners, their level of knowledge, decision making, etc, and to assess the psychometric behaviour [10]. There are many method which asses the psychometric behaviour of the healthcare professionals. Among all of the scales, one such scale is SOAPC. This scale was adopted by Goetz k et al., in Germany for assessment of organizational attribute in dental care practices [11]. In India, studies have been conducted for assessing learning organization attribute in health and oral health [12,13] care system but no study

has been conducted to assess the psychometric attribute of dental healthcare organization. So this study was conducted with the aim to assess the psychometric behaviours as well as organization attribute with the help of modified version of the SOAPC instrument among the Dental-care practitioners in India.

MATERIALS AND METHODS

The study was conducted in Ghaziabad city which is located in Western part of Uttar Pradesh, India. This was aquestionnaire based cross-sectional survey among the registered dental practitioners practicing in and around Ghaziabad city. A total of 268 dentists were contacted to be part of the study. The Institutional Review Board of Divya Jyoti college of Dental Sciences And Research, Modinagar, Uttar Pradesh, India, provided the ethical clearance for this study and informed consent was obtained from all the study participants prior to the study. Participation in the study was voluntary and confidentiality of data was maintained. SOAPC is a German version which measures diverse aspects concerning organizational culture in healthcare. Goetz K et al., adapted SOAPC for dental care and renamed as the SOADC [11]. The SOADC is comprised of 21 items. It is assessed using a five-point Likert scale, ranging from strongly disagree (score = 1) to strongly agree (score = 5). There are four predefined subscales of SOADC which includes: communication (four items); decision making (eight items); stress/chaos (six items); and history of change (three items). Data were collected from each practicing dentist and was personally approached by Principal Investigator requesting for participation in survey. After taking the consent and explaining the design of the study, the dentists were given two week time to respond to the questionnaire. The reminder was given through phone calls to return the questionnaire. Among all of the 268 dentists, 249 completed the questionnaire; 10 non reachable and 09 incomplete questionnaires were excluded from the study.

To check questionnaire validation, a pilot study was undertaken on 10% of the total population (n=27) which were not included in main study sample. It served as a preliminary study to check the feasibility and relevance of the study. Test-Retest was used to determine the reliability of the questionnaire and internal consistency of the questionnaire was verified by Chronbachs-Alpha (ɑ=0.86). Construct validity of the questionnaire was evaluated using Spearman's correlation coefficient between individual parameter/construct as well as overall score of the construct.

STATISTICAL ANALYSIS

The analysis was performed using SPSS 18.0 (SPSS Inc., Chicago, IL, USA) and descriptive and analytical tests, including Mean, Standard Deviation, and Chi-square test were applied.

RESULTS

The questionnaire based study was carried out among the 268 dentists regarding the organizational attributes in dental-care practices. The total of 249 dentists responded to the questionnaire, generating the response rate of 92.91%. The study sample comprised of 151 (60.6%) males and 98 (39.4%) females and based on, level of qualification, and career prospective of dentists are summarized in [Table/Fig-1].

[Table/Fig-2] shows the distribution and mean for each item of SOADC of the dentists who responded to the questionnaire. Among 249 practitioners, 70.3% agreed that they have constructive work relationship with staff in communication. In decision making, 50.2% agreed that this practice encourage staff input for making changes and improvements. In contexts of "stress/chaos" and "history of change", 32.9% and 41% of dentists neither agreed nor disagreed with the statement that they "feel overwhelmed by the work demands" and "practice has changed in how it does business of dentists" respectively.

Characteristic		Frequency (%)
Gender	Male	151 (60.6)
	Female	98 (39.4)
Age groups	20-30 years	98 (39.35)
	31-40 years	125 (50.20)
	41-50 years	23 (9.23)
	More than 50 years	3 (1.20)
Level of qualification	BDS	150 (60.2)
	MDS	99 (39.8)

[Table/Fig-1]: Demographic data of study subjects.

[Table/Fig-3] represents overall distribution of mean scores.

[Table/Fig-4] shows the comparison of graduates and postgraduates which revealed that mean score for graduate and postgraduate was approximately same which is 3.54±0.60 and 3.55±0.62 respectively in case of communication. In case of decision making and stress/chaos, graduate has slightly less mean scores 2.39±0.91 and 2.24±0.86 as compared to postgraduate 3.34±0.78 and 3.01±0.63 respectively. For history of change, both graduate and postgraduate have approximately same mean scores which is 3.23±0.71 and 3.26±0.70 respectively.

[Table/Fig-5,6] shows no statistically significant difference (p>0.05) in the mean score of various dimensions of SOADC based on age group and gender.

DISCUSSION

The present study measures the psychometric properties of organizational attribute among dental practitioners and it shows good reliability of SOADC in Indian setting. The present study can be compared with only a single past relevant study conducted by Goetz K et al., in Germany [11]

In the component "communication" overall highest mean score of 3.73 was obtained by the subscale "When there is a conflict in this practice, the people involved usually resolve the problem successfully" which was in agreement to an earlier study published by Goetz K et al., (3.62) in Germany, the probable reason behind this might be because of the hierarchical and dental manpower variations in the two countries [11]. Communication illustrate if there is any problem, all members of the practice work as a team through consultation and meeting with one another. High scores indicate better communication [14].

In the item "decision making" overall highest mean score of 2.97 was obtained by the subscale "practice encourage staff input for making changes and improvements and dental staff are involved in developing plan for improving quality" which is lower with the scores obtained by Goetz K et al., in Germany, since the mean score of 3.72 and 3.89 respectively was obtained for the same question [11]. High scores on decision making reveals that in executing decision there should be participatory approach within practice and leader should consult from all the employees in the practice [15].

In "stress/chaos", overall highest mean score of 2.75 was obtained by the subscale "the dentist in this practice very frequently feel overwhelmed by the work demands" which is slightly less as compared to score obtained by Goetz K et al., (3.57) [11]. The high scores of stress/chaos reveal that the practitioners feel overwhelmed by the workload [4]. If the work place is stressful and chaotic, there is often less communication and participation in decision making [14].

In the item "history of change", overall highest mean score of 3.41 was obtained by the subscale "our practice has changed in how everyone relates" which is in slight disagreement with the scores of 3.16 obtained by Goetz K et al., for same question [11]. The variation in scores might be because of change in practice level

Items and subscales of SOADC	Respondents' comments					Mean+SD
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	
Communication						
1. When there is a conflict in this practice, the people involved usually resolve the problem successfully.	4 (1.6)	39 (15.7)	38 (15.3)	106 (42.6)	62 (24.9)	3.73 ±1.052
2. Our staff has constructive work relationship.	23 (9.2)	5 (2.0)	32 (12.9)	175 (70.3)	14 (5.6)	3.61±0.974
3. There is often tension between people in this practice.	3 (1.2)	22 (8.8)	101 (40.6)	113 (45.4)	10 (4.0)	3.42±0.759
4. The dental staff and the dentist in this practice operate as a real team.	18 (7.2)	9 (3.6)	101 (40.6)	90 (36.1)	31 (12.4)	3.43±1.002
Decision making						
5. This practice encourage staff input for making changes and improvements.	32 (12.9)	72 (28.9)	18 (7.2)	125 (50.2)	2 (0.8)	2.97±1.15
6. This practice encourage nursing and clinical staff input for making changes and improvements.	61 (24.5)	78 (31.3)	49 (19.7)	52 (20.9)	9 (3.6)	2.47±1.17
7. All of the staff participates in important decisions about the clinical operation.	31 (12.4)	84 (33.7)	36 (14.5)	72 (28.9)	26 (10.4)	2.91±1.24
8. Practice leadership discourages dental staff from taking initiative.	50 (20.1)	80 (32.1)	28 (11.2)	91 (36.5)	0.0 (0.0)	2.64±1.16
9. This is a very hierarchical organization; decisions are made at the top with little input from those doing the work.	34 (13.7)	88 (35.3)	62 (24.9)	61 (24.5)	4 (1.6)	2.65±1.04
10. The leadership in this practice available for consultation on problem.	59 (23.7)	44 (17.7)	80 (32.1)	64 (25.7)	2 (0.8)	2.62±1.12
11. The practice defines success as a teamwork and concern for people.	50 (20.1)	47 (18.9)	47 (18.9)	78 (31.3)	27 (10.8)	2.93±1.31
12. Dental staff are involved in developing plan for improving quality.	40 (16.1)	54 (21.7)	53 (21.3)	75 (30.1)	27 (10.8)	2.97±1.26
Stress/chaos						
13. It is hard to make any change in this practice because we are so busy seeing patients.	30 (12.0)	101 (40.6)	59 (23.7)	50 (20.1)	9 (3.6)	2.62±1.04
14. The dental staff members of this practice very frequently feel overwhelmed by the work demands.	27 (10.8)	86 (34.5)	69 (27.7)	63 (25..3)	4 (1.6)	2.72±1.01
15. The dentist in this practice very frequently feel overwhelmed by the work demands.	35 (14.1)	67 (26.9)	82 (32.9)	55 (22.1)	10 (4.0)	2.75±1.07
16. Practice experienced as 'stressful'.	41 (16.5)	94 (37.8)	43 (17.3)	67 (26.9)	4 (1.6)	2.59±1.09
17. This practice is almost always in chaos.	38 (15.3)	123 (49.4)	62 (24.9)	26 (10.4)	0 (0.0)	2.30±0.853
18. Things have been changing so fast in our practice that is hard to keep up with what is going on.	41 (16.5)	118 (47.4)	47 (18.9)	43 (17.3)	0 (0.0)	2.36±0.954
History of change						
19. Our practice has changed in how it takes initiative to improve patient care.	5 (2.0)	78 (31.3)	80 (32.1)	84 (33.7)	2 (0.8)	3.0±0.875
20. Our practice has changed in how it does business.	3 (1.2)	41 (16.5)	102 (41.0)	75 (30.1)	28 (11.2)	3.34±0.924
21. Our practice has changed in how everyone relates.	7 (2.8)	29 (11.6)	95 (38.2)	90 (36.1)	28 (11.2)	3.41±0.934

[Table/Fig-2]: Distribution for each item of the Survey of Organizational Attributes in Dental Care (SOADC).

Overall SODAC	Mean	Standard Deviation
Communication	3.54	0.15
Decision Making	2.77	0.98
Stress /Chaos	2.56	0.80
History Change	3.25	0.21

[Table/Fig-3]: Overall distribution of mean scores.

SOADC	BDS (Mean±SD)	MDS (Mean±SD)	p-value
Communication	3.54± 0.60	3.55± 0.62	0.667*
Decision Making	2.39±0.91	3.34± 0.78	0.001**
Stress /Chaos	2.24± 0.86	3.01± 0.63	0.001**
History Change	3.23±0.71	3.26± 0.70	0.857*

[Table/Fig-4]: Comparison between graduates and postgraduates on basis of qualification.
**- Significant; *-non significant (Mann-whitney U test was applied)

Age groups	Communi-cation (Mean±Sd)	Decision making (Mean±Sd)	Stress / chaos (Mean±Sd)	History change (Mean±Sd)	p-value
20-30 years	3.47±0.67	3.28±0.75	2.99±0.66	3.17±0.70	0.16*
31-40 years	3.56±0.59	3.38±0.67	3.01±0.59	3.28±0.73	0.25*
41-50 years	3.70±0.38	3.57±0.28	3.09±0.47	3.40±0.64	0.92*
More than 50 years	4.08±0.14	3.66±0.16	2.94±0.58	3.22±0.38	0.45*

[Table/Fig-5]: Comparison of dimension of SOADC based on age group.
*-non significant (One-way ANOVA was applied)

SOADC	Male (Mean±SD)	Female (Mean±SD)	p-value
Communication	3.55±0.65	3.54±0.55	0.94*
Decision Making	3.34±0.72	3.40±0.63	0.50*
Stress /Chaos	2.99±0.63	3.03±0.58	0.63*
History Change	3.25±0.73	3.24±0.68	0.97*

[Table/Fig-6]: Comparison of dimension of SOADC based on gender.
*-non significant (One-way ANOVA was applied)

which is accomplished with low communication decision making in high stress/chaotic work environment [14].

SOADC assess not only the condition that is important for working together but also which assure a good structure and process of dental care. It has been established that quality of dental care can be improved by good practice quality management system [5].

However, to our knowledge there is only one study that has used this instrument in dental care practitioner and the findings showed that job satisfaction is associated with communication, decision making and stress/chaos.

LIMITATIONS AND RECOMMENDATIONS

Till date, most of the studies regarding this concept have been carried out in other countries and no such study has been done in India. Therefore, there was not much literature available for comparison of this study which proved a major limitation.

Since, the study was based on self-perception attitude of the participant, it may lead to perception bias.

This was a cross-sectional study so it does not give a causal relationship thus a longitudinal study is required to further support our research.

As this study was a cross-sectional survey, it does not provide causality among the variability, therefore a longitudinal research would substantiate the conclusions of the study.

This study can act as a guideline to asses psychometrics analysis with the objective measurement of finesse and intelligence, temperament, skills, personality traits, and educational success in a healthcare system. But, before its application it has to be further analysed on a larger scale comparing different healthcare levels and setups.

CONCLUSION

SOADC is an instrument with good psychometric behaviours. Psychometric is immensely related with different form of organizational attribute for dental care (communication, decision-making, stress/chaos and history of change). In the recent year, improving patient safety must be the priority of practitioners. To provide safety and care to the patient, dental care practitioners must take organization attribute into consideration.

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