

Validity and reliability of Marathi and Hindi version of Dental Trust scale and assessment of the extent of trust in dentist among patients who have undergone dental treatment – A Questionnaire study

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Abstract

Aim: To assess the validity and reliability of Dentist-Trust Scale (DTS) for Marathi and Hindi translated version and assess the extent of trust in dentist among patients who have undergone dental treatment.

Methodology: The English version of DTS was translated and back-translated into Marathi and Hindi version by following the validity and reliability measures. Internal consistency was measured using Cronbach’s alpha and intra-class correlation (ICC). Self-administered questionnaire(DTS) was distributed among 252 participants and data regarding trust in dentist was obtained on a 5-point Likert scale. Chi-square analysis was done using IBM SPSS software with respect to the responses obtained.

Results: Hindi and Marathi versions of DTS had good internal consistency with Cronbach’s alpha in the range of 0.71-1.00 and ICC between 0.7-1.00. An absolute agreement was 100% and 90.9% for Marathi and English version of DTS respectively. An acceptable amount of trust was present for all the items of DTS. Less than 50% responded that, dentists do not mislead patients regarding the treatment. The overall trust in the dentist was 90.9%.

Conclusion: Cross-culture validity and reliability appear to be promising in assessing the trust in dentist by the patients. There is an acceptable amount of trust in patients for the dentists.

Keywords: Dentist-Trust Scale, validity, reliability, cross-culture

Introduction

Trust can simply be described as a complex mixture of beliefs and expectations consisting of emotional as well as cognitive elements'. It is a moral value that is of significance for any good relationship, however; as a shared moral value and a demand in health care, it is crucial for the health professions. With its involvement in various aspects of healthcare, a greater emphasis is placed on the trust of patients towards health care providers.^{1,2} Considering this, trust is equivalent to the 'social contract' between the clinician and the patient and as a sign of the respect for patient's autonomy. Patient's trust in the health care is crucial as it influences health outcomes, facilitates partnership and adherence, improves health status thereby patient's satisfaction and reduces anxiety to a great extent. On the contrary, the decline of trust increases litigations along with reduced patients satisfaction and adherence.³ In the field of dentistry, trust forms the core value of the profession.⁴The profession's high ethical principles and professional standards along with its commitment towards compliance is an indicator of the incredible worth that dentistry puts on this privileges.⁵Secondly, the dentist-patient relationship is a personal and productive partnership and any disturbances in this relation directly affects the quality and efficiency of care.⁶ Thirdly, aspect of dentistry subjected towards adherence have a strong dependence on trust.⁷Trust increases the participation of patients in research projects. Furthermore, a relationship based on trust and partnership enables the dentist to carry out the best possible treatment for their patients with utmost importance to the quality of oral care and patient's autonomy.⁸Apart from these factors; compassion, interpersonal skills, competence, reliability and dependability on clinical skills of the dentist are evident determinants of trust among patients.^{3,6}

With the dependence of various aspects of treatment on the trust, it becomes essential to measure trust with a certain measuring scale. Literature on the dentist trust scale with merely one scale with an 11-item questionnaire known as the Dental Trust Scale (DTS) has been studied with modifications by the research team from the General Trust in Physicians scale originally developed for the medical profession.⁹The modifications, included a change of the term 'physicians' into 'dentists' with few other changes in certain words. The modified scale for dental trust measures aspects of general as well as global trust comprising; fidelity, conflict of interest, competence and honesty based on a thorough literature review. In addition, two new items were developed by Armfield JMet al¹⁰ to provide an assessment of the convergent validity of the DTS. With the increase in the emphasis given to the dental care and trust-building between dentist-patient the present study was undertaken to assess the validity and reliability of Marathi and Hindi versions of the Dental Trust Scale and the assessment of the extent of trust in the dentists among patients who have undergone dental treatment using the Dental Trust Scale.

Methodology

A cross-sectional questionnaire-based study was conducted between February to March 2021 among the patients visiting a dental institute in Pune after obtaining Ethical approval from Scientific Advisory Committee and Institutional Ethics Committee with registration no. SDCH/IEC/OUT/35. The sample size for the study was determined by conducting a pilot survey among 25 children visiting the dental college. The reliability and validity of the questionnaire were determined in the pilot study and these participants were excluded from the main study. Thus, by incorporating the obtained results of the pilot study into the below formula, sample size arrived was 252.

$$n = deff \times \frac{Npq}{\frac{d^2}{1.96} (N-1) + pq}$$

Where;

Population size (for finite population correction factor or fpc)(N): 1000000

Hypothesized % frequency of outcome factor in the population (p)⁹: 20.6%±5

Confidence limits as % of 100 (absolute±%)(d) : 5%

Design effect (for cluster survey-deff): 1

Sample size = 252

Eligibility

Individuals were willing to participate in the study and giving written informed consent that was of age 18 years and above undergone dental treatment by any dental professional i.e. Interns/PG/Staff and who were able to understand Hindi/Marathi/English language were included in the study while those individuals with intellectual and/or physical inability to answer the questionnaire were excluded.

Validity and Reliability

Face validity of the questionnaire was done by distributing the questionnaire to the experts in the field. With no further changes, the questionnaire was subjected to construct validity. The English version of the Dentist Patient Trust Scale questionnaire was translated into Hindi and Marathi languages with the help of Marathi and Hindi teachers, unaware of the dental terminologies. Both the teachers were not informed about the purpose of the study. The back-translation of Hindi and Marathi questionnaire into English was done by two dentists, who were proficient in Marathi, Hindi and English languages.

A cross-culture expert committee review compared the original and back-translated versions of the questionnaire and comments were given to improve the semantic equivalence of meaning between the two English versions. The committee also assessed the relevance of the English DTS items as compared to the Marathi and Hindi context post which the first version of the Marathi and Hindi Dentist Patient Trust Scale was created.

Reliability of the questionnaire was done by giving the questionnaire at baseline and after 15 days to the same participants in Marathi/Hindi/English.

Data collection

The self-administered final version of the Dentist-Patient Trust Scale was distributed according to the understanding of the language among 252 participants included by convenience sampling technique. The time period and number of participants per day was planned in such a way that the data collection did not hamper participant's treatment and meal timing.

Statistical analysis

The data obtained from the responses of the participants were entered onto a Microsoft excel spreadsheet 2010. IBM Statistical Package for Social Sciences (Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) was used for analysing the study data. Descriptive statistics using mean and standard deviation were used for the responses obtained for Dentist-Patient trust scale (DTS). The internal consistency of the scale was assessed using Cronbach's alpha. Intra-class correlation coefficient (ICC) was reported using the Pearson r correlation coefficient.

Results

Of the 152 participants included in the study, 118 (46.8%) were males and 134 (53.2%) were females. Table no.1 represents the test retest reliability of the scale with Cronbach's alpha in the range of 0.71-1.00 for different

languages measured between average (0.5) and excellent (1.0). Test-retest reliability for each item of the questionnaire measured with Intraclass Correlation (ICC) was good to excellent, ranging from 0.7-1.0 (Table no.2). 100% and 90.9% agreement was present for validation by experts for Marathi and Hindi version of Patient-trust Scale respectively.

With respect to responses of the participants regarding trust in dentist recorded with DTS, a significant difference in the responses was found among the participants for all the 11- items. 59.9% agreed that dentist cared about patient's health the way patients cared for themselves, 59.9% responded that dentists care more about the best possible treatment needs required for the patient over patient's need. The honesty of dentist in disclosing all the different treatment options available for patient's condition and being extremely thorough and careful was agreed by 56.3% and 57.5% participants respectively. For the responses towards the trust on dentist's decision about choosing the best treatment, 51.6% agreed to it. Similarly, 52.8% agreed that dentist think only about what is best for their patients.

For using best skill and efforts on patients, 51.6% participants agreed to it and 56.7% responded that they do not worry in putting oral health in dentist's hand. 56.3% participants believed that dentist would never mislead them. In terms of negative response, 30.6% responded that sometimes dentists do not pay full attention to what patients are trying to tell them. Overall, 51.6% had complete trust on the dentists. (Figure no.1)

The mean trust score for the Dental Trust Scale was 4.14 ± 0.5 for 252 participants. Among 252 participants 2% of the participants showed low trust in their dentist, the moderate trust was shown by 53.2% of the participants and 72.2 % of the population showed high trust in their dentist when measured with the Dental trust scale.

Discussion

Trust is the basic foundation to build a successful dentist-patients trust relationship. The Dentist can build this relation of trust by generating a feeling of confidence as well as effortless in his skills thereby making the patient comfortable, calming the fear within the patient towards the dental procedure and providing an uneventful and pleasant experience during each dental visit. A trustful relation increases the compliance of the patient towards the treatment thereby improving the overall outcome of the definitive treatment. A lack of trust weakens dentist's confidence and this creates a barrier in availing the health care services available to the patients. Thus, to continue the patients in seeking dental care and adopting them to habits conducive to oral health is essential.¹¹

Dentist Trust Scale is 11-item questionnaire tool developed to assess trust in dentist by the patients.¹⁰ The scale was first introduced to understand the trust in physicians among patients. It covers various dimensions of trust like; fidelity, competence, honesty, confidentiality and global trust.¹² In the year 2017, this scale was modified and used as a Dentist trust Scale. Similar to the physician trust scale, this scale too had 11 items assessing responses for dentist's care regarding patient's health, best treatment for the patient from dentist's point of view, being thorough and careful concerning treatment, trust of patient into dentist's decision, honesty of dentist in a choosing best treatment plan, attention of dentist towards patient's views, use of skills of dentist in dental decision and practice, trust in putting patients health in dentist's hand and overall trust in the dentist. The scale measures responses on a 5-point Likert scale with strongly agree, agree, neutral, disagree and strongly disagree as response options. Armfield JM et al¹⁰ developed the scale for its use in dentistry in the English language.

The present study intended to use the existing DTS of the English language and validate it into the Marathi and Hindi language translated scale by using validity and reliability measures. The Cronbach's alpha for the Marathi version was above 0.85 while that for the Hindi version was more than 0.71. In both versions the Cronbach's alpha was good and acceptable making the scale reliable for assessing dentist trust among patients. In the study reported by Armfield JM et al¹⁰ the internal consistency measured by Cronbach's alpha for the English version was 0.92 which was excellent. The intraclass correlation coefficient in the present study was 0.69 to 0.97 which is at a higher range compared to the one reported in Armfield JM et al¹⁰ study with a range of 0.25 to 0.74.

In the present study a majority of the participants gave positive responses (Strongly agree and agree) about the care of patients by the dentist similar to the care the patient's take of themselves. The result was in accordance with the study¹⁰ wherein maximum samples gave a positive response. A positive response was given by more than 59% participants responding that dentist care for the best treatment over what patient needs. The results were in contrast to the study conducted by Armfield JM et al¹⁰ wherein a slight lesser percentage of more than 48% were observed to respond to a positive option. With respect to the dentist being thorough and careful, 93% of the participants agreed to the statement while it was around 62% in same study cited. More than 96% in the present study positively responded that dentist articulate all possible options to the patients to decide about the treatment plan whereas only around 49% presented with a positive response in Armfield JM et al¹⁰ study. Dentists need to be aware about the communication methods while dealing with patients. Spending adequate time with the patients is essential to retract necessary information for the diagnosis and treatment. The patients should also be

encouraged to ask questions to clear their concerns and actively participate in decision making with the dentist.¹³ About 94.5% had a complete trust on the dentist's decision regarding the best treatment plan. The case was not similar in a study conducted by Armfield JM et al¹⁰ where only slightly more than half of the participants believing into the dentist's decision regarding treatment plan.

It is very important for the dentist to carefully listen to the patient's problems in order to correctly diagnosis based on the time period, intensity, aggravating and relieving factors and possible trauma if any regarding oral issues. Missing out on any of the information may lead to misleading diagnosis thereby performing an unethical practice.¹⁴ In the present study when participants were asked about the same, less than half of the participants reported that dentists do not listen to the patients carefully while they are giving history about the oral problems. The results were in agreement with the Armfield JM et al¹⁰ study wherein less than 50% gave a similar response. Around 87% believed that dentist use their best skills for the patient and thus more than 92% of the participants presented trust in putting their oral health into dentist's hand. The percentage was on a lower level with around 69% reporting towards the skills of the dentist and trust in placing their health into dentist's hand.

Approximately 79% of the participants in the present study believed that dentist would never mislead them regarding any of the dental decisions and majority 90% of them had a complete trust on the dentist. The trust regarding the same was found to be quiet low with only 40% showing trust in the dentist for not misleading them while only 52% had a complete trust on the dentists.¹⁰ According to the ethical principles, veracity is the core ethical principles to be strictly followed by the dentist and they should be transparent about the dental

procedures rendered to the patients.¹⁵This also improves patients involvement and helps in overcoming paternalistic approach towards the treatment decision.¹⁶Surprisingly, in the present study, only 5% to 26% of the participants could not answer to any of the positive and negative responses and stayed neutral for all the statements whereas in the study by Armfield JM et al,¹⁰ around 18% to 39% gave a neutral response to all the 11-items of the Dentist-Trust Scale.

Though this scale is intended to measure the trust in dentist by the patients and incorporated various dimensions, there are still numerous other factors which may have an influence in the trust in dentist. Some such factors could be unpleasant past experience of the treatment by a dentist, post treatment outcomes, type of funding to be provided to the dentist append to the existing dentist-patient relationship of trust.¹⁶The limitations of the study include lack of generalizability due to smaller sample size. Moreover, the scale developed for measuring trust is of 11-item questionnaire tool and the heterogeneity of the trust concept is still not completely clear.

Conclusion

Cross-culture validation of the Dentist-Trust scale has enabled measuring the trust in dentist by the patients. Overall, an acceptable trust was found in the dentist by all the responses of the patients. With the low percentage of participants responding positively to the trust in dentist for not misleading them it enhances the increasing need of adequate communication with sufficient time given to each and every patient and involving the patients in decision making. Moreover, the dentist should also monitor trust among his patients periodically so as to improve of the shortcomings as reported through the DTS by the patients.

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Legend Tables

Table 1: Cronbach's alpha (α) different languages of Dentist-Patient trust scale

Language	Marathi	Hindi	Marathi to Hindi	English to Marathi	English to Hindi
Cronbach's alpha	0.85-1.00	0.71-0.97	0.76-1.00	0.89-1.00	0.57-1.00

Table 2: Intra-class correlation coefficient of each questionnaire item in Hindi and Marathi language

Question No.	Marathi	Hindi
1	0.857	0.902
2	0.890	0.858
3	0.959	0.846
4	0.909	0.813
5	0.960	0.760
6	1.000	0.915
7	0.970	0.901
8	0.917	0.697
9	0.973	0.883
10	0.967	0.979
11	0.913	0.886

Figure 1: Responses of the participants for DTS

Statements	Response	Frequency	Percentage	Chi-square
Dentists care about their patients' health just as much or more as their patients do	Strongly Disagree	5	2.0	0.000
	Disagree	0	0.0	
	Neutral	5	2.0	
	Agree	151	59.9	
	Strongly Agree	91	36.1	
Sometimes dentists care more about what is best for them than about patients' dental needs	Strongly Disagree	9	3.6	0.000
	Disagree	9	3.6	
	Neutral	5	2.0	
	Agree	151	59.9	
	Strongly Agree	78	31.0	
Dentists are totally honest in telling their patients about all the different treatment options available for their conditions	Strongly Disagree	0	0.0	0.000
	Disagree	2	0.8	
	Neutral	6	2.4	
	Agree	142	56.3	
	Strongly Agree	102	40.5	
Dentists are extremely thorough and careful	Strongly Disagree	2	0.8	0.000
	Disagree	3	1.2	
	Neutral	11	4.4	
	Agree	145	57.5	
	Strongly Agree	91	36.1	
You completely trust dentists' decisions about which dental treatments are best	Strongly Disagree	2	0.8	0.000
	Disagree	0	0.0	
	Neutral	12	4.8	
	Agree	130	51.6	
	Strongly Agree	108	42.9	
Dentists think only about what is best for their patients	Strongly Disagree	7	2.8	0.000
	Disagree	2	0.8	
	Neutral	11	4.4	
	Agree	133	52.8	
	Strongly Agree	99	39.3	
Sometimes dentists do not pay full attention to what patients are trying to tell them	Strongly Disagree	41	16.3	0.000
	Disagree	72	28.6	
	Neutral	21	8.3	
	Agree	77	30.6	
	Strongly Agree	41	16.3	
Dentists always use their very best skill and effort on behalf of their patients	Strongly Disagree	2	0.8	0.000
	Disagree	3	1.2	
	Neutral	26	10.3	
	Agree	130	51.6	
	Strongly Agree	91	36.1	
You have no worries about putting your oral health in the hands of the dentist	Strongly Disagree	5	2.0	0.000
	Disagree	0	0.0	
	Neutral	13	5.2	
	Agree	143	56.7	
	Strongly Agree	91	36.1	
A dentist would never mislead you about anything	Strongly Disagree	8	3.2	0.000
	Disagree	0	0.0	
	Neutral	19	7.5	
	Agree	142	56.3	
	Strongly Agree	83	32.9	
All in all, you trust dentists completely	Strongly Disagree	2	0.8	0.000
	Disagree	0	0.0	
	Neutral	21	8.3	
	Agree	130	51.6	
	Strongly Agree	99	39.3	
Total		252	100	