Cross-Cultural Adaptation and Psychometric Properties of The Indonesian Version of Servqual For Assessing Oral Health Service Quality

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Abstract

The demand for improving the quality of general health services and oral services is increasing. One of the best and most used models for evaluating the quality of health services is SERVQUAL. This research tests the validity and reliability of the Indonesian version of SERVQUAL and identifies the gaps in the quality of dental care in the teaching hospital of the Faculty of Dentistry at Universitas Indonesia. A sample of (n=127) patients between 12 and 71 years old was recruited from patients who visited a teaching dental hospital in Jakarta. After translating the instrument, we conducted psychometric testing. The reliability coefficients (Cronbach α) for SERVQUAL were as follows: SERVQUAL Expectation 0.90 and SERVQUAL Perception 0.90. The reliability test of the Indonesian version of SERVQUAL yielded test and retest Interclass Correlation Coefficients that were in excellent agreement with Expectation 0.95 and Perception 0.88. The construct validity of SERVQUAL Indonesian version's Expectation and Perception showed that scores were associated significantly (p=0.00) with global ratings on a five-point Likert scale question. In general, there was no significance, but some domains showed a tendency toward significance: Domain Teamwork Expectations (p=0.09), Outcome Perception (p=0.09) and Reliability Perception (0.07). Total SERVQUAL discriminant validity was measured using satisfied and dissatisfied variables divided into two domains: the SERVQUAL Total Domain and the MOH Core Value Domain. Satisfied and dissatisfied variables were classified in terms of delta values: Delta with ≤0 was dissatisfied, and Delta with >0 was satisfied. Total SERVQUAL Perceptions, whose satisfaction was 82.84 (9.37) and whose dissatisfaction was 78.28 (7.16), were significant (p=0.01). This study provides strong evidence supporting the reliability and validity of the Indonesian SERVQUAL to be used as a satisfied oral health service measure for Indonesian people.

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Introduction

The most important indicator in assessing the quality of health services is patient satisfaction. Ensuring the quality of health services is a priority, as the quality of health services is significantly related to recovery, life expectancy and community welfare.[1] Thus, the demand for improving the quality of general health services and oral health services has been increasing. The organization of health facilities such as hospitals, health centers and clinics is required to provide quality services both technically and functionally. The technical quality of a service is the accuracy of its engineering and diagnostic procedures whereas the functional quality of a service is its accuracy in providing care to patients and determining the patient's perception.[2] Good health care should be tailored to the wants and needs of the patient rather than adhere to a general standard.[3] Other influences on the perception of service quality are social cultures.[2]

A key way to improve the quality of health care is to monitor and evaluate the patient's perception of the quality of health care over time using valid tools and models to measure service quality. This assessment involves identifying gaps in the Expectation and Perception regarding quality of dental care. One of the best and most used models for evaluating the quality of health services is SERVQUAL, which was introduced by Parasuraman *et al.* in 1980.[4] SERVQUAL

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contains six dimensions of service quality: tangibles, reliability, responsiveness, assurance, empathy and whether outcomes can be tailored to other health services. This instrument is also acknowledged as a model of patient satisfaction analysis, as SERVQUAL analyzes five gaps between expectations and perceptions of service quality provided by health facility organizations such as hospitals and community health centers. Furthermore, this model is suitable to measure quality in dental services.[5] SERVQUAL was adapted, modified, translated and validated in accordance with the oral health care environment in Malaysia by Roslan.[2] In oral care, the communication skills of dentists remain important for patient satisfaction.[3] The most important factor in health care that affects patient satisfaction is the quality of physician-patient interaction. The evaluation of oral health service quality using SERVQUAL in Indonesia has been adapted and used with only two domains: responsiveness and empathy.[6] Currently, no cross-cultural adaptation and validity and reliability test of SERVQUAL has been conducted in Indonesia. Thus, there is no available version of SERVQUAL that is suitable for oral health services in Indonesia. The aim of this study is to cross-culturally adapt the SERVQUAL to the Indonesian language and test the instrument's reliability and validity.

Materials and methods

SERVQUAL has been used to assess the perception of dental service quality. Cross-cultural adaptation and validity testing have been conducted in Malaysia to assess differences in patients' expectations and perceptions, known as service gaps, against patient satisfaction in oral health services. The first part of the SERVQUAL questionnaire addressed respondents' demographic characteristics. The second part of the questionnaire concerns the respondent's expectation and perception of the quality of oral health services. This section consists of 20 questions that use a 5-point Likert measurement scale ranging from "strongly disagree" (1) to "strongly agree" (5). The coded question will result in a sum of 0-100 numbers.[2] The largest number indicates the highest results for expectations and perceptions. Patient satisfaction is obtained by reducing expectations with perception. The result of reduction by ≤0 is

grouped as a dissatisfied subject whereas >0 is classified as a satisfied subject. The research design is cross-sectional.

The English version of SERVQUAL was originally introduced by Parasuraman et al. in 1980.[4] In his dissertation, Roslan adapted SERVQUAL to the context of oral health service in Malaysia; his modification involved the formation of 20 new questions.[2] Dewi et al. adapted the instrument to Indonesia, but only for the domains of responsiveness and empathy.[9] This SERVQUAL translation will be assessed and revised by an expert panel regarding the tool's concepts and content and its suitability between the original version and the Indonesian version. The panel was consist of a dentist and a community oral service researcher who are familiar with the quality of oral health services. A consensus version was be tested in 10 patients (ages 12-71 years) to determine the instrument's sensitivity to Indonesian culture and the selection of appropriate words. For transcultural adaptation, face-to-face interviews were conducted with patients who come for treatment at a health facility. The consensus version was translated back into English. This reverse translation of the Indonesian version in English was done by an Indonesian dentist who did not know the original words from SERVQUAL. Finally, SERVQUAL was confirmed by an expert panel after revision, and confirmation from the SERVQUAL author was received.

Data was collected from 127 patients (ages 12-71 years). To test and re-test, reliability measurements were taken from 10% of the sample (12 patients). These twelve patients received additional interviews and questionnaires within one-week intervals of the first measurement. Reliability was tested using Cronbach Alpha (α) and the interclass correlation coefficient (ICC). The validity of the face validity was analysed. The construct validity was tested by determining associations between SERVQUAL scores and global rankings using Spearman's correlation coefficients. Discriminant validity was tested by comparing SERVQUAL scores with global ratings from the Mann Whitney test. The global question is a question that represents all of the SERVQUAL questions as a global ranking. The global question pertains to direct satisfaction and indirect satisfaction The Expectation Question, which measured direct satisfaction of the perceived personal satisfaction

felt at the time of service, was as follows: "Are you satisfied with existing dental services?". Respondents could answer with either "yes," which would equate to 1, or "no," which would equate to 0. Indirect satisfaction is the perception of personal satisfaction to socialize health facilities to relatives and their families: "Do you promote for this dental health services facilities to your families and your partners?" Respondents replied to this question using a Likert: 5 = very satisfied; 4 = satisfied; 3: doubt; 2 = dissatisfied; 1 = very dissatisfied. Each measurement began with an explanation and informed consent approval and was then examined by interview using the Indonesian Version of the SERVQUAL questionnaire with the selected sample. The obtained data was recorded and statistically analyzed. The study was conducted at the Teaching Hospital of the Faculty of Dentistry at Universitas Indonesia.

Sample size estimation suggested that 100 subjects were needed to complete the study and to detect statistical significance ($p<0.05$) with a power of 95%, assuming a significant correlation of 0.4. A total of 127 subjects meeting the inclusion criteria were recruited for the study. The respondents in the study were recruited from patients who came to the health center and hospital. Inclusion and exclusion criteria were applied. Participants were included in the study if they were Indonesian citizens between the ages of 12 and 71 years old and were dental and oral patients at RSGMUI. Exclusion criteria were patients who were being treated; exodontia patients; surgical patients; and compromised patients. This research was approved by the Dental Research Ethical Committee at the Faculty of Dentistry at the Universitas Indonesia (No: 20/Ethical Approval/ FKGUI/IV/2017 Protocol Number: 070210317). Data was collected after research subjects signed the informed consent forms. The researcher provided questionnaires for the research subjects to answer regarding their conditions; each question had five answer options. The time to complete the questionnaire was about 20 minutes: 10 minutes for expectation questions before receiving service and 10 minutes for perception questions after receiving service. Five percent of the 127 subjects (n=12) were asked to complete the questionnaire twice in order to do test-retest scoring. The total duration between first data

collection and second data collection was 14 days. Private information such as age, gender, education level, occupation, ethnicity, marital status and other demographic data was noted in this research.

Results

The contents of the translated and original version of the SERVQUAL are similar. Only slight differences were seen between the back-translated and the original version. No specific issues were identified during the translation/back-translation process. Therefore, no modification should be done on the original version of the SERVQUAL. Completed, usable questionnaires were received from 121 respondents from a total of 127 distributed questionnaires (94% response rate). The average age of the respondents was 36 years (range = 12-71).

Variables		N	Number of Satisfied Patients (%)	x^2 Statistic (df)	p-value
Age (years)	Below 30	63	37(55.2)	0.00 (1)	0.55
	30 above	68	30(44.8)		
Gender	Male	43	24(35.8)	0.00(1)	1
	Female	78	43(64.2)		
Ethnicity	Java Indonesia	115	66(98.5)	2.35 (1)	0.08
	Others Indonesia	6	1(1.5)		
Education level[c]	At least primary	2	1(1.5)		
	Secondary	42	23(34.3)	0.037(2)	0.88
	Tertiary	77	43(64.2)		
Marital status	Married	64	28(41.8)	1.25(1)	0.26
	Single	57	39(58.2)		
Personal monthly income	<IDR 0 Not salaried	0	0	0.74(1)	0.78
	IDR 0-3.500.000	41	22(32.8)		
	>IDR3.600.000	80	45 (67.2)		
Family members in home	≤ 2	60	35(52.2)	2.31(2)	0.31
	2-4	41	19(28.4)		
	≥5	20	13(19.4)		
Expenses in a month	≤IDR3.500.000	61	31(46.3)	1.03(1)	0.31
	≥IDR3.600.000	60	36(53.7)		
Occupation status	Work	104	56(83.6)	0.32(1)	0.56
	No Work	17	11(16.4)		
Oral visit due to pain	Yes	88	45(67.2)	1.75(1)	0.18
	No	33	22(32.8)		

Table 1. Demographic Characteristics and Satisfaction Level of Respondents (n=121)[a] The difference between perception and expectation[b] x^2 Test for independence [c]Mann Whitney Test 3x2 Crosstab with expected count

A prominent feature of the sample characteristics was that a majority of the respondents were females and had tertiary level education (64. 2%), and only 5% of the respondents were less than 19 years old. The ethnic distribution of this study sample is not

representative of Indonesia's ethnic distribution because the majority of the population in Jakarta is from Java (about 95%), and only about 5% of the population are from Sumatera, Sulawesi and Kalimantan. All of the respondents have formal education; only a few of them have elementary education. An analysis of the respondent's demographic characteristics is presented in Table 1. There appeared to be a nearly significant association between patient satisfaction and ethnicity (p=0.008).

There was a small but statistically insignificant difference, as dissatisfaction was highest among those who were less than 19 years old (64%), female (65%) and in the "not salaried" category (65%), which includes housewives, pensionaries and students.

The results of the face validity test indicate the adjustment of the use of sentences in the SERVQUAL questions. Information was provided in the form of agree (4), doubt (3) and disagree (2).

Item		Expectation Min-Max (Median)	Perception Min-Max (Median)	Satisfaction Expectation Min-Max (Median)	Satisfaction Perception Min-Max (Median)
SERVQUAL Total		50-85(69)	51-85(68)	50-85(67)	51-85(68)
D1	Tangibles	9-20(16)	10-20(16)	10-20(15)	10-20(16)
D2	Reliability	6-15(12)	6-15(12)	6-15(12)	6-15(12)
D3	Responsiveness	7-15(12)	6-15(12)	7-15(12)	7-15(12)
D4	Assurance	9-15(12)	9-15(12)	9-15(12)	10-15(12)
D5	Empathy	7-5(12)	8-15(12)	9-15(12)	9-15(12)
D6	Outcome	2-5(4)	1-5(4)	2-5(4)	3-5(4)
MOH Core Value		54-85(70)	53-85(68)	54-85(68)	54-85(68)
D7	Carrying services	11-20(16)	11-20(16)	11-20(16)	11-20(16)
D8	Teamwork	5-10(8)	5-10(8)	6-10(8)	6-10(8)
D9	Professionalism	34-55(45)	32-55(44)	35-55(44)	35-55(44)

Table 2. Descriptive Expectations and Perceptions (n=121)[*] Central to the assessment of satisfaction on the performance of health personnel from the Ministry of Health (MOH Core Values)

The patients indicated good satisfaction with the oral services received, as indicated by the minimum-maximum (min-max) median value of 51-8. With a min-max median of 54-85 (68), patients indicated satisfaction with the performance of the oral health providers, including dentists, dental nurses, other medical staff and administrative staff. The respondents indicated their dissatisfaction with the cleanliness of the toilets, which was included in the tangible domain; the long waiting time, which was included in the reliability domain; and the carrying service.

Domains		Items	Cronbach α[b]	
			Expectation	Perception
D1	Tangibles	Q1, Q2, Q3, Q17	0.81	0.89
D2	Reliability	Q4, Q5, Q6	0.89	0.89
D3	Responsiveness	Q7, Q8, Q9	0.90	0.89
D4	Assurance	Q10, Q11, Q12	0.90	0.89
D5	Empathy	Q13, Q14, Q15	0.80	0.89
D6	Outcome	Q16	0.91	0.89
SERVQUAL Total		D1, D2, D3, D4, D5, D6	0.89	0.90
D7	Carrying services	Q4, Q8, Q9, Q12	0.89	0.89
D8	Teamwork	Q11, Q18	0.90	0.90
D9	Professionalism	Q4, Q6, Q7, Q10, Q11, Q13. Q14, Q15, Q16, Q19, Q20	0.87	0.87
MOH Core Values		D7. D8. D9	0.88	0.88

Table 3. Reliability Analysis for the Dimensions in the SERVQUAL Questionnaire (n=121) [b]Cronbach's Alpha for the SERVQUAL domains if an item is removed

The reliability coefficients (Cronbach α) for the SEVQUAL were as follows: SERVQUAL Expectation 0.90 and SERVQUAL Perception 0.90. If an item was removed, the reliability coefficients were as follows: Expectation SERVQUAL Total 0.89; Expectation MOH Core Values 0.88; Perception SERVQUAL Total 0.90; and Perception MOH Core Values 0.88. The reliability test of the Indonesian version of SERVQUAL yielded test and retest Interclass Correlation Coefficients that were in excellent agreement with Expectation 0.95 and Perception 0.88. As shown in Table 4, the construct validity of Expectation and Perception of the Indonesian SERVQUAL showed that the score was

significantly associated (p=0.00) with the global rating on a five-point Likert scale question. SERVQUAL with global rating was a dichotomies question. In general, there was no significance, but some domains showed a tendency toward significance: Expectations Teamwork Domains (p=0.09), Perception Outcome (p=0.09) and Perception Reliability (0.07).

Item		Expectation Question[a]		Promoting Facilities Question[b]	
		Mean(SD)	p-value	r	p-value
Expectation					
Total Question		83.75(10.71)	0.26	0.45	0.00
SERVQUAL Total		71.08(9.12)	0.24	0.47	0.00
D1	Tangibles	16.36(2.52)	0.25	0.44	0.00
D2	Reliability	12.19(2.03)	0.22	0.40	0.00
D3	Responsiveness	12.71(1.72)	0.21	0.40	0.00
D4	Assurance	12.87(1.59)	0.59	0.42	0.00
D5	Empathy	12.69(1.96)	0.27	0.40	0.00
D6	Outcome	4.26(0.62)	0.60	0.31	0.00
MOH Core Value		71.75(9)	0.31	0.42	0.00
D7	Carrying services	16.85(2.17)	0.82	0.38	0.00
D8	Teamwork	8.47(1.13)	0.08	0.35	0.00
D9	Professionalism	46.43(6.05)	0.26	0.43	0.00
Perception					
Total Question		80.80(8.72)	0.12	0.34	0.00
SERVQUAL Total		68.40(7.51)	0.15	0.34	0.00
D1	Tangibles	15.54(2)	0.31	0.42	0.00
D2	Reliability	11.89(1.87)	0.09	0.33	0.00
D3	Responsiveness	12.26(1.73)	0.76	0.25	0.00
D4	Assurance	12.50(1.48)	0.18	0.31	0.00
D5	Empathy	12.21(1.68)	0.16	0.26	0.00
D6	Outcome	4.10(0.66)	0.09	0.38	0.00
MOH Core Value		69.60(7.60)	0.12	0.31	0.00
D7	Carrying services	16.34(2.10)	0.76	0.29	0.00
D8	Teamwork	8.23(1.03)	0.07	0.32	0.00
D9	Professionalism	45.02(5)	0.10	0.31	0.00

Table 4. Construct Validity for the Indonesian SERVQUAL (n=121)
[a]Mann-Whitney non -parametric tests were used
[b]Spearmann non-parametric correlation tests were used

Discriminant validity of the Indonesian version SERVQUAL was measured using satisfied and dissatisfied variables divided into SERVQUAL Total Domains and MOH Core Value Domains. Satisfied and dissatisfied were classified according to their delta values: A delta of ≤0 was dissatisfied, and a delta of ≥1 was satisfied. In total SERVQUAL Expectations, satisfaction and dissatisfaction were significant. In MOH Core Value Expectations, satisfaction and dissatisfaction were significant. In Total SERVQUAL Perceptions, satisfaction and dissatisfaction were significant. In MOH Core Value Expectations, satisfaction and dissatisfaction were significant.

Item		Delta[a]		p-value[b]
		Dissatisfied Mean(SD)	Satisfied Mean(SD)	
Total Question		89.50(10.49)	72.12(8.44)	0.00
SERVQUAL Total		76(8.64)	67.12(7.49)	0.00
D1	Tangibles	17.65(2.57)	15.33(1.96)	0.00
D2	Reliability	13.22(1.78)	11.36(1.84)	0.00
D3	Responsiveness	13.52(1.57)	12.06(1.57)	0.00
D4	Assurance	13.67(1.44)	12.24(1.42)	0.00
D5	Empathy	13.46(2.09)	12.07(1.61)	0.00
D6	Outcome	4.50(0.54)	4.06(0.62)	0.00
MOH Core Value		76.46(8.58)	67.96(7.44)	0.00
D7	Carrying services	18.06(1.82)	15.88(1.95)	0.00
D8	Teamwork	8.96(1.18)	8.07(0.92)	0.00
D9	Professionalism	49.44(5.93)	44(5)	0.00
Total QUESTION				0.14
SERVQUAL Total		78.28 (7.16)	82.84(9.37)	0.01
D1	Tangibles	14.98(1.73)	15.99(2.10)	0.00
D2	Reliability	11.57(1.70)	12.15(1.98)	0.08
D3	Responsiveness	11.94(1.74)	12.51(1.69)	0.17
D4	Assurance	12.17(1.46)	12.78(1.45)	0.02
D5	Empathy	11.78(1.59)	12.55(1.69)	0.01
D6	Outcome	3.81(0.70)	4.16(0.59)	0.00
MOH Core Value		67.54(6.44)	71.24(8.08)	0.03
D7	Carrying services	18.06(1.82)	15.88(1.95)	0.10
D8	Teamwork	8.96(1.18)	8.07(0.92)	0.01
D9	Professionalism	49.44(5.93)	44(5)	0.02

Table 5. Discriminant Validity for the Indonesian SERVQUAL (n=121) [a]Delta is satisfaction, which is a value of difference between Perception and Expectation [b]Mann-Whitney non-parametric tests were used

Discussion

This study cross-culturally adapted and successfully validated the Indonesian version of the SERVQUAL instrument used for assessing oral health service quality. In addition to conducting a meticulous translation, we employed a pre-test phase, which is important for identifying potential problems with the questionnaire content, such as misunderstandings about the intended meaning of the items and their clarity. The results showed semantic equivalence between the English and Indonesian language versions of the SERVQUAL. The ethnic distribution of the study sample was not representative of the country, as the 95% of the population of Jakarta (the capital of Indonesia) are people from Java, and only 5% of the city's population are from other tribes. All Indonesian tribes exist in Jakarta, but the numbers vary. Some of those tribes are dominated by the Javanese, including Sundanese and Betawi.[7] Most of the participants in this study were Javanese, and they showed satisfaction that was close to significant. Javanese are more prevalent and also receive more oral services than other tribes. A prominent feature of the sample characteristics was that a majority of the respondents were females and had tertiary level

education (64.2%). This is similar to a study conducted by John et al., which found that female and public sectors employees were dominant[2]. This study was conducted to adjust the measurement of satisfaction of oral health services in accordance with the circumstances and culture of Indonesia using SERVQUAL. In Indonesia, the healthcare satisfaction assessment was performed only with the domains of assurance and empathy, making the SERVQUAL instrument incomplete.[6] This study determined the validity and high validity of SERVQUAL Indonesia Version so that the tool can be used to measure patient satisfaction of dental health services quality and can be replicated.

We found no significant association between patient satisfaction and age, gender, marital status and personal income. Researchers have investigated the effect of age on patient satisfaction and have found not much difference between younger and older patients. Younger patients (30 to 37-year-old patients) tend to indicate a little more between satisfaction with service than older patients do. In other studies, age was not associated with satisfaction.[8,9] Previous studies identified women as being more satisfied with oral health services than men were, explaining that women are more likely to be exposed to oral health services more frequently than men are, and thus women are able to moderate their expectations for care.[10] Only a small proportion of highly educated patients are satisfied with oral health services. This phenomenon was associated with a study conducted by John et al., which documented that patients with high education levels indicate more dissatisfaction with oral health services than those with lower education levels[2]. The responses in this study clearly show that the patients believed the oral staff did their job with high commitment; displayed good work discipline, always appeared neat; and were always polite. Although the patients' expectations regarding waiting time, cleanliness of public toilets and promptness of service was low, the perception was also low, suggesting that considerable improvement is needed in these areas. The results of this study can assist the MOH in planning and directing resources specifically toward services that were neglected but are critical to patient satisfaction.

The psychometric properties of the SERVQUAL provided strong support for its reliability and validity. The reliability of the SERVQUAL was established for both internal and test-retest consistency and validity associated with the global rating determined using a five-point Likert (Promoting Facilities Question) but only partially associated with global ratings dichotomies (Yes-No Expectation Question). Some domains showed a tendency toward significance: Expectations Teamwork Domains (p=0.09), Perception Outcome (p=0.09) and Perception Reliability (0.07). Satisfaction is multifactorial, and no individual factor contributes to satisfaction or dissatisfaction. In this study, there was a significant association between patient satisfaction and educational level. Oral pain can be severe, and has been described as excruciating. Only the nature of pain and its subsequent relief can be a cause for high satisfaction among patients with oral pain. More patients were satisfied than dissatisfied.

The measure also demonstrated discriminant validity between patient groups according to their satisfaction and dissatisfaction experience, which was divided into SERVQUAL Total Domains and MOH Core Value Domains. Patients with satisfaction and dissatisfaction between expectation and perception experience were significantly higher compared with total SERVQUAL. This study found that most of the patients were satisfied, but half of the total patients were dissatisfied. The gap between "expectations" and "perceptions" was small, with cut of point 0 as delta point: Values of less than zero were dissatisfied, and values of greater than zero were satisfied. A negative gap is usually anticipated because, normally, expectations of an ideal service are seldom fulfilled. According to the SERVQUAL model, the smaller the "quality gap," the higher the satisfaction. Studies assessing satisfaction with oral services have found that different factors affect satisfaction due to various approaches to assessment.[1,4,6]

Patients' expectations of service care providers were highest in relation to responsiveness, and patients' expectations of service care were lowest in relation to reliability among all the dimensions. The mean satisfaction score was used to compute the satisfaction gap scores at different levels of detail for each statement pair or for each dimension. This study was conducted by asking respondents about

their expectations and perceptions in a single session. The nature of the assessment may have induced bias in the questionnaire response. Ratings may be influenced by the individual's mood, past experience, tendency to rate with more or less severity and influence of the mass media, which may explain the reasons behind the high expectations and perceived outcomes in this study. Together with these respondent-related factors, the accuracy of ratings may be affected by methodological factors, including sampling strategy, response rate, questionnaire format and data collection procedure. A complete study of these factors, especially on the validity of the questionnaire, should be carried out at regular intervals. The statements representing the core values of the MOH corporate culture in this survey need to be reevaluated, as they do not seem to be valid for their respective dimensions. Future researchers could also use large sample sizes to compare the efficacy of SERVQUAL between patients and health care providers.

Conclusions

This study provides strong evidence supporting the reliability and validity of the Indonesian SERVQUAL to be used as an effective measure of oral health services for Indonesian people.

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