

Patients' satisfaction with oral health care provided at the University Dental clinic in Tanzania: A cross-sectional analytical study

Lenis Wencheslaus¹ | Matilda Mtaya-Mlangwa¹  | Karpal S. Sohal^{2,3} 

¹Department of Orthodontics, Paedodontics and Community Dentistry, School of Dentistry, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania

²Department of Oral and Maxillofacial Surgery, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania

³Department of Dental Services, Muhimbili National Hospital, Dar es Salaam, Tanzania

Correspondence

Karpal S. Sohal, Department of Oral and Maxillofacial Surgery, Muhimbili University of Health and Allied Sciences, Dar es Salaam 65014, Tanzania.

Email: karpal@live.com

Abstract

Background: Patients' satisfaction with health services is considered an essential element for hospital setup as it measures its performance and quality of care. Thus, evaluation of patients' satisfaction has become a basic concern of clinical practice. This study aimed to assess the satisfaction of patients with the oral health care provided at the University Dental Clinic in Tanzania.

Methods: This analytical cross-sectional study targeted all adult patients who sought treatment at the Muhimbili University of Health and Allied Sciences (MUHAS) dental clinic, between December 2019 and August 2020. It utilized a Dental Satisfaction Questionnaire (DSQ) to collect relevant information for this study.

Results: A total of 302 patients participated in this study with male to female ratio of 1:1.54. Their mean age was $35.95 \pm (SD = 14.19)$ years. The mean scores for various domains of satisfaction were; 9.42 ± 2.09 for pain management, 8.11 ± 2.84 for the quality of services, 16.08 ± 2.27 for the cost of service, 7.49 ± 1.94 for satisfaction with accessibility/convenience, and 8.93 ± 2.17 for satisfaction with access to care. The overall mean satisfaction score was 50.03 ± 6.53 . Only the education level of the participant was significantly associated with overall satisfaction, with the odds of participants with an education level of less than college, being satisfied with dental service 38% more than those with a college education.

Conclusion: Most of the participants had moderate overall satisfaction with the oral health care provided at the University dental clinic. The level of satisfaction was not determined by the sociodemographic characteristics of the participants.

Patient or Public Contribution: Patients with oral health problems and staff of the university dental clinic were consulted on the design, delivery, and reporting of the research.

KEYWORDS

oral health services, pain management, patient satisfaction, Tanzania, treatment cost

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1 | INTRODUCTION

Satisfaction is the extent to which an individual's experience compares with his or her expectations.¹ Patients' satisfaction with health services is considered an essential element for hospital/clinical setup as it measures the hospital's performance and its quality of care (which is an amalgamation of patient satisfaction and treatment outcome).²⁻⁴

Evaluation of patients' satisfaction has become a basic concern of clinical practice⁵ because satisfied patients are more likely to show positive illness behaviors.⁶ Response to satisfaction with dental care is fundamental for continuous improvement of the service delivery process and outcome⁷ because the satisfaction of the patient with the services can be measured in terms of access, convenience, cost, pain, and quality.⁸ Therefore, understanding these factors may help dental professionals appreciate the complexities involved in the attitude and behavior of the general public toward oral health care.⁹

A previous study conducted in Dar es Salaam nearly 15 years ago involving public dental clinics found that patients were least satisfied with waiting time and minimum communication with the doctor during the procedure.¹⁰ Another study involving five public dental clinics in the city was carried out about 8 years later. The results of the study found that the majority of the patients were satisfied with the clinic environment, yet, they were dissatisfied with the registration process and waiting time.¹¹

In Saudia Arabia,¹² a majority of patients were satisfied with the patient–dentist interaction, technical competency, administrative efficiency, and clinic setup environment. Whereas in Pakistan,¹³ most of the patients were satisfied with the performance of dentists and other dental staff members. A study from Kuwait¹⁴ found that the patients were highly satisfied with the dentists' performance and dental assistants' services but were least satisfied with the center's physical appearance and accessibility.

In Tanzania, the School of Dentistry at the Muhimbili University of Health and Allied Science (MUHAS) has been engaging in the training and provision of oral health services to students, staff, and the public. It is important to assess whether the School's perception of quality service provision aligns with that of the patient's perspective. So far limited studies (of which most are more than a decade old) have been conducted to determine to what extent the oral health services provided at MUHAS Dental clinic meet the patient's satisfaction, and therefore there is a need to assess the level of satisfaction in the current time. Hence, this study was carried out to assess the satisfaction of patients with the oral health care provided at the University Dental Clinic in Tanzania.

2 | METHODS

This analytical cross-sectional study was carried out at the Muhimbili University of Health and Allied Sciences (MUHAS) Dental clinic, between December 2019 and August 2020. The study targeted all adult patients who sought treatment at the MUHAS Dental clinic.

Patients who were in severe pain, who presented with emergency cases (facial space abscess, maxillofacial trauma, or bleeding tumors), those who were mentally incapacitated, and those who attended treatment for the first time at MUHAS dental clinic were excluded from this study.

The sample size was estimated using the population adjustment formula for single-proportion estimation.¹⁵ A minimum sample of 286 participants was calculated based on a 95% confidence level (CI), a 1.7% precision, a power of 0.8, and an expected proportion of 97.8%.¹¹ Simple random sampling was used to obtain the number of required participants.

A Dental Satisfaction Questionnaire (DSQ) was used to collect relevant information for this study. DSQ is a well-developed 19-item questionnaire recognized for covering multidimensional constructs of satisfaction classified into five subscales (Access, Availability/Convenience, Cost, Pain, and Quality).⁸ Each question was scored on a Likert scale of 1–5, with 1 *strongly agree* and 5 *strongly disagree*. The questions were translated into the Swahili language. Before using the Swahili version of the questionnaire, it was back-translated into English by an independent translator to check for consistency with the original version. A pilot assessment involving 10% of the calculated sample size was conducted among patients to assess the feasibility of the questionnaire and to ascertain the reliability of the information provided.

The data obtained from this study were coded and analyzed using Statistical Package for Social Sciences software (SPSS) for Windows (version 26, IBM Corp). Data was presented in the form of the mean for continuous variables and percentages for categorical variables.

The participants' age was grouped into young adults (<40 years), middle-aged (40–59 years), and elderly (≥ 60 years). The level of education was dichotomized into a low level (anything below college education) and a high level (college education). Marital status was grouped into those with partners (married, cohabiting) and those without partners (single, divorced, widowed). Treatment offered was broadly grouped into surgical (extraction, tissue biopsy, incision and drainage, disimpaction) and nonsurgical (restorative treatment, orthodontic cases, scaling and root planning, endodontic treatment). The aggregate score of each subscale of satisfaction was summed to obtain a total score ranging from 19 to 95 and means scores were calculated, with a lower mean score representing high satisfaction levels.

The data was presented using frequencies and percentages in the form of tables and charts. The Shapiro–Wilk test was used to check for the normality of the data and the $\alpha < 0.05$. Where appropriate, one-way analysis of variance (ANOVA), and χ^2 test were used to assess the relationship between the independent variables (sociodemographic characteristics and nature of treatment) and satisfaction with dental care. The probability level of $\alpha < 0.05$ was selected for statistical significance. The ordinal regression model was used to assess associations between the sociodemographic characteristics of participants and overall satisfaction with dental care.

TABLE 1 Distribution of study participants according to sociodemographic characteristics and nature of the treatment.

Sociodemographic characteristics	Participants		
	Male (n = 119)	Female (n = 183)	Total (n = 302)
<i>Age groups (years)</i>			
18–39	90 (75.6%)	127 (69.4%)	217 (71.9%)
40–59	23 (19.3%)	37 (20.2%)	60 (19.9%)
60+	6 (5.0%)	19 (10.4%)	25 (8.3%)
<i>Partner status</i>			
Without partner	54 (45.4%)	95 (51.9%)	149 (49.3%)
With partner	65 (54.6%)	88 (48.1%)	153 (50.7%)
<i>Education</i>			
Less than college	69 (58.0%)	112 (61.2%)	181 (59.9%)
College and above	50 (42.0%)	71 (38.8%)	121 (40.1%)
<i>Nature of treatment offered</i>			
Nonsurgical	50 (42.0%)	74 (40.4%)	124 (41.1%)
Surgical	69 (58.0%)	109 (59.6%)	178 (58.9%)

3 | RESULTS

A total of 302 patients participated in this study, and most were females (183, 60.6%) with male to female ratio of 1:1.54. Their ages ranged from 18 to 83 years and the majority (217, 71.9%) were in the age group of <40 years, with a mean age of $35.95 \pm (SD = 14.19)$ years. The number of participants who had partners and those who did not was nearly equal. The education level of most (181, 59.9%) participants was maximally secondary education. The commonest (178, 58.9%) dental treatment that was carried out on the participant was surgical (Table 1).

The score for the domain of satisfaction with pain management ranged from 3 to 15, with a mean score of 9.42 ± 2.09 . Nature of treatment was the only factor that was associated with satisfaction with pain management ($p = 0.003$). For the domain of satisfaction with the quality of service, the score ranged from 5 to 17 and the mean was 8.11 ± 2.84 . The relation between the partner status of participants and satisfaction with the quality of service was statistically significant ($p = 0.031$). The domain of cost scores ranged from 10 to 22 with a mean score of 16.08 ± 2.27 . The observed difference in mean score for satisfaction with the cost of treatment according to age groups was statistically significant ($p = 0.03$). The domain of satisfaction with accessibility/convenience had a mean score of 7.49 ± 1.94 (score ranged from 3 to 12). The differences in the mean score of satisfaction with accessibility were statistically significant for the sex and age group of the participants ($p < 0.05$). The mean score for satisfaction with access was 8.93 ± 2.17 (score ranged between 4 and

15). The difference in means scores of satisfaction with access within the partner status groups, and level of education group was statistically significant ($p < 0.05$) (Table 2).

The overall mean satisfaction score was 50.03 ± 6.53 (score ranged between 34 and 68). Ordinal regression was implemented to analyze the predictors of overall satisfaction with dental care. Only the education level of the participant was significantly associated with overall satisfaction. The odds of participants with an education level of less than college being satisfied with dental care were 38% [OR 0.622, 95% CI 0.413, 0.937, $p = 0.023$] more than those with a college education.

4 | DISCUSSION

This study assessed the satisfaction of patients with dental care provided in the University-owned Dental clinic in Tanzania. The results presented here indicate that respondents' overall satisfaction with dental care was average. This calls for substantial efforts to be taken to raise the levels of patient satisfaction with the care at the University Dental Clinic. This is important for maintaining and possibly increasing the number of patients attending this clinic for optimal training of dental students.¹⁶

Patient satisfaction with services is a significant element of health care and can potentially impact a patient's likelihood of choosing a dental professional, securing appointments, and complying with posttreatment instructions, thereby affecting the treatment outcomes.^{17,18} The MUHAS Dental Clinic is the sole, well-organized training facility for dental students in Tanzania. It is of utmost importance to understand how patients perceive the care they receive in the University-owned Dental clinic since it defines the quality of care and subsequent future utilization of the service. Moreover, it defines the standard of treatment that the future generation of dentists in the country is capable of rendering to the public.

In the present study, the relationship between different subscales of satisfaction and sociodemographic factors, and the nature of treatment were assessed. A nonstatistically significant relationship between satisfaction and the following variables of age, gender, and marital status was found. However, the level of education of the participants portrayed a statistically significant association with overall satisfaction with dental care. Unlike our findings, a study carried out in the United Arab Emirates,¹⁹ Taiwan,²⁰ and West Indies,²¹ noted no significant association between the sociodemographic characteristics of the patients and overall satisfaction.

The results of the current study portrayed that the odds of participants with an education level of less than college being satisfied with dental care were 38% more than those with a college education. Similarly, Akbar et al.²² reported that individuals with lower education had higher-level service satisfaction compared to their counterparts. This may be attributed to the notion that individuals with higher education levels tend to have higher

TABLE 2 Satisfaction with dental care according to sociodemographic characteristics of participants and nature of treatment.

Sociodemographic characteristics and nature of treatment (n = 302)		Mean value of satisfaction with dental care					Overall satisfaction mean (SD)
		Pain management mean (SD)	Quality mean (SD)	Cost mean (SD)	Availability/ convenience mean (SD)	Access mean (SD)	
Age groups (years)	18–39	9.50 (2.28)	7.97 (2.78)	16.19 (2.38)	7.71 (2.00)	8.93 (2.20)	50.30 (6.68)
	40–59	9.00 (1.51)	8.27 (3.05)	15.43 (1.50)	6.72 (1.65)	9.23 (1.82)	48.65 (5.44)
	60+	9.72 (1.46)	8.88 (2.86)	16.72 (2.59)	7.48 (1.58)	8.20 (2.61)	51.00 (7.33)
	p Value	0.200	0.284	0.03*	0.002*	0.136	0.165
Sex	Male	9.32 (1.84)	8.12 (3.27)	16.19 (1.66)	7.87 (1.89)	9.17 (2.05)	50.66 (6.12)
	Female	9.49 (2.25)	8.10 (2.54)	16.01 (2.60)	7.25 (1.94)	8.77 (2.24)	49.62 (6.78)
	p Value	0.499	0.954	0.497	0.007*	0.120	0.174
Partner status	Without partner	9.31 (2.31)	8.46 (2.81)	15.88 (2.47)	7.57 (2.03)	8.64 (2.10)	49.86 (6.57)
	With partner	9.53 (1.86)	7.76 (2.84)	16.28 (2.05)	7.42 (1.86)	9.21 (2.21)	50.20 (6.51)
	p Value	0.361	0.031*	0.125	0.497	0.022*	0.655
Education	Less than college	9.29 (2.06)	7.92 (2.81)	15.97 (2.12)	7.41 (1.84)	8.70 (1.97)	49.29 (5.68)
	College and above	9.61 (2.15)	8.38 (2.85)	16.25 (2.48)	7.62 (2.08)	9.27 (2.41)	51.13 (7.51)
	p Value	0.196	0.171	0.303	0.356	0.024*	0.016*
Nature of treatment	Nonsurgical	9.11 (2.04)	8.39 (2.87)	15.21 (2.13)	7.57 (1.99)	8.40 (1.95)	49.68 (6.48)
	Surgical	9.63 (2.11)	7.91 (2.82)	15.99 (2.37)	7.44 (1.91)	9.30 (2.25)	50.28 (6.57)
	p Value	0.033*	0.152	0.419	0.555	<0.001*	0.435

*P < 0.05.

expectations of healthcare services,²⁰ hence when these “unrealistic” expectations are not met they become easily dissatisfied.

The findings of this study indicated that a nonstatistically significant relationship existed between satisfaction with pain management with the sociodemographic characteristics of participants. On the contrary, a significant difference in the mean satisfaction score for pain management was observed with the nature of the treatment. The mean score was higher in participants who underwent surgical procedures. These findings may not be surprising since any surgical procedure must be carried out after local anesthesia, unlike some nonsurgical procedures like scaling of teeth or dental impression taking. The process of injecting does cause some degree of pain, hence the patient being unsatisfied.

The difference in mean scores for satisfaction with the subscale of quality of care within various variables was statistically insignificant except for the relationship status of the participants. Individuals without partners had a higher mean score for the subscale of quality of care, indicating low satisfaction. It has been reported that individuals who have no partner tend to exhibit higher pretreatment expectations,²⁰ and thus easily dissatisfied once those expectations are not met.

The findings from this study portrayed an average satisfaction of participants with the cost of treatment provided at the MUHAS Dental clinic. This average satisfaction comes despite the clinic providing high-quality service at very cheap prices compared to what is offered elsewhere in both public and privately owned dental clinics. The difference in mean scores for satisfaction with the cost of dental treatment was statistically significant for various age groups, whereby young individuals and the elderly had higher mean scores. The cost of health services is the most frequently stated problem by the elderly worldwide.²³ This may be attributed to the opinion that most elderly and some young individuals tend to have a nonreliable source of income, thus out-of-pocket expenses are the greatest financial burden for them.

While the employment of self-administered questionnaires eliminated the possibility of interviewer bias in this study,²¹ The limitation of this study was that there might be some overstated positive responses, since patients who were possibly dissatisfied with treatment in the past no longer utilize the dental services of the clinic of this dental school. This project, however, has laid important groundwork for dental staff members to ensure patient satisfaction is taken into consideration as it is a key indicator for the quality of dental services. Therefore, it is necessary to educate students about patient satisfaction as they are trained to

be future dental care providers. Moreover, it will be worth conducting a multicenter study involving private and public dental clinics to assess the differences in patient's level of satisfaction with oral health care.

5 | CONCLUSION

The majority of the participants had moderate overall satisfaction with the dental care provided at the University Dental Clinic in Tanzania. There was no significant difference in mean overall satisfaction scores as far as sociodemographic characteristics of the patient are considered except for education level.

AUTHOR CONTRIBUTIONS

Lenis Wenceslaus: Conceptualization; methodology; investigation; visualization; resources; writing—review & editing; project administration; writing—original draft. **Matilda Mtaya-Mlangwa:** Conceptualization; methodology; supervision; formal analysis; validation; visualization; writing—review & editing; project administration. **Karpal S. Sohal:** Conceptualization; methodology; software; data curation; validation; formal analysis; visualization; resources; writing—original draft; writing—review & editing. All authors have read and approved the final version of the manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request. The corresponding author had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

ETHICS STATEMENT

Ethical clearance was sought from the MUHAS Institution Review Board (Ref. No. DA.25/111/01/L). Only those participants who freely gave consent to participate were included in the study. All information was handled confidentially and access to data was only granted to the co-authors.

TRANSPARENCY STATEMENT

The lead author Karpal S. Sohal affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

ORCID

Matilda Mtaya-Mlangwa  <http://orcid.org/0000-0002-5238-5016>
Karpal S. Sohal  <http://orcid.org/0000-0001-9456-981X>

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How to cite this article: Wencheslaus L, Mtaya-Mlangwa M, Sohal KS. Patients' satisfaction with oral health care provided at the University Dental clinic in Tanzania: a cross-sectional analytical study. *Health Sci Rep.* 2024;7:e2101. doi:10.1002/hsr.2.2101