

Patient satisfaction with dental services rendered at School of Dentistry, Muhimbili University of Health and Allied Sciences, Tanzania

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Abstract

Aim: To determine patient satisfaction among dental patients treated at the School of Dentistry, MUHAS. **Study design:** Cross-sectional clinic based study. **Study participants and methods:** Two hundred twelve dental patients aged 18 years and above who attended the oral surgery and restorative dental clinics were given a 9-items-patient satisfaction questionnaire to fill in immediately after treatment was completed. The responses were on a 4-point Likert's scale. Data was analyzed using SPSS version 17.0. Chi-square test was used to determine the differences in patient satisfaction between the back-ground variables studied. Significant level was set at $p < 0.05$. **Results:** 78.8% of dental patients were satisfied with oral care, with mean satisfaction score of 3.1 (0.9). "Opportunity for a patient to explain his/her problem", "examination" and "doctor's explanation" were the most satisfying aspects of oral care with mean (sd) values of 3.45 (1.01), 3.28 (1.12) and 3.33 (1.05) respectively. "Treatment time", "cost of treatment" and "waiting time" were the least satisfying aspects of oral care with mean (sd) values of 2.67 (1.31), 2.54 (1.35) and 2.25 (1.26) respectively. Patients who received oral surgical type of treatment were statistically significantly more satisfied with oral care ($p < 0.05$); waiting time ($p < 0.001$); cleanliness of clinic ($p < 0.01$); technical competency ($p < 0.05$); treatment time ($p < 0.01$); treatment given ($p < 0.05$); and cost ($p < 0.001$) than patients who received restorative care. **Conclusion and recommendation:** Majority of the patients were satisfied with the oral care received. Efforts to reduce treatment fee, and shorten waiting and treatment time are recommended.

Running title: patient satisfaction, dental patients, School of Dentistry, Dar es Salaam, Tanzania

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Introduction

Patient satisfaction is an individual's appraisal, by, of the extent to which the care provided has met that individual's expectations and preferences (1). When care provided is perceived to be higher than ones expectations, he/she becomes satisfied. On the other hand, if the care received fall short of one's expectations, one is dissatisfied. Studying patient satisfaction is important because one can identify aspects of care that need to be improved in order to maintain quality of care (2,3). Furthermore, understanding patient satisfaction allows a practitioner to gauge his likely success in his/her prescription for behavioural change because satisfied patients have been shown to comply with a doctor/dentist's prescription (4).

Several studies that have been conducted in different countries indicate that majority of dental patients were satisfied with dental care (2,3,5-11). In Tanzania however, there have been contradicting findings on patient satisfaction (12-15). In their

study, Ntabaye et al (12) reported very high proportion (92.7%) of patients who were satisfied with dental care. Whereas, Matee and colleagues on the other hand reported moderate proportions of patients who were satisfied with dental care (13). Mwalutambi (15) reported a proportion of 77.7% among secondary school students in central parts of Tanzania. The differences may be due to the fact that Ntabaye studied patient satisfaction to emergency oral care in health centres from rural villages, while Matee studied patient satisfaction to all dental care provided in Dar es Salaam city where people may have a wide range of comparison. Kikwilu et al (14) study was a national representative survey that indicated that 68.4% were satisfied with urgent oral care.

Factors that have been shown to determine patient satisfaction include cost of treatment (6,15), technical competence of a practitioner (2), waiting time (6,12), treatment time, cleanliness and neatness of clinic environment (6,15), treatment options (3,15), treatment time (2), reason for first visit (7,9), patient educational

status (3), communication between the patient and doctor (13,6), socioeconomic status of the patient (3), age of the patient (10) and gender (3,6). At the time of the planning of this study, it was not known how dental patients at School of Dentistry, Muhimbili appraise the oral health care provided.

The aim of the current study was therefore to assess patient satisfaction towards dental services provided at School of Dentistry after inauguration of the new dental equipment donated by Miracle Corners of the World (MCW) in year 2009. The specific objectives were to (1) determine patient satisfaction with oral care provided at School of Dentistry clinics, (2) determine associations between patient satisfaction and satisfaction with different aspects of oral care, and (3) determine differences in patient satisfaction within demographic characteristics studied.

Methodology

Ethical considerations

The ethical clearance to undertake the current study was sought from the Muhimbili University of Health and Allied Sciences ethical committee. The permission to undertake the study was sought from the Executive Director of Muhimbili National Hospital because the patients treated at the Dental School clinics are under the Muhimbili National Hospital. Patients were requested to participate in the study by a preamble statement to the questionnaire that stated clearly the objectives of the study and a request for patients to participate.

Study participants and methods

The current study was a cross-sectional involving dental patients who had received treatment at the dental clinics of the Dental School Muhimbili University of Health and Allied Sciences, Tanzania. The dental clinics for adult patients (aged 18+ yrs) in the Dental School are divided into two categories: oral surgical clinics and restorative care clinics. The oral surgical clinics undertake tooth extractions, incision and drainage and other minor oral surgical procedures. The restorative care clinics undertake restorations of decayed teeth, prosthetic work and periodontal therapy. Dental patients were given a patient satisfaction questionnaire to fill after they had received dental treatment. The questionnaire that was used in the current study was in Kiswahili, a national language for Tanzania. The questionnaire had been tested for validity and reliability, and used in a national wide survey in Tanzania (14). In the current study the reliability of the total scale was also tested using Cronbach's alpha during analysis stage. The

alpha value was 0.85 indicating high reliability of the scale. This questionnaire included demographic characteristics; age, sex, and occupation. The reason for visiting dental clinic and treatment received were also asked. In addition the questionnaire had nine questions for measuring patient satisfaction with different aspects of oral care. These were on reception, cleanliness of clinic, waiting time, opportunity given for the patient to explain his/her problem, examination for the problem that brought the patient to the clinic, dentist's explanation of the findings of the examination and treatment plan, time taken to complete treatment, technical competency of a dentist, treatment received, and cost of treatment. The options for the questions on satisfaction were on a four-point Likert scale (1= very dissatisfied; 2= dissatisfied; 3= satisfied; 4= very satisfied).

Procedure of getting respondents

The questionnaires were kept at the reception of each clinic room because all patients who get treatment pass by the reception desk of the clinic before they get out of the clinic. Consecutive patients who were treated in oral surgical and restorative care clinics were requested by the clinic nursing officer in charge to fill in the questionnaire to assess the care provided. Those who could not read were interviewed by the nurse at the reception desk. The questionnaire had a preamble that explained the aim of the study, and a request for the patient to fill in the questionnaire. At the end of the preamble, it was clearly stated that if for any reason the patient did not like to fill in the questionnaire, then one was free to leave the clinic without filling in any questionnaire. The administration of questionnaires was to be stopped when the predetermined sample size of 200 was reached. Nevertheless, a total of 212 questionnaires were filled.

Data analysis

Data was entered into the computer using Microsoft Excel. After cleaning, the data was converted into SPSS file for subsequent analysis. Data for age was dichotomized into young adults (18-35 yrs) and older adults (35.1+ yrs). Overall satisfaction with oral care was computed by summing up satisfaction scores for each aspect of oral care, and then the total scores were divided by the number of aspects of oral care examined to reduce the range to 1-4 for easy comparison with the scores obtained for each of the 9 aspects studied. Since the data still retained a continuous nature, it was further re-categorized to interval scale as follows: 1-1.8 = 1; 1.81- 2.6 = 2; 2.61 - 3.20 = 3; and 3.21-4.0 =4). Correlation between satisfaction scores of different aspects of oral care to overall "patient satisfaction" was performed and Pearson correlation coefficients

generated to identify the relative contribution of each aspect of oral care to patient satisfaction. The mean satisfaction scores for each aspect of oral care and that of patient satisfaction were computed to aid the ranking of the level of satisfaction for each aspect of oral care. Frequency distribution of respondents by level of satisfaction with overall and different aspects of oral care was generated to reveal how the respondents were distributed over the satisfaction scale used in the current study. To aid comparison of satisfaction levels between independent variables studied, the four interval satisfaction scores were dichotomized into dissatisfied (1-2) and satisfied (3-4). Cross tabulations between independent variables and dichotomized satisfaction scores were generated and Chi square test was used to determine the association between independent variables and satisfaction with different aspects of oral care. Significance level was set at $p < 0.05$.

Results

Table 1 show the distribution of respondents by sex and age-group, work-groups, chief complaint and type of treatment rendered. With the exception of work-group in which women were more likely to be peasants, housewives and or house servants than men

who were more likely to be employed or businessmen ($\chi^2 = 40.85$; $p < 0.001$), the study population had similar characteristics in terms of age, chief complain and type of treatment received.

Table 2 summarizes the mean and (sd) satisfaction scores and the distribution of respondents by level of satisfaction with 9 aspects of oral care and overall satisfaction. Overall 78.8% of the respondents were satisfied with oral care, with a mean score of 3.1 (0.9) (minimum=1; maximum=4). The three most satisfying aspects of oral care were opportunity for a patient to explain his/her problem, examination and doctor’s explanation with mean (sd) values of 3.45 (1.01), 3.28 (1.12) and 3.33 (1.05) respectively. The proportion of respondents who were satisfied with these aspects of oral care was 83.0%; 77.4% and 78.8% for patient explanation, examination and doctor’s explanation respectively. The three least satisfying aspects of oral care were treatment time, cost of treatment and waiting time with mean (sd) values of 2.67 (1.31), 2.54 (1.35) and 2.25 (1.26) respectively. The proportion of respondents who were satisfied with these aspects of oral care was 54.3%; 51.0%; and 39.1% for treatment time, cost of treatment and waiting time respectively.

Table 1: Distribution of respondents by sex and age-group, work-groups, chief complain and type of treatment rendered

Sex	Age-group		Work-group		Chief complain		Type of treatment	
	Young adults	Older adults	Peasants, house servants and housewives	Employed and businessmen/ women	Toothache, abscess and other pains	Restorative and periodontal therapy	Surgery	restorative
Male	44 (45.4)	53 (54.6)	17 (17.5)	80 (82.5)	73 (75.3)	24 (24.7)	25 (25.8)	72 (74.2)
Female	61 (53.0)	54(47.0)	70 (60.9)	45 (39.1)	88 (76.5)	27 (23.5)	44 (38.3)	71 (61.7)
χ^2 -test	1.242; $p = 0.265$		40.854; $p < 0.001$		0.046; $p = 0.830$		3.738; $p = 0.057$	

Table 3 shows the Pearson correlation coefficients between overall patient satisfaction and satisfaction with 9 aspects of oral care. The three aspects of oral care that were strongly associated with overall patient satisfaction were treatment given, technical competency and examination with Pearson correlation coefficients of 0.671, 0.668 and 0.630 respectively. Cleanliness of dental clinic was least associated with overall patient satisfaction, with Pearson correlation coefficient of 0.504.

Table 4 shows the percentages of 212 respondents satisfied with aspects of oral care by independent variables studied. Patients who received oral surgical type of treatment were statistically more satisfied

with oral care ($\chi^2 = 4.096$; $p < 0.05$); waiting time ($\chi^2 = 15.209$; $p < 0.001$); cleanliness of clinic ($\chi^2 = 7.805$; $p < 0.01$); technical competency ($\chi^2 = 5.591$; $p < 0.05$); treatment time ($\chi^2 = 11.590$; $p < 0.01$); treatment given ($\chi^2 = 4.081$; $p < 0.05$); and cost ($\chi^2 = 30.545$; $p < 0.001$) than those patients who received restorative care. Patients with chief complain of restorative nature were statistically significantly more satisfied with waiting time than their counterpart who had chief complain of oral surgical nature ($\chi^2 = 5.361$; $p < 0.05$). Older adults were statistically significantly more satisfied with technical competency ($\chi^2 = 4.443$; $p < 0.05$) and cost of treatment ($\chi^2 = 6.801$; $p < 0.01$) than young adults.

Table 2: Mean (sd) satisfaction scores and distribution of respondents by level of satisfaction with 9 aspects of oral care and overall satisfaction

Aspect of oral care	Mean	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied
Patient's explanation	3.45(1.01)	115 (73.1)	21 (9.9)	13 (6.1)	23 (10.8)
Examination	3.28 (1.12)	139 (65.6)	25 (11.8)	17 (8.0)	31 (14.6)
Doctor's explanation	3.33 (1.05)	139 (65.6)	28 (13.2)	21 (9.9)	24 (11.3)
Treatment received	2.97 (1.22)	108 (50.9)	35 (16.5)	24 (11.3)	45 (21.2)
Cleanliness of dental clinic	2.93 (1.3)	116 (54.7)	22 (10.4)	18 (8.5)	56 (26.4)
Technical competency	2.91(1.24)	105 (49.5)	31 (14.6)	28 (13.2)	48 (22.6)
Treatment time	2.67 (1.31)	93 (43.9)	22 (10.4)	32 (15.1)	65 (30.7)
Cost of treatment	2.54 (1.35)	86 (40.6)	22 (10.4)	25 (11.8)	79 (37.3)
Waiting time	2.25 (1.26)	59 (27.8)	24 (11.3)	41 (19.3)	88 (41.5)
Overall Patient satisfaction	3.1 (0.9)	85 (40.1)	82 (38.7)	27 (12.7)	18 (8.5)

Discussion

This study was designed to ascertain the level of patient satisfaction with oral care rendered in dental clinics of the School of Dentistry. The patients were requested to fill in the questionnaire just after they had received treatment. This allowed the patients to respond to the questions on satisfaction while their memories were still fresh with the different aspects of oral care. This is considered to be a methodological strength of the current study. Many studies on patient satisfaction involve patients who had been treated some weeks and or months earlier. In such studies recall bias may become an issue whereby experiences with some aspects of oral care might have been forgotten.

In the current study men were more likely to be employed and or running business than women because in Tanzania being employed or undertaking business is more of men's activities while most women work at home as housewives. Even the house servants are more likely to girls than boys because the main activities in the house include cooking and cleaning house and washing, which currently are predominantly being done by women. These facts were clearly pointed out in a study of gender, employment and poverty in Tanzania by Waheeda Sharif (16). In contrast, higher proportions of employed males work as paid employees and in self-employment (18).

Table 3: Pearson correlation coefficients between patient satisfaction and satisfaction with 9 aspects of oral care

	1	2	3	4	5	6	7	8	9	10
1. Patient satisfaction	1	0.566**	0.504**	0.565**	0.630**	0.577**	0.668**	0.616**	0.671**	0.569**
2. Waiting time		1	0.459**	0.262**	0.242**	0.151*	0.285**	0.507**	0.249**	0.315**
3. Cleanliness of dental clinic			1	0.257**	0.163*	0.266**	0.196**	0.404**	0.146*	0.210**
4. Patient's explanation				1	0.527**	0.447**	0.244**	0.269**	0.261**	0.243**
5. Examination					1	0.623**	0.303**	0.277**	0.373**	0.285**
6. Doctor's explanation						1	0.256**	0.195**	0.319**	0.258**
7. Technical competency							1	0.318**	0.805**	0.459**
8. Treatment time								1	0.309**	0.278**
9. Treatment given									1	0.452**
10. Cost										1

Pearson correlation coefficients: * p< 0.05; ** p< 0.01

The fact that three quarters (78.7%) of the respondents were satisfied with oral care indicate that oral health services rendered by the dental clinics at the School of Dentistry, MUHAS meet the expectations of the dental patients who attended these clinics during the study period. Nevertheless, efforts should be undertaken to raise the proportion of dental patients who are satisfied with the services rendered in the School. This is important if the school wants to maintain adequate numbers of patients attending these clinics that are required for training of dental students as well as optimizing the use of the newly installed dental equipment. This can be achieved by improving those aspects of oral care that were shown to be more dissatisfying to dental patients. These included treatment time, cost of treatment and waiting time. High proportions of patients satisfied with oral care have been reported by Ntabaye et al in 1994 (12), and Mwalutambi et al in 2009 (15). Slightly lower proportions of patients satisfied with oral care were reported by Matee et al in 2006 (13), and Kikwilu et al in 2009 (14). A study on patient satisfaction in Nigeria indicated moderate proportions of dental patients satisfied with oral care (53.0%) (18). In Uganda the proportion of students who reported to be satisfied with dental care were 73% and 77% for Kampala and Lira respectively (7). In USA Cooper et al in 2006 reported patient satisfaction with dental care of as high as 98.0% (19).

In the current study the most satisfying aspects of oral care were patient having given due attention to explain his/her problem, the way the examination was conducted and doctor's explanation of the diagnosis and treatment plan. This indicates that dentists

working in School of Dentistry had good communication and patient handling skills expected by patients. These findings are similar to those reported by Rashim at Ajman University UAE (20) and by Cooper et al 2008, in University dental clinic, Minnesota, USA (19). In Ajman University the most satisfying aspects of oral care were explanation by dentist and courteous reception, while in university dental clinics, Minnesota USA caring nature of provider and communication with provider were the most satisfying aspects of oral care.

The least satisfying aspects of oral care in the current study were treatment time, cost of treatment and waiting time. This indicates that time taken to complete treatment and the waiting time before the patient is taken for treatment is too long for the patient. This is partly due to the fact that the clinics are being used for training of dental students. Students have to seek approval from the teachers for each step of the treatment procedure. This takes time. Teachers should find a way of shortening the treatment time in order to raise the patient satisfaction on this aspect of oral care. Waiting time could be shortened by improving information communication system in the dental building so that patients can precisely be told the expected time when they will get treatment. These findings are similar to those reported by Cooper et al in the university dental clinics at Minnesota USA where the least satisfying aspect of oral care was treatment time (19). In Ajman University, failure to explain the treatment options contributed to low satisfaction (20).

Table 4: Percentages of 212 respondents satisfied with aspects of oral care by independent variables studied

	Sex		Age group (yrs)		Employment status		Chief complaint		Type of treatment received	
	Men	Women	Young adults	Older adults	Unemployed	employed	Oral surgical nature	Restorative nature	Oral surgical	Restorative
1. Patient satisfaction	76.3	80.9	78.1	79.4	77.0	80.0	77.0	84.3	87.0*	74.8
2. Waiting time	39.2	39.1	36.2	42.1	37.9	39.2	34.8	52.9*	58.0***	30.1
3. Cleanliness of dental clinic	66.0	64.3	61.9	68.2	60.9	60.8	62.7	72.5	78.3**	58.7
4. Patient's explanation	81.4	84.3	84.8	81.3	80.5	84.8	82.0	86.3	89.9	79.7
5. Examination	77.3	77.4	79.0	75.7	77.0	77.6	77.6	76.5	82.6	74.8
6. Doctor's explanation	81.4	76.5	79.0	78.5	78.2	79.2	80.1	74.5	85.5	75.5
7. Technical competency	63.9	64.3	57.1	71.0*	63.2	64.8	61.5	72.5	75.4*	58.7
8. Treatment time	53.6	54.8	51.4	57.0	48.3	58.4	54.0	54.9	71.0**	46.2
9. Treatment given	67.0	67.8	63.8	71.0	70.1	65.6	67.1	68.6	76.8*	62.9
10. Cost	47.4	53.9	41.9	59.8**	49.4	52.0	51.6	49.0	78.3***	37.8

χ^2 -test: * p< 0.05; ** p< 0.01; *** p< 0.001

The three aspects of oral care that were strongly associated with overall patient satisfaction in the current study were treatment given, technical competency and examination. This indicates that these aspects of oral care influence patient satisfaction in this part of Tanzania more than other aspects of oral care. In a national survey conducted in Tanzania in 2005 (14), the three aspects of oral care that were strongly associated with patient satisfaction were quality of care, treatment time and hospitality of dentist. In Japan however, the aspects of oral care with highest correlation coefficients with overall patient satisfaction were technical competency, communication with dentist and reasonable treatment time. In both the cited studies and the current study, technical competency and communication skills of a dentist play a major role in patient satisfaction.

Patients who received oral surgical care were more satisfied with many aspects of oral care than those who received restorative care. This shows that oral surgery clinics in the School of Dentistry were meeting the expectations of their patients more compared to restorative clinics. Clinic staff in restorative department need to learn from their colleagues in oral surgery the best ways of handling

patients in order to improve patient satisfaction in restorative care.

Conclusion and Recommendations

From this study, we conclude that, three quarters of the patients who attended the dental clinics in the School of Dentistry during the year 2009 were satisfied with the oral care received. The most satisfying aspects of oral care were time taken by patient to explain his/her problem, examination, and explanation of the diagnosis and treatment plan. Waiting time, treatment time and cost of treatment were the least satisfying aspects of oral care. We recommend that School of Dentistry should find means of shortening waiting time, treatment time and reducing patient treatment fee.

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