

Patient satisfaction towards dental services among secondary school students in Makambako town, Iringa Tanzania

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Abstract

Aim: To assess patient satisfaction on dental services among secondary school students. **Design:** Cross-sectional study. **Study participants:** 200 Secondary school students in Makambako township randomly selected from school class registers. **Methods:** Self-administered structured questionnaire in a class room. Reliability of the questionnaire determined by Cronbach's alpha. Differences in patient satisfaction by demographic variables were determined by χ^2 statistic, significant level set at $p < 0.05$. Relative contribution of each aspect of oral care to patient satisfaction was determined by Spearman correlation coefficients and mean scores. **Results:** All 200 sampled students filled in questionnaires (100% response rate). Patient satisfaction was moderate (mean=2.81; se=0.05). *Appearance of clinic staff*, *Cleanliness of clinic environment* and *Waiting time* had the highest mean satisfaction scores {3.23 (0.04); 3.21 (0.04) and 3.10 (0.07)} respectively. *Infection control*, *respect shown by clinic staff*, and *handling of patients by staff* had highest correlation coefficients with patient satisfaction (0.585, 0.581 and 0.581 respectively). Cost of treatment had the lowest mean score of 1.34 (se=0.05) and correlation coefficient (0.199) with patient satisfaction. Rural residents were more satisfied with *waiting time* than urban residents ($\chi^2 = 6.719$; $p = 0.01$). **Conclusion:** Secondary school students were moderately satisfied with oral care. *Appearance of clinic staff* and *cleanliness of clinic environment* were the most satisfying aspects of oral care. *Cost of oral care* and *infection control* were the most dissatisfying aspects of oral care. We recommend education to the public on the importance of cost sharing in health and reviewing cost of treatment in favour of patients.

Key words: satisfaction, quality of dental care, secondary school students

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Introduction

Any service which is offered by a provider will satisfy the consumer only if the service provided meets the expectations of the customers. There are a number of indicators which can earmark the quality of any given dental service already reported in several studies. González et al (1) grouped these indicators into three levels. First level concern with health outcomes and subjective indicators; second level is on professionals – performance and rate of success, failure and complications; and the third level involves health care system – resources, finances and health care utilization.

With the present competition in health provision, dental professionals need to adjust themselves to match with patients' expectations by involving patients through discussion and providing information on the available treatment alternatives for their identified problems (2-9).

Patients prefer to be given an opportunity for an audience by their health care providers about their opinions, rather than being given medications alone. In many places, the major patients' complaints about their health care providers include the long waiting time at hospitals before seeing a dentist and inadequate interpersonal communication with health staff (6, 10, and 11).

Globally, similar indicators on satisfaction have been reported across the communities with different socio-cultural and economic status. However, different communities impose different prioritization of the strength with which, they judge upon whether or not they are satisfied with the services they are offered. Studies in the United States of America (12) and Tanzania (13) have shown that individuals attend dental clinics being mostly driven by pain and discomfort. In such situations, urgent alleviation of pain and discomfort is central rather than the circumstances in which the treatment is offered.

Consequently, the shortest waiting time and technical skills of a dentist to alleviate pain would greatly influence the degree of satisfaction.

Cleanliness of dental clinic environment, infection control measures, reduction of post-treatment complications (5, 14, and 15) and cost (16-18) are also important determinants of patient satisfaction.

Bad experience with dental patient handling may have been shown to be a barrier towards regular attendance of patients to dental clinics, especially the public compared to private and family dental clinics (11, 19) indicating that bad handling of patients influence patient satisfaction. While there are patients who prefer to be attended by students in academic dental clinics, others are less satisfied with the teaching hospital clinics with the quality of care, length and number of appointments by students and treatment explanations (20-23).

At the time of the conception of the current study, no published report on patient satisfaction on dental services among adolescents in Makambako township was retrieved. In order to ascertain this, the current study was carried out.

Methodology

Study population

The target population was all secondary school students attending four co-educational secondary schools in Makambako area, two of which were situated in a rural area, and other two in urban area of Makambako township. Selection criteria was having had received dental treatment from Makambako township. A sample of 200 participants out of 600 forms two and three students were systematically selected with the aid of a class register. Fifty students from each school were selected by picking every third name from two separate lists of males and females to ensure balance between boys and girls from each school. If the student had not visited a dental clinic in that specified time, the next name was picked.

Data collection

The study was conducted using a structured self-administered questionnaire. The demographic characteristics included in the questionnaire were residence, sex, and age. Questions on patient satisfaction were on cleanliness of clinic, waiting time, appearance of staff, respect shown by clinic staff, infection control measures, handling of patients by clinic staff, and cost of treatment. The responses were on four-point Likert scale ranging from very

dissatisfied, dissatisfied, satisfied, to very satisfied. Respondents were asked to encircle the option that best explained their level of agreement/satisfaction.

Reliability of the questionnaire

The questionnaire was pre-tested among similar students from other schools with similar characteristics before the major study to ensure that the questions are understood by the target population. In addition, at the time of analysis, internal consistency was tested by computing the Cronbach's alpha which 0.650 was, indicating acceptable levels of reliability of the scale used to measure patient satisfaction.

Ethical issues

Ethical clearance was obtained from the Ministry of Health and Social Welfare. Written consents were obtained from participants. Confidentiality of the responses was maintained by ensuring that no names were written on questionnaire forms and privacy was adhered to during filling of questionnaires.

Data analysis

Data were entered into the computer using Microsoft Excel. After cleaning, the data were converted into SPSS file and analyzed using SPSS version 17. Independent variables studied were residence (urban, rural), sex (male, female) and age categorized into two age-groups (13-16 years and 17-22 years).

In view of the fact that being rural or urban may influence utilization of dental services, and thus perception of it, demographic characteristics sex and age were cross-tabulated with residence and chi-square test performed to reveal if there were any dependence of sex and age with residence. Patient satisfaction was computed by summing the satisfaction scores of the seven aspects of oral care studied, and then divided by seven to reduce the range to 1-4 for easy comparison with the scores obtained for each of the 7 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 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

All 200 sampled students from four secondary schools in Makambako town returned the completed questionnaires, giving a response rate of 100%. Table 1 summarizes the distribution of respondents by residence, sex and age-groups. The sex and age distribution were statistically similar in rural and urban samples ($\chi^2 = 0.018$; $p = 0.892$ and $\chi^2 = 0.386$; $p = 0.534$ respectively).

Table 1: Distribution of 200 participants by residence, sex and age-group

Residence	Sex		Age-group (yrs)	
	Boys	Girls	13-16	17-20
Rural	52.5	47.5	22.8	77.2
Urban	51.5	48.5	19.2	80.8
Total	52.0	48.0	21.0	79.0
χ^2 -test for independence	$\chi^2 = 0.018$; $p = 0.892$		$\chi^2 = 0.386$; $p = 0.534$	

Table 2 shows the Pearson correlation coefficients between patient satisfaction scores with those of seven aspects of oral care. Although all correlation coefficients were statistically significant at $p < 0.01$, satisfaction with Infection control, Respect shown by clinic staff, and Handling of patients by staff had highest correlation coefficients (0.585, 0.581 and 0.581 respectively) with patient satisfaction than other aspects of oral care. Satisfaction with cost of treatment had the lowest correlation coefficient (0.199) with patient satisfaction compared to other aspects of oral care.

Table 2: Pearson correlation coefficients between patient satisfactions with seven aspects of oral care

Satisfaction facet	1	2	3	4	5	6	7	8
1. Patient satisfaction	1	0.379**	0.412**	0.458**	0.581**	0.585**	0.581**	0.199**
2. Cleanliness of clinic		1	0.037	0.322**	0.215**	0.222**	0.182**	-0.094
3. Waiting time			1	0.086	0.137	0.028	0.060	-0.069
4. Appearance of clinic staff				1	0.369**	0.252**	0.328**	-0.032
5. Respect shown by clinic staff					1	0.343**	0.434**	-0.107
6. Infection control						1	0.444**	0.030
7. Handling of patients by staff							1	0.043
8. Cost of treatment								1

Pearson correlation coefficients, $p < 0.01$

Mean satisfaction scores and the distribution of 200 respondents by level of satisfaction with overall and 7 aspects of oral care are summarized in Table 3. Satisfaction with appearance of clinic staff, cleanliness of clinic environment and waiting time had the highest mean satisfaction scores of 3.23, 3.21, and 3.10 respectively. Cost of treatment and infection control had the lowest mean satisfaction scores of 1.34 and 2.67 respectively. The distribution of respondents over the satisfaction scale indicated that the majority of respondents were either satisfied or very satisfied with all aspects of oral care measured except cost of treatment and infection control.

The percentage distribution of 200 respondents who reported to be satisfied with different aspects of oral care by residence, sex and age-groups is shown in Table 4. Rural residents were statistically significantly more satisfied with waiting time than urban residents

($\chi^2 = 6.719$; $p = 0.01$). There were no statistically significant differences in proportion of respondents who were satisfied with other aspects of oral care in all demographic characteristics measured.

Discussion

This study aimed at assessing patient satisfaction among secondary school students in Makambako Township. Students who participated in the current study were those who reported to have been treated in one of the dental clinics in Makambako Township. This ensured that the respondents' levels of satisfaction were really referring to the experiences encountered in dental clinics at Makambako township, and therefore the results of the current study reflect the satisfaction of Makambako dental clinics' clients. The fact that all the students who were issued with a questionnaire filled in and returned them to the researcher indicates that students were willing to

participate in the study. It may also show that the answers they gave were genuine. The above discussed issues indicate the strength of the current study.

The fact that “*Infection control*”, “*respect shown by clinic staff*”, and “*handling of patients by staff*” had highest correlation coefficients with patient satisfaction than other aspects of oral care indicate these aspects of oral care have the highest influence on patient satisfaction and therefore manipulation of these aspects of oral care towards more satisfaction would raise the patient satisfaction in this studied community. These findings also indicate that these aspects of oral care need to be taken seriously by all

dental clinic staff to maintain high acceptance of the services they provide by their clients. These findings are similar to those reported by Dorriz et al 2010 among patients attending dental school clinics in Tehran where students’ behavior was the greatest satisfying aspect of oral care with highest correlation coefficient with patient satisfaction (24). The findings are also similar to those reported by Kikwilu et al 2009 among Tanzanian adults in which hospitality of a dentist, handling of patients and quality of instruments had highest correlations with overall patient satisfaction. Quality of instruments was perceived as equivalent to infection control (8).

Table 3: Mean satisfaction score and distribution of 200 respondents by level of satisfaction with overall and 7 aspects of oral care (minimum = 1; maximum = 4)

Aspects of oral care	Mean (se)	Distribution: n (%)			
		Very dissatisfied	Dissatisfied	satisfied	Very satisfied
1. Appearance of clinic staff	3.23 (0.04)	1 (0.5)	7 (3.5)	137 (68.5)	55 (27.5)
2. Cleanliness of clinic environment	3.21 (0.04)	1 (0.5)	14 (7.0)	128 (64.0)	57 (28.5)
3. Waiting time	3.10 (0.07)	22 (11.0)	16 (8.0)	83 (41.5)	79 (39.5)
4. Respect shown by clinic staff	3.04 (0.05)	0.0	45 (22.5)	102 (51.0)	53 (26.5)
5. Handling of patients by staff	3.03 (0.05)	4 (2.0)	28 (14.0)	126 (63.0)	42 (21.0)
6. Infection control	2.67 (0.06)	12 (6.0)	74 (37.0)	83 (41.5)	31 (15.5)
7. Cost of treatment	1.34 (0.05)	162 (81.0)	9 (4.5)	29 (14.5)	0.0
8. Patient satisfaction	2.81 (0.05)	0.0	66 (33.0)	106 (53.0)	26 (14.0)

Satisfaction with cost of treatment had the lowest correlation coefficient with patient satisfaction indicating the need to review the cost of treatment in these dental clinics. It had also the lowest mean score. It should be born in mind that since independence in 1961 till 1990 Tanzania had health care services fully funded by the central government. A change in policy from “free” health care services to that requiring individual patient to contribute to care is unpleasant change to any Tanzanian. This does not mean that all those who are not satisfied with cost of treatment have difficulties to pay for the health service, but it is likely due to the change from “free” to “pay” situation. Nevertheless, there is a good proportion of Tanzanians who cannot afford to pay for health services. Similar findings have been reported in other recent patient satisfaction studies conducted in Tanzania (8,25, and 26).

The computed mean scores for satisfaction with different aspects of oral care indicate that patients were mostly satisfied with appearance of clinic staff, cleanliness of clinic environment and waiting time. This indicates that secondary school students in

Makambako Township were more impressed with these aspects of oral care. These findings differ from those reported by Kikwilu et al (2009) and Mwela (2010) whereby cleanliness of clinic, hospitality of dentist, effectiveness of local anaesthesia and perceived quality of care had the highest scores (8,26). Cost of treatment and infection control had the lowest mean satisfaction scores, indicating dissatisfaction with these aspects of oral care. Dissatisfaction with cost of treatment has also been shown in other studies conducted in Tanzania (8,26).

Dissatisfaction with infection control reported in the current study should be taken as warning bell to all dental practitioners and their co-workers. As the human rights movement take its stand and patients are becoming more informed of the health issues, infection control measures must be practiced and seen to be practiced by all parties. Short of that soon or later litigations in dental practice will surface in Tanzania. In addition, dental practitioners and their assistants must be vigilant to ensure that prevention and control of infections in dental practice is of highest standards due to the current high rates of

reported HBV and HIV infections among hospital patients and antenatal attendants (27,28). It is the responsibility of health workers, oral health workers included, to protect their clients and themselves from infection that may occur within their hospital/clinic environment. The fact that rural residents were more satisfied with waiting time than urban residents indicates that urban residents were more sensitive with time than rural residents. This implies that efforts need to be taken to reduce waiting time not only in urban

settings, but in all health care settings because the less time the clients spend in our clinics, the more time will be left for the clients to do other productive activities for the improvement of the economy of Tanzania. The findings in the current study differ from those reported by Kikwilu et al 2009 where no significant differences between rural and urban residents were reported in satisfaction with treatment time (8).

Table 4: Percentages of 200 respondents who reported to be satisfied with different aspects of oral care by residence, sex and age-groups

Aspects of oral care	Residence		Sex		Age-group (yrs)	
	Rural	Urban	Male	Female	13-16	17-22
1. Appearance of clinic staff	94.1	98.0	94.2	97.9	92.9	96.8
2. Cleanliness of clinic environment	93.1	91.9	91.3	93.8	90.5	93.0
3. Handling of patients by staff	81.2	86.9	81.7	86.5	88.1	82.9
4. Waiting time	88.1	73.7*	84.6	77.1	78.6	81.6
5. Respect shown by clinic staff	80.8	77.5	78.8	76.0	85.7	75.3
6. Infection control	53.5	60.6	52.9	61.5	61.9	55.7
7. Cost of treatment	12.9	16.2	13.5	15.6	9.5	15.8
8. Patient satisfaction	66.3	67.7	65.4	68.8	73.8	65.2

*Chi-square = 6.719; p = 0.01

Conclusion and recommendation

Based on the findings of the current study, we conclude that, secondary school students were moderately satisfied with oral care offered in Makambako town. Appearance of clinic staff and cleanliness of clinic environment were the most satisfying aspects of oral care. Cost of oral care and infection control were the most dissatisfying aspects of oral care. We recommend that authorities should (1) educate the public on the importance of cost sharing in health and (2) review the cost of treatment to enable the majority of Tanzanians to afford the services.

References

- González GZ, Klazinga N, ten Asbroek G, Delnoij DM. Performance indicators used to assess the quality of primary dental care. *Community Dent Health*. 2006; 23:228-35.
- Gürdal P, Cankaya H, Onem E, Dincer S, Yilmaz T. Factors of patient satisfaction/dissatisfaction in a dental faculty outpatient clinic in Turkey. *Community Dent Oral Epidemiol*. 2000; 28:461-9.
- Okullo I, Astrøm AN, Haugejorden O. Influence of perceived provider performance on satisfaction with oral health care among adolescents. *Community Dent Oral Epidemiol*. 2004;32:447-55
- Hashim R. Patient satisfaction with dental services at Ajman University United Arab Emirates, East Mediter Health J. 2005; 11:913-21.
- Matee MI, Scheutz F, Simon EN, Lembariti BS. Patient's satisfaction with dental care provided by public dental clinics in Dar es Salaam, Tanzania. *East Afr Med J*. 2006; 83:98-104.
- Chaffin JG, Chaffin SD, Mangelsdorff AD, Finstuen K. Patient satisfaction with dental hygiene providers in US Military clinics. *J Dent Hyg*. 2007; 81:9.
- Jagadeesan R, Kalyan DN, Lee P, Stinnett S, Challa P. Use of a standardized patient satisfaction questionnaire to assess the quality of care provided by ophthalmology residents. *Ophthalmology*. 2008; 115:738-743.
- Kikwilu EN, Kahabuka FK, Masalu JR, Senkoro A. Satisfaction with urgent oral care among adult Tanzanians. *J Oral Sci*. 2009; 51:47-54.
- Orenuga OO, Sofola OO, Uti OO. Patient satisfaction: a survey of dental outpatients at the Lagos University Teaching Hospital, Nigeria. *Nig Q J Hosp Med*. 2009; 19:47-52.
- Howard B, Goertzen J, Hutchison B, Kaczorowski J, Morris K. Patient satisfaction with care for urgent health problems: a survey of

- family practice patients. *Ann Fam Med.* 2007; 5:419-24.
11. Kikwilu EN, Frencken JE, Mulder J, Masalu JR. Barriers to restorative care as perceived by dental patients attending government hospitals in Tanzania. *Community Dent Oral Epidemiol.* 2009; 37:35-44.
 12. Riley JL 3rd, Gilbert GH, Heft MW. Orofacial pain: patient satisfaction and delay of urgent care. *Public Health Rep.* 2005; 120:140-9.
 13. Kikwilu EN, Masalu JR, Kahabuka FK, Senkoro AR. Prevalence of oral pain and barriers to use of emergency oral care facilities among adult Tanzanians. *BMC Oral Health.* 2008; 29:8-28. Ntabaye MK, Scheutz F, Poulsen S. Patient satisfaction with emergency oral health care in rural Tanzania. *Community Dent Oral Epidemiol.* 1998; 26:289-95.
 14. Karydis A, Komboli-Kodovazeniti M, Hatzigeorgiou D, Panis V. Expectations and perceptions of Greek patients regarding the quality of dental health care. *Int Qual Health Care.* 2001; 13:409-16.
 15. Newacheck PW, Hung YY, Park MJ, Brindis CD, Irwin CE Jr. Disparities in adolescent health and health care: Does socio-economic status matter? *Health Serv Res.* 2003; 38:1235-52.
 16. Adeyemi AT, Aderiokun GA, Denloye OO. Socio-economic status and utilization of orthodontic services in a Nigerian Hospital. *Odontostomatol Trop* 2008. 31:27-33.
 17. Mbawalla HS, Masalu JR, Astrøm AN. Socio-demographic and behavioral correlates of oral hygiene status and oral health related quality of life, the Limpopo-Arusha school oral health project (LASH): a cross sectional study. *BMC Pediatr.* 2010;30:87
 18. George AC, Hoshing A, Joshi NV. A study of the reasons for irregular dental attendance in a private dental college in a rural setup. *Indian J Dent Res.* 2007; 18:78-81.
 19. Butters JM, Willis DO. A comparison of patient satisfaction among current and former dental school patients. *J Dent Educ.* 2000; 64:409-15.
 20. Klein JD, Graff CA, Santelli JS, Hedberg VA, Allan MJ, Elster AB. Developing quality measures for adolescent care: validity of adolescent's self-reported receipt of preventive services. *Health Serv Res.* 1999; 34:391-404.
 21. Sakalauskiene V, Sertvytyte A. Testing of the questionnaire on dental care satisfaction in a sample of adult patients visiting dental clinics at Faculty of Odontology, Kaunas University of Medicine. A pilot study. *Stomatologija.* 2005; 7:84-9.
 22. Hutchison B, Øystbye T, Barnsley J, Stewart M, Mathews M, Campbel MK, Vayda E, Harris SB, Torrance-Rynard V, Tyrrel C. Ontario Walk-In Clinic study. Patient satisfaction and quality of care in walk-in clinics, family practices and emergency departments: The Ontario Walk-In Clinic Study. *CMAJ.* 2003; 168:977-83.
 23. Dorriz H, Farid F, Seidi D. Evaluation of patients' satisfaction from dental care services provided by dental school of Tehran University of Medical Sciences in academic year 2006-2007. *Journal of Dental Medicine-Tehran University of Medical Sciences* 2010(4);249-255.
 24. Mwalutambi SC, Kikwilu EN. Patient satisfaction with oral health care among secondary school students in Manyoni town, Tanzania. *Tanz Dent J* 2009; 15: 30-36.
 25. Mwela B. Patient satisfaction towards dental services provided at dental clinics of the School of Dentistry, MUHAS, Tanzania. Elective Report for partial fulfillment for the award of DDS degree, Department of Preventive and Community Dentistry, School of Dentistry, MUHAS.2010.
 26. Nagu TJ, Bakari M, Matee M. Hepatitis A, B and C viral co-infections among HIV-infected adults presenting for care and treatment at Muhimbili National Hospital in Dar es Salaam, Tanzania. *BMC Public Health* 2008, 8:416 doi:10.1186/1471-2458-8-416.
 27. National AIDS control programme. Surveillance of HIV and Syphilis Infections among Antenatal Clinic Attendees 2008. The United Republic of Tanzania. Ministry of Health and Social Welfare, Tanzania mainland. <http://www.nacp.go.tz/documents/surveillancereport4.pdf> Accessed on August 5th 2012