

# Satisfaction with urgent oral care among adult Tanzanians

Emil N. Kikwilu<sup>1</sup>), Febronia K. Kahabuka<sup>1</sup>), Joyce R. Masalu<sup>1</sup>)  
and Ahadieli Senkoro<sup>2</sup>)

<sup>1</sup>)Department of Preventive and Community Dentistry, School of Dentistry,  
Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania

<sup>2</sup>)Central Oral Health Unit, Ministry of Health, United Republic of Tanzania, Dar es Salaam, Tanzania

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**Abstract:** The aim of this study was to determine patient satisfaction with urgent oral care and to evaluate the association between patient satisfaction and different aspects of such care. A 5-point Likert scale questionnaire on patient satisfaction (score 1 = very dissatisfied; score 5 = very satisfied) was administered to 741 adults. Chi-squared test and logistic regression analysis were used to identify associations between dependent and independent variables. The mean patient satisfaction score was 3.79 (SEM = 0.02). Cleanliness of the clinic; hospitality of the dentist; and effectiveness of local anaesthesia; had the highest mean satisfaction scores of 4.0 to 4.15. Cost of treatment and explanation of treatment had the lowest mean scores (2.79 and 3.17 respectively). Sixty-eight percent of respondents were satisfied with urgent oral care. Rural residents were more satisfied with cost of treatment than urban residents ( $P < 0.0001$ ). Urban residents were more satisfied with explanation of treatment than rural residents ( $P < 0.0001$ ). Women were more satisfied with many aspects of oral care than men ( $P < 0.05$ ). It is concluded that adult Tanzanians have moderate levels of satisfaction with urgent oral care. Cost of treatment and explanation of treatment are the two aspects of urgent oral care that are least satisfactory for patients. (J Oral Sci 51, 47-54, 2009)

Keywords: patient satisfaction; oral urgent care; developing country; Tanzania.

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## Introduction

Patient satisfaction is an individual patient's appraisal of the extent to which the care provided has met his/her expectations and preferences (1). Patient satisfaction with health services is therefore a proxy measure of hospital performance, and its use has been recommended for evaluating the quality of care (2-4). Dental clinics with a high patient satisfaction score, for example, have been shown to have high credibility (4). The Institute of Medicine, USA, defines quality of health care as the degree to which health services for individuals and populations increases the likelihood of desired health outcomes and is consistent with current professional knowledge (5). From the viewpoint of health care providers, quality health care means doing the right thing, at the right time, for the right person, and obtaining the best possible results (6). It also means treatment and care that is safe, effective, patient-centred, timely, efficient and equitable (5).

According to Holt (7), a well conducted patient satisfaction survey would indicate levels of patient satisfaction with care and service, thus satisfying the quality assurance aspect of these surveys. In addition, such a survey would also enable the hospital/practitioner to access, and even influence, patients' awareness of the level of care and the services being delivered in that hospital or clinic. In such a case, the survey would have played a role in marketing the hospital or clinic. Studying patient satisfaction with oral care is therefore a useful tool for evaluating the quality of oral care services as well

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Correspondence to Dr. Emil N. Kikwilu, Department of Preventive and Community Dentistry, School of Dentistry, Muhimbili University of Health and Allied Sciences, P.O. Box 65014, Dar es Salaam, Tanzania  
Tel: +255-022-2150564  
Fax: +255-022-2150465  
E-mail: ekikwilu@muhas.ac.tz

as raising patients' awareness of care and the services provided in a given hospital.

Tanzania is one of the countries with the lowest level of dental caries in the world. Caries among primary school children has been below a mean DMFT score of 0.8 for the last two decades (8-11). The mean DMFT score among adults varies from 1.8 to 3.8 amongst 20-29- and 50-59-year olds, respectively (12). The D-component constitutes the major part of the DMFT score in children and young adults. The major documented cause of tooth loss is dental caries (12-14).

Most of the oral health care in Tanzania is provided by government-owned dental clinics established within hospitals in regional and district capitals. Patients from rural areas need to travel to towns to seek dental services. Most patients seek oral care on an emergency basis, without prior appointment, and no routine oral health care check-up system is in place. Before 1994, health care services, including oral health, were fully funded by the government. Thereafter, a policy of health cost sharing was introduced, whereby patients aged 6 years and above were required to pay for health care. Along with this policy, there were provisions for exceptions, including patients aged 60 years or above, or confirmed cases of genuine hardship that prevented payment of the health care fee. Since documentation of age and personal/family income is not well developed in Tanzania, exception criteria based on age or economic status present a challenge for hospital administrators. A study that compared attendance data one year before and after the introduction of health cost sharing revealed an overall drop in attendances of 33%, thus indicating a negative effect of the scheme on utilization of oral health services in Tanzania (15)

In early 2000, both the Ministry of Health and dental practitioners in Tanzania suggested the need to evaluate oral health care in order to identify areas where improvement was needed. In response, the Ministry of Health in collaboration with the School of Dentistry initiated a series of studies. These studies included evaluation of the state of the dental equipment, instruments and supplies in government-owned dental clinics, and job satisfaction among dental practitioners (16). The present study focused on patient satisfaction with urgent oral care, which is the predominant mode of dental treatment in Tanzania (17-19).

High levels of patient satisfaction have been reported in different countries (20-23), and the most important factors influencing this have included cost, waiting time, care organisation and reception (22), belief about the care received and the environment of care (24), communication skills and structural aspects of the clinic (25), belief in the

dentist, and pain control (26). In Sweden, Riley et al. (27) indicated that rural respondents were less likely to be satisfied with dental care than urban respondents, and that male young adults were more likely to report satisfaction than young female adults (26).

A literature search revealed two published reports on patient satisfaction in Tanzania (28,29). Ntabaye et al. (28) indicated that overall, 92.7% of respondents were satisfied with urgent oral care. A good working atmosphere at the dispensary, a good relationship between care provider and patient (art of care) and absence of post-treatment complications significantly influenced patient satisfaction, with odds ratios of 10.3, 17.4 and 6.2, respectively. In Dar es Salaam however, Matee et al. (29) reported only a moderate level of patient satisfaction. Areas that needed improvement included technical quality of care, interpersonal aspects and communication. These studies were done in single locations, and 10 years apart. To gain a more representative cross-sectional assessment of patient satisfaction, a nationwide study was therefore undertaken. The aim of the present study was to determine patient satisfaction with oral urgent care and evaluate the association between patient satisfaction and different aspects of oral urgent care among adult Tanzanians.

## Materials and Methods

### Selection of study sites and sampling procedure

Sample size determination and selection of sampling sites were done according to the national pathfinder survey methodology, which is described in the WHO Oral Health Surveys – Basic Methods (30). In this WHO publication, inclusion of study sites from each of a country's administrative zones is recommended. In mainland Tanzania there are 6 administrative zones, of which 2 were chosen as the urban study sites, and 4 as the rural study sites. Six clusters from the urban study sites and 8 clusters from the rural study sites were selected for the purpose of this study. The clusters were wards and villages in the urban and rural sites, respectively. From each of the clusters selected, the aim was to interview 150 adults aged 18 years and above. Therefore, a total of 2,100 subjects (900 urban, 1200 rural) were targeted. To facilitate stratification of the respondents by sex and age, each interviewer was provided with a matrix table for sex (male and female) and 5 age groups (18-25, 26-35, 36-45, 46-55, and 56+ years) for each cluster. Each age and sex category had a predetermined number of 15 respondents. The interviewer had to tally the appropriate age and sex category to which each interviewee belonged. At the end of the study period, some of the age and sex categories in the matrix were not completely filled due to difficulty in

locating individuals in their households during the daytime. Thus only 1,759 of the targeted 2,100 adults were interviewed, giving a response rate of 84%.

### Procedure for selection of study participants

This was a house-to-house survey. Cities and villages in Tanzania are divided into administrative units of 10-20 households called streets. Interviewers reported to the city or village authorities who assigned one street leader to lead the interviewers from house to house in his/her street until all the adults in a street who were present at the time of the study were interviewed. The street leader then handed over the responsibility of leading the interviewers to the next street leader. This process continued until the interviewers had interviewed the required number of adults in each age-group and sex category.

### Ethical clearance and procedure for obtaining informed consent from respondents

Ethical clearance for conducting this study was obtained from the Ministry of Health of the United Republic of Tanzania. The street leaders who led the interviewers introduced them to the family members of each household, and interviewers explained the aim of the visit. After the household members had understood the aim of the study, all members aged 18 years and above were requested to participate in the study by responding to the questions posed by the interviewers. Members were informed that they were free to participate or not participate. It was established before commencement of the study that any person agreeing to be interviewed after receiving the explanation was considered to have consented to participate.

### Questionnaire

The 10 items that were used to construct the questionnaire for the present study were extracted from a list of items for measuring patient satisfaction with the last dental visit, as summarized in the report of the Consensus Workshop for Selecting Essential Oral Health Indicators in Europe that was held at the University of Granada, Spain (31). The questionnaire in Kiswahili language was pre-tested for meaning and clarity among 20 adults in each of the 6 administrative zones. A meeting of the interviewers was convened to discuss the results of the pilot. Words and sentences that were not clear or seemed to distort the meaning of questions were changed.

To estimate the reliability of the questionnaire, it was administered twice to a group of 35 adults at an interval of one week. The re-test Spearman rank correlation coefficients ranged from 0.751-0.923. In addition, the coefficient of reliability using Cronbach's alpha for the 10

items was calculated at the stage of data analysis. The resulting Cronbach's alpha was 0.8491.

### Statistical analysis

#### *Construction of variables and coding for analysis*

The 10 items used to measure patient satisfaction were measured on a five-point Likert scale: very dissatisfied, dissatisfied, neither/nor, satisfied, very satisfied. Respondents were asked to rate their satisfaction with their last dental visit when oral urgent care was received. Overall patient satisfaction was calculated by summing up the 10 item scores. A new variable "patient satisfaction" was computed by dividing the overall patient satisfaction by 10. This resulted in a variable with values ranging from 1 to 5. This was then classified into three categories representing dissatisfied (scores 1-2.5), neutral (> 2.5-3.5) and satisfied (> 3.5-5.0) based on the mean score recommended by Roth et al. (32), and then coded (1 = dissatisfied, 2 = neutral, 3 = satisfied).

The scores for 10 individual items used to measure patient satisfaction were also categorized into dissatisfied (score 1-2), neutral (score 3), and satisfied (score 4-5), and then coded (1 = dissatisfied, 2 = neutral, 3 = satisfied). For the purpose of logistic regression analysis, patient satisfaction was dichotomized into dissatisfied (1.0-3.0) and satisfied (3.1-5.0). The 10 items used to measure patient satisfaction were also dichotomized into dissatisfied (1-3) and satisfied (4-5). The coding was 0 = dissatisfied and 1 = satisfied.

The background variables considered in this study were residence, sex, age, and education. Education and age were dichotomized for the purpose of logistic regression analysis. These were coded as follows: residence (0 = urban, 1 = rural); sex (0 = male, 1 = female); age was dichotomized into young adults (18-40 yr) and older adults (41+ yr), then coded as (0 = young adults, 1 = older adults); education was dichotomized into less educated (primary level or below) and educated (secondary level and higher), then coded as (0 = less educated, 1 = educated).

### *Analysis*

Cross-tabulations between residence and other independent variables, sex, age and education, were generated and chi-squared test was performed to identify differences between urban and rural respondents. The mean scores for patient satisfaction and 10 individual items used to measure patient satisfaction were generated to aid ranking of the items into their relative importance for patient satisfaction. To understand how the respondents were distributed over satisfaction scale, the frequency distribution of the respondents in the 3 categories of patient

satisfaction and of the 10 individual items used to measure patient satisfaction were generated. Pearson correlation coefficients between patient satisfaction and the 10 individual items used to measure patient satisfaction were computed to reveal the associations. To determine the importance of independent variables as predictors of patient satisfaction, cross-tabulations between independent and dependent variables were generated, and chi-squared test was performed. Variables that showed statistically significant associations were entered into a logistic regression model to determine their relative contribution to patient satisfaction and to the individual items used to measure patient satisfaction.

## Results

A total of 1,759 adult Tanzanians were interviewed on various aspects of oral care. Only 741 respondents had received oral urgent care, and were included in the present study. Table 1 summarizes the demographic characteristics of the respondents. There were proportionately older adults ( $\chi^2 = 4.625$ ;  $P = 0.032$ ) and less educated respondents ( $\chi^2 = 72.33$ ;  $P < 0.0001$ ) from rural areas than from urban areas.

The mean satisfaction scores and distribution of respondents by level of satisfaction with items used to measure patient satisfaction are shown in Table 2. Overall mean patient satisfaction was 3.79 (SEM = 0.02) over a 5-point Likert scale, with 1 = very dissatisfied and 5 = very

Table 1 Percent distribution of respondents by residence, sex, age and education (1<sup>0</sup> = primary education; 2<sup>0</sup> = secondary education)

| Residence                      | Sex                            |        | Age group (years)              |      | Education                      |                  |
|--------------------------------|--------------------------------|--------|--------------------------------|------|--------------------------------|------------------|
|                                | Male                           | Female | ≤ 40                           | > 40 | ≤ 1 <sup>0</sup>               | ≥ 2 <sup>0</sup> |
| Urban (1)                      | 49.9                           | 48.3   | 53.1                           | 45.2 | 40.8                           | 78.8             |
| Rural (2)                      | 50.1                           | 51.8   | 46.9                           | 54.8 | 59.2                           | 21.2             |
| Total                          | 46.0                           | 54.0   | 49.0                           | 51.0 | 78.4                           | 21.6             |
| $\chi^2$ test for independence | $\chi^2 = 0.189$ ; $P = 0.359$ |        | $\chi^2 = 4.625$ ; $P = 0.032$ |      | $\chi^2 = 72.33$ ; $P < 0.001$ |                  |

Table 2 Mean satisfaction score and distribution of respondents by level of satisfaction with 10 aspects of oral urgent care and with overall satisfaction

| Aspects of oral urgent care    | Satisfaction score <sup>a</sup> | Distribution <sup>b</sup> |            |              |
|--------------------------------|---------------------------------|---------------------------|------------|--------------|
|                                |                                 | Satisfied                 | Neutral    | Dissatisfied |
| 1. Cleanliness of clinic       | 4.15 ± 0.03                     | 611 (82.5)                | 89 (12.0)  | 41 (5.5)     |
| 2. Hospitality of dentist      | 4.09 ± 0.03                     | 617 (83.3)                | 76 (10.3)  | 48 (6.5)     |
| 3. Effectiveness of anesthesia | 4.03 ± 0.04                     | 548 (74.0)                | 100 (13.5) | 93 (12.6)    |
| 4. Perceived quality of care   | 4.00 ± 0.03                     | 591 (79.8)                | 84 (11.3)  | 66 (8.9)     |
| 5. Treatment time              | 3.94 ± 0.03                     | 562 (75.8)                | 114 (15.4) | 65 (8.8)     |
| 6. Quality of instruments      | 3.92 ± 0.03                     | 562 (75.8)                | 114 (15.4) | 65 (8.8)     |
| 7. Handling of patients        | 3.89 ± 0.03                     | 524 (70.7)                | 167 (22.5) | 50 (6.7)     |
| 8. Waiting time                | 3.89 ± 0.04                     | 565 (76.2)                | 90 (12.1)  | 86 (11.6)    |
| 9. Explanation of treatment    | 3.17 ± 0.05                     | 361 (48.7)                | 158 (21.3) | 222 (30.0)   |
| 10. Cost of treatment          | 2.79 ± 0.04                     | 226 (30.5)                | 237 (32.0) | 278 (37.5)   |
| 11. Patient satisfaction       | 3.79 ± 0.02                     | 507 (68.4)                | 202 (27.3) | 32 (4.3)     |

<sup>a</sup>Mean ± SEM of 5-point Likert scales (maximum = 5, minimum = 1).

<sup>b</sup>N (%), respondents ( = 741) were categorized as dissatisfied (1.0-2.5), neutral (> 2.5 but < 3.5), or satisfied (3.5-5.0) for overall satisfaction. For individual items: dissatisfied (1-2), neutral (3), satisfied (4-5).

satisfied. Cleanliness of the clinic; hospitality of the dentist; effectiveness of local anaesthesia; and perceived quality of care had the highest mean satisfaction scores of 4.0-4.15. Cost of treatment and explanation of treatment had the lowest mean scores of 2.79 (SEM = 0.02) and 3.17 (SEM = 0.05) respectively. Sixty-eight percent of respondents were satisfied with oral urgent care. Only 30.5% and 48.7% were respectively satisfied with cost of treatment and explanation of treatment. Respectively, 83% and 82% of respondents were satisfied with hospitality of the dentist and cleanliness of the clinic.

Table 3 summarizes the correlations between the items used to measure patient satisfaction and overall satisfaction. Hospitality of the dentist; quality of care; quality of instruments; and treatment time had the highest correlation coefficients with patient satisfaction, ranging from 0.77-0.80. Cost of treatment and explanation of treatment had the lowest correlation coefficients with patient satisfaction of 0.24 and 0.45, respectively.

Table 4 shows the logistic regression odds ratios for the

independent variables residence and sex as predictors of satisfaction with different items used to measure patient satisfaction. There were statistically significant differences in the level of satisfaction with different aspects of oral care between rural and urban respondents and between men and women. Rural residents were more satisfied with handling of patients ( $P < 0.05$ ) and with cost of treatment ( $P < 0.0001$ ) than urban residents. On the other hand, urban residents were more satisfied with explanation of treatment than rural residents ( $P < 0.0001$ ). Women were more satisfied with overall oral urgent care, quality of care, cleanliness of the clinic, effectiveness of local anaesthesia, and quality of instruments ( $P < 0.05$ ) and with treatment time ( $P < 0.01$ ) than men.

## Discussion

The data were collected using the pathfinder method from all the administrative zones in Tanzania. The high re-test correlation coefficients and Cronbach's alpha reliability coefficient indicated high reliability of the construct patient

Table 3 Pearson correlation between patient satisfaction with 10 aspects of oral urgent care

|                                 | 1. | 2.     | 3.     | 4.     | 5.     | 6.     | 7.     | 8.     | 9.     | 10.    | 11.     |
|---------------------------------|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| 1. Patient satisfaction         | 1  | 0.74** | 0.77** | 0.80** | 0.75** | 0.73** | 0.73** | 0.45** | 0.77** | 0.78** | 0.24**  |
| 2. Handling of patients         |    | 1      | 0.65** | 0.64** | 0.51** | 0.44** | 0.48** | 0.21** | 0.53** | 0.56** | 0.10**  |
| 3. Hospitality of dentist       |    |        | 1      | 0.68** | 0.55** | 0.49** | 0.51** | 0.24** | 0.56** | 0.58** | 0.04    |
| 4. Quality of care              |    |        |        | 1      | 0.56** | 0.62** | 0.55** | 0.29** | 0.53** | 0.58** | 0.04    |
| 5. Cleanliness of clinic        |    |        |        |        | 1      | 0.50** | 0.52** | 0.18** | 0.65** | 0.57** | 0.13**  |
| 6. Effectiveness of anaesthesia |    |        |        |        |        | 1      | 0.51** | 0.192* | 0.49** | 0.53** | 0.09*   |
| 7. Waiting time                 |    |        |        |        |        |        | 1      | 0.24** | 0.55** | 0.51** | 0.12**  |
| 8. Explanation of treatment     |    |        |        |        |        |        |        | 1      | 0.29** | 0.28** | -0.12** |
| 9. Quality of instruments       |    |        |        |        |        |        |        |        | 1      | 0.66** | 0.04    |
| 10. Treatment time              |    |        |        |        |        |        |        |        |        | 1      | 0.03    |
| 11. Cost of treatment           |    |        |        |        |        |        |        |        |        |        | 1       |

Pearson correlation coefficients: \* $P < 0.05$ ; \*\* $P < 0.0001$

Table 4 Logistic regression odds ratios (95% CI) of satisfaction with 8 items of patient satisfaction and with patient satisfaction for residence and sex

| Dependent variables <sup>a</sup> : | Independent variables <sup>b</sup>   |                                |
|------------------------------------|--------------------------------------|--------------------------------|
|                                    | Residence:<br>(0 = urban, 1 = rural) | Sex:<br>(0 = male, 1 = female) |
| (0 = dissatisfied, 1 = satisfied)  |                                      |                                |
| Handling of patients               | 1.63 (1.18-2.24)*                    | 1.20 (0.87-1.65)               |
| Perceived quality of care          | 0.85 (0.60-1.23)                     | 1.50 (1.05-2.15)*              |
| Cleanliness of clinic              | 1.13 (0.77-1.65)                     | 1.52 (1.04-2.22)*              |
| Effectiveness of local anaesthesia | 0.78 (0.56-1.09)                     | 1.42 (1.02-1.97)*              |
| Explanation of treatment           | 0.13 (0.10-0.18)***                  | 1.30 (0.94-1.81)               |
| Quality of instruments             | 0.72 (0.52-1.02)                     | 1.42 (1.01-1.99)*              |
| Treatment time                     | 0.72 (0.51-1.01)                     | 1.65 (1.17-2.32)**             |
| Cost of treatment                  | 2.00 (1.45-2.74)***                  | 1.25 (0.91-1.72)               |
| Overall patient satisfaction       | 0.83 (0.56-1.24)                     | 1.58 (1.06-2.35)*              |

<sup>a</sup> satisfied = outcome of interest

<sup>b</sup> category 0 = reference categories (odds ratios set at 1)

\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.0001$



satisfaction measured in the present study. Therefore the present data are considered to be sufficiently reliable for planning purposes.

The fact that more older adults than young adults were included in the study in rural areas was a selection artifact due to the method employed to contact respondents. The majority of young adults might have been returning to their homes after the survey hours, thus leading to many young adults being omitted from the study in rural areas. This was likely to have led to under-representation of perceptions of young adults in rural areas. The fact that there were more educated adults in urban than in rural areas is not surprising because educated people tend to be concentrated in urban areas where employment opportunities for educated people are higher than in rural areas.

The mean patient satisfaction of 3.79 over a 5-point Likert scale represents moderate satisfaction with urgent oral care. The low mean for patient satisfaction was due to extremely low satisfaction values for cost of treatment and explanation of treatment. Dental practitioners and oral health planners should strive to raise the level of satisfaction with cost of treatment and explanation of treatment. Cost of care has also been shown to have a negative effect on patient satisfaction among adults in Sweden (22). The low levels of satisfaction with explanation of treatment reported in the present study were similar to those reported in the United Arab Emirates (20) and Kuwait (25). In this study, one of the explanations for the very low satisfaction with treatment cost might have been that cost sharing in health is a relatively new concept among Tanzanians. Before 1994, health care costs were fully covered by the government, and thereafter the people began to pay for health services. Therefore any charges for health care were likely to have been perceived negatively by many Tanzanians. With time, it is expected that Tanzanians will get used to fees for medical care. On the other hand, there is a need for the government to review the charges for health care to enable most Tanzanians to afford them. In many dental clinics, for example, the fee for a tooth extraction in 2007 ranged from TZs 1,000 – 2,000. In the same year, a kilo of rice and a kilo of meat were priced at 1,000 and 2,000 TZs respectively, while a common employee earned 2,600 TZs (US\$ 2.2) a day. Asking such individuals to pay 1,000 or 2,000 TZs appears to be excessive. In this regard, the dissatisfaction of the respondents with treatment costs appeared justified.

The low satisfaction score for “explanation of the content of treatment” reported in the present study indicates that dental practitioners do not pay sufficient attention when explaining the content of treatment to patients. This finding underscores the need for oral health planners and educators

to make deliberate efforts to improve communication skills in treatment situations to dental students and in continuing the education of practising dentists.

The moderate level of patient satisfaction recorded in this study corresponds to that reported among Dar es Salaam city residents in Tanzania (29). On the other hand, high levels of patient satisfaction among villagers in a rural district were reported by Ntabaye et al. (28). These differences may be explained by the time that elapsed between these studies, indicating a change in the way of evaluating care.

Satisfaction with urgent oral care showed high correlation coefficients with the hospitality of the dentist; perceived quality of care; quality of instruments; and treatment time. This indicates that these encounters met the expectations of the patients when they attended the clinics for this type of care. Practitioners should maintain the present levels of quality of oral urgent care. Similar findings have been reported among members of the USA army (24) and among adults in Sweden (22). On the other hand, explanation of the content of treatment and cost of treatment showed the lowest correlation coefficients, indicating that this aspect of urgent oral care fell short of patients’ expectations when seeking this type of care. Therefore, there is a need to review these aspects of oral care with the aim of improving them.

The fact that rural respondents were more satisfied with handling of patients and cost of treatment than their counterparts in urban areas may be explained by the fact that there are few patients attending these facilities at any given time in regional and district clinics compared to those in cities. Therefore there is a high likelihood of proper patient handling when a practitioner has a lower workload, compared to the heavy work loads encountered in urban clinics. In addition, the fees for health care are lower in district and regional hospitals compared to the fees charged in cities. Rural residents may also have limited exposure to information related to their rights as patients and to other social services. This may be limiting their ability to make valid comparisons. Urban respondents were more satisfied with explanation of treatment and quality of instrument than their rural counterparts. This may indicate a difference in the level of equipping clinics in cities compared to regional and district clinics. It also may mean that practitioners in cities take time to explain the treatment compared to their colleagues in regional and district clinics because patients in urban areas may feel more motivated to ask about treatment.

In this study women were more satisfied with many aspects of urgent oral care, including overall patient satisfaction, than men. These findings are contrary to

many published studies that have shown no sex differences in patient satisfaction (33-37). Only Gopalkrishna and Mummalaneni found that women expressed greater levels of satisfaction with dental care than men (38). Tamaki and associates reported that women had higher satisfaction with cleanliness and neatness in the waiting room (4).

We conclude that adult Tanzanians have moderate levels of satisfaction with oral urgent care. Explanation of the content of treatment and cost of treatment were the two aspects of urgent oral care with very low satisfaction scores. It is recommended that in order to improve patient satisfaction, (1) the Ministry of Health should reduce the fees for urgent oral care; and (2) dental training institutions should emphasize communication skills in clinical training to students, and also to practitioners during their continuing education.

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### References

- Brennan PF (1995) Patient satisfaction and normative decision theory. *J Am Med Inform Assoc* 2, 250-259.
- Benson DS, Gartner C, Anderson J, Schweer H, Kirchgessner R (1987) The ambulatory care parameter: a structured approach to quality assurance in the ambulatory care setting. *QRB Qual Rev Bull* 13, 51-55.
- Ball R (1996) Practical marketing for dentistry. 3. Relationship marketing and patient/customer satisfaction. *Br Dent J* 180, 467-472.
- Tamaki Y, Nomura Y, Nishikawara F, Motegi M, Teraoka K, Arakawa H, Tsurumoto A, Hanada N (2005) Correlation between patient satisfaction and dental clinic credibility in regular dental check-ups in Japan. *J Oral Sci* 47, 97-103.
- Institution of Medicine of National Academy (2008) Crossing the quality chasm: the IOM health care quality initiative, available online at [www.iom.edu/CMS/8089.aspx](http://www.iom.edu/CMS/8089.aspx)
- Massachusetts Health Quality Partners (2008) Quality insights: health care performance in Massachusetts, available online at [www.mhqp.org/quality/whatisquality.asp?nav=03000](http://www.mhqp.org/quality/whatisquality.asp?nav=03000)
- Holt VP (2006) Patient satisfaction questionnaire – how to do them successfully. *Dent Update* 33, 338-340, 343-344, 346.
- Frencken J, Manji F, Mosha H (1986) Dental caries prevalence amongst 12-year-old urban children in East Africa. *Community Dent Oral Epidemiol* 14, 94-98.
- Rugarabamu P, Frencken JE, Amuli JA, Lihepa A (1990) Caries experience amongst 12- and 15-year-old Tanzanian children residing on a sugar estate. *Community Dent Health* 7, 53-58.
- Kikwilu EN, Mandari GJ (2001) Dental caries and periodontal conditions among primary school children in Morogoro municipality, Tanzania. *East Afr Med J* 78, 152-156.
- Awadia AK, Birkeland JM, Haugejorden O, Bjorvatn K (2002) Caries experience and caries predictors – a study of Tanzanian children consuming drinking water with different fluoride concentrations. *Clin Oral Investig* 6, 98-103.
- Sarita PT, Witter DJ, Kreulen CM, Matee MI, van't Hof MA, Creugers N (2004) Decayed/missing/filled teeth and shortened dental arches in Tanzanian adults. *Int J Prosthodont* 17, 224-230.
- Mosha HJ, Lema PA (1991) Reasons for tooth extraction among Tanzanians. *East Afr Med J* 68, 10-14.
- Baelum V, Fejerskov O (1986) Tooth loss as related to dental caries and periodontal breakdown in adult Tanzanians. *Community Dent Oral Epidemiol* 14, 353-357.
- Matee IM, Simon EN, Kalyanyama B (2000) Utilization of dental services in Tanzania before and after the introduction of cost sharing. *Int Dent J* 50, 69-72.
- Central Oral Health Unit (2001) Plan for rehabilitation and equipping dental clinics at all hospital levels in Tanzania. Central Oral Health Unit, Ministry of Health, United Republic of Tanzania, Dar es Salaam, 1-52.
- Mosha JH, Lema PA (1991) Reasons for tooth extraction among Tanzanians. *East Afr Med J* 68, 1-4.
- Mumghamba EG, Fabian FM (2005) Tooth loss among habitual chewing stick and plastic toothbrush users in the adult population of Mtwara, rural Tanzania. *Int J Dent Hyg* 3, 64-69.
- Kida IA, Astrom AN, Strand GV, Masalu JR (2006) Clinical and socio-behavioural correlates of tooth loss: a study of older adults in Tanzania. *BMC Oral Health* 6, 5.

20. Hashim R (2005) Patient satisfaction with dental services at Ajman University, United Arab Emirates. *East Mediterr Health J* 11, 913-921.
21. Bedi R, Gulati N, McGrath C (2005) A study of satisfaction with dental services among adults in the United Kingdom. *Br Dent J* 198, 433-437.
22. Ståhlacke K, Söderfeldt B, Unell L, Halling A, Axtelius B (2007) Patient satisfaction with dental care in one Swedish age cohort. Part II – What affects satisfaction. *Swed Dent J* 31, 137-146.
23. Shrestha A, Doshi D, Rao A, Sequeira P (2008) Patient satisfaction at rural outreach dental camps – a one year report. *Rural Remote Health* 8, 891.
24. Chaffin JG, Mangelsdorff AD, Finstuen K (2007) The development of a conceptual model for evaluating dental patient satisfaction. *Mil Med* 172, 1239-1244.
25. Al-Mudaf BA, Moussa MA, Al-Terky MA, Al-Dakhil GD, El-Farargy AE, Al-Ouzairi SS (2003) Patient satisfaction with three dental speciality services: a centre-based study. *Med Princ Pract* 12, 39-43.
26. Skaret E, Berg E, Raadal M, Kvale G (2005) Factors related to satisfaction with dental care among 23-year olds in Norway. *Community Dent Oral Epidemiol* 33, 150-157.
27. Riley JL 3rd, Gilbert GH, Heft MW (2005) Orofacial pain: patient satisfaction and delay of urgent care. *Public Health Rep* 120, 140-149.
28. Ntabaye MK, Scheutz F, Poulsen S (1996) Patient satisfaction with emergency oral health care in rural Tanzania. *Community Dent Oral Epidemiol* 26, 289-295.
29. Matee MIN, Scheutz F, Simon ENM, Lembariti BS (2006) Patients' satisfaction with dental care provided by public dental clinics in Dar es Salaam, Tanzania. *E Afr Med J* 83, 99-105.
30. World Health Organization (1997) Oral health surveys – basic methods. Design of a basic oral health survey. 4th ed, WHO, Geneva, 4-9.
31. European Commission, Health and Consumer Protection Directorate – General Community Action Programme on Health Monitoring (2004) European global oral health indicators development project – selecting essential oral health indicators in Europe. Report of the consensus workshop, Univ of Granada, Granada, 29.
32. Roth SF, Heo G, Varnhagen C, Glover KE, Major PW (2003) Job satisfaction among Canadian orthodontists. *Am J Orthod Dentofacial Orthop* 123, 695-700.
33. Corah NL, O'Shea RM, Pace LF, Seyrek SK (1984) Development of a patient measure of satisfaction with the dentist: the dentist visit satisfaction scale. *J Behav Med* 7, 367-373.
34. Gurdal P, Cankaya H, Onem E, Dincer S, Yilmaz T (2000) Factors of patient satisfaction/dissatisfaction in a dental faculty outpatient clinic in Turkey. *Community Dent Oral Epidemiol* 28, 461-469.
35. Mascarenhas AK (2001) Patient satisfaction with the comprehensive care model of dental care delivery. *J Dent Educ* 65, 1266-1271.
36. Sur H, Hyran O, Yildirim C, Mumcu G (2004) Patient satisfaction in dental outpatient clinics in Turkey. *Croatian Med J* 45, 651-654.
37. Al-Omiri MK, Alhaija ESA (2005) Factors affecting patient satisfaction after orthodontic treatment. *Angles Orthod* 76, 422-431.
38. Gopalakrishna P, Mummalaneni V (1993) Influencing satisfaction for dental services. *J Health Care Market* 13, 16-22.