PERCEPTION AND SATISFACTION WITH DENTAL APPEARANCE AND ITS ASSOCIATION WITH ORAL HEALTH RELATED QUALITY OF LIFE AMONG STUDENTS AT MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES, TANZANIA

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M.Dent Restorative Dentistry Dissertation

Muhimbili University of Health and Allied Sciences

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A Dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree of Master of Dentistry Restorative Dentistry of Muhimbili University of Health and Allied Sciences

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October, 2011

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled ***Perception And Satisfaction With Dental Appearance And Its Association With Oral Health Related Quality of Life Among Students At Muhimbili University of Health and Allied Sciences in Tanzania***, in (Partial) fulfillment of the requirements for the degree of Master of Dentistry Restorative Dentistry of Muhimbili University of Health and Allied Sciences.

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(Supervisor)

Date: _____

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(Supervisor)

Date: _____

DECLARATION AND COPYRIGHT

I **Tumaini Simon**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature……. Date……..

ABSTRACT

Background: Dental esthetics has not been seen to be important in most developing countries and research in this regard is meager. Due to rapid increase in global network the effect of a pleasant appearance is now recognized to be very important, hence may lead to changes in person's esthetics needs and may affect dental treatment priority.

Aim: To determine the level of dental appearance/aesthesis and to assess perceived dental appearance, satisfaction with dental appearance and their association with oral health related quality of life among students at Muhimbili University of Health and Allied Sciences' (MUHAS).

Methodology: This cross-sectional study was conducted at the Muhimbili University of Health and Allied Sciences. A census of 492 undergraduate students in 1st and 2nd year of study, response rate 82.7%, was involved in the study, in December 2010. The subject's were given self administered questionnaire where socio-demographic information was recorded and questions on perception and satisfaction with dental appearance were asked. Oral health related quality of life was assessed using Oral Impact on Daily Performance (OIDP) inventory. Clinical examinations was performed under natural day light by one dentists with good intra-examiner variability (Kappa = 0.85), and findings recorded in specially designed clinical forms. Prior to examination the anterior teeth (Incisors and canines) were cleaned and dried with gauze. Dental appearance was evaluated by using index for assessing dental Aesthetic. Data analysis was done using SPSS version 15 whereby Chi square statistics and logistic regressions with statistical level of significance of $p< 0.05$ were utilized.

Results: In this study, 492 participants were involved. Age ranged from 18 – 57 years old, mean age was 22.9, sd = 3.9, and greater proportion of participants 421 (85.6%) were in age group 18 – 25. Considering gender, greater proportion of participants were males 334 (67.9%) with male to female ratio of 2.1:1. School-wise, medicine contributed greater proportion 52.6% of participants and school of dentistry at least 5.5%. Generally 30.7% of participants,

perceived to have poor dental appearance, 21.5% were not satisfied with their dental appearance, while clinical examination revealed that 67.7% of participants had at least one factor for poor dental appearance. Prevalence of OIDP was 60.6%. The most affected performances were eating (46.1%) and cleaning (40.0%) and the least affected being speaking (11.4%). Those who reported impacts on performances were more likely to be females (OR - 1.5, CI: 1 – 2) those who perceived to have poor dental appearance (OR: 2.4, CI: 1.6 - 3.7), those who were not satisfied with their dental appearance (OR: 3.1, CI: 1.9 - 5.2) and those who objectively determined to have poor dental appearance (OR: 1.7, CI: 1.1 - 2.5). Furthermore those who had dental caries were about 6 times more likely to report an impact on their daily performances (OR: 6.6, CI: 2.3 – 18.6)

Conclusion:

Despite the high prevalence of objectively assessed poor dental appearance a high percentage of the university students perceived to have good dental appearance and were also satisfied with their dental appearance. The impacts of oral conditions to their dental appearance were substantial. There is, therefore, a need to raise the students' awareness on their poor oral health status so that they may be positively motivated to seek necessary intervention

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ABREVIATIONS

DAI	Dental Aesthetic Index
ICIDH	International Classification of Impairment Disabilities and Handicaps
OIDP	Oral Impact on Daily Performance
MDent	Masters of Dentistry
MNH	Muhimbili National Hospital
MoHSW	Ministry of Health and Social Welfare
MUHAS	Muhimbili University of Health and Allied Sciences
OHRQoL	Oral Health Related Quality of Life
VC	Vice Chancellor
WHO	World Health Organization

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DEDICATION

This work is humbly dedicated to my beloved wife
Jane Evarist, my precious
son Victor
and my dear parents
Simon Ndekero and Anthonia Augustine

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DEFINITION OF TERMS

Esthetics is defined as the branch of philosophy dealing with beauty, especially with the components thereof; that is color and form (Mosby, 2003).

Esthetic dentistry refers to those skills and techniques used to improve the art and symmetry of the teeth and the face to improve the appearance as well as the function of teeth, mouth and face (Mosby, 2003).

Dental esthetics is the application of esthetics to natural or artificial teeth, or restorations, usually with regards to form and color (Davis, 2001).

Perception is the recognition and interpretation of sensory stimuli based chiefly on memory (Davis, 2001).

Satisfaction is the fulfillment or gratification of a desire, need, or appetite (Davis, 2001).

1 INTRODUCTION AND LITERATURE REVIEW

Esthetics has become as important as function, structure and biology, until about the last two decades, (Samorodnitzky-Naveh et al., 2007) in dental practice the effect of a pleasant appearance is important in many everyday situations (Vallittu et al., 1996). This fact leads to changes in patient's esthetics needs and consequence of dental treatment priority (Samorodnitzky-Naveh et al., 2007).

Numerous factors are related to dental esthetics, such as color and shape of the teeth and the shape of dental arches. These factors are affected by the individual preferences, cultural factors and sociodemographic factors. The viewer's perception of a visual experience may be pleasant and beautiful by one individual and culture and not so in others (Lombardi, 1973, Marunick et al., 1983) . The perceived appearance of teeth could be influenced by gender, age and educational level. Females are reported to be more sensitive than males when it comes to the appearance of teeth while the importance of teeth decreases with ageing and lower education levels (Vallittu et al., 1996). Options for dental treatment on anterior teeth also have an impact on dental esthetics, which is affected by individual preferences and cultures. Unfortunately, in some cases, dentists may develop an esthetic appearance different from patient's concepts resulting in communication problems and unanticipated difficulties as far as quality of life is concerned, for example, impaired self-esteem (Brisman, 1980).

1.1 Perception with dental appearance

The patients' perception of the impact of dental appearance variation upon his or her self – image is subjected to enormous diversity such as level of dental awareness, age, sex, social economic status, and level of education and is modified by cultural and racial influence. This results in some individuals being unaware of marked unattractive dental appearance, whilst others complain bitterly about very minor irregularities (Mitchell et al., 2001). A study in Michigan found out that, social interactions that have a negative effect on self-image, career advancement, and peer-group acceptance have been associated with an unacceptable dental appearance (Koster, 1990, Cons and Jenny, 1994, Adams, 1997) and the public equates a 'good dental appearance' with success in many situations in life (Linn, 1966, Samuels and Proshek, 1973) Another study in Turkey

found out that greater proportion of young adults perceived to have attractive dental appearance and both male and female perceived to have attractive dental appearance. Also it was reported in this study that perception of having attractive dental appearance decreased with age (Hamamci et al., 2009). Similar results were observed in similar study done in Nigeria (Onyeaso and Sanu, 2005). In Tanzania a study by Mugonzibwa et al., (2004) on perceptions of dental attractiveness and orthodontic treatment needs among Tanzanian children reported that many subjects perceived to have unattractive dental appearance, and majority perceived that well arrangement of teeth was important for overall facial appearance. However, a previous Tanzanian study (Mtaya et al., 2008) concentrated only on perception of malocclusion.

1.2 Satisfaction with dental appearance

Satisfaction with dental appearance is influenced by various factors including arrangement of the teeth, colour, shape and size as well as with sex, age and social demographic factors.

A study done in Turkey to assess satisfaction with dental esthetics; and received and desired dental treatments for improvement of esthetics among adult patients, reported that patients were dissatisfied with the color of their teeth, general dental appearance, crowding of anterior teeth, and non-esthetic restorations (Akarslan et al., 2009). As a result they were hiding their teeth while smiling. A study in Florida by Meng et al., (2007) showed females, problem-oriented dental attendees, and participants who had not completed high school were significantly more dissatisfied with their dental appearances than their respective counterparts. Dissatisfaction with dental appearance was common in middle-aged and older adults, and was significantly more prevalent among female and those with higher educational status. A study in German reported that importance of dental appearance to overall appearance was rated high, as was overall satisfaction with dental appearance (Hassel et al., 2008). Factors contributing to dissatisfaction with dental appearance in this study were tooth colour, shape, or position; however, women were more critical when judging overall satisfaction with dental appearance. Satisfaction with dental appearance was high, as was the importance of dental appearance to elderly

patients than in younger patients. (Alkhatib et al., 2005) in United Kingdom reported in a study that three quarters of the population were satisfied with their own dental appearances and two-thirds of the participants in the study were satisfied with their tooth colour. Subjects over the age of 55 years old were significantly more likely to be satisfied with their dental appearance and tooth colour compared with younger age groups.

In East Africa assessment of satisfaction with dental appearance was done in school children 12-15 years old. Study in Kenya (Ng'ang'a et al., 1997) showed more females to be dissatisfied with their dental appearance than their male counterparts, In Tanzania a study by Rwakatema et al., (2006) on awareness and concern about malocclusion among adolescents, reported that respondent were satisfied with the appearance of their teeth and only few were dissatisfied, and no significance difference between males and females on the satisfaction with their dental appearance. Earlier studies regarding perception and satisfaction as they are related to sociodemographic factors with dental appearance have shown inconclusive results.

1.3 Dental esthetics and quality of life

According to the WHO definitions; health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1948) and Oral health is defined as a comfortable and functional dentition which allows individuals to continue in their desired social role (Dolan and Atchison, 1993). According to the concept of oral health-related quality of life (OHRQoL) good oral health is no longer seen as the mere absence of oral diseases and dysfunction, but also takes into account absence of negative impacts of oral conditions on social life, and a positive sense of dental-facial self-confidence (Inglehart and Bagramian, 2002). It has been recognized that individuals with poor dental appearance (poor esthetics) might develop feelings of shame about their dental esthetic and may feel shy in social contacts (Shaw, 1981, Albino et al., 1994) therefore the psychosocial benefits of dental esthetic treatment would include an enhancement and a reduction in social anxiousness (Albino et al., 1994, Birkeland et al., 1997). It has also been shown that there is a relationship between physical

attractiveness on the one hand and social success and higher self-esteem on the other (Feingold G, 2004).

Research on clinical and subjective assessment of oral health suggest that patients and dentists differ in their evaluation of dental esthetics and the perception of dental appearance (Burden, 1995, Giddon, 1995, Ahmed et al., 2001, Hunt et al., 2002). Some patients with severe poor dental appearance are satisfied or indifferent about their dental esthetics, while others are very concerned about minor irregularities (Hunt et al., 2002).

It has been suggested that poor dental appearance (poor esthetics) negatively impacts the quality of life of the affected individuals as it affects the appearance of the teeth and the face. This view has gained a wide acceptance in the dental profession despite the lack of sufficient data relating to poor dental appearance and its effects in the overall quality of life as defined by the World Health Organization (WHO). The WHO has developed instruments for determining the quality of life. Most of the instruments were derived from the conceptual framework of the International Classification of Impairment Disabilities and Handicaps (ICIDH).

The ICIDH is built up in three key levels. The first level, the impairment, refers to the immediate biophysical outcome of the condition. This is commonly assessed by clinical indicators. Functional limitation at the second level are concerned with functioning of the body parts which includes dental appearance. The third level, the ultimate impact, refers to any difficulty in performing activities of daily living (fig 1).

A number of instruments have been developed for measuring the effect of oral condition on the quality of life. One of these instruments is the Oral Impact on Daily Performance scale (OIDP) (Locker and Liddell, 1991, WHO, 1980). This scale concentrates only on the third level of measurement of the ICIDH theoretical framework thus demonstrating strong theoretical coherence and reduces the possibility of double scoring of the same oral impact at different levels (Tsakos et al., 2001). Since its development the OIDP has been adopted for studies of populations of various ages and has proved to be reliable and valid (Masalu and Astrom, 2002). In Tanzania, OIDP has been successfully used in

surveys among older adults, young adults and children (Kida et al., 2006, Masalu and Astrom, 2002, Mtaya et al., 2008). Despite its advantages it has not been used to determine the quality of life among individual with other dental esthetic problems.

Esthetics is important in dental practice and could be related to individual preferences, cultures, sociodemographic factors and perceived dental treatments, relevant for dental care demand. Therefore, the aim of this study is to assess perception and satisfaction with dental appearance and its association with oral health related quality of life among Students at Muhimbili University of Health and Allied science.

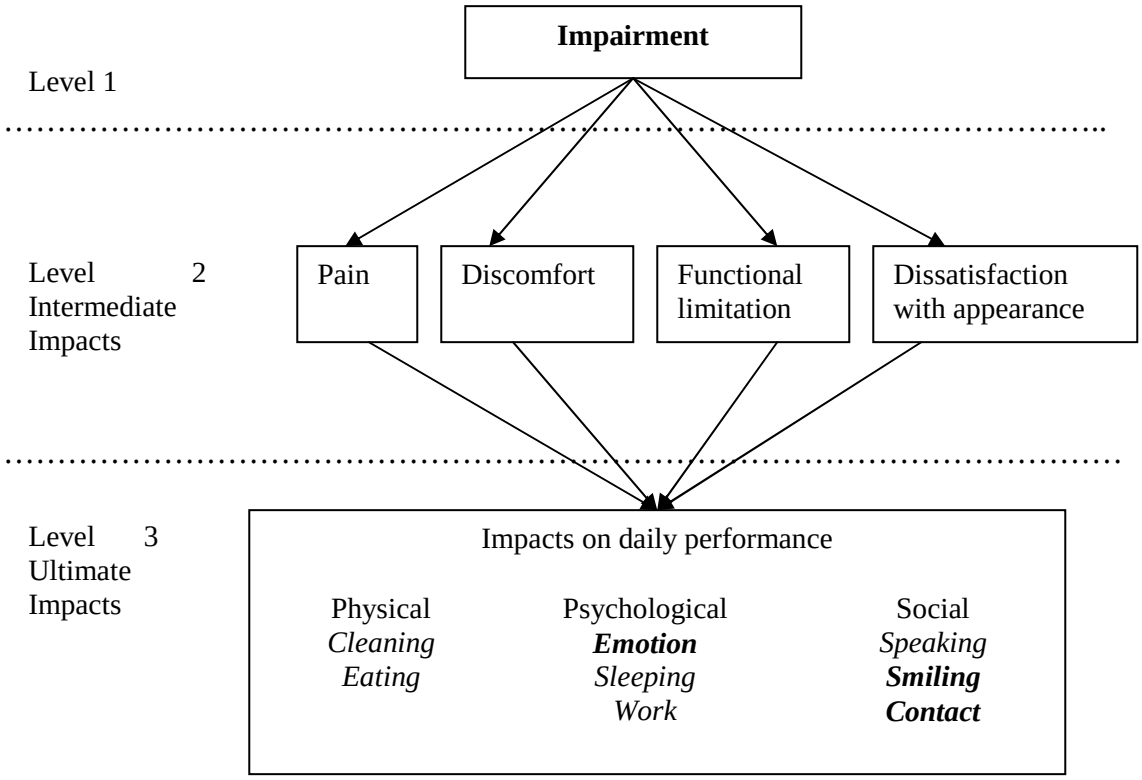

Figure 1 Theoretical Framework of consequences of oral impacts

(Modified from WHO's International Classification of Impairment, Disabilities and Handicaps) (WHO, 1980)

2 PROBLEM STATEMENT

In many countries in the developed world, poor dental appearance has been reported to be a problem and given very high attention (Samorodnitzky-Naveh et al., 2007). Today people are concerned more about their appearance and the demand for dental esthetics has become high such that the trend of dentistry has shifted from functional demand to dental esthetics (Samorodnitzky-Naveh et al., 2007). In Tanzania, esthetic dental treatment is not given a priority (National Plan for Oral Health 1988- 2002). As a result esthetic dentistry received little attention in the training institutions and consequently in the routine works of dentists. Furthermore, perception and satisfaction with dental appearance is not well known in other dental disciplines apart from orthodontics (Mtaya et al., 2008).

3 RATIONALE OF THE STUDY

Restorative and rehabilitative care in Tanzania is limited by finances, shortage of professionals, deficiencies in and poor maintenance of equipment, as well as restricted supplies of materials. Esthetic dental treatment is not given a priority in developing countries (National Plan for Oral Health 1988- 2002). As a result aesthetic dentistry received little attention in the training institutions and consequently in the routine works of dentists in Tanzania. In other places studies have shown that poor dental appearances especially tooth discoloration is of considerable importance to the general population. Its social and psychological impact is becoming less tolerated, and if not addressed can affect the appearance of a person's smile and craniofacial complex (Barath et al., 2003, Cristian et al., 2007). This study, therefore, will help to assess dental esthetic perception and its effect on the quality of life in Tanzanian University students. University students are an important group of people in Tanzanian because they will become future policy makers. The results of this study will then substantiate the relevance of dental esthetic and restorative dentistry in Tanzania.

4 OBJECTIVES

4.1 Broad objective:

To assess perception and satisfaction with dental appearance and its association with oral health related quality of life, among students at Muhimbili University of Health and Allied Sciences (MUHAS).

4.2 Specific objectives:

1. To determine perception of dental appearance among MUHAS students by age and sex.
2. To determine satisfaction with dental appearance among MUHAS students by age and sex.
3. To determine dental aesthesis by clinical examination of the anterior sextants
4. To determine the prevalence of Oral Impact on Daily Performance (OIDP) and associated factors among MUHAS students.

5 MATERIAL AND METHODS

5.1 Study design and Study period

This was Cross-sectional study which was conducted in December 2010

5.2 Study area

The study was carried out at Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam. At the time of study, the total number of undergraduate students was 1350 out of which 25.6% were females (according to data from MUHAS annual report 2010/2011). This group of students constituted a confluent homogeneous socially affluent group of Tanzanian young adult population. Students at higher education institutions have more or less frequently been exposed to oral health education programs and dental services.

5.3 Study population

The study population involved undergraduate students at first and second years of study in all five schools, named:- school of medicine, school of dentistry, school of pharmacy, school of public health and school of allied health sciences (degree courses only-Bachelor in Nursing, Bachelor in Medical laboratory and Bachelor in Radiotherapy Technology). The nature of education at MUHAS is that, during the first and second years of study students are oriented purely in basic sciences. In third year, clinical skills are introduced slowly, while in fourth and fifth years for Medicine and Dentistry they are purely clinical oriented. It is assumed in this study that, in first and second year of study; students are not entirely exposed to clinical studies which prepare them to become medical professionals, which might help to avoid response bias due to “social desirability”.

5.4 Sampling technique and Sample size

A census comprising all students pursuing different medical fields in First and Second academic years of their studies at MUHAS was involved in this study in December 2010. The total number of students from all five schools in 1st and 2nd year of study was 645. (According to data from MUHAS annual report 2010/2011) Out of the 645 first and second year students invited in the study, 41 were not available during the data collection and 9 were excluded. Reasons reported for the absence were abscond-ment 14, illnesses 12, permission for social problems 10 and unknown reasons 5. Five foreign students, 3 with restorations in anterior teeth and 1 with orthodontic treatment were excluded. Thus a total of 595 students were enrolled however 99 students did not respond. Four hundred and ninety six (496) participants completed self administered questionnaire, of which only 492 participants appeared for clinical examination, making a response rate of 82.7% (Fig.2). Non respondents (17.3%) were followed up and they were found to be basically not different from the studied participants in terms of gender, age and school from which they were coming from.

Table 1 shows that response rate ranged from 65.8% school of allied health sciences to 93.8% school of public health.

Table 1 Frequency distribution of participating students according to schools, and response rates

School	Eligible	Enrolled	Responded
Medicine	348	313	259 (74.4%)
Dentistry	39	36	27 (69.2%)
Pharmacy	83	81	73 (87.9%)
Allied Health Sciences	111	101	73 (65.8%)
Public Health	64	64	60 (93.8%)
Total	645	595	492 (82.7%)

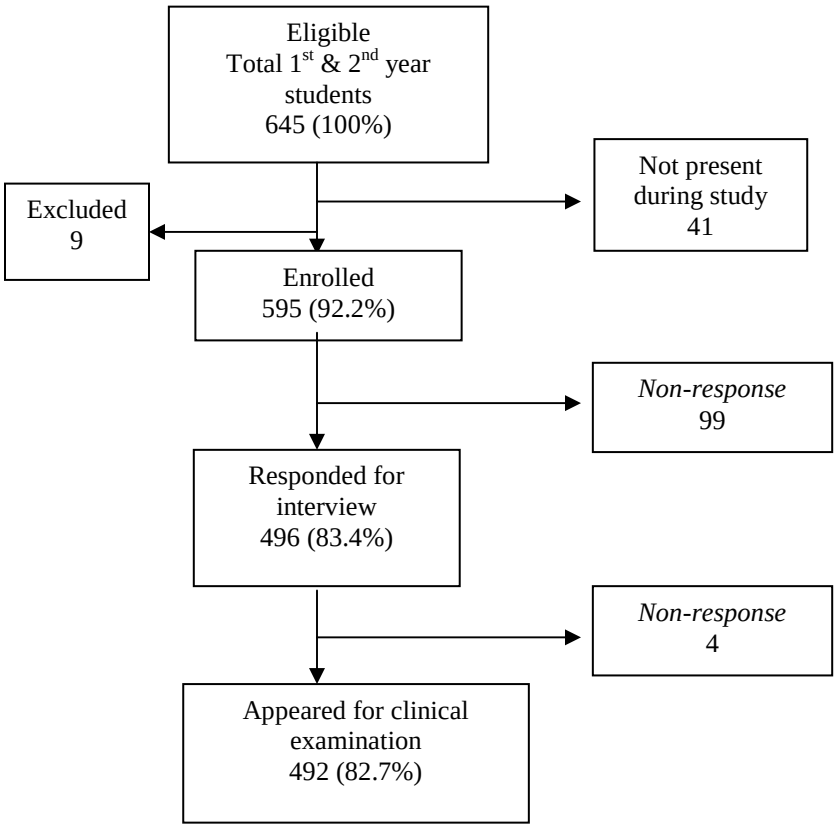

Figure 2 Flow diagram showing enrolment of participants

5.5 Inclusion criteria

Consented students in their first and second academic year of study during the period August and December 2010

5.6 Exclusion criteria

Students were excluded if they had a restoration, crown, veneer (in anterior teeth) or had undergone orthodontic treatment. Foreign students were also excluded from this study.

5.7 Instruments

Questionnaire

A self administered questionnaire was constructed in English (appendix 3a) and translated to Kiswahili (appendix 3b). Adjustments and some corrections were made following a pilot study conducted on 6% of randomly selected participants from the parent population (n= 595). The questionnaire contained social demographic items: age, sex, place of origin, school from which the participant belongs and year of study. Questionnaires were administered in classrooms under supervision of trained fifth year dental students. The investigator was present for clarification whenever inquiry arisen or if the question was not clearly understood and making sure that all questions were answered.

Age was recorded as age at last birth date and categorized into two 1 (≤ 25 years", 2 (> 25 years).

Perception with dental appearance was assessed by four questions which addressed perception with general appearance, color, arrangement and shape of anterior teeth, each measured on a 5 point scale with the lowest value on the one end of the score and highest response on the highest score (5) on the scale. Summative index of the four questions in all 5 items was computed giving a product score ranging from (4) "lowest" to (20) "highest". This range was dichotomized into a binary variable using mid-value (median) 12 as a cut-off point yielding 1 = "poor" (including the summative index 4 – 12) and 2 "good" (summative index 13 – 20).

Satisfaction with dental appearance was assessed using four questions which addressed satisfaction with general appearance, color, arrangement and shape of the anterior also each measured on a 5 point scale: lowest 1 = "Very unsatisfied" to highest 5 = "Very

satisfied". Summative index of these four questions was computed giving a product score ranging from (4) "lowest" to (20) "highest". This range was dichotomized into a binary variable using mid-value (median) 12 as a cut-off point yielding 1 = "Not satisfied" (including the summative index 4 – 12) and 2 = "Satisfied" (summative index 13 – 20).

Oral Impact on Daily Performances (OIDP) (Table 2) were assessed by asking "During the past 6 months how often have problems with your mouth and teeth caused you any difficult with; eating and enjoying food, speaking or pronouncing words clearly, cleaning teeth, sleeping and relaxing, smiling and showing teeth without embarrassment, maintaining usual emotional state, carryout major work and social role and enjoying contact with people?" Each question was assessed using a 4 point scale lowest =never, highest = everyday. For the purpose of cross-tabulation analysis, each item was dichotomized yielding the categories 0 = never affected and 1 = perceived impact at least once a month (which incorporated categories 1, 2 and 3). One summative index was constructed from the eight items. Furthermore the OIDP score (0-8) was dichotomized yielding the categories 0 = "no daily performance affected" and 1 = "with at least one daily performance affected".

A question on how severe was the impact/problems were asked for each performance. The response included a four point scales: 1 = not severe at all, 2 = less severe, 3 = severe 4 = very severe.

Table 2 The Oral Impacts on Daily Performances index (OIDP).

During the past 6 months – how often have problems with your mouth and teeth caused you any difficulty in:
a. Eating and enjoying food
b. Speaking and pronouncing clearly
c. Cleaning teeth
d. Sleeping and relaxing
e. Smiling, laughing and showing teeth without embarrassment
f. Maintaining usual emotional state without being irritable
g. Carrying out major works or socio role
h. Enjoying contact with people/socialization

5.8 Clinical examination

The clinical examination was carried out in an isolated space (tent outside the lecture theatre) with adequate natural day-light. The participants, while seated on an office chair, were examined by a calibrated dentist (the investigator) with good intra-examiner variability (Kappa = 0.85), and findings recorded in specially designed clinical forms. Anonymity and confidentiality was observed. Prior to examination all anterior teeth (incisors and canines) were cleaned and dried with gauze. Instruments used in the inspection were mouth mirror, an explorer and veneer caliper. Index for assessing dental appearance/aesthesis (Appendix 3) had to be developed by extracting components from DAI (Cons and Jenny, 1994) and from evaluation criteria for tooth discoloration level (Alkhatib et al., 2004, Dean, 1993, Schmidseder, 2000) to suit the objectives of this study. The created index (Appendix 3) had 7 elements (missing, decay, crowding, discoloration, crown fracture, malformation and midline shift) each categorized into 0 = “absent”, 1 = “present” 2 = “present at a high magnitude”, giving a minimum of 0 and maximum of 2 scores. Summative index of the scores ranging from 0 to 14 was calculated and applied to rank dental appearance/esthetic, into 0 = “good” (score 0), 1 = “moderately good” (scores 1 - 4) and 2 = “poor” (scores > 4). For the purpose of cross-tabulation the scores were dichotomized into 0 = “good” (score 0) and 1 = “poor" (score ≥1).

5.9 Data analysis and management

Data was analyzed using a statistical package for social sciences SPSS Version 15. Re-coding into different variable, computing summative index and dichotomization was carried out. Cross tabulation and Chi-square statistics were used to assess bivariate relationship (social demographic factors, objective and subjective perception and satisfaction with dental appearance). Oral impacts on daily performances were estimated by logistic regression with 95% CI (confidence interval) given for odds ratios indicating statistically significant relationship if both values were above or below 1. Internal consistency as a measure of reliability of a scale was assessed using Cronbach's alpha statistical test.

5.10 Ethical issues

Ethical clearance for this study was obtained from the Director of Research and Publications committee of the Muhimbili University of Health and Allied Science (MUHAS) and permission to conduct research at MUHAS was obtained from V.C MUHAS and the Dean of students MUHAS. The aims, possible risks and benefit of the study were explained to all participants and informed consent was obtained from each participant in writing. The participants were specifically informed that they were free to refuse to participate in the study or withdraw at any moment during the study. (Appendix 1a&1b)

5.11 Null hypothesis

Participants, who will perceive to have good and satisfied with their dental appearance, will not be diagnosed clinically to have poor dental appearance.

6 RESULTS:-

6.1 Social demographic factors

A total of 492 (response rate 82.7%) students age range 18 – 57 years (mean 22.9, sd = 3.9) were involved in this study. Greater proportion of participants 85.6% (421) were in age group 18 – 25 years (Table 3). By gender, male students contributed 68% with male to female ratio of 2.1:1.

Medicine contributed a greater proportion of participants (52.6%) and the school of dentistry the least (5.5%).

Table 3 Distribution of participants by sex age, schools, perception and satisfaction with dental appearance and Oral Impact on Daily Performances. Percentage in parentheses.

Variable	**N**	**Sex**			
Age (in years)		Male	Female	Chi-square	*p*-value
18-25	421 (85.6)	292 (69.4)	129 (30.6)		
>25	71 (14.4)	42 (59.2)	29 (40.8)	2.901	0.088
School					
Medicine	259 (52.6)	184 (71.0)	75 (29.0)		
Dentistry	27 (5.5)	20 (74.1)	7 (25.9)		
Pharmacy	73 (14.8)	54 (74.0)	19 (26.0)		
Public Health	73 (14.8)	37 (61.7)	23 (38.3)		
Allied Health Sciences	60 (12.2)	39 (53.4)	34 (46.6)	10.966	0.027*
Subjective perception					
Poor	151 (30.7)	94 (28.1)	57 (36.1)		
good	341 (69.3)	240 (71.9)	101 (63.9)	3.173	0.075
Objective perception (Clinically)					
Poor	333 (67.7)	227 (68.0)	106 (67.1)		
Good	159 (32.3)	107 (32.0)	52 (32.9)	0.038	0.846
Satisfaction					
Unsatisfied	106 (21.5)	61 (18.3)	45 (28.5)		
Satisfied	386 (78.5)	273 (81.7)	113 (71.5)	6.625	0.010*
OIDP					
No impact	194 (39.4)	143 (42.4)	53 (33.3)		
At least one impact	298 (60.6)	194 (57.6)	106 (66.7)	3.743	0.050*

* *P-value <0.05*

6.2 Perception with dental appearance

Generally 30.7% of participants perceived to have poor dental appearance

Table 4 gives the distribution of participants according to perception of dental appearance by age, sex and school. A larger proportion of participants (39.4%) from the older age group (>21 yrs) perceived to have poor dental appearance. When sex was considered, more females (36.1%) than male participants (28.1%) perceived to have poor dental appearance. The highest proportion of participants who perceived poor dental appearance came from the school of Medicine. The differences observed in perceptions of dental appearance were, however, not statistical significant (Table 4)

Table 4 Perceived dental appearance by age, sex and schools. Percentages in parenthesis

Variable	Perception			
	Good	Poor	Chi-square	*p*-value
Age				
18 - 25	298 (70.8)	123 (29.2)		
>25	43 (60.6)	28 (39.4)	2.983	0.084
Sex				
Male	240 (71.9)	94 (28.1)		
Female	101 (63.9)	57 (36.1)	3.173	0.075
School				
Medicine	169 (65.3)	90 (34.7)		
Dentistry	20 (74.1)	7 (25.9)		
Pharmacy	59 (80.8)	14 (19.2)		
Public health	40 (66.7)	20 (33.3)		
Allied health sciences	53 (72.6)	20 (27.4)	7.411	0.116

6.3 Satisfaction with dental appearance

Generally, 21.5% of participants were not satisfied with their dental appearance.

Table 5 gives the distribution of participants according to satisfaction with dental appearance by age, sex, and school. According to age and school, the differences were not statistically significant. However, by sex more females (28.5%) than males (18.3%) were dissatisfied with their dental appearance, the difference being statistically significant (p= 0.01).

Table 5 Satisfaction with dental appearance by age, sex and schools. Percentages in parenthesis

Variable	Satisfaction with dental appearance			
	Satisfied	Unsatisfied	Chi-square	*p*-value
Age:				
18 - 25	331 (78.6)	90 (21.4)		
> 25	55 (77.5)	16 (22.5)	0.048	0.826
Sex				
Male	273 (81.7)	61 (18.3)		
Female	113 (71.5)	45 (28.5)	6.625	0.010*
School				
Medicine	195 (75.3)	64 (24.7)		
Dentistry	23 (85.2)	4 (14.8)		
Pharmacy	61 (83.6)	12 (16.4)		
Public health	45 (75.0)	15 (25.0)		
Allied health sciences	62 (84.9)	15 (25.0)	5.620	0.229

*P- value <0.05

6.4 Clinically determined dental appearance

Generally clinical examination revealed that 67.7% of participants had at least one clinical problem (poor dental appearance).

Table 6 shows clinically determined dental appearance according to age, sex and school. There were no statistically significant differences in proportion of participants diagnosed to have poor dental appearance in respect to age or sex. As for schools, a greater proportion of participants in the school of pharmacy were diagnosed to have poor dental appearance. The difference in clinically determined dental appearances between schools was statistically significant (p- 0.046).

Table 6 Clinically determine dental appearance by age, sex and school. Percentages in parenthesis

Variable	Dental appearance			
	Good	Poor	Chi-square	*p*-value
Age				
18 - 25	135 (32.1)	286 (67.9)		
> 25	24 (33.8)	47 (66.2)	0.084	0.772
Sex				
Male	107(32.0)	227(68.0)		
Female	52 (32.9)	106 (67.1)	0.038	0.846
School				
Medicine	92 (35.5)	167 (64.5)		
Dentistry	8 (29.6)	19 (70.4)		
Pharmacy	13 (17.8)	60 (82.2)		
Public health	18 (30.0)	42 (70.0)		
Allied health sciences	28 (38.4)	45 (61.6)	9.695	0.046*

* *p*- value <0.05

Factors affecting dental appearance and degree of their contribution

On clinical grounds, conditions determining dental appearance as assessed clinically were identified and degree of their contribution assessed (Fig 3). Discoloration was the major determinant contributing 39.4%, to the poor dental appearance followed by tooth malformation (32.3%). The least contributor to the poor appearance was missing teeth in the anterior quadrants (3.7%).

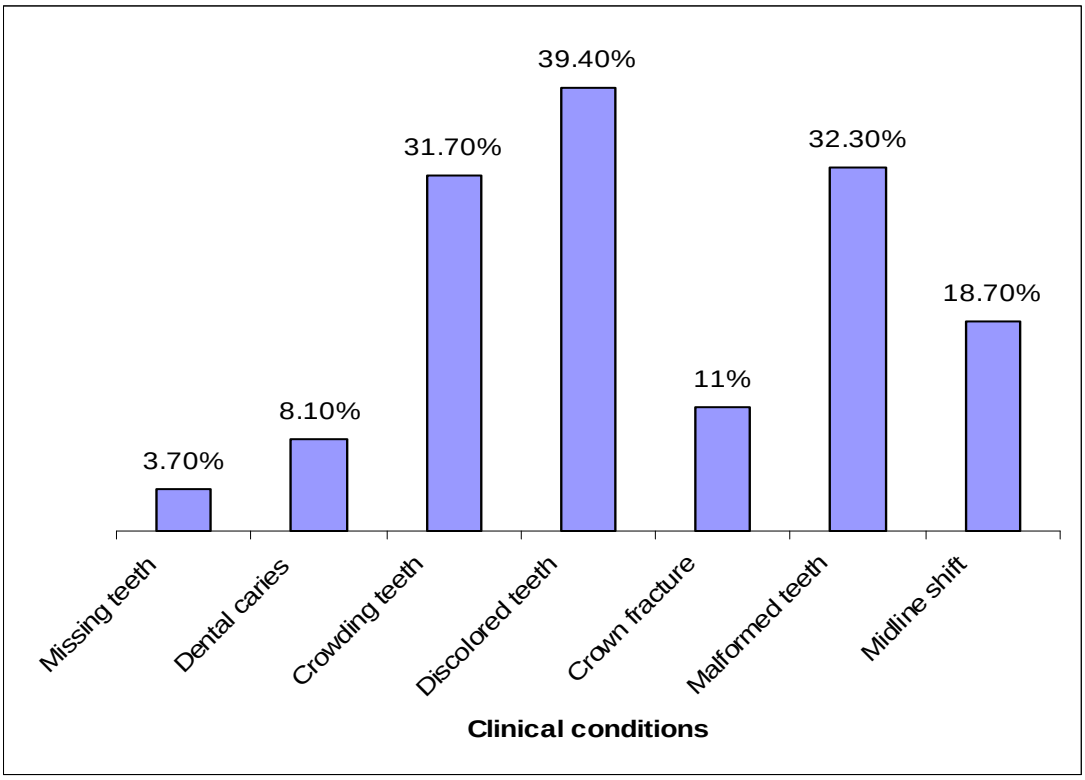

Figure 3 Percent contribution of clinical conditions to the clinically determined dental appearance

6.5 OIDP oral impact on daily performances

6.5.1 Prevalence of OIDP

Generally the prevalence of OIDP was 60.6%

The prevalence of OIDP by age, sex and school is shown in table 7. There were no statistically significant differences in OIDP by age groups. A greater proportion of females (66.7%) had oral impact on daily performance. Of the five schools, public health and medicine were affected by at least one factor determinant of OIDP the most (65.0% and 64.2%, respectively) with dentistry the least. The differences in OIDP prevalence between the schools were statistical significance (p=0.017).

Table 7 Prevalence of Oral Impact on Daily Performances by age, sex and schools. Percentages in parenthesis

Variable	OIDP			
	No impact	At least one impact	Chi square	*p*-value
Age				
18 - 25	167 (39.5)	256 (60.5)		
> 25	29 (39.7)	44 (60.3)	0.002	0.968
Sex				
Male	143 (42.4)	194 (57.6)		
Female	53 (33.3)	106 (66.7)	3.743	0.050*
School				
Medicine	93 (35.8)	167 (64.2)		
Dentistry	19 (67.9)	9 (32.1)		
Pharmacy	31 (42.5)	42 (57.5)		
Public health	21 (35.0)	39 (65.0)		
Allied health sciences	32 (42.7)	43 (57.3)	12.026	0.017*

* *p*-value <0.05

6.5.2 Most affected performances and severity

Generally, for participant observed to have impact on daily performance, the most reported frequency was once or twice a month and the least reported was once or twice a week in all eight OIDP performances. Frequency of the eight OIDP performances and intensity of their impact on participants is shown in table 8. The performances most affected were eating (46.1%) and cleaning (40.0%) (Fig. 3). Effects on sleeping, emotion, work, smiling and socialization ranged from 21-14% in descending order with the least affected being speaking (11.4%). In relation to severity of the impacts, it is interesting to note that smiling performances had the highest proportion of individuals with “very severe” and “severe” impact.

Table 8 Frequency of the Eight, Oral Impact on Daily Performances and intensity of their impact on participants

	Overall OIDP	Eating	Speaking	Cleaning	Sleeping	Smiling	Emotion	Work	Socialization
%	60.6	46.1	11.4	40.0	21.7	16.9	19.9	18.7	14.6
Intensity of impact (%)									
not severe at all		18.0	21.4	21.7	11.2	16.9	8.1	9.8	13.9
less severe		56.1	58.9	44.9	54.2	48.2	62.6	62.0	54.2
Severe		21.1	17.9	26.8	30.8	25.3	24.2	20.7	26.4
very severe		4.8	1.8	6.6	3.7	9.6	5.1	7.6	5.6

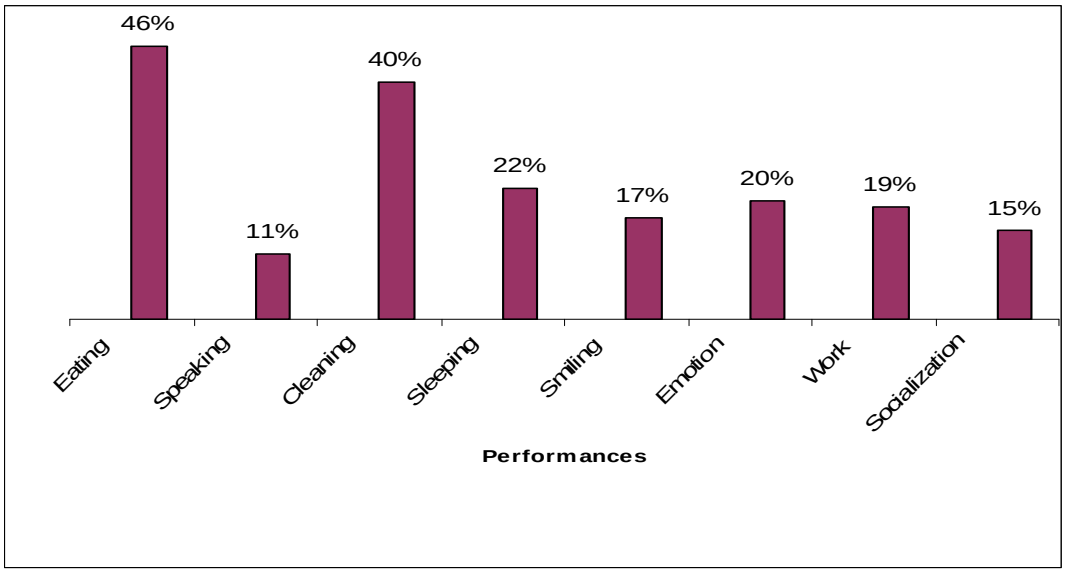

Figure 3 Proportion distribution of the 8 performances of Oral Impact on Daily Performances among the participants

The study revealed that 2% of participants suffered oral impact in all 8 performances and 39% never suffered oral impact in any of the 8 performances (Fig. 4).

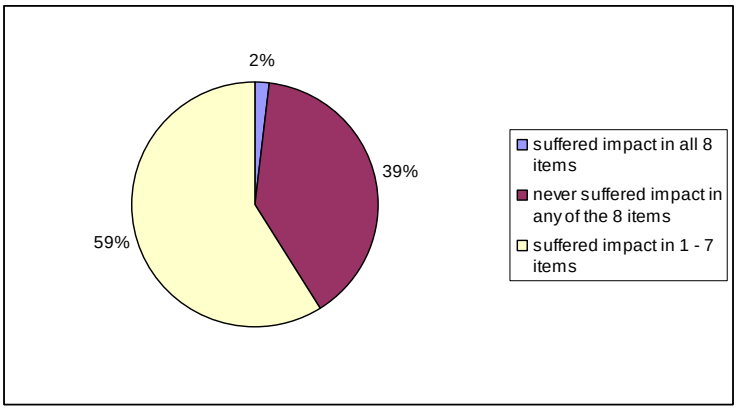

Figure 4 Proportion of participant who suffered oral impacts by number of performances suffered impact.

6.5.3 Factors associated with OIDP-multivariate analysis

Those who reported OIDP were more likely to be females (OR - 1.5, CI: 1 – 2) those who perceived to have poor dental appearance (OR: 2.398, CI: 1.6 - 3.7), those who were not

satisfied with their dental appearance (OR: 3.1, CI: 1.9 - 5.2) and those who objectively perceived to have poor dental appearance (OR: 1.7, CI: 1.1 - 2.4)

Specific clinical indicators when analyzed revealed that those who had dental caries were 6 times more likely to report an impact on their daily performances (OR: 6.5, CI: 2.3 – 18.6) (Table 9)

Table 9 Odds ratios (ORs) and Confidence limits (CL) for having any OIDP (total >0) according to social demographic data, perceived, clinically determined and satisfaction with dental appearance. Percentages in parenthesis

Variables	N	OR	95% CI
Age			
18 - 25	256 (60.5)	1	
> 25	44 (60.3)	0.990	0.596-1.644
Sex			
Male	194 (57.6)	1	
Female	106 (66.7) *	**1.474**	**0.994 - 2.187**
School			
Medicine	167 (64.2)	1	
Dentistry	9 (32.1) *	0.264	0.115 - 0.607
Pharmacy	42 (57.5)	0.754	0.445 - 1.280
Public health	39 (65.0)	0.748	0.443 - 1.263
Allied health sciences	43 (57.3)	1.034	0.574 - 1.862
Perception			
good	188 (54.5)	1	
poor	112 (74.2) *	**2.398**	**1.573 - 3.656**
Satisfaction			
satisfied	215 (55.3)	1	
Unsatisfied	85 (79.4) *	**3.127**	**1.878 - 5.205**
Objective perception			
good	83 (52.2)	1	
poor	215 (64.6) **	**1.668**	**1.137 - 2.449**
Specific clinical indicators			
Dental caries			
Not present	263 (58.0)	**1**	
Present	36 (90.0)***	**6.527**	**2.285 – 18.646**
Missing teeth			
Not present	283 (59.7)	**1**	
Present	15 (83.3)*	**3.375**	**0.964 – 11.815**
Crown Fracture			
Not present	254 (58.0)	**1**	
Present	44 (81.5)**	**0.314**	**0.154 – 0.640**

* *p*-value <0.05

** p-value <0.01

7 DISCUSSION

Discussion of methodological issues

A cross sectional census study of all 1st and 2nd year MUHAS undergraduate students was done. When a target population is small, the researcher can include the entire population in the study (census study). One of the advantages of census is that it ensures good representation of the target population.

The cross sectional study design and MUHAS (the study area representing high education institutions in Tanzania) were chosen because of easy accessibility of target group, shortage of fund, manpower and time.

The sample size of this study represent 1st year and 2nd year undergraduate students at MUHAS, and it could be a true representative of non clinical undergraduate students attending different medical institutions in Tanzania. However, since higher educational institutions commonly vary in atmosphere (nature and social aspect) and in the type of students they attract, it is questionable whether the subjects investigated generally, it may not necessarily represent students attending higher education institutions (medical and non-medical institutions) in Tanzania. According to data from MUHAS annual report 2010/2011 the male to female ratio is higher (2.6:1), similarly, the male to female ratio of the study participants coincided fairly well with the 2.1:1 ratio of the eligible study population in this study. The response rate of 82.7% has been found to be good (Locker, 2000). Furthermore, the non-respondents were followed up in registry and were found to have a male to female ratio of 2.2:1 and mean age 23 years, indicating that the non-respondents among gender sub-groups and age were broadly similar. The use of self-administered questionnaire is known to have limitations as participants may have difficulties in understanding and responding to some questions. Likewise participants may respond in a way that will please the researcher or leaving several questions unfilled. However, the questionnaire was pre-tested in a pilot study and polished for clarity and proved to be understandable and reader friendly. Measures of oral health perception constitute an important component to information about health status, as they are personal judgments and evaluation of one's own health status, integrating different components, such as diseases, functions, and feelings (Stewart, 1998).

Oral Impact on Daily performance index – has been tested and proven to be applicable among University students Dar es Salaam (Masalu and Astrom, 2003) and China (Xiao et al., 2007).

In clinical examination (professional/objective assessment of dental appearance), index for assessing dental appearance/aesthesis had to be developed by extracting components from DAI by Jenny and Cons (1988) and some components from Evaluation criteria for tooth discoloration level (Alkhatib et al., 2004, Dean, 1993, Schmidseder, 1988) to suit objectives of this study. A test is reliable to the extent that repeated measurements made under constant conditions will give the same result and is thus considered with the degree of consistency or accuracy with which it measures an attribute (Moser and Kalton, 1971) Measurement error plays a key role in reducing reliability; hence a reliable instrument minimizes the error component and maximizes the true component of a score. In this study, several measures were taken to ensure data quality. They included a pilot study done before the actual study, and repeated checks during the data entry process. In this study internal consistency reliability was assessed using Cronbach's alpha (Cronbach, 1951) and the OIDP inventory gave the cronbach's alpha of 0.825 among the studied participants.

Discussion of results

Social demographic

The mean age of the studied population was 22.9 years, sd = 3.9, similar to findings in other universities and colleges in Tanzania (Masalu and Astrom, 2002).

Male to female ratio among this population was 2.1:1 which is fairly similar to that reported in other universities in east Africa

Perception with dental appearance

About subjective perception with dental appearance, greater proportions of participants perceived to have good dental appearance (69.3%). Majority of the young adults perceived to have good dental appearance compared to their counter parts, and these findings were consistent with study in Turkey on perception of personal dental appearance among university students (Hamamci et al., 2009). Furthermore in this study

there was no statistically significant different between male and female on perception with dental appearance. This finding was consistent with study in Florida (Meng et al., 2007). Contrary to these findings it was reported that females were more sensitive concerning their dental appearance and were more dissatisfied with their dental appearance in study on young adults in Nigeria (Onyeaso and Sanu, 2005). Also inconsistent with study in United Kingdom on age and perception with dental appearance and tooth color (Alkhatib et al., 2005) which reported females to be more sensitive on dental appearance.

Satisfaction with dental appearance

In this study, majority of the participants were satisfied with their dental appearance (78.5%). This findings is similar to the study in young adults in Israel on patient satisfaction with dental esthetics where 62.3% of participants were satisfied with their dental esthetics (Samorodnitzky-Naveh et al., 2007). And contrary to study in Turkey on Dental esthetic satisfaction, received and desired dental treatments for improvement of esthetics (Akarslan et al., 2009) Greater proportion of female were dissatisfied by their dental appearance compared to male group, and the difference was statistically significant different ($P < 0.05$). This was in line with a study by Akarslan et al., (2009). There was no difference on satisfaction with dental appearance between young and old age groups. The findings was in contrast to the study by Samorodnitzky-Naveh et al., (2007) Akarslan et al., (2009) whereby young adults were dissatisfied by their dental appearance compared to their counterparts.

Clinically determined dental aesthesis

Two third of the participants were professionally/objectively determined to have at least one condition that gives them a poor dental appearance. These findings are similar to those reported by Hamamci et al., (2009) on their study among Turkish University students using a Dental Aesthetic Index (DAI) (66.5%). Conversely, these findings are different from those reported by Shue-Te Yeh et al., (2000) a low prevalence.

These differences might reflect the type of health care services provide in these different communities. Also the use of dissimilar indices between the studies might bring these

reported differences. The finding that, a greater proportion of participants in the school of pharmacy were diagnosed to have poor dental appearance, calls for further investigations in order to ascertain the reason.

OIDP oral impact on daily performances

Prevalence of OIDP

The prevalence of oral impact on daily performance was very high, about 60% of individuals had at least one performance affected. This finding was in line with study among university students in Tanzania by Masalu and Astrom (2002) and was inconsistent with results from a study among elderly in Tanzania by Kida et al., (2006). On the contrary the prevalence of OIDP among the studied population was much lower than that reported in western populations with high dental disease levels (Locker and Liddell, 1991) and in a low Thai population (Adulyanon et al., 1996). This might probably be due to high and low disease levels among the western population and Thai population respectively

Most affected performances and severity

Among the university students included in this study, the most affected performance reported was Eating (46%) followed by cleaning teeth (40%). These results, shows a similar trend to what was reported in a study among the university student in Dar es Salaam whereby eating performances (40%) was followed up by cleaning teeth performances (17%) (Masalu and Astrom, 2002). Studies done in Tanzania revealed that the most frequently reported reasons for impact on eating and cleaning teeth were tooth ache and loose teeth, respectively. In this study reasons for reported impacts was not assessed, though the prevalence of dental caries (8%) on anterior teeth might be suggestive of eating performance being the most affected impact.

Consistent with the findings of (Masalu and Astrom, 2002), only 17% of students reported to be affected on smiling performance by oral problems.

Despite the high prevalence of OIDP among the university students, this impact was generally reported to be less severe

Factors associated with OIDP (Multivariate analysis)

Those who reported OIDP were more likely to be females (OR - 1.5, CI: 1 – 2) those who perceived to have poor dental appearance (OR: 2.4, CI: 1.6 - 3.7), those who were not satisfied with their dental appearance (OR: 3.1, CI: 1.9 - 5.2) and those who objectively perceived to have poor dental appearance (OR: 1.7, CI: 1.1 - 2.4)

Specific clinical indicators when analyzed revealed that those who had dental caries were about 6 times more likely to report an impact on their daily performances (OR: 6.5, CI: 2.23 – 18.6).

Comparison of objectively and subjectively determined dental appearance

Despite the fact that the University students are considered to be affluent urban people they could not subjectively report to have aesthetics problems and were satisfied with dental appearance. The problem is there but the students might not be aware of it. Studies in Tanzania show that the main reason for dental attendances is pain. In this study, the clinically determined oral condition/problems were mostly discoloration, malformation and crowding of teeth, conditions which do not necessarily cause pain. This might be the reason for the high satisfaction with dental appearance reported in this study. Hence, raising awareness on these aspects of oral problems among these students is imperative. (Poplinger, 2010)

8 CONCLUSION

Despite the high prevalence of objectively assessed poor dental appearance a high percentage of the university students perceived to have good dental appearance and were also satisfied with their dental appearance. The impacts of oral conditions to their dental appearance were substantial. There is, therefore, a need to raise the students' awareness on their poor dental esthetic status so that they may be positively motivated to seek necessary intervention

9 RECOMMENDATIONS

There is a need to raise the students' awareness on oral health issues such as what has been researched on in this study i.e. dental aesthesis, through oral health education and promotion. This ought to improve on the students' perception of the problem, which should translate into action on need for care

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11 APENDIX

11.1 Appendix 1a: Informed Consent Form (English version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS, MUHAS
INFORMED CONSENT FORM

ID-NO. ☐☐

Consent to Participate in a Study

Greetings! My name is Dr Simon Tumaini ; I am working on this research with the objective of assessing the perception and satisfaction with dental appearance and its effect on the quality of life among students at Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam.

Purpose of the study

The study is conducted in partial fulfillment of the requirements for the degree of Master of Dentistry in Restorative of MUHAS. This study is aiming to determine the perception and satisfaction with dental appearance and its effect on the quality of life among students at Muhimbili University of Health and Allied Sciences. You are being asked to participate in this study because you have particular knowledge and experiences that may be important to the study. Kindly please be honest and true for betterment of the results that could lead to better intervention and recommendations for future.

What Participation Involves

If you agree to join the study, you will first be interviewed in order to answer a series of questions in the questionnaire prepared for the study.

Secondly a dentist will perform a brief examination of your mouth and the examiner will provide you with a summary of the findings and offer advice.

Confidentiality

I assure you that all the information collected from you will be kept confidential. Your name will not be written on any questionnaire or in any report/documents that might let someone identify you. Your name will not be linked with the research information in any way. All information collected on forms will be entered into computers with only the study identification number. Confidentiality will be observed and unauthorized persons will have no access to the data collected.

Risks

We do not expect that any harm will happen to you because of participating in this study. Some questions could potentially make you feel uncomfortable. You may refuse to answer any particular question and may stop the interview at anytime.

Right to Withdraw and Alternatives

Taking part in this study is completely voluntary. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve penalty.

Benefits

The information you provide will help to determine the perceptions and satisfaction with dental appearance and its effect on the quality of life.

Who to Contact

If you ever have questions about this study, you should contact the Principal Investigator, Dr Simon Tumaini. of Muhimbili University Of Health and Allied Sciences, P. O. Box 65001, Dar es Salaam. (Tel 0713503879)

If you ever have questions about your rights as a participant, you may call Prof. M. Aboud Chairperson of the Senate Research and Publications Committee, P. O. Box 65001, Telephone : 255-22-2152489 Dar es Salaam and Dr. I. Kida who is the Supervisor (Tel 075426990)

Signature:

Do you agree?

Participant agrees …… Participant does NOT agree …….

I ……. have read the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of participant ……

Signature of Research Assistant ……..

Date of signed consent …….

11.2 Appendix 1b: Informed Consent Form (Swahili version)

CHUO KIKUU CHA SAYANSI ZA AFYA MUHIMBILI

KURUGENZI YA TAFITI NA UCHAPISHAJI

FOMU YA RIDHAA

Namba ya utambulisho ☐☐

Ridhaa ya kushiriki kwenye utafiti

Hujambo! Ninaitwa Dr Simon Tumaini, nashughulika kwenye utafiti huu wenye lengo la kutathmini hisia na kuridhika kwa watu kuhusu mwonekano wa meno yao na matokeo yake katika ubora wa maisha kati ya wanafunzi wa Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili.

Utafiti huu unafanyika katika kutimiza sehemu ya matakwa ya shahada ya uzamili ya matibabu ya kurekebisha na kuziba meno ya Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili. Utafiti unalenga kuchunguza na kutathmini hisia na kuridhika kwa watu kuhusu mwonekano wa meno yao na matokeo yake katika ubora wa maisha kati ya wanafunzi wa Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili.

Unaombwa kushiriki katika utafiti huu kutokana na upeo na ufahamu ulio nao ambavyo ni muhimu kwa utafiti huu. Tafadhali kuwa mkweli na muwazi kwa vile matokeo ya utafiti huu yanaweza yakatoa maamuzi na mapendekezo ya baadaye.

Jinsi ya kushiriki

Ukikubali kushiriki katika utafiti huu, kwanza utasailiwa ili kuweza kujibu maswali toka kwenye dodoso lililoandaliwa kwa ajili ya utafiti huu.

Pili mganga wa meno atafanya uchunguzi mfupi wa kinywa chako kisha atakufahamisha kuhusu afya yako ya kinywa na kukupatia ushauri.

Usiri

Taarifa zote zitakazokusanywa kupitia dodoso zitaingizwa kwenye ngamizi kwa kutumia namba za utambulisho. Kutakuwa na usiri na hakuna mtu yeyote asiyehusika atakayepata taarifa zilizokusanywa.

Hatari

Hatutegemei madhara yoyote kukutokea kwa kushiriki kwako kwenye utafiti huu.

Faida

Kama utakubali kushiriki kwenye utafiti huu taarifa utakazotoa zitatuwezesha kutupa mwanga zaidi juu ya hisia na kuridhika kwa watu kuhusu mwonekano wa meno yao na matokeo yake katika ubora wa maisha yao.

Athari na kukitokea madhara

Hutegemewi kupata madhara yoyote kutokana na ushiriki wako katika utafiti huu. Baadhi ya maswali yanaweza yasikupendeze, unaweza kukataa kujibu swali lolote la aina hiyo na unaweza kuamua kusimamisha udahili wakati wowote.

Uhuru wa kushiriki na haki ya kujitoa

Kushiriki kwenye utafiti huu ni hiari. Unaweza kujitoa kwenye utafiti huu wakati wowote hata kama umeshajaza fomu ya ridhaa ya kushiriki utafiti huu. Kukataa kushiriki au kujitoa kwenye utafiti huu hakutaambatana na masharti yoyote.

Nani wa kuwasiliana naye

Kama una maswali kuhusiana na utafiti huu, wasiliana na Mtafiti mkuu wa utafiti huu, Dr Simon Tumaini. wa Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili, S. L. P. 65001, Dar es Salaam. (Simu 0713503879)

Kama una swali kuhusu stahili zako kama mshiriki unaweza kumpigia simu Prof. M. Aboud, Mwenyekiti wa kamati ya Utafiti na Uchapishaji, S.L.P 65001, Simu: 255 22 2152489 Dar es Salaam au msimamizi wa utafiti huu Dr. I. Kida (Simu 0754269990)

Sahihi:

Je umekubali?

Mshiriki amekubali ……..... Mshiriki hajakubali …….....

Mimi ..... nimesoma maelezo ya fomu hii.

Maswali yangu yamejibiwa.Nakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki……

Sahihi ya mtafiti msaidizi……

Tarehe ya kutia sahihi ya idhini ya kushiriki……

11.3 Appendix 2a: questionnaire (English version)

STRUCTURED PERSONAL INTERVIEW FOR STUDENTS AT MUHAS.

Questionaire: "Dental Esthetics: perception and satisfaction with dental appearance and its effect on quality of life among students at MUHAS in Dar es salaam"

Date of interview [……]

A. Identification details

1. Identification number …….
2. Age *(give your age at last birth-date).....*
3. Sex of informant 1=Male 2=Female [ ]
4. Religion
   1. Christian [ ]
   2. Muslim [ ]
   3. Others (mention) [ ]……..
5. Place of origin *District* ……. Region……..
6. Tribe …….
7. Course/degree programme……..
8. Year of study …….

B. Answer the following questions about your **<u>perception</u>** of the appearance of your anterior teeth according to the level of acceptance ranging from **5= Highest level, 1= lowest level**

How do you feel about:-

1. *General appearance of your anterior teeth.*
   1. = *Not good at all* [ ]
   2. = *Not good* [ ]
   3. = *Satisfactory* [ ]
   4. = *Good* [ ]
   5. = *Very good* [ ]
2. *Colour of your anterior teeth*
   1. = *Not good at all* [ ]
   2. = *Not good* [ ]
   3. = *Satisfactory* [ ]
   4. = *Good* [ ]
   5. = *Very good* [ ]
3. *The arrangement of your anterior teeth*
   1. = *Not good at all* [ ]
   2. = *Not good* [ ]
   3. = *Satisfactory* [ ]
   4. = *Good* [ ]
   5. = *Very good* [ ]
4. *The shape of your anterior teeth*
   1. = *Not good at all* [ ]
   2. = *Not good* [ ]
   3. = *Satisfactory* [ ]

4. = *Good* [ ]
5. = *Very good* [ ]

C. Answer the following questions about your **satisfaction** with the appearance of your anterior teeth according to the level of satisfaction ranging from **5= highest level, 1= lowest level**:

Are you satisfied with:-

1. *General appearance of your anterior teeth.*
    1. = *very unsatisfied* [ ]
    2. = *unsatisfied* [ ]
    3. = *neutral* [ ]
    4. = *satisfied* [ ]
    5. = *Very satisfied* [ ]

2. *Colour of your anterior teeth*
    1. = *very unsatisfied* [ ]
    2. = *unsatisfied* [ ]
    3. = *neutral* [ ]
    4. = *satisfied* [ ]
    5. = *Very satisfied* [ ]
3. *The arrangement of your anterior teeth*
    1. = *Very unsatisfied* [ ]
    2. = *unsatisfied* [ ]
    3. = *neutral* [ ]
    4. = *satisfied* [ ]
    5. = *very satisfied* [ ]
4. *The shape of your anterior teeth*
    1. = *Very unsatisfied* [ ]
    2. = *unsatisfied* [ ]
    3. = *neutral* [ ]
    4. = *satisfied* [ ]
    5. = *very satisfied* [ ]

D. Please respond by putting [√] in **YES** or **NO** for the following questions

	YES	NO
1. Do you think that your anterior teeth are crowded?	[ ]	[ ]
2. Do you think your anterior teeth are protruding?	[ ]	[ ]
3. Do you think you have non esthetic restoration on your anterior teeth?	[ ]	[ ]
4. Do you hide your teeth while you are smiling?	[ ]	[ ]

E. The following questions are about the effect of dental appearance on the quality of life *(Please tick to* **"YES"** *or* **"NO"** *for each statement)*
Think back on the previous 6, months have you experience the following?

Condition	Yes	No
1. Pain		
2. Missing teeth		
3. Caries teeth		
4. Crowding		
5. Discoloration		
6. Crown fracture		
7. Malformed teeth		
8. Others (mention….)		

F. ***Please answer the following questions irrespective of the answers to the above problems (tick only one category)***

1. During the past six months how often have problem with your teeth (for example such as mentioned above or others) caused you difficulty with **eating or enjoying food?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Everyday/ nearly every day

If your answer for this question above is ***never*** *please go to question number 3*

2. How severe was your difficulties with **eating or enjoying food**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

3**.** During the past six months how often have problems with your mouth or teeth caused you any difficulty with **speaking or pronouncing words?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

If your answer for this question above is ***never*** *please go to question number 5*

4. How severe was your difficult in **speaking or pronouncing words**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

5**.** During the past six months how often have problems with your mouth or teeth caused you any difficulty with **cleaning teeth?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

*If your answer for this question above is **never** please go to question number 7*

6. How severe was your difficult with **cleaning teeth**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

7. During the past six months how often have problems with your mouth or teeth caused you any difficulty with **sleeping or relaxing?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

*If your answer for this question above is **never** please go to question number 9*

8. How severe was your difficult with **sleeping or relaxing**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

9. During the past six months how often have problems with your mouth or teeth caused you any difficulty with **smiling or laughing?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

*If your answer for this question above is **never** please go to question number 11*

10. How severe was your difficulties with **smiling or laughing**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

11. During the past six months how often have problems with your mouth or teeth caused you any difficulty with **maintaining usual emotional stability?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

*If your answer for this question above is **never** please go to question number 13*

12. How severe was your difficulties with **maintaining usual emotional stability**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

13. During the past six months how often have problems with your mouth or teeth caused you any difficulty with **performing your daily activities?**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

*If your answer for this question above is **never** please go to question number 15*

14. How severe was your difficulties in **performing your daily activities**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

15. During the past six months how often have problems with your mouth or teeth caused you any difficulty with **having fun with other people**

1 [ ] Never
2 [ ] Once or twice a month
3 [ ] Once or twice a week
4 [ ] Every day/ nearly every day

*If your answer for this question above is **never** please end up here.*

16. How severe was your difficulties with **having fun with other people?**

1 [ ] Not severe at all
2 [ ] Less severe
3 [ ] Severe
4 [ ] Very severe

THANK YOU

11.4 Appendix 2b: questionnaire (Swahili version)

USAILI BINAFSI KWA WANAFUNZI WA CHUO KIKUU CHA AFYA NA SAYANSI YA TIBA MUHIMBILI

Dodoso: "Hisia na kuridhika na muonekano wa meno na matokeo yake katika ubora wa maisha ya wanafunzi wa Chuo Kikuu cha Afya na sayansi ya Tiba Muhimbili"

Tarehe ya usahil *siku/mwezi/mwaka* [……/……/……..]

A. Maelezo ya utambulisho

1. Namba ya utambulisho ……..
2. Umri wa mtafitiwa ……miaka
3. Jinsi 1 [ ] me 2 [ ] ke
4. Dini yako
   a. Mkristo [ ]
   b. Muislamu [ ]
   c. Nyingineyo (taja) [ ]……
5. Mahali ulipozaliwa *wilaya* …… Mkoa……..
6. Kabila lako …….
7. Kozi ya mtafitiwa …….
8. Mwaka wa masomo wa mtafitiwa …….

B. Jibu maswali yafuatayo kuhusu hisia yako kwa mwonekano wa meno yako ya mbele kulingana na kiwango cha kukubaliana 5= kiwango cha juu kabisa 1 = kiwango cha chini kabisa.

1. Je unajisikiaje kuhusu muonekano wa meno yako ya mbele kwa ujumla.
   1. = Siyo vizuri kabisa [ ]
   2. = Siyo vizuri [ ]
   3. = Kawaida [ ]
   4. = Vizuri [ ]
   5. = Vizuri sana [ ]

2. Je unajisikiaje kuhusu muonekano wa rangi ya meno yako ya mbele
    1. = Siyo vizuri kabisa [ ]
    2. = Siyo vizuri [ ]
    3. = Kawaida [ ]
    4. = Vizuri [ ]
    5. = Vizuri sana [ ]

3. Je unajisikiaje kuhusu mpangilio wa meno yako ya mbele
    1. = Siyo vizuri kabisa [ ]
    2. = Siyo vizuri [ ]
    3. = Kawaida [ ]
    4. = Vizuri [ ]
    5. = Vizuri sana [ ]

4. Je unajisikiaje kuhusu maumbile(shape) ya meno yako ya mbele
    1. = Siyo vizuri kabisa [ ]
    2. = Siyo vizuri [ ]
    3. = Kawaida [ ]
    4. = Vizuri [ ]
    5. = Vizuri sana [ ]

C. Jibu maswali yafuatayo kuhusu kuridhishwa kwako kwa mwonekano wa meno yako ya mbele kulingana na kiwango cha kurizika 5= kiwango cha juu kabisa1 = kiwango cha chini kabisa

1. Je ni kwa kiasi gani unaridhika na muonekano wa meno yako ya mbele kwa ujumla.
    1. = Siridhiki kabisa [ ]
    2. = Siridhiki [ ]
    3. = Katikati [ ]
    4. = Naridhika [ ]
    5. = Naridhika sana [ ]

2. Je ni kwa kiasi gani unaridhika na muonekano wa rangi ya meno yako ya mbele
    1. = Siridhiki kabisa [ ]
    2. = Siridhiki [ ]
    3. = Katikati [ ]
    4. = Naridhika [ ]
    5. = Naridhika sana [ ]
3. Je ni kwa kiasi gani unaridhika na mpangilio wa meno yako ya mbele
    1. = Siridhiki kabisa [ ]
    2. = Siridhiki [ ]
    3. = Katikati [ ]
    4. = Naridhika [ ]
    5. = Naridhika sana [ ]
4. Je ni kwa kiasi gani unaridhika na maumbile(shape) ya meno yako ya mbele
    1. = Siridhiki kabisa [ ]
    2. = Siridhiki [ ]
    3. = Katikati [ ]
    4. = Naridhika [ ]
    5. = Naridhika sana [ ]

D. Tafadhali weka vema [√] katika kisanduku cha **NDIYO** au **HAPANA** katika maswali yafuatayo

	NDIYO	HAPANA
1. Je, unafikiri kuwa meno yako ya mbele yamepandana?	[ ]	[ ]
2. Je, unafikiri meno yako ya juu mbele yametokeza zaidi sana kuliko ya chini?	[ ]	[ ]
3. Je, unafikiri una meno ya mbele yaliyozibwa lakini hayapendezi?	[ ]	[ ]
4. Je, unaficha meno yako wakati unapocheka?	[ ]	[ ]

E) Yafuatayo ni maswali kuhusu matokeo ya mwonekano wa meno yako katika ubora wa maisha.

(tafadhali tia vema[√] *kwenye* **"NDIYO"** *au* **"HAPANA"** *kwa kila sentensi)*

1. Fikiria nyuma miezi sita iliyopita, umeshapata lolote kati ya haya yafuatayo

hali	NDIYO	HAPANA
1. Maumivu ya jino		
2. Pengo		
3. Ugonjwa wa kuoza meno		
4. Meno kupangana vibaya		
5. Matatizo ya rangi ya meno yako		
6. Kuvunjika kwa jino		
7. Jino lisilo na umbo zuri		
8. Mengineyo (Taja) …		

F. ***Tafadhali jibu maswali yafuatyo bila kujali majibu uliyotoa kwa maswali ya hapo juu (weka alama ya vema kwa jibu moja tu)***

1. Katika miezi sita iliyopita ni mara ngapi umekuwa na matatizo katika kinywa chako au meno

(kwa mfano kama yale yaliyotajwa hapo juu au mengine) yaliyokusababishia taabu wakati wa

kula au kutafuna chakula?

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku/ au karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 3

2. Tatizo lako ni kubwa kiasi gani **unapokula au kutafuna chakula?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

3. Katika miezi sita iliyopita ni mara ngapi umekuwa na matatizo katika kinywa chako au meno yaliyokusababishia taabu wakati wa **kuzungumza au kutamka maneno?**

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku / karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 5

4.Tatizo lako ni kubwa kiasi gani **unapozungumza au kutamka maneno?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

5 Katika miezi sita iliyopita ni mara ngapi umekuwa na matatizo katika kinywa chako au meno yaliyokusababishia taabu wakati wa **kusafisha meno yako?**

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku/ karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 7

6. Tatizo lako ni kubwa kiasi gani **unaposafisha meno?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

7. Katika miezi sita iliyopita ni mara ngapi matatizo katika kinywa chako au meno yalikusababishia taabu wakati wa **kulala au kupumzika?**

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4 [ ] Kila siku / karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 9

8. Tatizo lako ni kubwa kiasi gani **unapolala au kupumzika?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

9. Katika miezi sita iliyopita ni mara ngapi umekuwa na matatizo katika kinywa chako au meno yaliyokusababishia taabu katika **kutabasamu, kucheka, au kuonyesha meno bila kuona aibu?**

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku/ karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 11

10. Tatizo lako ni kubwa kiasi gani **unapotabasamu, kucheka au kuonyesha meno yako bila kuona aibu?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

11. Katika miezi sita iliyopita ni mara ngapi umekuwa na mataitizo katika kinywa chako au meno yaliyokusababishia taabu katika **kuendelea kuwa na hali ya kawaida ya mhemko bila ya kukereka?**

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku/ karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 13

12. Tatizo lako ni kubwa kiasi gani katika **kuendelea kuwa na hali ya kawaida ya mhemko bila kukereka**?

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

13. Katika miezi sita iliyopita ni mara ngapi umekuwa na matatizo katika kinywa chako au meno yaliyokusababishia taabu katika **kufanya kazi zako za kila siku**

1. [ ] Sijawahi kuwa na tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku/ karibu kila siku

Kama jibu lako kwa swali hili hapa juu ni <u>sijawahi kuwa na tatizo</u> tafadhali nenda swali la 15

14. Tatizo lako ni kubwa kiasi gani katika **kufanya kazi zako za kila siku?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

15. Katika miezi sita iliyopita ni mara ngapi umekuwa na matatizo katika kinywa chako au meno yaliyokusababishia taabu **kufurahia kukutana na watu?**

1. [ ] Sijawahi kupata tatizo
2. [ ] Mara moja au mbili kwa mwezi
3. [ ] Mara moja au mbili kwa wiki
4. [ ] Kila siku/ karibu kila siku

16. Tatizo lako ni kubwa kiasi gani katika **kufurahia na kukutana na watu wengine?**

1. [ ] Siyo kubwa kabisa
2. [ ] Siyo kubwa
3. [ ] Kubwa
4. [ ] Kubwa sana

MWISHO ASANTE SANA

11.5 Appendix 3: clinical examination forms

Date of interview [……]

A. Identification details

1. Identification number …….

3. Age (give your age at last birth-date).....

4. Sex of informant 1[ ] Male 2[ ] Female

Clinical examination will involve examination of anterior quadrants only.

(Anterior quadranst means right canine to left canine in upper and lower jaw)

B.EXAMINATION ELEMENTS AND THEIR SCORES

INDEX FOR ASSESSING DENTAL APPEARANCE/AESTHETIC

Clinical examination involved examination of anterior quadrant only.

(Anterior quadrant means right canine to left canine in upper and lower jaw)

1. Missing teeth (*absence of tooth in the anterior quadrant leaving a space*)

0 = no missing tooth

1 = at least one missing tooth

2 = more than one missing tooth

2. Dental caries (*brownish discoloration and cavitations on a tooth surface visible from labial palatal view)*

0 = no dental caries

1 = presence of dental caries less than 1mm involving one surface one tooth only

2 = presence of dental caries greater than 2mm involving multiple surfaces or multiple teeth

3. Crowding (*insufficient room for normal complement of adult teeth*)

    0 = no crowding

    1 = only one tooth involved and out of line not more than 2mm.

    2 = at least two teeth involved and or out of line more than 3mm

4. Discoloration (*brownish or blackish color not caused by caries visible on the tooth*)

    0 = no discoloration

    1 = discoloration present in only one tooth and less than 1mm

    2 = discoloration present in more than 2mm and or at least two teeth.

5. Crown fracture (*Part of crown missing not due to dental caries*)

    0 = no crown fracture

    1 = crown fracture present involving only one tooth not more less than 1mm

    2 = crown fracture present involving at least two teeth and more than 2mm

6. Malformed teeth (*teeth with abnormal shape and size*)

    0 = no malformed tooth

    1 = not more than 1 malformed tooth present

    2 = more than 2 malformed teeth present

7. Midline shift (*greater than 2mm deviation of the midline to the left or right side*)

    0 = no midline shift

    1 = midline shift present but not more than 3mm deviation

    2 = midline shift present more than 3mm deviation.

Chart for scoring

PARAMETER	SCORE 0, 1 or 2
1. Missing teeth	
2. Caries teeth	
3. Crowding	
4. Discoloration	
5. Crown fracture	
6. Malformed teeth	
7. Midline shift	