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GENDER, ELDERLY AND CHILDREN**

**THE FIFTH TANZANIA NATIONAL ORAL HEALTH
SURVEY REPORT**

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FOREWORD

Oral health is an integral part of general health and wellbeing. Structures of the oral cavity allow many functions to take place in the orofacial region including ability to speak, smile, smell, taste, feel, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain or discomfort.

National pathfinder surveys are conducted periodically to provide relevant data which is crucial for planning. From 1979 to date, Tanzania has conducted a total of four national surveys with the last one carried out in 2010. Since oral diseases vary with time and economic trends; as the year 2020 rolled in and Tanzania transitioned from low to lower-middle income country, it was necessary that another national oral health survey was conducted.

Data from previous national and small-scale surveys have enabled the central oral health unit of the Ministry of Health to prepare oral health national plans and policy guidelines for Tanzania. Hence, this 5th national oral health survey was conceived to elucidate the current oral health situation in Tanzania and allow for appropriate updates to the national oral health strategic plans and policy guidelines.

Data from this national oral health survey describes various oral diseases and conditions. These include dental caries, periodontal diseases, malocclusion, dental trauma, and dental fluorosis. The most prevalent oral diseases: namely dental caries and periodontal diseases, are linked to an individual's lifestyle. In this accord, the survey also provides information on pertinent oral health-related knowledge and behaviours which should be targeted in preventive dental programs. Oral diseases and conditions do not cause high death tolls; however, they have profound impacts on the quality of life. In this regard, the survey also provides information on oral health related quality of life which reflects the constant suffering that our people endure due to oral diseases and conditions.

The investigation tools used in the survey are those prescribed by the World Health Organization (WHO), making it possible to compare Tanzanian data with





those of other countries and thereby offer an opportunity for gauging oral disease burden against others. This data can also be archived by the WHO for future reference.

This survey has been conducted through enormous support from our development partners and the academia. It is the expectation of the Ministry that all stakeholders will use the data from this 5th national oral health survey of the year 2020 to mount evidence-based oral health interventions for betterment of oral health for all Tanzanians.

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We are equally humbled by the contribution of all other dental professionals who supervised and/or facilitated in training research assistants and providing valuable guidance. Our participants from all over the country; thank you for representing your fellow Tanzanians and providing the required national data that today we are proud of, and ready to hand over to those responsible for planning oral health services in Tanzania.

Survey Team
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LIST OF ABBREVIATIONS

CDS	Chief Dental Surgeon
CPI	Community Periodontal Index
DDO	District Dental Officer
DMFT	Decayed Missing Filled Teeth
HIV/ AIDS	Human immunodeficiency virus/ acquired immune deficiency syndrome
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
OHRQoL	Oral Health Related Quality of Life
PO-RALG	President's Office, Regional Administration and Local Government
RCH	Reproductive and Child Health
RDO	Regional dental officers
WHO	World Health Organization





CHAPTER ONE INTRODUCTION

1.1 EXECUTIVE SUMMARY

Background

National pathfinder surveys are conducted periodically to provide relevant data that is required for planning. Since 1979 to date, Tanzania has conducted a total of four (4) national surveys with the 4th carried out in 2010. Oral diseases vary with time and socio-economic situations; therefore, it was due that another national oral health survey was conducted. Data from previous national and small-scale surveys have enabled the central oral health unit of the Ministry of Health to prepare national plans for oral health and policy guidelines for Tanzania. Hence, this 5th Tanzania national oral health survey was conceived to elucidate the current oral health situation in Tanzania to allow revisions of oral health strategic plans and policy guidelines.

Aim:

The aim of this fifth national pathfinder survey was to determine the status of oral diseases and conditions and associated factors among Tanzanians, with the following specific objectives:

- i. To determine caries, periodontal status and their association with socio demographic and behavioral factors among Tanzanians*
- ii. To determine the occurrence of malocclusion, dental trauma and dental fluorosis among Tanzanians and associated factors*
- iii. To determine oral health behaviors among Tanzanians by social demographic factors*
- iv. To determine the association between oral diseases, conditions, and Oral Health Related Quality of life among Tanzanians*
- v. To determine caries trends among 12-year-olds from 2005-2020*



Materials and Methods

A national pathfinder survey was conducted involving 14 study sites located in mainland Tanzania represented by 6 rural sites (Kilombero, Mbinga, Mbozi, Magu, Manyoni and Kaliua), 4 cosmopolitan sites (Kinondoni, Ilala, Mbeya city, Arusha city) and 4 urban sites (Tarime, Tanga, Kigoma, and Mtwara). A total of 3,601 Tanzanians were involved (2,191 children and 1,410 adults) according to WHO basic oral health survey guidelines which was slightly modified to suit Tanzanian demographic profile. Clinical examinations of dental caries, periodontal disease, trauma, and dental fluorosis were conducted according to standard WHO criteria. Additionally, malocclusion in children was assessed according to modified Björk criteria.

Standardized questionnaires were used to interview participants on oral health-related behaviors and quality of life (OHRQoL). To allow tracking of changes in DMF-T among 12-year-olds; data from 2005 and 2010 National surveys regarding caries experience was retrieved to get the mean DMF-T for 12-year-olds during those corresponding years. Standard data analysis as described in the WHO basic oral health survey methods was performed to provide descriptive statistics and determine bivariate associations.

The proposal was reviewed the Borrow Foundation and WHO prior to funding approval. Ethical clearance was obtained from Muhimbili University of Health and Allied Sciences (MUHAS) Institutional Review Board where the investigators are stationed. Permission to gain access to the study sites was obtained from Prime Minister's Office - Regional Administration and Local Government in Dodoma. Subsequently, further permissions were obtained from respective local authorities where study sites were located. The study was conducted from January to March 2020. Permission to publish the report was granted by the National Bureau of statistics by their letter with ref. No CB.317/377/01/43 of 8th January 2021.

Dissemination

The findings are primarily meant for the Tanzania Health Ministry which requires robust health statistics that are invaluable for planning dental services in mainland Tanzania. The obtained data will be further analyzed as deemed necessary and shared with the national and international audience through peer reviewed journals.



Finance and Administration

The survey was jointly supported by the Miracle Corners of the World, Borrow Foundation, Colgate Palmolive Tanzania LTD, Bridge 2Aid, Tanzania Ministry of Health Community Development, Gender Elderly and Children, Tanzania Dental Association, Prime Minister's Office Regional Administration and Local Government, and the Muhimbili University of Health and Allied Sciences.

Results

The data was collected from two thousand one hundred and ninety-one (2191) children aged 5, 12 and 15 years; and one thousand four hundred and ten (1410) adults aged 30 years and above. Slightly different tools were used for children and adults and therefore results are presented in two parts: **part I** for children and **part II** for adults.

Part I-Children

Demographic characteristics of the children

The children sample included five-years-old (32.2%), twelve years-old (32.8%) and fifteen years-old (35.0%). Girls accounted for 49.4% of the sampled children. Most children had guardians with primary or lower education (72.2% and 79.9% for male and female guardians, respectively).

Dental diseases and conditions in children

i) Dental caries in children

About one third (31.1%) of the children had dental caries experience. More rural than urban children were affected by dental caries. Children who were 5 years old had the highest dental caries experience with the decay component accounting for 99% of the total caries experience. The high percentage of the decay component in both deciduous and permanent dentition in children shows that most children walk with untreated dental caries.

Comparing caries experience among 12-year-olds in this sample with the previous two Tanzania national oral health surveys; the DMF-T among 12-year-olds has remained low since 2005 to date (in 2005 the DMF-T was 0.3, in 2010 the DMF-T



was 0.36 and in 2020 the DMF-T was 0.4 respectively), although trends suggest a slow, gradual increase.

The overall mean DMF-T for children aged 5, 12 and 15 years was 0.35 with the mean for the D-component accounting for 91.43% of the overall mean DMF-T. The mean DMF-T increased with age from 0.05, 0.4, and 0.58 for five-, twelve- and fifteen-year-olds, respectively.

ii) Periodontal and other oral conditions in children

Gingivitis affected 57.4% of children aged twelve and fifteen years with rural children being more affected (65.2%) compared to urban children (52.0 %). The prevalence of dental fluorosis among twelve and fifteen years was 24.8%, with more rural children affected than their urban counterparts. Whereas 61.2% of children had at least one form of malocclusion, residence was not associated with its variations. The prevalence of dental trauma was 4.4% with rural children (2.7%) having less likelihood of sustaining trauma compared to urban (5.7%) counterparts.

Oral health related behaviors in children

Among children aged twelve and fifteen years, 54.6% consumed sugar once or more times a daily, 89.4% brushed their teeth daily and 81.5% used toothpaste. Only 20.3% have ever had a dental visit and only 0.5% visited for dental check-up. This suggests that children who need dental check-up the most are not utilizing this important component of child oral health care.

More rural than urban children consumed sugar frequently, less likely to brush frequently, less likely to ever visited a dental clinic, less likely to have used fluoridated toothpaste and less likely to have used toothpaste. Higher proportion of children with male and female guardians with Secondary education used fluoridated tooth paste than those with primary education.

Oral health related quality of life in children

About a quarter (24.9%) of twelve- and fifteen-years old children had at least one studied aspect of their lives impacted due to oral conditions (oral impact on daily performance: OIDP). Difficulties in eating food was the most prevalent impact, experienced by 19.7% of the children. Twelve-year-old children had a higher proportion (30.2%) of with oral impacts as compared to fifteen-year-olds (19.9%).



Those with dental caries, gingivitis, trauma, dental pain in the past 12 months, and had visited the dental clinic in the past 12 months were more likely to have at least one oral impact on daily performance.

Part II-Adults

Demographic characteristics of the adults

The adults sample included 30-34 years (20.4%), 35-44 years (30.5%), 46-49 years (0.4%) and 50+ (48.8%). The age groups were further categorized to young adults; 30-44 (50.9%) and older adults; 45+ years.

Dental diseases and conditions in adults

i) Dental caries in adults

About three-quarters (76.5%) of the adults aged 30 years and above had dental caries experience. Of those with dental caries experience, about one-half (52.2%) had Missing teeth while conserved (Filled) teeth accounted for only 1.7%. This indicates that the commonest type of treatment of dental caries is tooth extraction while very few decayed teeth are being restored. Only 3% of the study sample reported to have artificial teeth indicating a low uptake of prosthodontic care. Accordingly, about two thirds (62.4%) of adults perceived the condition of their teeth status to be bad or awfully bad.

The overall mean score for Decayed, Missing, Filled Teeth (DMF-T) was 4.6 and caries experience was shown to increase with age. The mean DMF-T of those aged 30-34 years, 35 – 44 years and 50 years and above was 2.8, 3.7, and 5.9, respectively. More females (79.4%) than males (73.5%) were affected. A higher proportion of those who visited the dental clinic (93.7%) had a DMFT ≥ 1 than those who did not visit the dental clinic (59.5%). This indicates that most dental clinic attendance is due to caries experience. However, more than half of the participants that had clinical findings of caries experience reported not to have visited a dental clinic in the preceding year.

Those who reported to consume almost none of the sugary foods and drinks were less likely to have caries-experience (DMFT > 0) as compared to those who consumed sugar daily. However, this observed difference was not statistically significant. Those who brushed their teeth daily, used toothpaste, and used fluoridated toothpaste were



less likely to have a DMFT > 0 than those who reported brushing less than once a day, not to use toothpaste, and not to use fluoridated toothpaste; but these differences were also not statistically significant. Residence and education were not associated with variations in the DMF-T.

ii) Periodontal conditions in adults

Gingivitis was common, affecting close to two-thirds (62.8%) of adult participants. The old, males, rural residents, with less education, who never visited a dental clinic, brushed less than once a day, those who had dental pain and used tobacco were more likely to have gingivitis.

The prevalence of periodontal breakdown: shallow pockets (4-5mm) and deep pockets (6mm or more) was 27.2%, and 9.1% respectively. Overall, both shallow and deep pockets affected 29.1% of adults while attachment loss was found in 29.3%. The old, living in rural areas, with less education, who never visited a dental clinic, brushed less than once a day, and had dental pain during the past 12 months were more likely to have periodontal pockets.

iii) Dental Fluorosis and dental trauma among adults

Dental fluorosis affected 31.6% of the participants, and the prevalence of dental trauma was 9.2%.

Oral health related behaviors in adults

i) Oral Hygiene behaviors

The majority (93.4%) of adult Tanzanians reported to clean their teeth using plastic toothbrushes (88.2%) and toothpaste (83.5%), although less than half (46.9%) brushed twice a day. However, non-recommended oral hygiene behaviors were also reported whereby 2.7% of adults reported using charcoal to clean their teeth. A small proportion (1.2%) of adults used dental floss.

ii) Sugar, alcohol and tobacco use, and dental visits behavior.

Sugar was reported to be consumed twice or more times a day by 42.7%, alcohol consumption by 30.9% and usage of tobacco at least once by .3% of the participants.

About one half (49.8%) of the participants have ever visited a dental clinic while only 11.3% did so during the past 12 months. Nearly a half (48.2%) reported to visit the



dental clinic due to pain, while those who visited for dental check-up was only 1.8% of all adult participants. This implies that people visit the dental clinic when in pain; but visiting for dental check-up or preventive care is simply not their habit.

Oral Health related quality of life in adults

Slightly more than one-third (36.7%) of adults had at least one studied aspects of their lives impacted due to oral conditions. One-third (33.3%) reported impact on eating food, 21.9% on sleeping and relaxing, and 19.7% on cleaning teeth. Oral health related quality of life was measured by the Oral Impact on Daily Performance (OIDP) scale.

Clinical indices were associated with the OIDP in the expected direction with higher proportion of those with caries having an impact than those who were caries free (42.3% and 18.5% respectively), those with periodontal pockets (54.5%) than those who did not have pockets (29.4%), those with loss of attachment (50.5%), than those who did not have loss of attachment (31.0%), and those with gingivitis (40.8%) than those who did not (29.7%). This indicates that occurrence of untreated oral diseases and conditions compromises oral health related quality of life (OHRQoL).

Conclusions

- a. Caries experience in both deciduous and permanent dentition in children was low and the disease was skewed to about one third of the sample with rural more than urban children being more affected. Caries experience in permanent dentition among 12-year-olds has remained low over the past 15 years; with DMFT ranging from 0.3 in the year 2005 and 0.4 in 2020.
- b. Gingivitis affected slightly more than half of all the children with rural more than urban children being affected. Most children brushed their teeth daily using toothpaste, while sugar was consumed daily by more than half of the children. However, these behavioral factors were not significantly associated with variations in dental caries and gingival health in children.
- c. Rural children were less likely to take dental health preventive behavior, although were more likely to consume sugar frequently than urban children. High education of male and female guardians was associated with the children's uptake of preventive behavior.



- d. Nearly two thirds of children had malocclusion, and dental fluorosis affected about a fifth of the children, while the prevalence of dental trauma was low. More rural than urban children had dental fluorosis, while more urban than rural children were prone to dental trauma.
- e. About one fifth of the children had oral impacts; with dental caries, gingivitis, trauma, and pain varying with the OIDP scores in the expected direction. Dental fluorosis did not vary with OIDP scores in children.
- f. The prevalence of dental caries among Tanzanian adults was high, with more than three quarters (76.5%) with at least one carious experience. Attendance to the dental clinic was strongly influenced by pain and dental attendance for preventive visits and dental check-ups remained negligibly low.
- g. Gingivitis among adults was widespread, affecting nearly two thirds of Tanzanians while a few had shallow and deep pockets. The prevalence of gingivitis and periodontal pockets was higher among the elderly, males, those who lived in rural areas, had less than secondary education, never visited a dental clinic, brushed less than once a day, not used toothpaste, and used tobacco.
- h. Nearly one third of adult participants had dental fluorosis. More rural than urban residents had dental fluorosis, however fluorosis did not vary across age categories. Trauma was found in 9.2% of adults, but there was no association between trauma and residence or age.
- i. Slightly more than a third of adults had at least one oral impact on daily performance. Clinical indices for dental caries, periodontal pockets, loss of attachment, and gingivitis were significantly associated with OIDP scores in the expected direction.
- j. Rural children were less likely to take dental health preventive behavior. High education of male and female guardians was associated with the children's uptake of preventive behavior.
- k. Among the adults; there were no significant sex differences in performing a range of oral health related behaviours including use of tooth paste, use of



plastic tooth brushes, visit to dental clinic and consumption of sugar containing foods and drinks.

1. Adults with secondary or higher education, and who resided in urban areas reported a higher uptake of oral hygiene and dental visits behaviors but consumed sugar more frequently.



CHAPTER TWO

GENERAL OVERVIEW OF NATIONAL ORAL HEALTH SURVEYS IN TANZANIA

2.1 Introduction

Oral health is multi-faceted and includes the ability to speak, smile, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence without pain and discomfort (1,2). Invariably, the most prevalent oral diseases i.e., dental caries and periodontal diseases are not usually a cause of high death tolls; but are a cause of long periods of suffering. Therefore, the importance of oral health should be viewed with its links to quality of life. Moreover, in many aspects, oral health and general health are interlinked (3–5). Apart from the suffering imposed by poor health on individuals, dental treatment is expensive and impacts on government's expenditure on health (6,7). At an individual level cost-sharing for dental treatment may preclude access to services and hence contributing to socio-disparities in health (8). Worth noting; poor oral health is also known to hinder child's growth and development by interfering with food intake and disturbing sleep (7,9).

Oral diseases are behavior-linked and are preventable through acquiring lifestyles which are conducive to oral health (10). Important oral health related behaviors include tooth brushing twice daily, flossing, tooth picking, use of fluoridated toothpaste, reduction of frequent sugar intake, stop tobacco use, and refrain from non-nutritive sucking behaviors (7,9). However, socio-economic status limits individual's ability to acquire healthier lifestyles and therefore promoting oral health requires an interplay of many factors. (7-9, 11– 14). In addition, dental visits are equally important as they allow for early detection and treatment of dental diseases. To realize the benefits of dental visits, a viable health care delivery system should be in place.

Dental caries and periodontal diseases are chronic in nature and can go unnoticed for a considerable period of time without causing pain or discomfort (7). In this regard, people can walk with untreated disease until at a later stage when pain is unbearable and treatment options are limited or become more expensive. Therefore,



dental checkups are an essential part of oral health care. In addition to dental caries and periodontal diseases; there are many other less prevalent oral diseases and conditions that can significantly impinge on the quality of life of an individual. These include dental trauma, malocclusion and dental fluorosis. Getting an overall picture of occurrence of oral diseases and conditions is essential for planning for access to quality oral health care (12,15).

The WHO guides countries to periodically conduct national oral health surveys in order to have the required data for planning oral health services, monitor oral disease trends and allow comparability across the nations. In this accord, in 1982 Tanzania conducted its first national survey (16). The findings of the first survey formed a basis for the revision of the first Tanzania national plan for oral health. Further on; the second national plan for oral health of 1988-2002 was written largely based on the findings from the first national survey but also complemented by small scale surveys. This was followed by the formulation of a plan for the rehabilitation and equipping dental clinics at all hospital levels in Tanzania (17), and policy guidelines for oral health of 2002 (18). Years later the second national survey (19) was conducted and formed the basis for drafting the Tanzania oral health strategic rolling plan for 2010-2015. The third national oral health survey addressed psychosocial aspects of oral health including oral pain and barriers to use emergency oral care facilities (20); satisfaction with urgent oral care (21), oral health related behaviors (22) and impact of dental diseases on oral health related quality of life (23). From the third national survey, it was realized that half of the participants had at least one oral impact on daily performance, and distance as well as cost of treatment hindered many Tanzanians to access dental services. These findings led to the intensification of dental task shifting; whereby clinical officers were trained to render emergency oral care at health centers and strategically placed dispensaries (24). More and more teeth have been extracted through this task shifting for emergency care, restorative care was not part of this initiative and hence the number of filled teeth has remained very low since then. Fortunately, village health workers, primary school teachers and reproductive and child health workers were trained to be able to give oral health education to prevent oral diseases. Concurrently, Tanzania expanded its coverage on health insurance schemes to allow more people to access health services (25,26). In the recent past Tanzania has significantly expanded the number and composition of its health care delivery facilities. To compliment all these efforts, employment of the



required dental personnel will be mandatory. This will enable people to enjoy the variety of types of dental treatment that are covered by the insurance schemes. Therefore this 5th national oral health survey was conducted to generate up to date health statistics on oral health status and associated factors in Tanzania.

2.2 Rationale of the 5th National Oral Health Survey

Evidence based planning for dental services requires availability of good quality data that is current and representative of the target community. Several small-scale oral health surveys have been conducted in the recent past, but these cannot give the real picture of the whole country and are definitely not sufficient for planning oral health services in Tanzania. Likewise, lifestyles do change over time as the economy is changing. Since dental diseases and particular dental caries change with changes in lifestyles; a new data set is required to monitor trends in oral health as Tanzania is transcending from a low to a middle-income country. This 5th national oral health survey will provide relevant data for planning. Likewise, the data will allow monitoring trends in dental caries in children over the past two decades.

2.3. The aim and objectives of the 5th National Oral Health Survey.

Aim

The aim of this survey is to determine the status of oral diseases and conditions and associated factors among Tanzanians.

Specific Objectives

- i. To determine caries, periodontal status and their association with socio demographic and behavioural factors among Tanzanians
- ii. To determine the occurrence of malocclusion, dental trauma and dental fluorosis among Tanzanians and associated factors
- iii. To determine oral health behaviours among Tanzanians by social demographic factors
- iv. To determine the association between oral diseases, conditions, and Oral Health Related Quality of life among Tanzanians.
- v. To determine caries trends among twelve year olds from 2005 – 2020



CHAPTER THREE

MATERIALS AND METHODS

3. MATERIALS AND METHODS

3.1 Study design

This was a national pathfinder survey using a cross sectional design involving fourteen districts in mainland Tanzania.

3.2 Study sites

Study sites were selected as per WHO basic oral health survey methods (WHO, 2013) using a national pathfinder approach. According to the national pathfinder methodology, the selection of study sites must include cosmopolitan, towns and rural clusters/sites. The national pathfinder survey method is essentially a modified stratified-cluster sampling technique that allows inclusion of the most important population subgroups likely to have different oral disease levels. It also specifies the appropriate numbers of subjects in specific index age groups in each cluster. According to WHO (2013) guidelines for national pathfinder surveys, a minimum of 12 sites including 4 in metropolitan areas, 4 sites in large towns, and 4 rural areas are recommended. However, given the size of Tanzania the number of sites has been increased to 14.

Tanzania has 26 regions located in five administrative zones including the northern, coastal, central, lake, southern highlands, and western zones. Three cosmopolitan cities; Dar es Salaam, Arusha and Mbeya were purposively chosen. Dar es Salaam contributed two cosmopolitan clusters whereas Arusha and Mbeya contributed one cluster each. Then from each zone, regions were purposively selected depending on geographical location and fluoride endemicity of the place. Four regions (Mara, Kigoma, Tanga and Mtwara) were allocated to urban clusters. The four selected urban clusters were put together with the four cosmopolitan clusters to make an overall total of 8 urban clusters. Six regions (Morogoro, Ruvuma, Songwe, Mwanza, Singida and Tabora) were allocated to rural clusters. Dar es Salaam region provided two cosmopolitan districts. One district from the remaining selected regions was randomly selected and each one contributing one cluster. Therefore, the total number of both rural and urban clusters was 14. Including 6 rural clusters (Kilombero,



Mbinga, Mbozi, Magu, Manyoni and Kaliua); 4 urban clusters (Tarime, Tanga, Kigoma, and Mtwara) and 4 cosmopolitan clusters (Kinondoni, Ilala, Mbeya city, Arusha city). The selected clusters are indicated by circles (Figure 2); green circles (cosmopolitan areas), purple circles (rural sites) and blue circles (urban areas). In each district a list of wards was obtained, and one ward was randomly selected to constitute a cluster for the city, township, or a rural settlement.

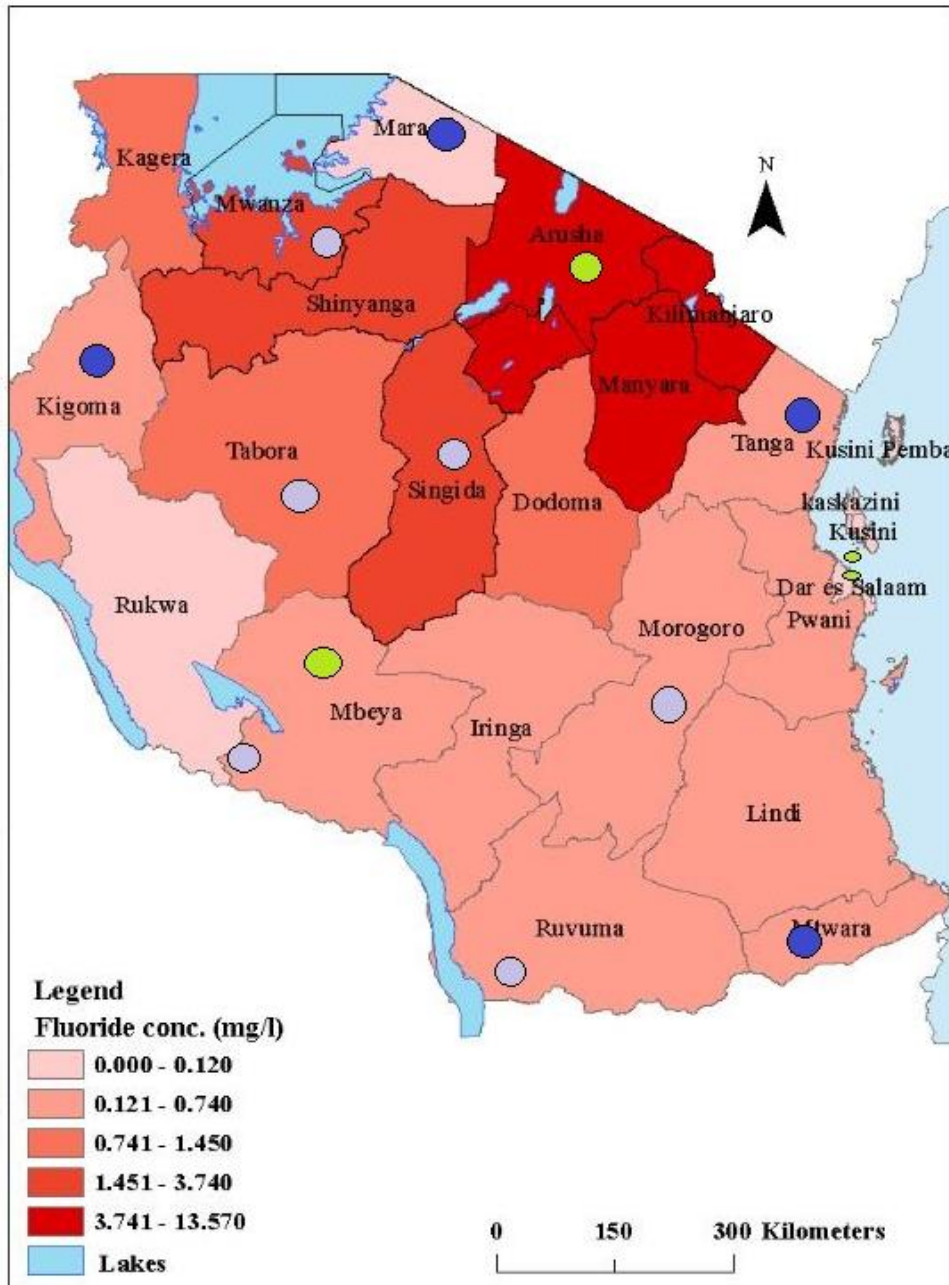


Figure 2: Map of Tanzania showing the distribution of cosmopolitan, urban, rural cluster, and Fluoride concentration. Fluoride map from Malago et al., (59)

3.3 Study population



Each of the 6 rural and 8 urban clusters was stratified by age and sex as guided by the WHO (2013) manual, whereby each cluster was to invite five index age groups; 5, 12, 15, 35- 44 and 50+ years olds. However, in this survey age stratification was modified to 5, 12, 15, 30-44 and 45 and above. Overall, 2191 children aged 5, 12 and 15 years and 1410 adults aged 30 years and above participated in the study.

3.4 Sample size and sampling process

As per WHO (2013) national pathfinder approach; 5-year-olds were obtained from randomly selected nursery schools, 12-year-olds from randomly selected primary schools, and 15 years from day secondary schools in each cluster. In Tanzania, each primary school has pre-school children classes (nursery classes), therefore a primary school provided both 5- and 12-year-olds. In every school a stream/class that contains a particular index age was picked randomly out of the streams that were available. All pupils with the age that was specified was eligible. If their number exceeded 50 then they were listed; thereafter a systematic sampling was employed in each age and sex strata to obtain 25 girls and 25 boys. Adults were followed where they lived by selecting streets randomly and pick 100 subjects: fifty from 30-44 and from 45+. One street was done by following participants in their households until the required number was achieved, if the number was not achieved in one street, the next was picked randomly until the required sample size was obtained. In the event a street had more than the required number, then a list of those individuals was made thereafter a systematic sampling of the required sample was done.

3.5 Inclusion

All males and females falling in the recommended index age groups were eligible to be included in the study as described above under study population and sampling process.

3.6 Exclusion

All those who could not be examined or interviewed for any reason were excluded. There was no attempt to use patients attending dental clinics.

3.7 Variables

All variables were measured and recorded according to WHO (2013) criteria. These variables included socio-demographics, dental caries, gingival bleeding, shallow and deep pockets, loss of attachment, trauma, fluorosis, oral health behaviors and oral health related quality of life.



Caries trends for 12-year-olds were checked from retrieved dental caries information from 2005 and 2010 DMF-T for 12-year-olds and compared with DMF-T for twelve-year-olds in this 2020 sample.

For 5-year-olds gingivitis, dental fluorosis, oral health related behaviors and oral health related quality of life were not measured. Among children aged 5, 12 and 15 years malocclusion was also measured using modified Björk criteria.

3.8 Data collection tools

WHO (2013) clinical record forms were used to gather clinical indices. Mouth mirrors and probes (CPI and Williams) were used in oral examinations that were done under natural light. In addition to examination instruments: sterilization equipment, instruments storage drums, gloves, masks, gauze, and refuse bags were available. WHO (2013) oral health questionnaires for adults and children were used to collect non-clinical information from participants [see **Annex**]. Participants were seated on normal chairs or school desks during interview and oral examination.

3.9 Reliability and validity

All data collection tools were pre-tested to ensure that the tools measure what they were expected to measure. Additionally, the tools were pretested to check for logic, practicability, and time estimation for examining and interviewing one participant across the age groups.

All investigators and research assistants attended a two-day training at the Dental School of the Muhimbili University of Health and Allied Sciences (MUHAS). The training involved acquaintance of the research team with the survey. Examiners were calibrated against senior clinicians to further ensure validity. Once clinical scoring process was mastered by all examiners, exercises were done on inter and intra examiner reproducibility to ascertain their consistency.

The WHO (2013) oral health questionnaire has been validated elsewhere, including here in Tanzania. The questionnaire was translated to Swahili and piloted to 10 adults and 10 children. Only minor modifications were done for a few questions in terms of wording, but the meaning was maintained.

Data collectors were given copies of survey information sheet which has all the variables and their operationalization. Data was reviewed daily to ensure that all



relevant information was recorded accurately. There was a research supervisor in each study team to monitor and ensure quality of data. Test re-test of the questionnaire though was not done due to logistical limitations.

3.10 Data collection process

A list of possible schools, villages and streets was sought. In all the sites a local person (district dental officer of the respective cluster) participated, guided, and facilitated the access to study sites. Four teams of data collectors each having two pairs of examiners and recorders were used for data collection.

Used examination instruments were sterilized after decontamination with antiseptics, washed with liquid soap, and rinsed with water. Sterilized instruments were packed in clinical drums for subsequent use. All examinations followed standard aseptic techniques including dusting and disinfecting working surfaces, use of gloves and face masks. All used gauze, gloves, masks, and other waste materials were collected in hospital refuse bags for incineration at a nearby health facility.

Electronic questionnaires were used to interview all age groups except 5-year-olds. For five-year-olds only demographics were recorded before proceeding for dental examination. RedCap (Research Electronic Data Capture) software was used to capture both questionnaire and clinical information. The collected information was checked and uploaded to MUHAS website by research supervisors of each study team.

3.11 Data Analysis

Data analysis was guided by specific objectives. Data was transformed to allow computation of sum indices where applicable, including DMF-T, simple sugar sum score, malocclusion and OIDP. Frequencies were generated to determine proportions of individuals with specific oral conditions and behaviors. Bivariate associations were assessed by using chi-square to compare proportions of individuals with oral health conditions/diseases and oral behaviors across socio-demographic groups.

3.12 Ethical considerations

The proposal for this survey was reviewed by the WHO and Borrow Foundation before approval of funding. Ethical clearance was sought from MUHAS Institutional Review Board. Relevant permissions were sought from respective authorities to gain access to the study sites. These included permission from the Prime Minister's Office Regional Administration and Local Governments. Each study team used the



permission letter to initiate dialogue with respective district authorities for access to study sites. Privacy of participants was observed by ensuring that both questionnaire and clinical examinations were done to one participant at a time without allowing others overhearing the conversations or viewing the oral examinations. Special codes instead of names were used for participants. Data was protected and only study teams have had the access to the data. Only official final reports will be released for dissemination after being endorsed by the Tanzania National Bureau of Statistics. Consent and assent were sought from participants and guardians as appropriate. All those who were found to have dental diseases and conditions were advised accordingly to seek assistance from the nearby health facilities.

3.13 Study limitation and mitigation

As it is the case with other questionnaire surveys; social desirability bias is likely to have occurred; such that participants may have under-reported or over-reported some of their behaviors. Due to the necessity to have several examiners, inter- and intra-examiner variability may be a threat to reliability. Recall bias may also have been introduced especially when participants were asked to recall what happened during the past in terms what they ate, or what was the reason for visit if ever visited a dental clinic. Adults were followed where they lived, this may have introduced volunteer bias whereby those who had dental problem were more likely to wait at home and meet the study team. To minimize these limitations, re-assurance of participants was done in that none of the information will be used against them and asked them to take enough time to think and provide answers as correct as possible. The importance of correct information in planning interventions was also emphasized. Examiners consistency was enhanced by taking a manageable number of participants to reduce examiners fatigue. Likewise, the pre-survey calibration exercise reduced wide variations between examinations.



CHAPTER FOUR

4.0 RESULTS

The data was collected from two thousand one hundred and ninety-one (2191) children aged 5, 12 and 15 years; and one thousand four hundred and ten (1410) adults aged 30 years and above. Slightly different tools were used for children and adults and therefore results are presented separately in two parts, including **part I** for children and **part II** for adults.

PART I

Demographic characteristics of the children

The children’s age, sex and residence distributions were predetermined as guided by the WHO national pathfinder methodology specifications, whereby each stratum contributed an equal proportion to the total sample size (**Table 1**). Most guardians had primary education or lower (72.2% and 79.9% for male and female guardians respectively)

Table 1: Frequency distribution of children by their socio-demographic factors.

Variable	Category	% (n)
Age in years	5	32.2 (706)
	12	32.8 (719)
	15	35.0 (766)
Sex	Male	50.6 (1109)
	Female	49.4 (1082)
Residence	Rural	42.4 (929)
	Urban	57.6 (1262)
Male guardian education level	Primary education or lower	72.2 (718)
	Secondary education or higher	27.8 (277)
Female guardian education level	Primary education or lower	79.9 (852)
	Secondary education or higher	20.1 (215)

NB: Many children did not know their guardian’s education, urban included cosmopolitan and town sites.



Dental diseases and conditions among children

Dental caries in children

Table 2 shows the proportions of children aged 5-, 12-, and 15-year-old who experienced caries in both deciduous and permanent teeth were 44.2%, 28.4%, and 27.4% respectively. The overall caries experience in both deciduous and permanent dentition (dft/DMF-T) in children was 0.93. Overall, 33.1% of all children had dft/DMF-T \geq 1. The proportion of caries free children at the age of 5 years was 55.8%.

Caries experience in permanent dentition in children increased with age from mean DMF-T of 0.05, 0.4 to 0.58 among 5-, 12-, and 15-year-olds, respectively. Exploring the data further, the overall mean DMF-T for all the three age groups was 0.35, while the overall mean number of decayed permanent teeth was 0.32. The D-component accounted for 91.43% of the overall mean DMF-T of all children.

Table 2: Frequency distribution of children by oral diseases and conditions.

Variable	Category	5 years % (n)	12 years % (n)	15 years % (n)	All ages
Dental caries	dft/DMF-T \geq 1	44.2 (312)	28.4 (204)	27.4 (210)	33.1 (726)
Periodontal status	Have gingivitis	NA	57.2 (411)	57.8 (443)	57.4 (856)
Dental fluorosis	Have mild to severe fluorosis	NA	24.6 (177)	24.7 (189)	24.8 (366)
OHRQoL	At least one oral impact on daily performance	NA	30.9 (209)	19.3 (148)	24.9 (357)
Dental trauma	Have any Trauma	3.0 (21)	5.1 (37)	5.0 (38)	4.4 (96)
Dental Malocclusion	Maxillary overjet grade 2and3	2.9 (17)	14.1(95)	16.1(115)	11.4 (228)
	Mandibular overjet	4.4 (30)	1.9 (22)	2.2 (17)	2.8 (60)
	Angle’s class 2 and3	15.3 (105)	8.5 (60)	10.3 (78)	11.3 (243)
	Deep bite	6.3 (34)	10.1 (61)	14.5 (96)	10.6 (191)
	Open bite	10.0 (69)	14.0 (99)	12.8 (97)	12.3 (265)
	Cross bite	3.5 (24)	3.4 (24)	4.5 (34)	3.8 (82)
	Midline shift	6.5 (45)	9.1 (64)	11.0 (84)	8.9 (193)
	Scissor bite	0.6 (4)	0.8 (6)	1.3 (10)	0.9 (20)
	Crowding	3.9 (27)	14.3 (101)	11.9 (91)	10.1 (219)
	Spacing	46.7 (323)	34.0 (241)	29.5 (225)	36.5 (789)
	Simple sum score	61.3 (307)	61.7 (356)	60.6 (383)	61.2 (1046)



The mean dft among 5-year-olds was 1.51 with a mean number of decayed teeth being 1.50; accounting for 99% of the dft (**Table 2a**). There were almost no filled teeth recorded in this sample; thus far children are walking with untreated dental caries.

Table 2a Dental caries experience in deciduous and permanent dentition in 5-, 12- and 15-years old children

Caries experience	5 years Mean (SD)	12 years Mean (SD)	15 years Mean (SD)	All children Mean (SD)
Deciduous teeth				
<i>decayed</i>	1.50 (2.45)	0.25 (0.96)	0.02 (0.17)	0.58 (1.63)
<i>filled</i>	0.01 (0.09)	0 (0)	0 (0)	0.0(0)
<i>dft</i>	1.51 (2.45)	0.25 (0.96)	0.02 (0.18)	0.58 (1.63)
Permanent teeth				
<i>Decayed</i>	0.04 (0.23)	0.36 (0.95)	0.55 (1.3)	0.32 (.99)
<i>Missing</i>	0.02 (0.12)	0.023 (0.19)	0.04 (.23)	0.03 (0.19)
<i>Filled</i>	0.0 (0)	0.01 (0.07)	0.0 (0)	0.0 (0)
<i>DMF-T</i>	0.06 (0.27)	0.40 (0.98)	0.59 (1.33)	0.35 (1.0)
All teeth				
<i>Dft/DMF-T</i>	1.57 (2.51)	0.65 (1.41)	0.61 (1.39)	0.93 (1.88)

Caries trend among 12-year-olds from 2005-2020

Comparing caries experience among 12-year-olds in this sample with the previous two national surveys; during the second national survey done in 2005 the DMFT for 12-year-olds was 0.30, in another national survey done in 2010 the DMF-T among 12-year-olds was 0.36 and in the current survey of 2020 the DMF-T among 12-year-olds was 0.40 (**Table 2b**). This shows generally low caries experience among 12-year-olds for the past fifteen years.

Table 2b. Dental caries trend for 12-year-olds from 2005-2020

Year of Survey	Sample size	Caries experience (DMF-T)
2005	197	0.30
2010	1212	0.36
2020	719	0.40



Demographic factors including sex, residence, and education of male and female guardians were not associated with variations in the dft/DMF-T among the children. However, children from rural areas had significantly higher proportions with dental caries than their counterpart (**Table 2c**).

Table 2c: Distribution of children with dental caries by socio-demographics.

Variable	Category	Have caries dft/DMF-T ≥1
Age	5	44.2 (312) ***
	12	28.7 (204)
	15	27.4 (210)
Sex	Male	33.0 (357)
	Female	33.3 (369)
Residence	Rural	38.4 (357) ***
	Urban	29.2 (369)
Male guardian education level	Primary education or lower	28.4 (204)
	Secondary education or higher	32.1 (89)
Female guardian education level	Primary education or lower	30.0 (256)
	Secondary education or higher	32.1 (69)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Gingivitis, dental trauma, dental fluorosis, and dental malocclusion in children

Gingivitis affected more than half of children aged 12 and 15 years (57.4%) (**See Table 2**). Male children (12- and 15-year-old), those from rural areas and with female guardians having primary or lower level of education had higher proportions with gingivitis at 60.1%, 65.2% and 57.5%, respectively. The education level of the male guardian was not associated with variations in gingival inflammation (**Table 2d**)

The prevalence of dental trauma was 4.4% among children of 5, 12 and 15 years with fewer 5-year-olds being affected (3.0%) as compared to 12 years (5.1%) and 15 years (5.0%) children (**See Table 2**).



Table 2d: Distribution of 12 and 15 years children with gingivitis by socio-demographic factors.

Variable	Category	Have gingivitis % (n)
Sex	Male	60.1 (443) *
	Female	54.9 (411)
Residence	Rural	65.2 (404) ***
	Urban	52.0 (450)
Male guardian education	Primary or lower	57.8 (406)
	Secondary or higher	52.3 (145)
Female guardian education	Primary or lower	57.5 (481) *
	Secondary or higher	48.8 (105)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Children from rural areas (2.7%) had less likelihood to sustain dental trauma than their urban (7%) counterparts. Also, dental fluorosis affected 24.8% of the children aged 12 and 15 years. More rural (35.3%) than urban (17.2%) children were affected by dental fluorosis (**Table 3**).

Having at least one form of malocclusion was reported by 61.2% of all children aged 5, 12 and 15 years. The most prevalent form of malocclusion was spacing (36.5%), followed by open bite (12.3%), maxillary over jet (11.4%) and Angle's class 2 and 3. The least prevalent form of malocclusion was Scissor bite (0.9%). Various forms of malocclusion across the three age groups were as shown in **Table 2**. Residence was not associated with variations in overall presence of malocclusions (**Table 3**).

Table 3: Distribution of participants' dental fluorosis, trauma, and malocclusion by residence.

Variable	Category	Rural %(n)	Urban % (n)	Total
Dental fluorosis	No Fluorosis	64.7 (399)	82.8(713)	75.2 (1112)
	Have mild to severe fluorosis	35.3 (218)	17.2 (148) ***	24.8 (366)
Dental trauma	No trauma	97.3 (899)	94.3(1181)	95.6 (2080)
	Have trauma	2.7 (25)	5.7 (71) **	4.4 (96)
Dental Malocclusion	No malocclusion	40.1 (294)	37.8(375)	38.8 (669)
	Have malocclusion	59.9 (440)	62.2 (617)	61.2 (1726)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



Oral health related behaviours in children

Sugar consumption

Sugar consumption among 12- and 15-years old children; 54.6% of children reported taking sugary foods and drinks once or more times daily (**Table 4a**). Significantly higher proportion of rural than urban children consumed sugar frequently. Age, sex, female and male guardians' education were not associated with variation in sugar intake among 12- and 15-year-olds (**Table 4b**).

Table 4a: Frequency distribution of children's oral health related behavior.

Variable	Category	Percent (number)
Daily sugary intake	Less than once a day	45.4 (995)
	On daily bases or more	54.6 (1196)
Tooth brushing	Less than once a day	10.6 (156)
	Brush at least once a day	89.4 (1321)
Toothpaste	Use toothpaste	81.5 (1186)
	Use of fluoridated toothpaste	23.3 (324)
Dental visit	Ever had a dental visit	20.4 (302)
	Visited in the past 12 months	7.3 (108)
Reason for dental visit	Visited due to pain/treatment	5.9 (130)
	Visited for Check-up	0.5 (12)

Oral hygiene among children

A high proportion of 12- and 15-years old children (89.4%) reported to brush their teeth at least once daily, while 81.5% indicated using toothpaste but only 23.3% were aware that the toothpaste they used to contain fluorides (**Table 4a**). Regular tooth brushing was reported more among girls (92.3%) than in boys (86%), urban (91.9%) than rural (85.9%) and among children whose female guardians had secondary education (94.4%) than those with primary education (**Table 4b**). Use of fluoridated toothpaste was reported more among 15-year-olds (29.7%) than in 12-year-olds (16.1%), while being an urban child, having male and female guardians with secondary education were more likely to use fluoridated toothpaste. Being 15 years



old, female, residing in urban sites and having male and female guardian with secondary education were more likely to use toothpaste (**Table 4b**)

Dental visits among children

As regards dental visits; 20.4% of the children ever visited a dental clinic, while only 7.3% visited a dental clinic in the past 12 months with 5.9% visiting due to pain and only 0.5% visited for dental check-up (**Table 4a**). Dental visits were reported more among urban than rural children (**Table 4b**).

Table 4b: Distribution of children oral health related behavior by socio-demographics.

Variable	High sugar intake % (n)	Regular toothbrushing % (n)	Ever had dental visit % (n)	Use fluoridated toothpaste. % (n)	Use toothpaste. % (n)
Age					
12	51.0 (367)	87.6 (623)	21.3 (152)	16.1 (107)	78.3 (546)
15	47.5 (364)	91.1 (694) *	19.3 (148)	29.7 (217) ***	84.3 (640) **
Sex					
Male	45.6 (336)	86.4 (631)	19.8 (145)	24.2 (167)	78.9 (569)
Female	52.8 (395) *	92.3 (686) ***	20.7 (155)	22.3 (157)	83.9 (617) *
Residence					
Rural	54.0 (335)	85.9 (526)	16.4 (101)	16.2 (90)	64.1 (389)
Urban	45.8 (396) **	91.9(791) ***	23.1(199)	28.0(234) ***	93.9(797) ***
Male guardian education level					
Primary or lower	53.7 (377)	89.8 (626)	22.4 (157)	21.0 (138)	73.8 (512)
Secondary or higher	54.5 (151)	92.8 (257)	22.1 (61)	34.9 (94) ***	89.1 (244) ***
Female guardian education level					
Primary or lower	52.8 (442)	89.4 (745)	21.3 (178)	21.9 (171)	74.8 (617)
Secondary or higher	50.7 (109)	94.4 (202) *	23.3 (50)	35.5 (75) ***	91.5 (195) ***

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



Tobacco use

None of the children reported using tobacco in any form.

Oral health related quality of life among children

The prevalence of oral impacts on daily performance (OIDP) was 24.9%. Eating was the most affected performance with nearly one fifth (19.7%) of children having an impact on eating. Children also expressed difficulties in cleaning teeth (13.1%), followed by difficulties in sleeping (7.9%). These and other oral impacts on daily performances are as shown in table **(Table 5)**.

Table 5: Distribution of children’s oral impacts on daily performance items.

Have Impact	%	n
Take role in social	4.2	62
Emotion	4.5	67
Smiling	4.7	69
Speaking	5.1	75
Enjoying	5.4	80
Sleeping	7.9	117
Cleaning	13.1	193
Eating	19.7	290
<i>At least one impact</i>	24.9	357

OIDP scores varied with age; whereby a higher proportion of twelve-year-olds (30.2%) had at least one oral impact as compared to 15-year-olds (19.9%). In addition, a higher proportion (74.7%) of those who had dental pain in the past 12 months were more likely to have at least one oral impact than those who didn’t (14.9%). Presence of clinical conditions including dental caries, gingivitis, and trauma also significantly varied with OIDP scores **(Table 6)**. However other clinical conditions like dental fluorosis and malocclusion were not associated with OIDP scores. Socio-demographic variables including residence, sex, and education of female and male guardians were not associated with OIDP scores. Those who had experienced pain and had visited dental clinics were more likely to have oral impacts **(Table 6)**.



Table 6: Distribution of reported oral impact by socio-demographic, behavioral and oral diseases/conditions.

Variable	Category	At least one Impact % (n)
Age	12 years	30.2 (209) ***
	15 years	19.9 (148)
Sex	Male	23.1 (165)
	Female	26.7 (192)
Residence	Rural	25.8 (155)
	Urban	24.2 (202)
Male guardian education level	Primary or lower	25.4 (173)
	Secondary or higher	28.7 (77)
Female guardian education level	Primary education or lower	26.9 (218)
	Secondary education or higher	21.8 (46)
Gingivitis	Have no gingivitis	20.0 (122) ***
	Have gingivitis	28.5(235)
Dental caries	Have no caries	19.4 (201) ***
	Have caries	39.1 (156)
Fluorosis	Have no fluorosis	24.6 (265)
	Have fluorosis	25.6 (352)
Trauma	Have no trauma	24.2 (327) ***
	Have trauma	37.0 (27)
Visited dental clinic in past 12 months	Visited	53.8 (56) ***
	Not visited	22.6 (301)
Dental pain in past 12 months	Had pain experience	74.7 (177) ***
	No pain experience	14.9 (178)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



PART II:

ORAL HEALTH STATUS AND RELATED FACTORS AMONG ADULTS

Demographic characteristics of the adults

A huge proportion of participants (80.4%) had less than secondary education. Residence had three categories from rural (42.8%), urban (28.2%) and cosmopolitan (29.0%) sites. Residence was then dichotomized to Urban; including the original urban and cosmopolitan participants (57.2%), and Rural; including the original rural group (42.8%). Age was dichotomized to 30-44 and 45 and above (**Table 7**).

Table 7: Distribution of adult participants by socio-demographic variables

Variable	Category	% (n)
Age	30-34	20.4 (286)
	35-44	30.5 (429)
	45+	57.2 (802)
Sex	Male	48.4 (678)
	Female	51.6 (722)
Residence	Rural	42.8 (601)
	Urban	
Education	Primary education or lower	80.4 (1130)
	Secondary education or higher	19.6 (276)

Oral diseases and conditions among adults

Dental caries among adults

The prevalence of dental caries among Tanzanian adults was 76.5% [**Table 8**]. The overall mean DMF-T for all adult participants was 4.6; with 2.1, 2.4 and 0.08 being the mean number of decayed, missing and filled teeth, respectively [**Table 8a**]. Caries experience increased with age with those aged 30-34 years having a mean DMF-T of 2.8, those with 35- 44 years of age had a mean DMT-F of 3.7, while those with 50+ years having a DMF-T of 5.9 [**Table 8b**].

In exploring the data further, it was realized that; the M-Component contributed 52.2% of the DMF-T indicating a dominance of extraction of decayed teeth, while the



Table 8: Distribution of adult participants by oral diseases and conditions

Oral health condition	Percentage	Frequency
Dental caries	76.5	1078
Gingivitis	62.8	886
Periodontal Shallow pockets	27.2	384
Periodontal Deep Pockets	9.2	130
Total pockets	29.1	410
Periodontal Attachment loss of 4-5mm	22.6	319
Periodontal Attachment loss of 6-8mm	11.8	166
Periodontal Attachment loss of 9-11mm	2.5	35
Periodontal Attachment loss of 12 mm	1.3	18
Total loss of attachment	29.3	413
Dental Trauma	9.2	130
Dental Fluorosis	31.6	442

F-component accounted for only 1.7% of the DMF-T showing an exceedingly low uptake of restorative care. The D-Component accounted for 45.7% of the DMFT. In this study low uptake of restorative care and dominance in exodontia are coupled with low uptake of prosthodontic care as expressed by only 3% of the study sample who reported to have artificial teeth. In addition, about two thirds (62.4%) of adults perceived the condition of their teeth status to be bad or very bad.

Table 8a: Dental caries experience by age in years, mean (SD)

Caries experience	30-34yrs	35-44yrs	45-49yrs	50+yrs	Total
Permanent teeth					
<i>Decayed</i>	1.76 (2.7)	2.06 (3.0)	3.20 (6.0)	2.32 (3.0)	2.1 (2.9)
<i>Missing</i>	1.03 (2.1)	1.59 (2.5)	3.20 (3.9)	3.53 (5.1)	2.4 (4.0)
<i>Filled</i>	0.07 (0.3)	0.09 (0.56)	0.20 (.4)	0.084 (0.6)	0.083(0.5)
<i>DMF-T</i>	2.8 (3.8)	3.7 (4.2)	6.6 (9.3)	5.9 (6.2)	4.6 (5.4)

There was a higher proportion of older adults aged 45 years and above with a DMF-T of one or more (83.3%) as compared to the younger ones aged 30-44 years (70.1%). The majority (93.7%) of those who ever visited a dental clinic had a DMF-T of one or more as compared to those who never visited a clinic (59.5%).



Table 8b: Distribution of adult participants by Mean DMFT for adults by age categories.

Age in years	Frequency	Mean DMFT	Standard Deviation
30-34 years	286	2.8	3.8
35-44 years	429	3.7	4.2
45-49	5	6.6	9.3
50+	685	5.9	6.2
Total	1405	4.6	5.4

More females (79.4%) than males (73.5%) had DMF-T of one or more. Those who reported to consume almost none of the sugary foods and drinks were less likely to have a DMF-T of one or more as compared to those who consumed sugar daily [Table 9].

Table 9: Distribution of adults Participants by dental caries, socio-demographic, and behavioral factors

Variable	Categories	Dental caries % (n)
		DMFT ≥1
Age	30-44 years	70.1 (501) ***
	45+ years	83.3 (575)
Sex	Male	73.5 (498) **
	Female	79.4 (573)
Residence	Rural	77.5 (466)
	Urban	75.7 (607)
Education level	Primary or lower	77.0 (870)
	Secondary or higher	74.3 (205)
Sugar consumption	Almost none	71.9 (225)
	On daily basis	78.2 (352)
	Twice or more per day	76.8 (436)
Dental visits	Never visited a clinic	59.5 (421) ***
	Ever visited a clinic	93.7 (656)
Tooth brushing	Less than once a day	79.6 (74)
	Once a day	75.8 (497)
	Twice a day	76.9 (508)
Toothpaste use	No	79.2 (183)
	Yes	76.6 (891)
Use Fluoride toothpaste	No	79.7 (102)
	Yes	74.9 (289)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



However, this difference was not statistically significant. Those who brushed their teeth daily, used toothpaste, and used fluoridated toothpaste were less likely to have a DMFT of one or more than those who reported brushing less than once a day, do not use toothpaste, and do not use fluoridated toothpaste; but these differences were not statistically significant. Residence and education were not associated with variations in the DMF-T [Table 9].

Examining other factors associated with caries experience; it was found that a higher proportion of those who visited the dental clinic because of pain (94.3%) had a DMF-T score of one or more as compared to those who just visited for dental check-up (69.2%) or those who never visited the clinic at all (59.6%). Likewise, those who had pain or trouble with their mouth during the past 12 months (88.1%) had DMF-T of one or more as compared to those who did not have pain during the past 12 months (65.7%). Those with dental fluorosis (68.6%) were less likely to have dental caries as compared to those who had no dental fluorosis (80.3%). Further it was also noted that; knowing that sugar causes caries was not significantly associated with variations in caries experience [Table 10].

Table 10: Distribution of adult Participants by caries, fluorosis, dental pain, and reason for dental visit

Variable	Categories	Dental caries % (n)
		DMFT =1
Sugar causes caries	No	75.6 (444)
	Yes	77.3 (635)
Dental Fluorosis	Normal	80.3 (769) ***
	Fluorosis	68.6 (303)
Reason for dental visit	Pain	94.3 (641) ***
	Dental check up	69.2 (18)
	Not had a visit	59.6 (418)
Dental pain in past year	No	65.7 (479) ***
	Yes	88.1 (592)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



Periodontal diseases among adults

Gingivitis was widespread affecting 62.8%, while 27.2% had shallow pockets and 9.2% had deep pockets. Overall, both shallow and deep pockets affected 29.1% of adult Tanzanians whereas attachment loss was found in 29.3% [see **Table 8**].

Examining the variations of gingivitis across sociodemographic and behavioral factors; being of old age, male, living in rural areas, having less than secondary education, never visited a dental clinic, brushed less than once a day, not using toothpaste, using tobacco, having pain during the past year, and not knowing that tooth brushing prevents gingivitis were more likely to have gingivitis [**Table 11**].

Table 11: Distribution of adult Participants by Gingival bleeding, socio-demographic, and behavioral factors

Variable	Categories	Gingivitis % (n)
Age	30-44	57.6 (412) ***
	45+	68.6 (473)
Sex	Males	66.4 (450) **
	Females	59.6 (430)
Residence	Rural	75.7 (455) ***
	Urban	53.2 (427)
Education	Primary or lower	67.1 (758) ***
	Secondary or higher	45.7 (126)
Reason for Dental visits	Visit due to pain	55.4(377) ***
	Check up	69.2 (18)
	Never had a visit	70.0 (491)
Tooth brushing	Less than once a day	81.7 (76) ***
	Once a day	64.6 (424)
	Twice a day	58.4 (386)
Toothpaste use	No	75.3 (174) ***
	Yes	60.4 (708)
Tobacco use	Do not use tobacco	61.3 (744) ***
	Use tobacco	74.7 (115)
Dental pain in past year	No	58.0 (423) ***
	Yes	68.3 (459)
Brushing prevents gum disease	No (<i>Not knowledgeable</i>)	68.4 (312) **
	Yes (<i>knowledgeable</i>)	60.1 (572)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Across sociodemographic and behavioral factors, periodontal pockets were more prevalent among the old than the young (40% and 18.5% respectively), rural than



urban residents (38.6% and 18.2 % respectively), those with less than secondary education than those with secondary or more (32.2% and 17% respectively), those who brushed less than once a day than those who brushed twice a day (51.6% and 25.3%). Other factors associated with the occurrence of periodontal pockets included not using toothpaste, use of tobacco, having had pain or trouble with their teeth/mouth during the past 12 months and those who never visited a dental clinic [Table 12].

Table 12: Distribution of adult participants by periodontal pockets, socio-demographic, and behavioral factors.

Variable	Categories	Periodontal pockets % (n)
Age (years)	30-44	18.5 (132) ***
	45+	40.0 (276)
Sex	Males	31.0 (210)
	Females	27.8 (201)
Residence	Rural	38.6 (232) ***
	Urban	22.2 (178)
Education	Primary or lower	32.2 (364) ***
	Secondary or higher	17.0 (47)
Dental visits	Never visited	33.1 (234) ***
	Ever visited	25.0 (175)
Reason for dental visit	Pain	24.7 (168) **
	Dental check up	34.6 (9)
	Never visited	33.1 (232)
Tooth brushing	Less than once a day	51.6 (48) ***
	Once a day	29.9 (196)
	Twice a day	25.3 (167)
Toothpaste use	No	51.9 (120) ***
	Yes	24.6 (289)
Tobacco use	No	63.0 (97) *
	Yes	37.0 (57)
Dental pain in past one year	No	23.2 (169) ***
	Yes	35.9 (241)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Dental fluorosis and trauma among adults

Other oral conditions studied among adult participants included dental fluorosis whereby 31.6% were affected [see Table 8], more rural (46.4%) than urban (20.3%) residents had dental fluorosis, however fluorosis did not vary across age categories.



Trauma was found in 9.2% of participants but there was no association between trauma and residence or age.

Oral health related behaviours among adults

Sugar consumption among adults

Sugar consumption was common, with 42.7% reported using sugary foods and drinks twice or more times a day. Only 23.5% reported taking almost no sugary foods or drinks. Sugar was mostly consumed in tea (67.5%), buns (35.3%) and soft drinks (15.2%).

Those with secondary or higher education were more likely than those with less than secondary education to consume sugar twice or more times a day (46.0% and 41.8% respectively). Young adults (30-44 years old) and urban residents were more likely to consume sugar twice or more times per day than their counterpart.

Oral hygiene among adults

The majority (93.4%) of participants reported to brush their teeth, although less than half (46.9%) brushed their teeth twice a day. Regarding tooth cleaning devices, plastic toothbrushes were commonly used (88.2%) than any other device.

Table 13: Distribution of participants by tooth cleaning devices used to clean mouth.

Cleaning device	%	n
Plastic toothbrush	88.2	1237
Wooden toothpicks	30.6	427
Mswaki	21.5	300
Plastic toothpicks	1.7	24
Dental floss	1.2	16

About one fifth (21.2%) used plant twig toothbrush commonly called mswaki in Swahili language. Dental floss and plastic toothpicks were the least used tooth cleaning devices reported by 1.2% and 1.7% of the respondents, respectively [**Table 13**].



Toothpaste was also reported to be widely used (83.5%), however only 28.8% indicated that the toothpaste they used contained fluorides [Table 14]. Worth noting is that 2.7% of adult Tanzanians reported using charcoal to clean their teeth.

Table 14: Distribution of adult participants by oral health behaviours

Oral health behavior	%	n
Cleaning teeth	93.4	1317
Tooth brushing once a day	46.5	656
Tooth brushing twice a day	46.9	661
Tooth cleaning using plastic toothbrush	88.2	1237
Tooth cleaning using <i>Mswaki</i>	21.5	300
Use of toothpaste	83.5	1173
Use of fluoridated toothpaste	28.3	386
Ever had a dental visit	49.8	700
Dental visit in the past 12 months	11.3	159
Reason for a dental visit being pain	48.2	680
Dental visit Dental check-up/consultation	1.8	26
Sugary foods/drinks consumption: <i>Almost none</i>	23.5	313
Sugary foods/drinks consumption: <i>On daily basis</i>	33.8	450
Sugary foods/drinks consumption: <i>Twice or more daily</i>	42.7	568
Alcohol use	30.9	436
Tobacco use	11.3	154

Small but significant differences across sex were noted in tooth brushing frequency; whereby females (50.7%) more than males (43.8%) brushed twice a day. On the other hand, men (31.4%) more than females (25.3%) used fluoridated toothpaste [Table 15].

Urban more than rural residents were more likely to brush twice a day (55.7% and 42.0% respectively), use plastic toothbrush (95.3% and 78.7% respectively), use toothpaste, and use fluoridated toothpaste. Whereas rural residents were more likely than their urban counterparts to use *mswaki* (24.8 and 8.1% respectively) [Table 16]



Table 15: Distribution of adult participants' oral health behaviours by sex

Oral health behaviours	Sex % (n)	
	Male	Female
Brush once a day	49.9 (338)	43.8 (316) **
Brushing twice a day	42.3 (287)	50.7 (46.6)
Use plastic toothbrush	87.1 (586)	89.0 (641)
Use mswaki	24.1 (162)	19.2 (137) *
Use of toothpaste	82.7 (558)	84.1 (605)
Use fluoridated toothpaste	31.4 (204)	25.3 (178) *
Ever had a dental visit	48.2 (326)	51.4 (370)
Dental visit in past year	11.4 (77)	11.2 (81)
Reason for dental visit		
<i>Visit due to pain</i>	45.9 (311)	50.7 (365)
<i>Visit for check up</i>	2.5 (17)	1.2 (9)
Sugar consumption		
<i>Almost none</i>	26.3 (168)	21.1 (144)
<i>On daily basis</i>	33.4 (213)	33.8 (231)
<i>Twice or more per day</i>	40.3 (257)	45.1 (308)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Table 16: Distribution of participants by oral health behaviours by residence

Oral health behavior	Residence % (n)	
	Urban	Rural
Brushing twice a day	55.7 (435)	42.0 (222) ***
Use plastic toothbrush	95.3 (763)	78.7 (468) ***
Use Mswaki	9.6 (77)	37.5 (222)
Use of toothpaste	93.5 (749)	70.1 (418) ***
Use fluoridated toothpaste	36.7 (293)	16.5 (92)
Ever had a dental visit	58.9 (472)	37.2 (223) ***
Dental visit in past year	14.4 (115)	7.2 (43)
Reason for dental visit		
<i>Visit due to pain</i>	57.1 (457)	36.4 (218) ***
<i>Visit for check up</i>	2.7 (22)	0.7 (4)
Sugar consumption		
<i>Almost none</i>	12.1 (92)	39.0 (221) ***
<i>On daily basis</i>	40.8 (309)	24.2 (137)
<i>Twice or more per day</i>	47.1 (357)	36.7 (208)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



The level of education had a significant association with all studied oral health related behaviours. Those with secondary or higher education were more likely than those with less than secondary education to brush twice a day (59.8% and 38.8% respectively), use plastic toothbrush (97.5% and 85.8% respectively) [Table 17].

Table 17: Distribution adult participants' oral health behaviours by education level

Oral health behavior	Educational level %(n)	
	Primary or lower	Secondary or higher
Brush less than once a day	7.9 (89)	1.4 (4)
Brushing once a day	48.5 (548)	38.8 (107)
Brushing twice a day	38.8 (493)	59.8 (165) ***
Use plastic toothbrush	85.8 (964)	97.5 (269) ***
Use Mswaki	24.8 (278)	8.1(22) ****
Use of toothpaste	80.2 (901)	97.5 (269) ****
Use of fluoridated toothpaste	22.6 (245)	51.1 (141) ****
Ever had a dental visit	46.4 (523)	63.0 (174) ****
Dental visit in past year	9.4 (106)	18.8 (52) ****
Reason for dental visit		
<i>Visit due to pain</i>	45.9 (517)	58.0 (160) ****
<i>Visit for check up</i>	1.1 (12)	5.1 (14)
Sugar consumption		
<i>Almost none</i>	25.9 (275)	14.0 (37) ****
<i>On daily basis</i>	32.3(343)	40.0 (106)
<i>Twice or more per day</i>	41.8 (444)	46.0 (122)

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Dental visits among adults

About half (49.8%) of the participants ever visited a dental clinic, with only 11.25% visited within the past 12 months. The commonest reason for dental visit was pain accounting for 48.2% of the participants visiting due to pain, while only 1.8% ever visited for dental check-up [see Table 14].



Those aged 45 years and above were more likely than those aged 30-44 to ever visit a dental clinic (54.7% and 45.2% respectively) and to visit a dental clinic due to pain (53.6% and 43.6% respectively) [**Table 18**]. Those with secondary or higher education were more likely than those with less than secondary education to visit a dental clinic (63.0% and 46.4%) [see **Table 17**].

Table 18: Distribution of adult participants' oral health behaviours by age

Oral health behavior	Age % (n)	
	30-44	50+
Brush once a day	44.9 (321)	48.0 (331)
Brushing twice a day	51.2 (366)	42.6 (294) ***
Use plastic toothbrush	92.6 (660)	83.8 (574) ***
Use mswaki	18.0 (128)	25.1 (171) ***
Use of toothpaste	89.5 (637)	77.4 (532) ***
Use fluoridated toothpaste	30.7 (215)	25.8 (170)
Ever had a dental visit	45.2 (322)	54.7 (377) ***
Dental visit in past year	11.2 (80)	11.3 (78)
Reason for dental visit		
<i>Visit due to pain</i>	43.6 (311)	53.6 (369) ***
<i>Visit for check up</i>	1.5 (11)	2.0 (14)
Sugar consumption		
<i>Almost none</i>	21.3 (143)	26.0 (170)
<i>On daily basis</i>	30.7 (206)	37.0 (242)
<i>Twice or more per day</i>	48.1 (323)	37.0 (242) ***

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$

Alcohol and tobacco consumption among adults

Alcohol was reported to be consumed by 30.9%, and 11.3% reported to consume tobacco products [see **Table 14**].

Oral Health related quality of life among adults

At least one oral impact on daily performance was reported by 36.7% of adults, with 33.3% reported impact on eating food, 21.9% on sleeping and relaxing, and 19.7% on cleaning teeth. Other impacts on their daily performances were as shown in table [**Table 19**].



Table 19: Frequency distribution of adult participants by oral impacts on daily performance items (OIDP)

OIDP	%	n
Eating difficulties	33.3	469
Speaking difficulties	14.0	197
Cleaning teeth	19.7	276
Sleeping and relaxing	21.9	307
Smiling, laughing, and showing the teeth without embarrassment	10.8	152
Maintaining the usual emotional state without being irritable	12.4	174
Carrying out major work or a social role	12.6	176
Contact with people	11.9	167
<i>Reported at least one impact on daily performance</i>	36.7	504

Clinical indices were associated with the OIDP in the expected direction with higher proportion of those with caries having an impact than those who were caries free (42.3% and 18.5% respectively), those with periodontal pockets (54.5%) than those who did not have pockets (29.4%), those with loss of attachment (50.5%), than those who did not have loss of attachment (31.0%), and those with gingivitis (40.8%) than those who did not (29.7%) [Table 20].

Table 20: Distribution of oral health related quality of life by oral diseases and conditions

Oral disease/condition	Have oral impact % (n)
Dental caries experience	
DMFT=0	18.5 (59)
DMFT ≥1	42.3 (445) ***
Periodontal pockets	
No Periodontal Pockets	29.4 (288)
Have periodontal pockets	54.5 (216) ***
Loss of attachment	
No Loss of attachment	31.0 (302)
Have loss of attachment	50.5 (202) ***
Gingivitis	
Have no Gingivitis	29.7 (152)
Have gingivitis	40.8 (352) ***

*= $p \leq 0.05$, **= $p \leq 0.01$, ***= $p \leq 0.001$



CONCLUSIONS

Conclusions are made against the five specific objectives of the survey:

To determine caries, periodontal status and their association with socio demographic and behavioral factors among Tanzanians

- a. Caries experience in both deciduous and permanent dentition in children was low and the disease was skewed to about one third of the sample with rural more than urban children being more affected. Gingivitis affected slightly more than half of all the children with rural more than urban children being affected.
- b. Most children brushed their teeth daily using toothpaste, while sugar was consumed daily by more than half of the children, however there was no statistically significant differences between behavioral factors and dental caries and gingival health.
- c. The prevalence of dental caries among Tanzanian adults was 76.5%. The overall mean DMF-T for adult Tanzanians was 4.6 with the missing component contributing a bigger proportion of the DMF-T. More adults who reported to consume almost none of the sugary foods and drinks, brushed their teeth daily, used toothpaste, and used fluoridated toothpaste were less likely to have caries. The differences though were not statistically significant.
- d. Gingivitis was widespread affecting nearly two thirds of adult Tanzanians while a few had shallow and deep pockets. The prevalence of gingivitis and periodontal pockets was higher among the elderly, males, those who lived in rural areas, had less than secondary education, never visited a dental clinic, brushed less than once a day, not used toothpaste, and used tobacco.

To determine the occurrence of malocclusion, dental trauma and dental fluorosis among Tanzanians and associated factors

- a. Nearly two thirds of children had malocclusion, and dental fluorosis affected about a fifth of the children, while the prevalence of dental trauma was low. More rural than urban children had dental fluorosis,



while more urban than rural children were prone to dental trauma. Malocclusion did not vary with residence among Tanzanian children.

- b. Nearly one third of adult participants had dental fluorosis, more rural than urban residents had dental fluorosis, however fluorosis did not vary across age categories. Trauma was found in 9.2% of adults, but there was no association between trauma and residence or age.

To determine oral health behaviors among Tanzanians by social demographic factors

- a. Rural children were less likely to take dental health preventive behaviors but were more likely to consume sugar frequently than urban children. High education of male and female guardians was associated with the children's uptake of preventive behavior.
- b. Among the adults, there were no significant sex differences in performing a range of oral health related behaviours including use of toothpaste, use of plastic toothbrushes, visit to dental clinic and consumption of sugar containing foods and drinks.
- c. Adults with secondary or higher education, and who resided in urban areas reported a higher uptake of oral hygiene and dental visits behaviors but consumed sugar more frequently.

To determine the association between oral diseases, conditions, and Oral Health Related Quality of life among Tanzanians

- a. About one fifth of the children had oral impacts; with dental caries, gingivitis, trauma, and pain varying with the OIDP scores in the expected direction. Dental fluorosis did not vary with OIDP scores in children.
- b. Slightly more than a third of adult Tanzanians had at least one oral impact on daily performance. Clinical indices for dental caries, periodontal pockets, loss of attachment, and gingivitis were significantly associated with OIDP scores in the expected direction.



To determine caries trend among 12-year-olds from 2015-2020

Caries experience among 12-year-olds has remained steadily very low over the past 15 years; with DMFT ranging from 0.3 in the year 2005 and 0.4 in 2020.



RECOMMENDATIONS

Recommendations are provided in relation to the observed status requiring the attention of policy makers, planners, and implementers of dental interventions in Tanzania. The disease/condition status, assumptions and recommendations are summarized in a tabular form below [Table 24].

Table 24: Recommendations for actions to be taken in relation to STATUS observed in the NOHS, 2020 survey.

DISEASE/CONDITION	ASSUMPTIONS	RECOMMENDATIONS
Caries and periodontal diseases		
1. More caries in deciduous than in permanent dentition in children	Breast, bottle feeding, weaning practices, dental visits and oral hygiene behaviors are likely to have contributed to caries experience in deciduous teeth	Health education to mothers attending RCH clinics on the etiology and prevention of dental caries in deciduous teeth
2. High D- Component in primary dentition	Children stay with decayed teeth without being sent to dental clinics for treatment	Health education to mothers attending RCH clinics to raise awareness on possibilities to restore deciduous teeth
Almost no fillings in primary dentition	Probably people do not know that deciduous teeth can be restored	Health education to mothers attending RCH clinics and the whole community on treatment options available for deciduous teeth
3. Rural than urban children have higher proportions of those with dental caries and gingivitis	There are very few dental personnel in health facilities located in rural areas. There is poor access to oral	Dental services should reach out people in rural areas. Rural children



	health information in rural areas	should also be reached out through school health program
4. The prevalence of dental caries among adults is high	More people have access to risk factors and limited access to factors enhancing teeth resistance to decay	Health education at all levels of the health care delivery system, in schools and communities with emphasis to etiology and prevention of caries
5. High missing- component in permanent dentition	More teeth are being extracted instead of being restored. This can be due to lack of treatment facilities and personnel qualified to do restorative work or lack of money to pay for restorative care	All hospitals in both rural and urban areas should have dental personnel to provide restorative care and other types of dental treatment. In strategically placed health centers and dispensaries dental personnel should be stationed to render appropriate restorative care Insurance schemes should expand their packages for allowable costs of dental services
6. Still there is a big proportion of decayed permanent teeth that are not treated	Lack of dental services to different locations of the country and insufficient funds to pay for treatment	Dental personnel, equipment and supplies should be in all hospitals and in lower levels where the catchment is sufficiently big. Insurance schemes



		should expand their packages for allowable costs of dental services More people should be enrolled in insurance schemes
7. Extremely low uptake of prosthetic treatment	Lack of prosthetic care where people live, cost of prosthetic care or attitudes towards use of prosthodontic care	Employ dental personnel who can render prosthetic care, Expand insurance schemes coverage and packages. Provide health education on the usefulness of replacing lost teeth
8. Exceedingly small proportion of decayed teeth were filled	Lack of restorative care where people live, cost of restorative care or attitudes towards filled teeth	Employ dental personnel who can render restorative care, Expand insurance schemes coverage and packages. Provide health education on the usefulness of restoring decayed teeth
9. Gingivitis was widespread among adults	Many people do not know that correct tooth brushing prevents gingivitis. Lack of correct tooth brushing skills is a major cause of gingival	Health education be provided in RCH, schools and communities on correct tooth brushing techniques. Demonstration on how to brush



	inflammation	properly should be done at all possible locations including use of video clips
10. Periodontal diseases were more prevalent in rural areas,	Rural people likely have limited access to preventive information due to socioeconomic inequalities	Reach out marginalized communities in rural areas. Employing dental personnel for prevention and treatment of periodontal diseases
Malocclusion, dental trauma, and dental fluorosis among Tanzanians		
11. The prevalence of malocclusion is high in children	Possible reasons include low awareness on preventive and treatment measures. High of cost of orthodontic care	The Dental school should increase its intake for master students in orthodontics to increase number of Orthodontists. National Health Insurance scheme to increase its coverage for orthodontic care.
12. Trauma is more prevalent among children especially urban children	Urban areas have less favorable environment for games and sports for children. Low awareness for dental trauma treatment options	Health education on prevention of dental trauma should be provided. Raising awareness on treatment options for dental trauma through RCH and primary schools.
13. Fluorosis is prevalent in	High fluoride	Awareness should



<p>fluoride endemic areas</p>	<p>content in drinking water, salt, and food tenderizers in fluoride endemic areas</p>	<p>be raised on possible care of teeth with fluorosis.</p> <p>Searching for alternative sources water should be considered.</p> <p>Use of fluoride rich-salts and food tenderizers should be discouraged</p>
<p>Oral health behaviors</p>		
<p>14. Higher proportion of rural children have low uptake of all dental preventive behaviors.</p> <p>15. Dental check-up uptake is exceptionally low for both adults and children</p>	<p>Rural children have less access to care and prevention.</p> <p>Poor knowledge on importance of dental check-ups</p>	<p>Health education programs to target rural areas be made through pre-schools, primary schools, and RCH clinics.</p> <p>Importance of dental check-up be included in the health education content at all levels</p>
<p>Oral Health Related Quality of life</p>		
<p>16. Many people endure pain, walk with untreated disease, have difficulties in chewing food and do not enjoy life due dental diseases</p>	<p>Poor knowledge, attitudes, and practices related to dental diseases.</p> <p>Poor detection of dental disease and early treatment</p>	<p>People should be given health education on prevention of dental diseases.</p> <p>Awareness raising to promote dental check-ups for early detection and treatment of oral diseases and conditions.</p>



Caries trends among 12-year-olds from 2015-2020

17. No evidence of increase or decrease in caries experience among children	Nothing changed in caries experience for the past 15 years	Continue interventions to prevent upward trends in caries
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ANNEXES

(i) Oral Health Questionnaire for Adults; National oral health survey 2020

Identification number □□□□

Sex

Male 1

Female 2

Location

Cosmopolitan 1

Urban 2

Rural 3

How old are you today?
..... (Years)

4. How many natural teeth do you have?

No natural teeth	<input type="checkbox"/> 0
1-9 teeth	<input type="checkbox"/> 1
10-19 teeth	<input type="checkbox"/> 2
20 teeth or more	<input type="checkbox"/> 3

5. During the past 12 months, did your teeth or mouth cause any pain or discomfort?

Yes	<input type="checkbox"/> 1
No.	<input type="checkbox"/> 2
Don't know	<input type="checkbox"/> 9

6. Do you have any removable dentures?

	Yes (1)	No (2)
A partial denture?	<input type="checkbox"/>	<input type="checkbox"/>
A full upper denture?	<input type="checkbox"/>	<input type="checkbox"/>
A full lower denture?	<input type="checkbox"/>	<input type="checkbox"/>

**7. How would you describe the state of your teeth and gums?
Is it "very good", "good", "average", "poor", or "very poor"?**

	Teeth	Gums
Very good	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Good	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Average	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Poor	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Very poor	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Don't know	<input type="checkbox"/> 9	<input type="checkbox"/> 9



8. How often do you clean your teeth?

Never	<input type="checkbox"/> 1
Once a month	<input type="checkbox"/> 2
2-3 times a month	<input type="checkbox"/> 3
Once a week	<input type="checkbox"/> 4
2-6 times a week	<input type="checkbox"/> 5
Once a day	<input type="checkbox"/> 6
Twice or more a day	<input type="checkbox"/> 7

9. Do you use any of the following to clean your teeth?

(Read each item)

	1 Yes	2. No
Toothbrush.	<input type="checkbox"/>	<input type="checkbox"/>
Wooden toothpicks	<input type="checkbox"/>	<input type="checkbox"/>
Plastic toothpicks?	<input type="checkbox"/>	<input type="checkbox"/>
Thread (dental floss)	<input type="checkbox"/>	<input type="checkbox"/>
Charcoal	<input type="checkbox"/>	<input type="checkbox"/>
Chewstick/miswak	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
(Please specify)		
.....		

10. Do you use toothpaste to clean your teeth?

Yes	<input type="checkbox"/> 1
No	<input type="checkbox"/> 2

11. Do you use toothpaste that contains fluoride?

Yes	<input type="checkbox"/> 1
No	<input type="checkbox"/> 2
Don't know	<input type="checkbox"/> 9

12. How long is it since you last saw a dentist?

Less than 6 months	<input type="checkbox"/> 1
6-12 months	<input type="checkbox"/> 2
More than 1 year but less than 2 years	<input type="checkbox"/> 3
2 years or more but less than 5 years	<input type="checkbox"/> 4
4 years or more	<input type="checkbox"/> 5
Never received dental care	<input type="checkbox"/> 6



13. What was the reason of your last visit to the dentist?

Consultation/advice.	<input type="checkbox"/> 1
Pain or trouble with teeth, gums, or mouth	<input type="checkbox"/> 2
Treatment/ follow-up treatment	<input type="checkbox"/> 3
Routine check-up/treatment.	<input type="checkbox"/> 4
Don't know/don't remember.	<input type="checkbox"/> 5

14. Because of the state of your teeth or mouth, how often have you experienced any of the following problems during the past 12 months?

	Very often 4	Fairly often 3	Sometimes 2	No 1	Don't know. 0
(a) Difficulty in biting foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Difficulty chewing foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Difficulty with speech/trouble pronouncing words	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Dry mouth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Felt embarrassed due to appearance of teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very often 4	Fairly often 3	Sometimes 2	No 1	Don't know. 0
(f) Felt tense because of problems with teeth or mouth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Have avoided smiling because of teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Had sleep that is often interrupted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Have taken days off work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Difficulty doing usual activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Felt less tolerant of spouse or people who are close to you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) Have reduced participation in social activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. How often do you eat or drink any of the following foods, even in small quantities? (Read each item)

	Several times a day	Every day	Several times a week	Once a week	Several times a month	Seldom/Never
	6	5	4	3	2	1
Fresh fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biscuits, cakes, cream cakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweet pies, buns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jam or honey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chewing gum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



containing sugar						
Sweets/candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coca Cola or other soft drinks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tea with sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coffee with sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. How often do you use any of the following types of tobacco?
(Read each item)

	Several times a day	Every day	Several times a week	Once a week	Several times a month	Seldom/Never
	6	5	4	3	2	1
Cigarettes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cigars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A pipe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chewing tobacco	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use snuff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please specify						

17. During the past 30 days, on the days you drank alcohol, how many drinks did you usually drink per day?

Less than 1 drink	<input type="checkbox"/> 0
1 drink	<input type="checkbox"/> 1
2 drinks	<input type="checkbox"/> 2
3 drinks	<input type="checkbox"/> 3
4 drinks	<input type="checkbox"/> 4
5 or more drinks	<input type="checkbox"/> 5
Did not drink alcohol during the past 30 days	<input type="checkbox"/> 9

18. What level of education have you completed?

No formal schooling.	<input type="checkbox"/> 1
Less than primary school	<input type="checkbox"/> 2
Primary school completed	<input type="checkbox"/> 3
Secondary school incomplete.	<input type="checkbox"/> 4
Secondary school completed	<input type="checkbox"/> 5
High school completed.	<input type="checkbox"/> 6
College/university and above	<input type="checkbox"/> 7



(i-b) Dodoso la afya ya kinywa na meno kwa watu Wazima: Utafiti wa Afya ya kinywa 2020

Namba ya utambulisho □□□□

Jinsia

Mwanaume □ 1

Mwanamke □ 2

Mahali anapoishi

Jijini □ 1

Mjini □ 2

Kijijini □ 3

Una miaka mingapi?

..... (Miaka)

4. Una meno ya kwako mangapi?

Sina meno ya kwangu	□ 0
Meno 1-9	□ 1
Meno 10-19	□ 2
Meno 20 au zaidi	□ 3

5. Kwa miezi 12 iliyopita, je kinywa au meno yako vimekuletea maumivu au kukukosesha raha?

Ndiyo	□ 1
Hapana	□ 2
Sijui	□ 9

6. Je una meno ya bandia ya kuvaa na kuvua?

	Yes (1)	No (2)
Ninayo machache?	□	□
Ninayo ya taya la juu lote?	□	□
Ninayo ya taya la chini lote?	□	□

7. Je unaiuelezeaje hali ya meno yako? Kuwa ni "nzuri sana", "nzuri", "ya wastani", "mbaya", au "mbaya sana"?

?

	Teeth	Gums
Nzuri sana	□ 1	□ 1
Nzuri	□ 2	□ 2
Ya wastani	□ 3	□ 3
Mbaya	□ 4	□ 4
Mbaya sana	□ 5	□ 5
Sijui	□ 9	□ 9



8.8. Je huwa unapiga mswaki au unasafisha meno yako mara ngapi?

Huwa sipigi mswaki	<input type="checkbox"/> 1
Mara moja kwa mwezi	<input type="checkbox"/> 2
Mara 2-3 kwa mwezi	<input type="checkbox"/> 3
Mara moja kwa wiki	<input type="checkbox"/> 4
Mara 2-6 kwa wiki	<input type="checkbox"/> 5
Mara moja kwa siku	<input type="checkbox"/> 6
Mara mbili kwa siku	<input type="checkbox"/> 7

9. Je unatumia vifaa vifuatavyo kusafisha meno?

(taja kila kifaa)

	1 Yes	2. No
Mswaki wa plastiki	<input type="checkbox"/>	<input type="checkbox"/>
Vijiti vya miti vya kusafishia meno	<input type="checkbox"/>	<input type="checkbox"/>
Vijiti vya plastik kusafishia meno	<input type="checkbox"/>	<input type="checkbox"/>
Uzi wa kusafishia meno (dental floss)	<input type="checkbox"/>	<input type="checkbox"/>
Mkaa	<input type="checkbox"/>	<input type="checkbox"/>
Mswaki wa mti	<input type="checkbox"/>	<input type="checkbox"/>
Vifaa vinginevyo	<input type="checkbox"/>	<input type="checkbox"/>
(Tafadhali vitaje vifaa vingine unavyotumia)		

10. Je huwa unatumia dawa ya mswaki wakati wa kupiga mswaki?

Ndiyo	<input type="checkbox"/> 1
Hapana	<input type="checkbox"/> 2

11. Je dawa ya mswaki unayotumia ina madini ya fluorides?

Ndiyo	<input type="checkbox"/> 1
Hapana	<input type="checkbox"/> 2
Sijui	<input type="checkbox"/> 9

12. Ni muda mrefu kiasi gani tangu uende kuonana na daktari wa meno?

Chini ya miezi 6	<input type="checkbox"/> 1
Kati ya miezi 6-12	<input type="checkbox"/> 2
Zaidi ya mwaka mmoja 1 ila haifiki miaka 2	<input type="checkbox"/> 3
Miaka 2 ila haifiki miaka 5	<input type="checkbox"/> 4
Miaka 5 au Zaidi	<input type="checkbox"/> 5
Sijawahi kwenda kuonana na daktari wa meno	<input type="checkbox"/> 6

13. Kwa mara ile ya mwisho; ni sababu gani ilikufanya uende kuonana na daktari wa meno?

Kupata ushauri.	<input type="checkbox"/> 1
Maumivu au shida ya meno, ufizi au kinywa	<input type="checkbox"/> 2



Matibabu ya mwanzo au matibabu ya mundezezo	<input type="checkbox"/> 3
Ukaguzi wa kawaida.	<input type="checkbox"/> 4
Sijui au sikumbuki.	<input type="checkbox"/> 5



14. Kwa sababu ya maradhi ya meno umewahi kupata matatizo yafuatayo katika miezi 12 iliyopita?

	Mara nyingi 4	Mara kadhaa 3	Wakati mwingine 2	Hapana 1	Sijui 0
(a) Matatizo wakati wa kung'ata	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Matatizo wakati wa kutafuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Matatizo wakati wa kuongea/ kutamka maneno	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Kukauka mdomo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Kuona aibu kwa uonekano wa meno	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Mara nyingi 4	Mara kadhaa 3	Wakati mwingine 2	Hapana 1	Sijui 0
(f) Kujisikia wasiwasi (tense) kuhusu matatizo ya meno na fizi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Kujizuia kutabasamu sababu ya meno	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Kushindwa kulala vizuri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Kukosa kwenda kazini	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Kushindwa kufanya shughuli za kawaida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Kutomvumilia mwenzi au watu wangu wa karibu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) kushindwa kujumuika kwenye sherehe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Ni mara ngapi unakula vyakula au kunywa vinywaji vifuatavyo hata kama ni kwa uchache? (Soma kila chakula au kinywaji)

	Mara nyingi kwa siku 6	Kila siku 5	Mara kadhaa kwa wiki 4	Mara moja kwa wiki 3	Mara kadhaa kwa mwezi 2	Kwa uchache sana/situmii 1
Matunda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biskuti, keki,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mandazi au vitumbua	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jemu au asali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chewing gum yenye sukari kama Bigijii	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pipi/chokoleti	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coca Cola soda nyingine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Chai iliyotiwa sukari	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kahawa iliyotiwa sukari	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**16. Ni mara ngapi unatumia kati ya tumbaku zilizotajwa?
(Soma kila kimoja)**

	Mara nyingi kwa siku	Kila siku	Mara kadha kwa wiki	Mara moja kwa wiki	Mara kadha kwa mwezi	Mara chache sana/situmii tumbaku
	6	5	4	3	2	1
Sigara	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cigars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kiko	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tumbaku ya kutafuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ugoro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nyinginezo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nitajie						

17. Katika siku 30 zilizopita, kwa siku ulizokunywa pombe ulikunywa vipimo (chupa) vingapi kwa siku?

Sijanywa pombe yoyote kwa siku 30 zilizopita	<input type="checkbox"/> 0
Chini ya chupa au kipimo kimoja	<input type="checkbox"/> 0
Chupa au kipimo kimoja	<input type="checkbox"/> 1
Chupa mbili au vipimo viwili	<input type="checkbox"/> 2
Chupa tatu au vipimo vitatu	<input type="checkbox"/> 3
Chupa tatano au vipimo vitano	<input type="checkbox"/> 4
Zaidi ya chupa au vipimo vitano	<input type="checkbox"/> 5

18. Umemaliza masomo katika kiwango gani?

Sikusoma shule.	<input type="checkbox"/> 1
Sikumaliza elimu ya msingi	<input type="checkbox"/> 2
Nimemaliza elimu ya msingi	<input type="checkbox"/> 3
Sikumaliza elimu ya sekondari.	<input type="checkbox"/> 4
Nimemaliza elimu ya kidato cha nne	<input type="checkbox"/> 5
Nimemaliza kidato cha sita.	<input type="checkbox"/> 6
Nimemaliza elimu ya chuo	<input type="checkbox"/> 7



(ii) Tanzania National Oral Health Survey form 2020 (Adults)

Leave blank	Year	Month	Day	Identification No.	Orig/Dupl	Examiner
(1) <input type="text"/>	(4) <input type="text"/>	(5) <input type="text"/>	(10) <input type="text"/>	(11) <input type="text"/>	(14) <input type="text"/>	(15) <input type="text"/>
				(16) <input type="text"/>	(17) <input type="text"/>	
General information:				Sex 1=M, 2=F	Date of birth	Age in years
[Name] _____				(18) <input type="text"/>	(19) <input type="text"/>	(24) <input type="text"/>
Ethnic group (27) <input type="text"/>		Other group (29) <input type="text"/>		Years in school (31) <input type="text"/>	Occupation <input type="text"/>	
Community (geographical location) (14) <input type="text"/>		Location Urban (1) Periurban (2) Rural (3) <input type="text"/>		Other data _____ (37) <input type="text"/>		
Other data _____ (41) <input type="text"/>		Extra-oral examination _____ (43) <input type="text"/>				

<p>Dentition status</p> <table style="width: 100%; text-align: center;"> <tr> <td></td> <td>18</td><td>17</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td> <td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td> <td></td> </tr> <tr> <td>Crown (45)</td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td>(60)</td> </tr> <tr> <td>Root (61)</td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td>(76)</td> </tr> <tr> <td>Crown (77)</td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td>(92)</td> </tr> <tr> <td>Root (91)</td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> <td>(108)</td> </tr> <tr> <td></td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td> <td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td> <td></td> </tr> </table>		18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28		Crown (45)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	(60)	Root (61)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	(76)	Crown (77)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	(92)	Root (91)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	(108)		48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38		<p>Permanent teeth</p> <p>Status</p> <p>0 = Sound 1 = Caries 2 = Filled w/caries 3 = Filled, no caries 4 = Missing due to caries 5 = Missing for any another reason 6 = Fissure sealant 7 = Fixed dental prosthesis/crown abutment, veneer, implant 8 = Unerupted 9 = Not recorded</p>
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	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28																																																																																													
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<p>Loss of attachment</p> <p>Severity 0 = 0–3 mm 1 = 4–5 mm Cemento-enamel junction (CEJ) within black band 2 = 6–8 mm CEJ between upper limit of black band and 8.5 mm ring 3 = 9–11 mm CEJ between 8.5 mm and 11.5 mm ring 4 = 12 mm or more CEJ beyond 11.5 mm ring X = Excluded sextant 9 = Not recorded</p> <p><small>* Not recorded under 15 years of age</small></p>	<p>Index teeth</p> <table style="margin: auto; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">17/16</td> <td style="text-align: center;">11</td> <td style="text-align: center;">26/27</td> <td></td> </tr> <tr> <td style="text-align: right;">(173)</td> <td style="border: 1px solid black; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; width: 30px; height: 30px;"></td> <td style="text-align: left;">(175)</td> </tr> <tr> <td style="text-align: right;">(176)</td> <td style="border: 1px solid black; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; width: 30px; height: 30px;"></td> <td style="text-align: left;">(178)</td> </tr> <tr> <td></td> <td style="text-align: center;">47/46</td> <td style="text-align: center;">31</td> <td style="text-align: center;">36/37</td> <td></td> </tr> </table>		17/16	11	26/27		(173)				(175)	(176)				(178)		47/46	31	36/37		<p>Enamel fluorosis <input style="width: 30px; height: 20px;" type="text"/> (179)</p> <p>Severity 0 = Normal 1 = Questionable 2 = Very mild 3 = Mild 4 = Moderate 5 = Severe 8 = Excluded (crown, restoration, "bracket") 9 = Not recorded (unerupted tooth)</p>
	17/16	11	26/27																			
(173)				(175)																		
(176)				(178)																		
	47/46	31	36/37																			
<p>Dental erosion</p> <p>Severity <input style="width: 30px; height: 20px;" type="text"/> (180)</p> <p>0 = No sign of erosion 1 = Enamel lesion 2 = Dentinal lesion 3 = Pulp involvement</p> <p>Number of teeth affected</p> <p>(181) <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> (182)</p>	<p>Dental trauma</p> <p>Status <input style="width: 30px; height: 20px;" type="text"/> (183)</p> <p>0 = No sign of injury 1 = Treated injury 2 = Enamel fracture only 3 = Enamel and dentine fracture 4 = Pulp involvement 5 = Missing tooth due to trauma 6 = Other damage 9 = Excluded tooth</p>																					
<p>Oral mucosal lesions</p> <p><input style="width: 30px; height: 20px;" type="text"/> (186)</p> <p><input style="width: 30px; height: 20px;" type="text"/> (187)</p> <p><input style="width: 30px; height: 20px;" type="text"/> (188)</p> <p>Condition</p> <p>0 = No abnormal condition 1 = Malignant tumour (oral cancer) 2 = Leukoplakia 3 = Lichen planus 4 = Ulceration (aphthous, herpetic, traumatic) 5 = Acute necrotizing ulcerative gingivitis (ANUG) 6 = Candidiasis 7 = Abscess 8 = Other condition (specify if possible) 9 = Not recorded</p>	<p><input style="width: 30px; height: 20px;" type="text"/> (189)</p> <p><input style="width: 30px; height: 20px;" type="text"/> (190)</p> <p><input style="width: 30px; height: 20px;" type="text"/> (191)</p> <p>Location</p> <p>0 = Vermillion border 1 = Commissures 2 = Lips 3 = Sulci 4 = Buccal mucosa 5 = Floor of the mouth 6 = Tongue 7 = Hard and/or soft palate 8 = Alveolar ridges/gingiva 9 = Not recorded</p>	<p>Denture(s)</p> <p style="text-align: center;">Upper Lower</p> <p style="text-align: center;"><input style="width: 30px; height: 20px;" type="text"/> (192) <input style="width: 30px; height: 20px;" type="text"/> (193)</p> <p>Status</p> <p>0 = No denture 1 = Partial denture 2 = Complete denture 9 = Not recorded</p>																				
<p>Intervention urgency <input style="width: 30px; height: 20px;" type="text"/> (194)</p> <p>0 = No treatment needed 1 = Preventive or routine treatment needed 2 = Prompt treatment (including scaling) needed 3 = Immediate (urgent) treatment needed due to pain or infection of dental and/or oral origin 4 = Referred for comprehensive evaluation or medical/dental treatment (systemic condition)</p>																						



(iii) Oral Health Questionnaire for Children: National Oral health survey 2020

First, we would like you to answer some questions concerning yourself and your teeth.

Identification number □□□□

Sex

Boy 1

Girl 2

Location

Cosmopolitan 1

Urban 2

Rural 3

2. How old are you today?
..... (Years)

**3. How would you describe the state of your teeth and gums?
Is it “good”, “average” or “poor”?**

	Teeth	Gums
Good	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Average	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Poor	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Don't know.	<input type="checkbox"/> 9	<input type="checkbox"/> 9

4. How often during the past 12 months did you have toothache or feel discomfort due to your teeth?

Often	<input type="checkbox"/> 1
Occasionally.	<input type="checkbox"/> 2
Rarely	<input type="checkbox"/> 3
Never	<input type="checkbox"/> 4
Don't know.	<input type="checkbox"/> 9



Now please answer some questions about the care of your teeth

5. How often did you go to the dentist during the past 12 months?

(Put a tick/cross in one only)

Once.	<input type="checkbox"/> 1
Twice.	<input type="checkbox"/> 2
Three times	<input type="checkbox"/> 3
Four times	<input type="checkbox"/> 4
More than four times	<input type="checkbox"/> 5
I had no visit to dentist during the past 12 months	<input type="checkbox"/> 6
I have never received dental care/visited a dentist	<input type="checkbox"/> 7
I don't know/don't remember	<input type="checkbox"/> 9

If you did not see a dentist during the last 12 months, go on to question 7.

6. What was the reason for your last visit to the dentist?

(Put a tick/cross in one box only)

Pain or trouble with teeth, gums, or mouth	<input type="checkbox"/> 1
Treatment/follow-up treatment	<input type="checkbox"/> 2
Routine check-up of teeth/treatment.	<input type="checkbox"/> 3
I don't know/don't remember	<input type="checkbox"/> 9

7. How often do you clean your teeth?

(Put a tick/cross in one box only)

Never	<input type="checkbox"/> 1
Several times a month (2-3 times)	<input type="checkbox"/> 2
Once a week	<input type="checkbox"/> 3
Several times a week (2-6 times)	<input type="checkbox"/> 4
Once a day	<input type="checkbox"/> 5
2 or more times a day	<input type="checkbox"/> 6



8. Do you use any of the following to clean your teeth? (Read each item)

	1 Yes	2. No
Toothbrush.	<input type="checkbox"/>	<input type="checkbox"/>
Wooden toothpicks	<input type="checkbox"/>	<input type="checkbox"/>
Plastic toothpicks?	<input type="checkbox"/>	<input type="checkbox"/>
Thread (dental floss)	<input type="checkbox"/>	<input type="checkbox"/>
Charcoal	<input type="checkbox"/>	<input type="checkbox"/>
Chewstick/miswak	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
(Please specify)		

9. Do you use tooth paste when brushing or cleaning your teeth?

Yes	<input type="checkbox"/> 1
No	<input type="checkbox"/> 2

10. Does the toothpaste you are using contain fluorides?

Yes	<input type="checkbox"/> 1
No	<input type="checkbox"/> 2
I don't know	<input type="checkbox"/> 9

11. Because of the state of your teeth and mouth, have you experienced any of the following problems during the past year?

	Yes 1	No 2	Don't know 3
(a) I am not satisfied with the appearance of my teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) I often avoid smiling and laughing because of my teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Other children make fun of my teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Toothache or discomfort caused by my teeth forced me to miss classes at school or miss school for whole days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) I have difficulty biting hard foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) I have difficulty in chewing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. How often do you eat or drink any of the following foods, even in small quantities?

(Read each item)

	Several times a day	Every day	Several times a week	Once a week	Several times a month	Seldom/Never
	6	5	4	3	2	1
Fresh fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Biscuits, cakes, cream cakes, sweet pies, buns etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweet pies, buns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jam or honey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chewing gum containing sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweets/candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coca-Cola/other soft drinks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Milk with sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tea with sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coffee with sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**13. How often do you use any of the following types of tobacco?
(Read each item)**

	Several times a day	Every day	Several times a week	Once a week	Several times a month	Seldom/Never
	6	5	4	3	2	1
Cigarettes, pipe, or cigars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chewing tobacco or snuff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What level of education has your father completed (or your stepfather, guardian or other male adult living with you)?

No formal schooling.	<input type="checkbox"/> 1
Less than primary school	<input type="checkbox"/> 2
Primary school completed	<input type="checkbox"/> 3
Secondary school incomplete.	<input type="checkbox"/> 4
Secondary school completed	<input type="checkbox"/> 5
High school completed.	<input type="checkbox"/> 6
College/university completed	<input type="checkbox"/> 7
No male adult in household	<input type="checkbox"/> 8
Don't know	<input type="checkbox"/> 9

What level of education has your mother completed?

No formal schooling.	<input type="checkbox"/> 1
Less than primary school	<input type="checkbox"/> 2
Primary school completed	<input type="checkbox"/> 3
Secondary school incomplete.	<input type="checkbox"/> 4
Secondary school completed	<input type="checkbox"/> 5



High school completed.	<input type="checkbox"/> 6
College/university completed	<input type="checkbox"/> 7
No female adult in household	<input type="checkbox"/> 8
Don't know	<input type="checkbox"/> 9



(iii-b) Dodoso la afya ya kinywa na meno kwa watoto: Utafiti wa kitaifa wa afya ya kinywa 2020

Kwanza tunapenda kukuuliza maswali yahusuyo afya ya kinywa na meno yako:

Nambari ya utambulisho □□□□

Jinsia

Mvulana □ 1

Msichana □ 2

Unapoishi

Jijini □ 1

Mjini □ 2

Kijijini □ 3

2. Una miaka mingapi leo?
..... (Miaka)

3. **Je unaelezeaje hali ya meno yako? Kuwa ni "nzuri sana", "nzuri", "ya wastani", "mbaya", au "mbaya sana"?**

	Teeth	Gums
nzuri	□ 1	□ 1
Wastani	□ 2	□ 2
Mbaya	□ 3	□ 3
Sijui.	□ 9	□ 9

4. **Kwa miezi 12 iliyopita, je kinywa au meno yako vimekuletea maumivu au kukukosesha raha?**

Mara nyingi	□ 1
Mara kadhaa.	□ 2
Mara chache sana	□ 3
Haijatokea	□ 4
Sijui.	□ 9

Tafadhali sasa jibu maswali yanayohusu meno yako

5. **Katika miezi 12 iliyopita ni mara ngapi umekwenda kwa daktari wa meno?**
(chagua moja tu na weka alama ya vema)

Mara moja.	□ 1
Mara mbili	□ 2
Mara tatu	□ 3
Mara nne	□ 4
Zaidi ya mara nne	□ 5
Sijakwenda kwa daktari meno kwa miezi 12 iliyopita	□ 6



Sijawahi kwenda kwa daktari meno kabisa	<input type="checkbox"/> 7
Sijui au sikumbuki	<input type="checkbox"/> 9

Kama hujawahi kwenda kwa daktari wa meno katika miezi 12 iliyopita basi nenda swali la 7

6. Mara ya mwisho ulipokwenda kwa daktari wa meno ulikuwa na shida gani?
(Chagua moja na weka alama ya vema)

Maumivu au shida ya meno, gums au ufizi	<input type="checkbox"/> 1
Matibabu au matibabu ya muendelezo	<input type="checkbox"/> 2
Uchunguzi wa kawaida	<input type="checkbox"/> 3
Sijui au sikumbuki	<input type="checkbox"/> 9

7. Hua unapiga mswaki mara ngapi?
(Chagua moja na weka alama ya vema)

Hua sipigi mswaki	<input type="checkbox"/> 1
Mara 2–3 kwa mwezi	<input type="checkbox"/> 2
Mara moja kwa wiki	<input type="checkbox"/> 3
Mara 2–6 kwa wiki	<input type="checkbox"/> 4
Mara moja kwa siku	<input type="checkbox"/> 5
Mara mbili au Zaidi kwa siku	<input type="checkbox"/> 6

8. Je unatumia vifaa vifuatavyo kusafisha meno?
(taja kila kifaa)

	1 Ndiyo	2. Hapana
Mswaki wa plastiki	<input type="checkbox"/>	<input type="checkbox"/>
Vijiti vya miti kusafisha meno	<input type="checkbox"/>	<input type="checkbox"/>
Vijiti vya plastik kusafisha meno	<input type="checkbox"/>	<input type="checkbox"/>
Uzi wa kusafishia meno (dental floss)	<input type="checkbox"/>	<input type="checkbox"/>
Mkaa	<input type="checkbox"/>	<input type="checkbox"/>
Mswaki wa mti	<input type="checkbox"/>	<input type="checkbox"/>
Vifaa vinginevyo	<input type="checkbox"/>	<input type="checkbox"/>
(Tafadhali vitaje vifaa vingine unavyotumia)		
.....		

9. Je huwa unapiga mswaki na dawa ya mswaki?

Ndiyo	<input type="checkbox"/> 1
hapana	<input type="checkbox"/> 2

10. Je dawa ya mswaki unayotumia ina madini ya fluoride?

Ndiyo	<input type="checkbox"/> 1
Hapana	<input type="checkbox"/> 2



Sijui	<input type="checkbox"/> 9
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11. Kwa sababu ya hali ya meno na kinywa chako umewahi kupata matatizo yafuatayo katika mwaka mmoja uliopita?

	Ndiyo 1	Hapana 2	Sijui 3
Siridhishwi na muonekano wa meno yangu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Huwa ninajizuia kutabasamu na kuchaka kwa sababu ya meno yangu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Watoto wengine hunitania juu ya meno yangu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) maumivu ya jino hunifanya kukosa kwenda shule au nikose baadhi ya vipindi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Siwezi kung'ata chakula	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Ninapata shida kutafuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Ni mara ngapi unakula vyakula au kunywa vinywaji vifuatavyo hata kama ni kwa uchache?

(Soma kila chakula au kinywaji)

	Mara kadhaa kwa siku	Kila siku	Mara kadhaa kwa wiki	Mara moja kwa wiki	Mara kadhaa kwa mwezi	Kwa uchache sana au situmii kabisa
	6	5	4	3	2	1
matunda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biskuti, keki,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maandazi au vitumbua	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jemu au asali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chewing gum kama bigijii	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pipi/chokoleti	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cocacola/soda nyingine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maziwa yaliyotiwa sukari sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chai yenye sukari	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kahawa yenye sukari	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Ni mara ngapi unatumia kati ya tumbaku zilizotajwa? (Soma kila moja kisha chagua moja tu)

	Mara kadhaa kwa siku	Kila siku	Mara kadhaa kwa wiki	Mara moja kwa wiki	Mara kadhaa kwa mwezi	Kwa uchache sana/Situmii tumbaku kabisa
	6	5	4	3	2	1
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Sigara, Cigar au kiko	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tumbaku ya kutafuna au ugoro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Baba yako au mlezi wako wa kiume amemaliza elimu ya kiwango gani?

Hakusoma shule.	<input type="checkbox"/> 1
Hakumaliza elimu ya msingi	<input type="checkbox"/> 2
Amemaliza elimu ya msingi	<input type="checkbox"/> 3
Hakumaliza kidato cha nne.	<input type="checkbox"/> 4
Amemaliza kidato cha nne	<input type="checkbox"/> 5
Amemaliza kidato cha sita.	<input type="checkbox"/> 6
Amemaliza chuo	<input type="checkbox"/> 7
Hakuna mlezi wa kiume nyumbani kwetu	<input type="checkbox"/> 8
Sijui	<input type="checkbox"/> 9

Mama yako au mlezi wako wa kike ana elimu ya kiwango gani?

Hakusoma shule	<input type="checkbox"/> 1
Hakumaliza shule ya msingi	<input type="checkbox"/> 2
Alimaliza elimu ya msingi	<input type="checkbox"/> 3
Hakumaliza kidato cha nne.	<input type="checkbox"/> 4
Alimaliza kidato cha nne	<input type="checkbox"/> 5
Alimaliza kidato cha sita.	<input type="checkbox"/> 6
Alimaliza chuo	<input type="checkbox"/> 7
Hatuna mlezi wa kike nyumbani kwetu	<input type="checkbox"/> 8
Sijui elimu ya mama	<input type="checkbox"/> 9



(v)Occlusion clinical record form for 5-, 12- and 15-year-olds (Modified Björk criteria):

Sagittal

1. Maxillary overjet

- 1 = grade 1 (1-4.9 mm)
- 2 = grade 2 (5-8.9 mm)
- 3 = grade 3 (9 mm or more)
- 9= not registered

2. Mandibular overjet

- 0 = absent
- 1 = grade 1 (<0-1.9mm)
- 2= grade 2 (<2 mm)

3. Angle Classification

- 1 = class I
- 2 = class II (occlusion distal to Cl. I relation)
- 3 = class III (occlusion mesial to Cl. I relation)
- 9= not registered

Vertical

4. Deep bite

- 1 = grade 1 (0.1-2.9 mm, overlapping of the upper and lower right incisors)
- 2 = grade 2 (3-4.9 mm)
- 3 = grade 3 (5 mm or more)
- 9= not registered

5. Open bite

- 0 = absent
- 1 = frontal open bite grade 1 (0-1.9 mm)
- 2 = frontal open bite grade 2 (2 mm or more)
- 3= lateral open bite

Transversal

6. Cross-bite (cross-bite of one or more teeth in the side segments)

- 1= absent
- 2= present unilateral
- 3= present bilateral

7. Midline shift (if the displacement in relation to the midline of the face was ≥ 2 mm)

- 1= absent



2= present

8. Scissor bite (Scissor bite of one or more teeth in the side segments)

1= absent

2= present unilateral

3= present bilateral

9. Crowding (of ≥ 2 mm in a segment)

1= absent

2= present upper jaw

3= present lower jaw

4= present both jaws

10. Spacing (≥ 2 mm in a segment)

1 = absent

2 = present upper jaw

3= present lower jaw

4= present both jaws

THE END

