THE REASONS AND PATTERNS OF PERMANENT TEETH EXTRACTION IN-PATIENTS SEEN AT THE UNIVERSITY OF NAIROBI DENTAL HOSPITAL.

A COMMUNITY DENTISTRY RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILMENT OF THE BACHELOR OF DENTAL SURGERY DEGREE AT THE UNIVERSITY OF NAIROBI.

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<td>Masters in Public Health</td>
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<td>UON</td>
<td>University of Nairobi</td>
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<td>Msc.</td>
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<td>FDSRCS</td>
<td>Fellow of the Dental School Royal College of Surgery</td>
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3. INTRODUCTION.

Despite improvements in oral health conditions among children, tooth loss remains a dental public health problem among the adults. Studies on tooth loss have shown that although edentulousness is on the decline, a substantial proportion of adults is still losing their teeth.\textsuperscript{1,2}

There are several reasons for tooth extraction; dental pain,\textsuperscript{3} tooth decay,\textsuperscript{4} periodontal disease,\textsuperscript{5} pulpitis and apical periodontitis,\textsuperscript{6} orthodontic treatment,\textsuperscript{7} preprosthetic treatment,\textsuperscript{8} traumatic injury to the tooth,\textsuperscript{9} and tooth impaction.\textsuperscript{9} There is no doubt caries and periodontitis are the major reasons for tooth extraction\textsuperscript{5,9} but there have been variation in reports to whether caries or periodontal disease is the major cause of tooth loss.

Some of the causes for permanent tooth loss however are preventable if adequate oral hygiene measures are observed before their onset or appropriate preventive treatment is carried out at the right time to prevent progression to irreversible damage. This is to say that the time of presentation of diseased teeth is very important.

This study is aimed at determining the reason for permanent-teeth extraction among patients seen at the University of Nairobi Dental Hospital and the extent to which these reasons account for the extractions carried. The study will also evaluate the patterns of permanent tooth loss in relation to their position in the jaws and the male to female ratios.
4. LITERATURE REVIEW.

Studies investigating the reasons for tooth extraction have been carried out in many countries especially in developed industrial Europe. The results of these studies indicated that dental caries and periodontal disease were the most common causes of tooth loss\(^3,11\).

Dental caries was the most important cause of tooth loss in the populations under the age of forty years while the periodontal disease were the major causes for tooth loss in patients over forty years\(^3\).

A study carried out in an adult rural population in Kenya by Manji in 1988 showed that the prevalence of complete edentulousness was less than 0.3%\(^12\).

A study carried out in Brazil by Caldes et al indicated that more females (213) than males (191) had extractions within the study population. The maxillary teeth and the mandibular molars and premolars were extracted more due to dental caries as opposed to the mandibular canines and incisors, which were mostly extracted due to caries. 70.3% of these teeth were extracted due to caries and its sequele, 15.1% due to periodontal disease, 6.4% for preprosthetic reasons, 3.7% were wisdom teeth, 2.5% orthodontic reasons and 1.0% as a result of trauma and patient request.

Similar trends in which dental caries had the largest proportion was observed in several other countries except in Canada where periodontal disease accounted for 35.9%, dental caries 28.9%, pre-prosthetic treatment 3.9%, orthodontic reasons 7.4%, trauma 0.8%, impaction 0.8% and other reasons 6.4%\(^5\). Similarly, in Germany, periodontal diseases accounted for 27.3% of the extractions, dental caries 20.7%, pre-prosthetic treatment 11.2%, orthodontic treatment, trauma, impaction and other reasons accounting for 4.1%, 0.4%, 14.7% and 2.9% respectively.
5. JUSTIFICATION OF THE STUDY.

Understanding the reasons for tooth loss in different populations is important in the formulation of strategies and planning of dental health services as well as providing information about the prevalence of dental diseases and the availability of dental care.

In order to reduce the number of teeth lost per individual and therefore reduce the rate of edentulousness it is important to understand the reasons that result in tooth loss. An understanding of this will therefore enable the medical personnel decide whether primary, secondary or tertiary prevention is the most logical way to reduce tooth morbidity among any population under study.

The study can serve as a good guide for policy makers to use while formulating health policies aimed at improving the oral health status of the community under study and will also help raise interests as to why as in this study there are differences among the genders for the reasons for extractions.

The analysis of tooth mortality statistics is important in evaluating dental care and is equivalent to that of mortality statistics in the medical field research on the criteria used by the dentist for tooth extractions would help separate disease-specific risk factors from professional treatment decisions.

WHO as at 1989 also set various global goals regarding edentulousness. These include achieving a 50% reduction in the present level of edentulousness in 35-44 year olds, to achieve a 25% reduction in the present levels of edentulousness in +65 year olds. This group should also have 20 strategically placed teeth (functional teeth) in approximately 50% of them (World Health Assembly). The only way through an analysis of the current levels of edentulousness can be analyzed is through a study like this.

6. STATEMENT OF THE PROBLEM.

Some of the results for tooth loss are: undermining cosmetic appearance resulting in a myriad of psychosomatic complications and problems of social acceptance especially if the tooth loss occurs at an early age and involves the labial segments, loss of masticatory efficiency which may in the long run present with nutritional deficiencies and the inability to enjoy certain foods especially with complete edentulousness, migration of teeth resulting in discrepancies which reduce an individuals ability to maintain plaque levels at minimum with the conventional plaque control measures, extrusion of teeth which may result in oral soft tissue injury, distorted occlusion creating periodontal conditions due to trauma from occlusion, temporomandibular joint disorders resulting even in myofacial pain dysfunction syndrome and alveolar bone loss which poses difficulties if dentures are required later on in life due to limited denture supporting area.

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An understanding of this will therefore enable the medical personnel decide whether primary, secondary or tertiary prevention is the most logical way to reduce tooth morbidity among any population under study.

The reasons for tooth loss are affected by a number of other factors. They include irregular attendance\textsuperscript{13}, ineffectiveness of dental services\textsuperscript{14}, age and household income\textsuperscript{15}, anxiety\textsuperscript{16}, function and strategic importance of the tooth status to the patient\textsuperscript{17}.

It is important to bear in mind that extraction of teeth is not only based on disease related factors. Studies in many European and other countries have shown that the decision to extract a tooth is substantially influenced by factors related both to the patient and dentists specific requirements. These factors may include the dentist’s philosophy of practice, his experience as well as esthetic, prosthetic and economic considerations. These factors may play an important role in the decision for tooth extraction\textsuperscript{18} but most of the studies including this one, they were not taken into consideration.

7.\textbf{OBJECTIVES.}

1. To determine the main cause of tooth extraction among patients attending the University of Nairobi dental hospital.

2. To determine the distribution of reasons for extractions among different ages and the different genders.

3. To evaluate the patterns of tooth extraction among patients presenting to the oral diagnosis clinics.

4. Partial fulfillment of the Bachelor of Dental Surgery degree course at the University of Nairobi.

8.\textbf{HYPOTHESIS.}

1. Dental caries and its sequele are the main cause of tooth loss in patients seeking treatment at the University of Nairobi dental hospital.
9. VARIABLES.

i) **Independent.**

1. Dental caries.
2. Periodontal disease.
3. Trauma.
4. Eruption problems.

ii) **Dependent.**

1. Tooth loss.

iii) **Socio demographic characteristics.**

1. Age.
2. Sex.
10. MATERIALS AND METHODS.

i). STUDY AREA.

The study is to be carried out in Nairobi at the University of Nairobi Dental hospital. Nairobi is the capital city of Kenya with a population of about three million people drawn from all tribes in the country.

The University of Nairobi dental hospital is located on Argwings Khodek road opposite the Lee funeral home. The hospital is a teaching hospital for undergraduate and post-graduate dental surgeons and is also a referral hospital for specialized dental treatment. It is organized in clinics i.e. oral diagnosis, orthodontics and paediatrics, prosthetics, periodontology and conservative clinics. Patients visiting this hospital are first seen in the oral diagnosis clinic that receives about seventy patients per week on average. Students who carry out both simple and surgical extractions under supervision run the clinics by consultants.

ii). STUDY POPULATION.

Patients presenting to the University of Nairobi dental hospital oral diagnosis clinics.

iii). STUDY DESIGN.

A descriptive cross sectional study using a hospital based study group will be used.
iv). **SAMPLE SIZE.**

Sample size will be calculated using an estimated prevalence of 10% and a confidence level of 95%. I.e. of the patients presenting to the oral diagnosis clinics, 10% have indications for extraction.

\[ N = Z^2 P(1-P) \]

\[ N = \text{Sample size} \]

\[ C^2 \]

\[ P = \text{Prevalence} = 10\% \]

\[ C = 100 - \text{Confidence level} = 5 \]

\[ Z = \text{Corresponding value of confidence level} = 1.96 \]

\[ N = 1.96^2 \times 10(100 - 10) \]

\[ 5^2 \]

\[ = 3.8416 \times 10 \times 90 \]

\[ 25 \]

\[ = 138 \text{ patients}. \]

v). **SAMPLING.**

All the patients presenting to the oral diagnosis clinics will be evaluated whether for the first time referrals from other clinics or reappointed.

vi). **DATA COLLECTION.**

A questionnaire will be filled out by the student/dentist carrying the extraction. The adopted criteria of classification of reasons for extraction are based on those by Ainamo et al, Cahen et al, Kay and Blinkhorn, Agerholm and Sidi and Murray et al.

vii). **INCLUSION CRITERIA.**

Patients presenting to the oral diagnosis clinics and indicated for extraction.

viii). **EXCLUSION CRITERIA.**

Patients presenting to oral diagnosis clinic but not indicated for extraction.
12. **ETHICAL CONSIDERATIONS.**

The reason for the study will be briefly explained to the participants before administering the questionnaire and examination.

13. **BUDGET.**

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**Report typing Printing and binding of final paper**

| Computer print outs-40 at 10/= each                   | 400.00 |
| Binding                                               | 120.00 |
|                                                      | 520.00 |
|                                                      | **2780.00** |
13. PERCEIVED BENEFITS.

1. Results from this study will give an overview of the oral health status of the people living in Nairobi, as the hospital is a referral center for specialized dental treatment. This will enable policy makers to formulate oral health programs geared towards elimination of the major causes of permanent teeth loss and therefore reduce edentulism.

2. Information on the patterns of permanent teeth loss will also be obtained for academic use in further research regarding edentulousness at the dental school.

3. Partial fulfillment of the Bachelor of Dental Surgery Degree.
REFERENCES.


**Questionnaire.**

Please tick where appropriate.

1. Patients: Age ....... years.

2. Sex  
   - [ ] Male  
   - [ ] Female

   Reference number ...........

3. Teeth extracted and reason for extraction. Please cross the tooth on the chart and indicate the reason for the extraction using the code provided below:

   - Initial dental caries-IDC
   - Failed root canal treatment-FRCT
   - Pre-prosthetic treatment-PP
   - Impaction-I
   - Orthodontic treatment-OT
   - Recurrent dental caries-RDC
   - Periodontitis-P
   - Trauma/Jaw fracture-T
   - Chronic pericoronitis-CP
   - Other reasons-O (Please specify)

   8 7 6 5 4 3 2 1 1 2 3 4 5 6 7 8

   8 7 6 5 4 3 2 1 1 2 3 4 5 6 7 8

4. Others? Please specify .................................................................