KNOWLEDGE ON CAUSES AND PREVENTION OF DENTAL CARIES AMONG PATIENTS ATTENDING UNIVERSITY OF NAIROBI DENTAL HOSPITAL.

INVESTIGATOR: MOHAMED HANEEF BAGHA

BDS LEVEL 3

ADM NO: V28/28759/09

A research proposal submitted in partial fulfillment for the award of a degree in Bachelor of Dental Surgery at the University of Nairobi

YEAR 2012
DECLARATION

I, Mohamed Haneef Bagha declare this as my original work, except as acknowledged in the customary manner. To the best of my knowledge this study contains no material previously published or written by another person except where due reference is made.

SIGN: [Signature]  DATE: 9/8/2012
APPROVAL

I MOHAMED HANEFF BAGHA wish to submit this proposal to UON/KNH research ethics and standard committee for approval to carry out the study.

SIGN............................... DATE 9/8/12

This proposal has been submitted with the approval of my supervisors.

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SIGNATURE.......................... DATE 9/3/12
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDY TITLE</td>
<td>I</td>
</tr>
<tr>
<td>DECLARATION</td>
<td>II</td>
</tr>
<tr>
<td>APPROVAL</td>
<td>III</td>
</tr>
<tr>
<td>TABLE OF CONTENT</td>
<td>IV</td>
</tr>
<tr>
<td>ABBREVIATIONS</td>
<td>VI</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>1</td>
</tr>
<tr>
<td>1.0 INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>2.0 LITERATURE REVIEW</td>
<td>3</td>
</tr>
<tr>
<td>3.0 STATEMENT OF PROBLEM AND JUSTIFICATION OF STUDY</td>
<td>5</td>
</tr>
<tr>
<td>3.1 Statement Of Problem</td>
<td>5</td>
</tr>
<tr>
<td>3.2 Statement Of Justification</td>
<td>5</td>
</tr>
<tr>
<td>3.3 Objectives</td>
<td>5</td>
</tr>
<tr>
<td>3.3.2 General Objectives</td>
<td>5</td>
</tr>
<tr>
<td>3.3.3 Specific Objectives</td>
<td>5</td>
</tr>
<tr>
<td>3.4 Variables</td>
<td>6</td>
</tr>
<tr>
<td>4.0 MATERIALS AND METHODS</td>
<td>7</td>
</tr>
<tr>
<td>4.1 Study Area</td>
<td>7</td>
</tr>
<tr>
<td>4.2 Study Population</td>
<td>7</td>
</tr>
<tr>
<td>4.3 Study Design</td>
<td>7</td>
</tr>
<tr>
<td>4.4 Sample Size</td>
<td>7</td>
</tr>
<tr>
<td>4.5 Sampling Methods</td>
<td>8</td>
</tr>
</tbody>
</table>
ABBREVIATIONS

BDS: Bachelor Of Dental Surgery
UON: University Of Nairobi
DMFT: Decay, Missing, Filled, Teeth
KNH: Kenyatta National Hospital
SUMMARY

BACKGROUND

Dental caries is one of the most prevalent dental diseases and one of the major causes of tooth loss in Kenya. Knowledge on causes and prevention is important in the design of oral health education programmes to prevent the disease.

OBJECTIVE

To assess the knowledge on causes and prevention of dental caries among patients attending UON dental hospital.

STUDY DESIGN

This will be a descriptive cross-sectional study.

SETTING

The study will be carried out in the oral diagnosis clinic at the UON dental hospital.

STUDY PARTICIPANTS

Patients attending the UON dental hospital.

METHODS

140 patients attending the oral diagnosis clinic will be recruited and interviewed using a semi-structured questionnaire. It will be used to collect data on the knowledge on the causes and prevention of dental caries. Data will be analysed using the SPSS software.

STUDY BENEFITS

If the patients don't have adequate knowledge on the causes and prevention of dental caries, then the results can be used to design oral health education programmes to raise the level of awareness.
1.0 INTRODUCTION

Dental caries is one of the most prevalent chronic diseases of people worldwide. It forms through a complex interaction over time between acid-producing bacteria and fermentable carbohydrates and a number of host factors including teeth and saliva. It develops both in the crowns and roots of teeth. (1)

Risk for development of dental caries includes physical, biological, environmental and lifestyle-related factors such as high numbers of cariogenic bacteria, inadequate salivary flow, insufficient fluoride exposure, poor oral hygiene and inappropriate methods of feeding infants (2).

Dental caries can be prevented through decreasing the frequency of our daily sugar intake, brushing our teeth after every meal using the appropriate techniques and also visiting dentists for regular check-ups. (2)

People who are not aware about the causes of dental caries will have a high risk of developing dental caries as they are unlikely to take preventive measures against the disease.

Prevalence of dental caries in Kenya among 13-15 year olds is around 50% while the DMFT index mean is around 1.8. In Most prevalent in Latin America, Middle East and South Asia and least prevalent in China. 29-59% above age 50 experience dental caries adults the prevalence is around 40% and the DMFT index mean is around 1.2. (3)

There is very little information in Kenya regarding the knowledge on causes and prevention of dental caries among patients and the Kenyan community at large.

Aim of the study is to determine the knowledge on prevention and causes of dental caries among the public so that if the public in general has inadequate knowledge measures such as patient education programmes at dental school can be held so that the knowledge can be disseminated and the prevalence of dental caries can be reduced.
2.0 LITERATURE REVIEW

Studies concerning dental caries in Kenya show that there is an increase in the number of children being affected by this disease. One study conducted among public primary school children in Nairobi, comprising of 513 children, 262 aged 6-8 years and 251 aged 13-15 years. 54% of 6-8 year olds and 50% of 13-15 year olds were caries free. The mean DMFT of 6-8 year olds was 1.7, while that of 13-15 year olds was 2.9. This study showed that there is a high percentage of children being affected by dental caries and that in the older age group females were more affected by dental caries than males. (4)

Caries prevalence is showing a general decline in developed countries over the past two decades as shown in studies done in Europe (5). It was shown that there was a reduction in the dental caries in age group of 12-14 years. This was as a result of many preventive measures are taken in developed countries and hence decrease in prevalence of dental caries.

A study done in Kenya showed that there was a statistically significant association between severity of dental fluorosis and caries experience among the participants. The study showed that DMFT scores for fluorosis patients of >2.5. The DMFT of patients without fluorosis was <1.5. (6)

A study done in Kenya showed that the main cause of tooth mortality among people between the age range of 15-65 years is dental caries. It also showed that more women lost their teeth to dental caries than the men. (7)

A study done in Kenya showed that there is a need to carry out intensive oral health promotion and also highlighting the harmful dietary practices to reduce caries prevalence. The study was carried out at Nairobi West and showed caries prevalence of >37% with DMFT scores of 0.7-1.2. The main reason was attributed to lack of knowledge on the causes and preventive methods of the disease (8).

Studies have been done concerning oral health status among Kenyans in a rural arid setting where dental caries experience and knowledge on its causes were
Results showed that 43% did not know any causes of dental diseases while 30%, 17%, 12% knew that diet, dirt on teeth and bacterial respectively were possible causes. 50% did not know the preventive measures for dental caries.

0.2% sodium fluoride mouthwash has been shown to be effective in prevention of dental caries according to the DMFT index (10). This study showed that if the mouth wash is used, there is a general decrease in dental caries experience.

Edentulous mothers’ children have been shown to constitute a group at risk of developing dental caries. This study showed that if a mother is edentulous than the chances of her children developing dental caries is increased (11).

The relationship between passive exposure to cigarette smoke and the prevalence of dental caries was assessed in a cross-sectional study of 3,531 children (aged 4-11 years) participating in the Third National Nutrition Examination Survey of America (1988-1994). Passive smoking was defined as a serum cotinine concentration of 0.2 ng/ml or greater (cotinine is a metabolite of nicotine). These associations persisted after adjusting for age, sex, race, family income, geographic region, frequency of dental visits, and blood lead level (12).
3.0 STATEMENT OF PROBLEM AND JUSTIFICATION OF STUDY

3.1 STATEMENT OF PROBLEM

Dental caries is the major cause of tooth loss in Kenya yet there is evidently very little knowledge as to what causes dental caries or methods of its prevention among the public. This is due to limited resources and self care methods important in prevention of dental caries. Adoption of such methods depends on the understanding of this disease. Lack of knowledge can be a serious hindrance to adoption of the preventive measures. There is a need to know how much the public knows and raise level of awareness on the causes and methods of prevention of dental caries.

3.2 STATEMENT OF JUSTIFICATION

There is very little information on what is the level of understanding of the risk factors and methods of prevention available especially among Kenyan adults on dental caries. The few studies available have concentrated mainly on children. The aim of this study is to describe knowledge patients attending UON dental hospital have on causes and methods of prevention of dental caries. Findings of this study will enable a decision to be taken on the level of intervention against dental caries.

3.3 OBJECTIVES

3.3.1 General Objectives

To assess the knowledge on causes and prevention of dental caries among the patients attending UON dental hospital.

3.3.2 Specific Objectives.

1. To assess the knowledge on causes of dental caries among the patients.

2. To assess the knowledge on prevention of dental caries among the patients.
Hypothesis

50% of the patients attending the clinic know causes and methods prevention of dental caries

### 3.4 VARIABLES

**Socal demographic variables**

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<th>Level of education attained</th>
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**Independent variables**

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<th>Consumption of sugary substances</th>
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<td>Failure to brush teeth</td>
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<td>Bacteria</td>
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<table>
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<td>Use of fluoride mouthwashes</td>
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<td>Avoiding cariogenic diet</td>
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<td>Timing of cariogenic diet in relation to mass</td>
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<td>Dental check-ups</td>
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**Dependent variables**

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<td>Whether they have ever suffered from the disease</td>
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4.0 MATERIALS AND METHODS

4.1 STUDY AREA

The study will be conducted at UON referral and teaching dental hospital. It is located along Ralph Bunche and Argwings Kodhek road, 5km from Central Business District of Nairobi. Treatment starts from diagnosis clinic where initial diagnosis is made and minor surgical procedures like simple teeth extractions are done. Then the patients are referred to other clinics to be booked for other procedures. There are 4 departments in dental school. These are the conservative and prosthetic department where restorative procedures are done, Maxillofacial surgery department, Periodontology and Community dentistry and Pediatric dentistry.

4.2 STUDY POPULATION

Adult Patients attending the oral diagnosis clinic at the UON dental hospital

4.3 STUDY DESIGN

This will be a descriptive cross-sectional study

4.4 SAMPLE SIZE

Sample size will be calculated using the formula

\[ n = \frac{z^2 \times p[1 - p]}{m^2} \]

where

\( n \) = required sample size

\( z \) = z-value corresponding to confidence level at 95%

\( p \) = estimated percentage of adult patients who have knowledge on causes and preventive methods for dental caries = 50%

\( m \) = margin error of 0.05 (5%)

\[ n = \frac{1.96^2 \times 50[100 - 50]}{25} \]
=384 (this gives sample size for a population of 10000 and above)

Since study population is less than 10000 then sample size calculated using the formula

\[ n = \frac{n}{1 + \frac{n}{N}} \]

where

\( n = \) sample size when population size is less than 10000

\( N = \) Estimate of number of patients who will attend diagnosis clinic at that time

\( n = \) sample size for population above 10000

\[ n = \frac{384}{1 + \frac{384}{220}} \]

\[ = 140 \]

4.5 SAMPLING METHODS

All Patient who will be attending the diagnosis clinic will be recruited into the study as long as they are of 18 years old and above.

4.6 INCLUSION AND EXCLUSION CRITERIA

4.6.1 Inclusion criteria

a) Patients who consent to the study
b) Dentate patients
c) Patients above the age of 18

4.6.2 Exclusion criteria

a) Patients who do not consent to the study
b) Edentulous patients
c) Patients below the age of 18

4.7 DATA COLLECTION TECHNIQUES

Data will be collected using interviewer-administered questionnaires (appendix 1). The selected patients will be interviewed by the investigator at the waiting room. The questions will be asked on some of the variables of interest being the
knowledge on causes of dental caries and some of the preventive methods available. The interview will be conducted before diagnosis and treatment is done.

4.8 DATA ANALYSIS AND PRESENTATION

The data collected will be analysed using a computer software called SPSS and presented using bar graphs and tables.

4.9 ETHICAL CONSIDERATIONS

1. Permission to conduct the study will be sought from the UON- KNH research ethics and standards committee
2. Permission will be sought from the dean of dental school
3. The patients will be informed of the purpose of the research
4. All information collected during the study will be confidential and will not be disclosed to any third parties
5. Information will be used to design methods of patient education programmes for the benefits of the population studied

4.10 PERCEIVED BENEFITS

1. The findings of this study may be used to design patient education programmes for patients at UON dental hospital
2. Both the research proposal and the final report will be submitted as part fulfillment of my bachelor of dental surgery degree.
## BUDGET PROPOSAL

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**DATA COLLECTION**

| Questionnaires | 140 pages | 10 | 1400 |

**REPORT WRITING**

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**GRAND TOTAL**

|                 |                |                | **6000**  |
## WORKPLAN

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</tbody>
</table>
REFERENCES

1. Selwitz RH, Ismail AI. Dental caries definition, Lancet 2007 Jan 6:369(9555);51-9
2. Selwitz RH, Ismail AI. Dental caries risk factors, Lancet 2007 Jan 6:369(9555);51-9
11. Barbara Gooch, Susan O Griffin. The relationship of edentulousness of mothers and caries risk to their children, dental health services research, UCLA. American Dent 1989 140: 11; 1356-1365
12. C. Andrew Aligne, Mark E Moss. Association of dental caries with passive smoking JAMA 2003 March; 289[10]; 1258
APPENDIX 1

KNOWLEDGE ON CAUSES AND PREVENTION OF DENTAL CARIES AMONG PATIENTS ATTENDING UON DENTAL HOSPITAL

Please respond by circling the letter or number that best represents your response or fill in the answer in the spaces provided

1. Age (yrs): ........................

2. Gender (M/F): ..............

3. Highest level of education attained?
   a) Primary
   b) Secondary
   c) University
   d) Others, specify ............................................

4. Tooth decay also known as Dental caries presents as cavities on teeth. Have you ever heard of such a disease?
   a) Yes
   b) No
   - If yes go to question 5, if no go to question 24

5. Have you ever suffered from such a disease now or in the past?
   a) Yes
   b) No
   c) Unsure

6. Can tooth decay can lead to tooth loss?
   a) Yes
   b) No
   c) I don’t know
7. Have you ever had a tooth removed due to tooth decay?
   a) Yes
   b) No

8. What causes tooth decay?
   a) Sugar and sugary foods and drinks
   b) Bacteria
   c) Food debris (remnants) on teeth
   d) Failure to brush teeth
   e) Smoking tobacco
   f) Others, specify

9. Which of the following foods and drinks have a high risk of causing tooth decay?
   a) Biscuits
   b) Sodas
   c) Cakes
   d) Sweets
   e) Juices
   f) Others, specify

10. How frequently do you take sugary foods such as biscuits, sweets, sodas, cakes and juices?
    a) 3 times a day
    b) 2 times a day
    c) Once a day
    d) I don’t take any sugary foods
    e) Others, specify

11. Can dental caries be prevented?
    a) Yes
    b) No
    c) I don’t know
12. Which of the following methods can be used to prevent tooth decay?
   a) Brushing teeth with toothpaste containing fluoride
   b) Using a mouthwash containing fluoride
   c) Brushing teeth without toothpaste
   d) Avoiding eating sugary foods
   e) Having decayed teeth treated
   f) Others, specify

13. If you have to eat sugary foods, what is the best time to eat in relation to meals?
   a) Before meals
   b) After meals
   c) With main meals
   d) Others, specify

14. How many times do you visit a dentist for a regular check-up?
   a) I don't go for a check-up
   b) Once a year
   c) 2 times a year
   d) Others, specify

15. What is the importance of going for dental check-up?
   a) To be sure I have no dental disease
   b) To be taught how to prevent dental disease
   c) To detect dental disease in early stages
   d) Can be taught how to maintain oral hygiene
   e) Others, specify
16. Do you brush your teeth
   a) Yes
   b) No

17. If yes, do you use toothpaste?
   a) Yes
   b) No

18. Does your toothpaste contain fluoride?
   a) Yes
   b) No

19. In relation to meals which is the best time to brush your teeth?
   a) Before meals
   b) Immediately after meals
   c) Several hours after meals
   d) Others, specify

20. Have you ever been taught how to prevent tooth decay?
   a) Yes
   b) No

21. If yes, what were you taught?

22. Have your family members ever been taught on how to prevent dental caries?
   a) Yes
   b) No

23. Is it important for family members to be taught on how to prevent dental caries?
   a) Yes
   b) No
24. Would you want to be taught about the causes and prevention of tooth decay?
   a) Yes
   b) No

25. Give comments and ask questions on the causes and prevention of tooth decay? 

.................................................................