DENTAL STAINING AMONG PATIENTS VISITING THE ORAL DIAGNOSIS CLINIC IN THE UNIVERSITY OF NAIROBI DENTAL HOSPITAL

A COMMUNITY DENTISTRY PROJECT SUBMITTED FOR PARTIAL FULFILLMENT OF BACHELOR OF DENTAL SURGERY DEGREE, UNIVERSITY OF NAIROBI, 2009

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DURATION OF STUDY: JULY-OCTOBER 2009

COST OF STUDY: Kshs. 7,500

SOURCE OF FUNDS: SELF
DECLARATION
I declare that this dissertation is my original work and it has never been submitted to any other institution for any degree, diploma or certificate.

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Approval
This research project was submitted for the partial fulfillment of the award of a bachelor in dental surgery with our approval as supervisors

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DEDICATION

To the most important people in my life, my parents and friends who have supported and encouraged me throughout this project. God bless them.
AKNOWLEDGEMENTS:

I wish to acknowledge the following with great gratitude for the help offered throughout my research work.

Dr. Mua for his dedication in supervising my work and showing me the way to go.

Dr Masiga for his encouragement and support with his precious time, and required academic material.

Patients who visited the University of Nairobi dental hospital during the research period for their co-operation in filling the questionnaires.

Fellow dental students for their assistance in data collection.
ABBREVIATIONS

**BDS** - Bachelor of Dental Surgery

**UON** - University Of Nairobi

**Kshs** - Kenya shillings

**HND** – Higher national diploma
ABSTRACT

BACKGROUND: University Dental Hospital is a school of dental sciences of Nairobi University. It is an institution where many people come for their dental problems. Many patients with various dental conditions including dental staining are seen.

AIM OF STUDY: To investigate Dental staining in oral diagnosis clinic in University Dental Hospital.

STUDY DESIGN: A Descriptive cross-sectional study

SETTING: Oral diagnosis clinic in University dental hospital

STUDY PARTICIPANTS: Included all the patients that who visited the oral diagnosis clinic of the UON dental hospital during the time of study.

MATERIALS AND METHODS: All the 170 patients were examined. An intra-oral examination was conducted. The type of dental staining, location of tooth stain and its relevance with age and sex was mentioned. And the data analysis was done both manual and computer method.

RESULTS: Among the patients examined 52.9%, had teeth discolouration and 47% did not have any kind of tooth discolouration.

CONCLUSIONS: Extrinsic staining of teeth was higher (57%) than intrinsic stains (33%).

RECOMMENDATIONS: Prevalence of discolouration is high and appropriate intervention measures need to be put in place and a broader research needs to be carried out to include other institutions and private clinics.
1.0 INTRODUCTION

Tooth discoloration is a frequent dental finding associated with clinical and esthetic problems. It differs in etiology, appearance, composition, location, severity and degree of adherence. Basically, there are two types of tooth discolorations: those related to intrinsic factors such as congenital or systemic influence and inherited conditions, and those caused by extrinsic factors, related to metallic or nonmetallic stains.

Attraction of materials to the tooth surface plays a critical role in the deposition of extrinsic dental stain. The types of attractive force include electrostatic and van der Waals forces, hydration forces, hydrogen bonds and hydrophobic interactions. However, the mechanisms that determine the adhesion strength are not completely understood (1).

1.1 Extrinsic stains:

These may present in different forms such as:

1) Brown stains are due to tobacco products, dental plaque, tea, coffee, wine, and other beverages, certain foods, metals, iodine, chlorhexidine rinse, cetylpyridinium chloride rinse, stannous fluoride, Khat leaf and doxycycline.

2) Black stains which can also be due to tobacco products, betel nut, dental plaque, chromogenic bacteria, tea, coffee, wine, and other beverages, certain foods and metals.

3) Green stains can be caused by chromogenic bacteria, tea and metals.

4) Orange stains can also be caused by chromogenic bacteria, metals and doxycycline.

1.2 Intrinsic stains:

These may present in different forms such as:

1) White (opaque) stains can be caused by mild trauma to teeth during enamel formation (secondary teeth), eg, Turner tooth, periapical infection of primary tooth, traumatic injury to primary tooth or teeth, incipient caries (primary or secondary teeth), infection (maternal or childhood) during enamel formation, trauma to multiple teeth during enamel formation, mild
fluorosis (short-term exposure), nutritional deficiency, mild fluorosis and amelogenesis imperfecta.

2) Yellow stains which are due to moderate trauma to teeth during enamel formation (secondary teeth), eg, Turner tooth, periapical infection of primary tooth, traumatic injury to primary tooth or teeth, trauma without hemorrhage, Composites or glass ionomer or acrylic restoration, caries (active), focal tooth abrasion, infection (maternal or childhood) during enamel formation, moderate fluorosis (short-term exposure), trauma to multiple teeth during enamel formation, nutritional deficiency, epidermolysis bullosa, regional tooth abrasion or erosion, diseases causing hyperbilirubinemia, moderate fluorosis, amelogenesis imperfecta, dentinogenesis imperfecta, dentinal dysplasia, epidermolysis bullosa, diseases causing hyperbilirubinemia, hemolytic diseases, generalized tooth attrition, abrasion, or erosion.

3) Brown stains are caused by severe trauma to teeth during enamel formation (secondary teeth), eg, Turner tooth, periapical infection of primary tooth, traumatic injury to primary tooth or teeth, composite, glass ionomer, or acrylic restoration, caries (active or remineralized), Pulpal trauma with hemorrhage, infection (maternal or childhood) during enamel formation, severe fluorosis (short-term exposure), trauma to multiple teeth during enamel formation, porphyria and tetracycline therapy (long-term exposure).

4) Blue, gray, or black stains which are caused by amalgam restoration, glass ionomer or acrylic restoration, metal crown margin associated with porcelain fused to metal crown, pulpal trauma with hemorrhage, tetracycline therapy (short-term exposure), tetracycline therapy (long-term exposure) and minocycline therapy.

5) Green stains can cause diseases like hyperbilirubinemia (eg, HDN and biliary atresia).
2.0. LITERATURE REVIEW

Many studies have been done on tooth discolouration and it has a global distribution. A study done to determine prevalence of self-assessed tooth discoloration in the United Kingdom established that half of the study population perceived their tooth colour to be normal and 6% perceived that they had severe discoloration, the remainder reported themselves to have levels of tooth discoloration between these two extremes. Satisfaction with tooth colour decreased with increased discoloration. Sex, age, income and smoking, had statistically significant effects on the prevalence of perceived discoloration. Half of the people in this study perceived themselves to have tooth discoloration. Results suggest that the general public is concerned about dental appearance in terms of tooth colour, indicated by public dissatisfaction with relatively mildly discoloured teeth. Findings may suggest that a further increase in the demand of tooth whitening services and cosmetic dentistry in general is likely. The changing emphasis and level of perceived dissatisfaction need to be taken into account in planning dental services. Evidence based approaches are needed for the appropriate management of patients who demand treatment of mild discoloration. Half of the people in this study perceived themselves to have tooth discoloration. Results suggest that the general public is concerned about dental appearance in terms of tooth colour, indicated by public dissatisfaction with relatively mildly discoloured teeth. Findings may suggest that a further increase in the demand of tooth whitening services and cosmetic dentistry in general is likely. The changing emphasis and level of perceived dissatisfaction need to be taken into account in planning dental services. Evidence based approaches are needed for the appropriate management of patients who demand treatment of mild discolouration.

Prevalence of black tooth stains and dental caries in Brazilian school children. This study evaluated the correlation between the presence of black extrinsic tooth stains and caries in Brazilian schoolchildren. The target population consisted of 263 children aged 6-12 years. Clinical examinations were performed by four dentists calibrated for the World Health Organization criteria for caries diagnosis. Black stains were observed in 14.8% of the children. The number of children with caries-free permanent dentition was not statistically different between groups. In the present study, the prevalence of black tooth stains and caries were not significantly different between males and females. None of the patients with black stains were using mouth rinses or were taking any ferrous sulfate supplement. Another interesting finding was that the amount or extension of staining was significantly correlated to DMF-T, i.e., less caries were observed among those children with the largest areas affected by the stains (score
3). For the population and conditions of this study, a negative correlation was observed between the presence of black stains and caries severity in the permanent dentition. (3)

A study was conducted to evaluate the prevalence of dental stain and to correlate it with the age of dogs. Dental stain alters the colour of the teeth surface from yellow to dark chestnut. Dietary components, microbes, and chemicals influence the formation and tonality of dental stains. This study was conducted to evaluate the prevalence of dental stain and to correlate it with the age of dogs. 83 dogs of varying sexes aged 4 months to 13 years, and weighing 0.18 to 19kgs were included in the study. 97.6% of the dogs presented dental stain. The highest prevalence was observed in 4 of upper premolar, whereas the lowest was in the surface mesial. It is concluded that a low correlation exists between dental stain and age of dogs. (4)

A Clinical Trial to Examine Dental Stain Induction and Removal was done and this clinical study were to examine induction of dental stain by foods and stain removal efficacy of a dentifrice containing calcium peroxide and calcium phosphate. The results show that under the study conditions, food induces dental stain; the test dentifrice removes the induced stain and improves tooth color. (5)

Smoking and tooth discolouration study conducted in which Smoking behaviour was recorded together with satisfaction with own tooth colour. Prevalence of perceived discolouration was measured by asking respondents to match their own tooth colour to one of a set of seven photographs of differing severities of discolouration. A cross sectional national study was conducted on sample of 6,000 UK adults. A total of 3,384 adults was interviewed. The result was twenty eight percent of smokers reported having moderate and severe levels of tooth discolouration compared to 15% in non-smokers. As well as more often perceiving discolouration smokers were also more likely to be dissatisfied with their own tooth colour compared to non-smokers. The study has shown that smokers have higher prevalence of tooth discolouration than non-smokers as anticipated. Variations in the prevalence tooth discolouration were clearer in the case of more severe levels (6)
3.0 STATEMENT OF PROBLEM, JUSTIFICATION, OBJECTIVES & VARIABLES

3.1 PROBLEM STATEMENT

Esthetics is the science of beauty. Esthetic dentistry not only relates to disfigured teeth but also involves the need of normal appearing persons who wish to look younger, healthier and confident. One of the most frequent reasons warranting dental care is discoloured anterior teeth. The increasing public interest in Kenya with better technical ability of the dentists have paved the way of improving aesthetics by lightening the stained teeth.

3.2 STUDY JUSTIFICATION

Inadequate knowledge of the community in dental staining leads to many patients suffering from it without knowing how to prevent it, also there is inadequate knowledge on how treatment is possible and patient can get good aesthetics. This study will determine the people who have stained teeth and are aware about it and how many know how they can prevent it and from those how many are willing to treat their dental stain, especially in the city of Kenya, Nairobi.

3.3 OBJECTIVES

MAIN OBJECTIVE

To determine patterns of dental staining among patients visiting the oral diagnosis clinic in the University of Nairobi Dental Hospital.

SPECIFIC OBJECTIVES

1. To determine the type of staining among the patients visiting the dental school
2. To determine the location and surfaces of tooth stains.
3. To relate tooth staining to age and gender.
3.4 VARIABLES

3.4.1 INDEPENDENT VARIABLES
1. Age
2. Sex
3. Area of residence
4. Occupation

3.4.2 DEPENDENT VARIABLES
1. Tooth discolouration
   - Type
   - Intrinsic
   - Extrinsic
   - Location and tooth stains
   - Surface of tooth with stain
   - Tooth affected
   - Nature of discolouration
   - colour