

SOCIO-ECONOMIC DETERMINANTS OF UTILIZATION OF ORAL HEALTH CARE SERVICES IN KENYA.

Patricia Wangui Chiuri
Reg No: X53/80643/2015

A research project submitted in partial fulfillment of the requirements for the award of the degree of Master of Science in health economics and policy in the school of economics, University of Nairobi.

DECLARATION

This research paper is my original work and has not been presented for a degree in any other University.



Signed.....

Date.....17 November 2020.....

Patricia Wangui Chiuri

X53/80643/2015

SUPERVISOR

This research paper has been submitted for examination with my approval as University supervisor.

Signed.....

Date.....

Dr. Phyllis Machio

DEDICATION

I dedicate this research paper to my parents, siblings and my children-Makena and Roman, for their love, support and encouragement during my studies.

ACKNOWLEDGEMENTS

I would like to acknowledge The Almighty God, whose grace and will has aided me in completing this research paper.

I am so grateful to my supervisor, Dr. Phyllis Machio, whose insights in the project and constant encouragement, support and guidance propelled me to manage to complete the research paper. Thank you for your patience and kindness throughout the duration of writing this paper.

I would also like to acknowledge Dr. Gatheca of the Ministry of Health division of Non-communicable diseases and the Kenya National Bureau of Statistics for assisting me with the STEPS 2015 survey data for analysis.

And finally, to my classmate and friend, Lucy Muriithi who has continuously encouraged me during this process. I am forever indebted to you for all the moral support.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vii
ACRONYMS.....	viii
ABSTRACT.....	ix
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the study.....	1
1.2 Problem Statement	3
1.3 Objective of the study	4
1.3.1. Specific Objectives	4
1.4 Research questions	4
1.5 Justification of the Study	4
1.6 Organization of the study	4
CHAPTER TWO: LITERATURE REVIEW.....	5
2.1 Introduction	5
2.2 Theoretical literature review	5
2.2.1. Andersen's Generic Behavioral Model	5
2.3 Empirical literature.....	6
2.4 Overview of literature.....	10
CHAPTER THREE: METHODOLOGY.....	11

3.1 Introduction	11
3.2 Theoretical model	11
3.3 Econometric Model specification	12
3.4 Model specification	12
3.5 Definition of variables	13
3.6 Data, Data types and Sources	14
CHAPTER FOUR: RESULTS AND DISCUSSION OF RESULTS.	15
4.1 Introduction.	15
4.2 Results.	16
4.3 Discussion of results.	17
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATION	20
5.1 Introduction	20
5.2 Summary of findings and conclusions.	20
5.3 Policy recommendations.	20
5.4 Areas for further research	21
REFERENCES	22

LIST OF TABLES

Table 1:Definition of variables	13
Table 2:Desriptive statistics	15
Table 3: Determinants of utilization	16

ACRONYMS

MOH-K- Ministry of Health Kenya.

WHO-World Health Organisation.

HIV-Human Immunodeficiency virus

AIDS- Acquired Immunodeficiency Syndrome

NHIF-National Hospital Insurance Fund

KNBS-Kenya National Bureau of Statistics

ABSTRACT

Oral health plays a vital part of the general health of an individual. Poor oral hygiene status lowers the quality of life of all individuals alike as it affects aspects of their lives such as chewing, speech and their facial appearance. According to the 2015 STEPS survey, 32 per cent of individuals reported to have pain in the oral region in the past 1 year in Kenya. However, only 11 per cent visited a dentist. The aim of the study was to examine the socio-economic determinants factors of utilization of oral healthcare services in Kenya. The study estimated a logit model and analyzed data from the 2015 STEPS survey. The findings indicate that the presence of oral pain, education and poverty, were the most significant determinants of oral health services utilization. Individuals who had pain, who had higher levels of education and those who belonged to rich wealth quintiles were more likely to use oral health care services. Investment in promotive and preventive oral healthcare services can aid in raising awareness on when to seek care leading to improvements in individuals' oral health status. There is also need to subsidize the cost of oral health care services.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The World Health Organization (WHO, 2003) describes oral health as being alleviated from pain in the area of the face and infections in the mouth that make it difficult for an individual to perform normal functions related to the oral cavity such as mastication and speech. WHO(2003) has identified some risk factors that predispose one to oral diseases and they include poor dietary habits, tobacco use and its products, intake of alcohol and individuals having poor oral hygiene practices. The prevalence of diseases of the oral cavity is high and their impact on an individual and the society at large are quite significant. Sleepless nights due to toothache and other related pain and discomfort and also limitation in eating function and the ability to carry out daily activities are some of the results of unmet oral healthcare needs (Watts 2005). According to Petersen (2005), a great proportion of the population in industrialized countries suffer from dental caries and this coupled with diseases of the periodontium are some of the most common oral health burdens around the world.

Clementino et al (2016) noted that dental caries is prevalent in children and it leads to dental pain, difficulties chewing, associated general health complications, and this affects their quality of life. Other oral health ailments include cancers related to the soft and hard tissues of the mouth, dental abscesses and infections and also injuries such as fractures of the bones of the face. The United States Department of Health and Human Services (2000) noted a possible association between heart and lung disease, diabetes mellitus, myocardial infarction, low birth weight and chronic oral diseases. This is an indication that poor oral health can negatively impact an individual's general health.

A child's teeth may be extracted early in cases of severe tooth decay and this may lead to mal-alignment, loss of midline alignment or minimal space for the permanent teeth. Early extraction of teeth may leave children with difficulties with pronunciation of some sounds and words and subsequent low self-esteem (Almoudi 1999). Poor alignment of permanent teeth due to early extraction of deciduous teeth will also affect a child's appearance. This also requires further

treatment to correct mal-aligned teeth. Some oral ailments such as dental infections, abscesses and oral cancers have been known to be fatal if not managed and treated early enough.

Petersen et al (2005), noted that the main treatment offered in major hospitals in middle income countries is curative in nature and minimal importance is placed on preventative or restorative procedures. Majority of African, Asian and Latin American countries have low numbers of oral healthcare professionals and most of the services offered are generally limited to relief of dental pain or emergency care. People suffering from dental ailments have to endure pain which can range from mild to severe. Patients may report inability to sleep, eat or even report to work. Some patients may begin by self-medicating with over-the-counter medications such as antibiotics and painkillers. This may reduce or eliminate the symptoms for some time. If or when symptoms recur, at times with worse sequela such as abscesses, patients will then report to the dental clinic for further management. This therefore requires time off work to visit the dental clinic. Some procedures that may be carried out such as surgical dis-impactions may require patients to take a few days sick-off to recover. Parents who accompany their children to the hospital also have to seek time off work for the day and children miss days in school. This leads to a disruption in work or school timetables with reduced productivity at work and loss of working hours.

Oral health seeking behavior and utilization globally has been noted to be low. The distribution of oral health care workers and the ideal health facilities is unequal, according to WHO. This therefore leads to low access to primary healthcare services. WHO notes that the availability of oral health service in adults who require these services range from 82 per cent in high-income countries to 35 per cent in low income countries. This leads to a high number of untreated dental illnesses and unmet patient needs. Dolan and Atchinson (1993) found that older adults had lower dental utilization rates than for younger age groups. Some of the identified obstacles to seeking oral care included fear, transportation problems, treatment charges and the lack of perceived need for care.

Liu et al (2015), noted that visits for oral health care treatment were low among older individuals of northeast China. An individual's level of education and income were seen to have a positive association with the frequency of visits whereas living within a rural set-up was noted to have a

negative association. In Burkina Faso, a study by Varenne et al (2006) found that visits for dental care were mostly undertaken for symptomatic reasons and rarely for preventative ones. 62 per cent of respondents reported that pain or acute discomfort affected their daily lives, yet only 28 per cent sought help from an oral health facility, 48 per cent self-medicated and 24 per cent sought no treatment at all. It was also noted that socio-cultural factors played a major role in oral health services utilization.

The Ministry of Health Kenya (MOH-K 2015), noted that among its citizens, out of those affected by oral ailments 31 per cent of them were unable to bite hard foods, 27.8 per cent of individuals would avoid smiling because of the appearance of their teeth and 18.9 per cent missed school or work because of teeth related issues. In a STEPS survey on non-communicable diseases (MOH-K 2015), it was noted that 32 per cent of respondents reported having pain in the oral region in the past year with more women at 37 per cent reporting to have pain than men at 26 per cent. Out of those that reported having pain in the oral region only 11 per cent of the respondents visited a dentist within the one year period.

1.2 Problem Statement

Oral health plays a vital part of the general health of an individual. Poor oral hygiene status lowers the quality of life of all individuals alike as it affects aspects of their lives such as chewing, speech and their facial appearance. It has also been noted that an association exists between some chronic illnesses such as diabetes, heart diseases and chronic oral infections. Ultimately it has been shown that some chronic oral infections can be so severe that they can lead to loss of life.

According to the STEPS 2015 survey, the burden of oral health diseases is high in Kenya. Tooth decay among both children and adults was at 46.3 per cent and 34.3 per cent respectively (MOH-K 2015). A third of the individuals reported to have pain in the oral region in the past year with more women at 37 per cent reporting to have pain than men at 26 per cent. However, only 11 per cent of the respondents visited a dentist within the one year period. Public hospitals and health centers provide oral health services for free for children less than 5 years and at low or highly subsidized rates for adults. Even so, there are still very low utilization rates for these services.

1.3 Objective of the study

The main objective of this study was to identify the major socio-economic determinants affecting utilization of oral health care services.

1.3.1. Specific Objectives

- I. To identify the major socio-economic determinants affecting utilization of oral health care services.
- II. To draw policy recommendation based on study findings.

1.4 Research questions

- I. Which are the major socio-economic factors affecting utilization of oral health care services.

1.5 Justification of the Study

Results from the study will aid in understanding what are the major barriers affecting utilization of oral health care services despite the high level of awareness, knowledge and resultant burden of disease.

It will also assist the various policy makers in both the county and national governments to formulate targeted policies that will enable better access of services. The research will also add to a body of oral health-care literature.

1.6 Organization of the study

The remainder of the project is structured as follows; chapter two reviews the existing theoretical and empirical literature. Chapter three details the methodology employed in this study and the type of data used. Chapter four discusses the results and chapter five is a summary of the results and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this section, the literature detailing socio-economic determinants of utilization of oral health services has been discussed. These will help to identify a suitable econometric model to fit.

2.2 Theoretical literature review

2.2.1. Andersen's Generic Behavioral Model

The Andersen and Newman model (1973) aims to assist in understanding the factors that an individual considers before he utilizes health services. Three major factors were identified, and they are termed as predisposing characteristics, enabling characteristics and need characteristics. Predisposing characteristics are classified into three groups. The first is demographics such as age and gender of the individual. Second is social structural for example ethnicity, occupation and education and third is health beliefs that is, what the individuals' beliefs on illness are and what his beliefs on the benefit of treatment are. The age and gender of an individual for example are closely associated to health, illness and health seeking behavior. People in different age groups are more likely to suffer certain sets of diseases and consequently have differing patterns of health care utilization.

Enabling characteristics are those that aid the individual or family to satisfy the need for the utilization of a health service. Health service resources are made available to the individual through his ability to access certain enabling characteristics such as a place of residence, a regular source of income, health insurance coverage and having health facilities and personnel available. Need characteristics may be grouped into perceived needs and evaluated or clinical needs. For health services to be utilized, an individual or his family must acknowledge the presence of an illness. Once an individual identifies presence of disease, they then need to seek medical care. The

evaluated need refers to the attempts made to get to the actual diagnosis of the illness by a health care provider.

The model mainly focused on the family but has been re-modeled to focus more on the individual and the reasons why they utilize health care services. The model has been critiqued for not acknowledging how culture influences health care utilization since an individual does not live in isolation. Majority of an individual's thoughts, ideas and beliefs are molded by his upbringing and his interactions with other members of his community and this may affect how he utilizes healthcare services.

2.3 Empirical literature.

A review of the factors which affect the use of oral health services was carried out by Bommireddy et al, (2014).The objectives were to identify the major oral healthcare demands among the respondents and to identify the factors that would determine utilization of dental services. Demographic information including occupation and income were collected. The major reason for seeking oral health care was toothache. It was also noted that almost 30 per cent of respondents having toothache had not visited the dentist. A main contributing factor negatively affecting service utilization was that respondents did not give much importance to oral care. The respondents mainly preferred private dental hospitals for treatment due to ease of accessibility to the facilities.

Nagarjuna et al, (2016) carried out a study on patients visiting community health centers to assess the barriers to utilization of oral health-care services. A questionnaire filled in by the respondents was used to collect information. The information sought included sociodemographic characteristics, dental visit history, and reasons for lack of dental visits. Chi-square test was used to test for any association between the socio-demographic variables. It was noted that utilization of the dental service among patients visiting community health centers was very low. Respondents within the higher education group visited the dentist more often. It was also noted that younger respondents had more dental visits than older respondents. It was only if the respondents had signs such as discomfort and a dental emergency that the patient felt a need to see a dentist. Half the respondents believed that dental ailments were not that important. Cost, fear of dental procedures, lack of time and the distance to the health centers were other factors that were identified for not visiting the dentist. It was concluded that there was need to increase the levels of dental awareness

and to encourage more progressive attitudes toward oral health in the community. It was also noted that it would be more beneficial to reduce cost of treatment and reduce the distance that patients travel to access care.

Subramani et al, (2017) conducted a study on patients reporting to a peripheral medical center that sought to identify the pattern of utilization of services and the barriers encountered affecting utilization. Interviewer-administered forms were used to gather data in relation to the objectives. This was followed by clinical examination of respondents to identify the major oral healthcare needs among the study population. The study found that 44 per cent of the study participants had no history of dental visit. This status was attributed to negligence in oral healthcare and that there were no dental health based programmes for the community. Cases of emergencies would lead respondents to visit a dental setup and rarely would they visit for preventative dental care. Patients with history of dental visit had mainly visited them for toothache. The most common cause for not seeking oral healthcare was unawareness regarding dental problems. People sought healthcare services only when they believed that they needed health professional assistance otherwise their condition would be worse by the time they sought care. Fear of dental care was believed to constitute a huge obstacle to treatment as the respondents were mostly unaware of the dental problems. Some of the barriers among the study population were lack of time and inaccessibility to dental care as most of the study respondents were daily wage earners, therefore a visit to the dentist would have lost them a whole or part of their earnings for the day leading to low dental attendance among the study population. It was recommended that appropriate education measures should be taken with emphasis on bringing out how important regular oral evaluations are, discussing which are the barriers to oral healthcare, and to promote changes in attitude towards positive health-seeking behavior.

Uguru, (2014) conducted a survey of routine dental services access and usage between various socio-economic groups in the south east region of Nigeria. He used a quantitative cross-sectional hospital-based and community-based descriptive study. Two different questionnaires were used; one a health facility interview and the other a household based questionnaire. Regression analysis was done to determine effects of the predisposing, enabling and need factors on utilization. Majority of the respondents, 62.9 per cent sought treatment in a dental clinic, which can be

attributed to their level of education, the belief that the staff in the dental clinics were more experienced and the perceived health needs or seriousness of condition. Of those that visited a dentist, 72 per cent only did so when they had a toothache. He noted that the factors that constitute barriers to accessing dental care were attitude of staff in the facilities, the clinic environment and high treatment cost and to a lesser extent distance to the health facility. A limitation of this study was that it was carried out in an urban setting which accounted for the high number of patients accessing and utilizing dental treatment as cost and distance may not be a big challenge.

Fotedar et al, (2013) carried out a survey to assess dental utilization behavior and barriers in India. Knowledge about oral hygiene practices and the cause for respondents' most recent visit to the dentist were collected. The following barriers were put forth to the respondents as to whether they prevented them from seeking oral health services: dental fear/anxiety, no time to seek treatment, presence of toothache, if the distance to the dentist is significant, if oral health services are costly or the belief that dental illnesses are not severe. It was found that the respondents in the younger age group visited the dentist more regularly in comparison to the older age group. The most substantial barriers for those not seeking oral health services were the presence of pain, fear of dental procedures and lack of time. The government subsidizes the cost of oral health services therefore cost was not considered as a major obstacle to service utilization.

Ajayi and Arigbede, (2012) conducted a study in south west Nigeria on oral health utilization barriers at a dental center of a university college hospital. Respondents were asked to submit information on their demographic information and their dental visit behaviors. Some of the identified barriers included no oral healthcare personnel in the clinic, no time to attend the clinic, problems with transportation, fear of dental pain and feelings of insecurity were outlined. Others included, fear of instruments, the fear of contracting infections while undergoing treatment and the high charges for treatment. Among the studied population, it was found that conditions related to fear constituted the key limitation to oral health services use with majority of respondents' fearing pain caused by injection. That dental treatment costs are high ranked next followed by fear of contracting infections. The least ranked barrier was lack of transportation and lack of accessibility to a dentist. This was attributed to the study having been carried out in dental facility where dentists

were mostly available and in an urban setting where transportation challenges were not as rife as in a rural set-up.

Masiga (2007) conducted a study in Nairobi County seeking to identify the major hindrances to utilizing oral healthcare services. Her target group were guardians of children with HIV-AIDS. Information was collected through a standardized questionnaire with both open and closed ended questions. She noted that there was poor utilization with only 28.3 per cent of children reported to have visited a dentist. The major cause for seeking oral care was pain or toothache. The expensive nature of dental services was a major constraint in seeking aid. Payment for oral health services by 76 per cent of the care givers was from out-of-pocket expenditure. About 68 per cent of respondents did not have dental insurance with 31 per cent noting that they did not know much about NHIF and a further 29 per cent saying they could not afford it. Those who were aware of the fund found its use laborious as it would entail travelling to an accredited hospital and finding a dentist that accepts to treat patients on that specific insurance cover. In case they had defaulted in paying their monthly contributions for NHIF, they would have to pay a penalty for defaulting thus adding onto costs. Private dental clinics were rated higher than public oral health facilities in the quality of health services provided.

Kanyi (2010) carried out a study in Thika District on factors that affect utilization of dental tooth conservation methods. An analytic cross-sectional analysis was conducted where qualitative and quantitative data were gathered. A structured questionnaire collected data on age, respondents' level of education, knowledge and socio-cultural factors. It also collected information on utilization of dental conservation services. To note the strength and significance of any association between the variables, Chi-square statistics was used. She noted that the age of the respondents was a major barrier in use of dental conservation methods. Older respondents (above 60 years) were likely to have a lower level of formal education and were more conversant with one mode of treatment being dental extraction. The level of education also played a role. Respondents who were more educated (beyond primary school level) were more likely to be informed on dental health and the varying treatment modes available. The level of knowledge and awareness of dental conservation methods was found to be low. It was also noted that the occupation of an individual

is likely to affect utilization of dental conservation methods because it touched on affordability of the services.

2.4 Overview of literature

Despite there being both a high level of awareness of dental ailments and a high level of unmet demand for oral healthcare services as shown by many studies, oral health services utilization continues to be limited. Some common factors have been identified such as age, level of education, cost of treatment and distance to a health facility. A number of respondents also identified fear of dental practitioners and dental treatment. The cost of accessing a high standard of dental care services is high and prohibitive for most.

Many of the studies carried out in Kenya have focused on identifying barriers within smaller localities and groups which vary according to set-ups. Challenges affecting those in an urban setting will differ from those in a rural set-up. This study will use a nationally representative survey to estimate the determinants of oral healthcare services utilization.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter will provide information on the theoretical framework, the empirical model specification, and the data source and types.

3.2 Theoretical model

This study will use the framework posited by Mwabu and Ajakaiye (2007). The framework, first proposed by Rosenzweig and Schultz (1982) presents a model of demand for health care inputs and health production. The model can be applied to formulate a framework for demand of oral health care services. An individual's utility function is given by;

$$U=U(X, Y, H) \tag{1}$$

Where:

X = A health neutral good that has no direct effect on the health status of an individual.

Y = A health related good that has a direct effect on an individual.

H = Health status of an individual.

The health input production function is given by

$$H= F(Y, Z, \mu) \tag{2}$$

Z = The market inputs that an individual purchases that directly affect health such as oral health services.

μ = A factor of health either due to genetic or environmental conditions uninfluenced by behavior.

An individual maximizes (1) and (2) subject to the budget constraints given by equation (3).

$$I= XP_x + YP_y + ZP_z \tag{3}$$

I = Exogenous income

P_x = Price of the health neutral goods

P_y = Price of the health related goods

P_z = Price of a health investment good.

The demand for oral health care services is therefore given by the equation below;

$$Z=D_z(P_x, P_y, P_z, I, \mu) \tag{4}$$

3.3 Econometric Model specification

In evaluating the socio-economic determinants affecting oral health care services utilization, this study will employ a logit model for analysis. The choice of logistic model is guided by previous literature whereby many healthcare studies have utilized the model. According to Woolridge (2002), this model is used when the dependent variable is binary in nature taking on the value 0 or 1, where $Y=1$ is noted as a success of an event occurring and $Y=0$ as a failure. The independent variables to be assessed are denoted as \mathbf{X} (x_1, x_2, \dots, x_k). These include explainer variables such as age, gender, education level of an individual etc.

The index model for binary response is given as;

$$P(y=1/x) = G(x\beta) \equiv p(x) \tag{5}$$

Where G is a cumulative distribution function which is derived from an underlying latent variable model given as:

$$y^* = x\beta + e \qquad y = I(y^* > 0) \tag{6}$$

Where y^* is the latent variable and y is the observed variable.

Therefore, the dependent variable Y will take value 1 if $y^* > 0$ which signifies utilization of oral health services, and will take 0 if $y^* < 0$ which signifies no utilization.

Therefore the probability that $Y=1$ given X is estimated using the cumulative distribution function which is shown by the equation,

$$G(z) = \Lambda(z) \equiv \exp(z) / [1 + \exp(z)] \tag{7}$$

Assuming we have N independent, identically distributed observations, to estimate the model by maximum likelihood, we need the log-likelihood function for each i . This is given by;

$$f(y/x_i; \beta) = [G(x_i\beta)]^y [1-G(x_i\beta)]^{1-y} \qquad y=0,1 \tag{8}$$

The log likelihood for observation i is given by;

$$l_i(\beta) = y_i \log[G(x_i\beta)] + (1-y_i) \log[1-G(x_i\beta)] \tag{9}$$

Therefore, we look for $\hat{\beta}$ estimates that maximizes the log likelihood function.

3.4 Model specification.

The model to be estimated is given by:

$$U = \beta_0 + \beta_1 \text{Age} + \beta_2 \text{Residence} + \beta_3 \text{Level of Education} + \beta_4 \text{Wealth index} + \dots + \varepsilon$$

(11)

3.5 Definition of variables

Table 1: Definition of variables

Variable	Measurement
Utilization of oral health services	Dummy variable taking value 1 if utilized oral health services and 0 otherwise
Age	Measured in categories: 18-29; 30-44; 45-59; 60-69
Level of education	Measured by 4 dummy variables: no formal education dummy, primary education dummy, secondary education dummy and tertiary education dummy. Each takes value 1 if the highest level of education is none, primary, secondary, tertiary education respectively and 0 otherwise.
Place of residence	Dummy variable taking value 1 if urban and 0 otherwise
Knowledge of oral health status	Dummy variable taking value 1 if an individual has knowledge of their oral health status and 0 otherwise
Oral pain	Dummy variable taking value 1 if an individual has oral pain and 0 otherwise
Wealth Index	Dummy variable taking value 1 if an individual is from a rich household and 0 otherwise

3.6 Data, Data types and Sources

The study analyzed data from the 2015 STEPwise survey for non-communicable diseases risk factors. The survey targeted respondents between the ages of 18 to 69 years. The targeted sample size was of 6000 respondents with 4500 eligible respondents interviewed. This covered both males and female in both urban and rural settings. A master sample frame was used to identify clusters which were then separated into four equal sub-samples. A three stage cluster sample design was used whereby the first stage involved identification of one hundred urban and one hundred rural clusters from one of the sub-samples. Thirty households from the clusters were then selected and in the final stage individuals from the eligible households were randomly identified to act as respondents.

The survey collected information on prevalence of non-communicable diseases risk factors but also collected information on oral health. Specifically, the survey collected information on perception of the state of teeth and gums, history of pain and discomfort and dental visits within the preceding 12 months.

The data was analyzed using STATA statistical software package.

CHAPTER FOUR: RESULTS AND DISCUSSION OF RESULTS.

4.1 Introduction.

In this chapter we present the results and discussion of results. The descriptive statistics will be explained first followed by the results on the determinants of oral health care services.

Table 2 presents the descriptive statistics.

Table 2:Descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Use of oral health services dummy	4,490	0.11	0.32	1	0
No formal education	4,500	0.41	0.49	1	0
Primary education dummy	4,500	0.32	0.47	1	0
Secondary education dummy	4,500	0.16	0.37	1	0
Tertiary education dummy	4,500	0.11	0.31	1	0
Oral pain dummy	4,491	0.34	0.47	1	0
Knowledge on oral health status dummy	4,475	0.63	0.48	1	0
Poor dummy	4,500	0.4	0.49	1	0
Middle dummy	4,500	0.2	0.40	1	0
Rich dummy	4,500	0.4	0.49	1	0
Age (18-29years) dummy	4,500	0.33	0.47	1	0
Age(30-44years) dummy	4,500	0.38	0.49	1	0
Age(45-59years) dummy	4,500	0.19	0.40	1	0
Age(60-69years) dummy	4,500	0.09	0.29	1	0
Urban dummy	4,500	0.46	0.50	1	0

The total number of respondents were 4,500. From the table, it can be noted that 11 per cent of the respondents utilized oral health services within the past one year. The majority of respondents were within the 30-44-year age group at 38 per cent. On analyzing the level of education, majority of the respondents at 41 percent did not have any formal education while only 11 per cent had attained tertiary level of education The respondents socio-economic status were equally spread between those in the poor and rich wealth indices at 40 per cent. Those reporting having experienced oral pain within the past one year stood at 34 per cent while 63 per cent of respondents reported they had excellent, very good or good knowledge on their oral health status. Those residing in urban areas stood at 46 per cent.

4.2 Results.

Table 3 presents the coefficients and odds ratio from the logistic regression.

Table 3: Determinants of utilization.

Independent variable	Odds ratio	Co-efficient	Robust Std.Error	z	P> z
Education level (Base: No formal)					
Primary dummy	1.10	0.10	0.14	0.75	0.45
Secondary dummy	1.23	0.21	0.20	1.27	0.20
Tertiary dummy	1.51	0.41	0.27	2.30	0.02
Oral pain dummy	14.56	2.68	2.10	19.42	0.00
Knowledge of oral health status dummy	0.95	-0.49	0.11	-0.40	0.69
Wealth Index (Base: poor)					
Middle dummy	1.30	0.26	0.19	1.74	0.08
Rich dummy	1.78	0.57	0.27	3.76	0.00
Age range (Base 18-29 years)					
Age (30-44) dummy	1.01	0.01	0.12	0.05	0.96
Age (45-59) dummy	0.72	-0.33	0.11	-2.06	0.04
Age (60-69) dummy	0.72	-0.33	0.15	-1.55	0.12

Residence (1=urban)	1.01	0.01	0.13	0.11	0.91
---------------------	------	------	------	------	------

Source: Authors computation from data analysis of STEPS 2015

From the analysis, we can note that the presence of oral pain, having attained education up to the tertiary level, being rich and of the age group 45-59 significantly determine oral healthcare services utilization in Kenya ($p < 0.05$).

Being within the 45-59 years age group was found to negatively influence utilization of oral health care services with those respondents being 0.72 times less likely to seek services. This was noted to be statistically significant. Those within the 60-69 age range were 0.72 times less likely to utilize oral health services. This was however not statistically significant. Respondents having completed primary, secondary, and tertiary education were 1.1, 1.2 and 1.5 times more likely to utilize oral health services, respectively. Having completed tertiary education was the only one found to be statistically significant. Those residing in the urban areas were 1 time more likely to utilize oral healthcare services than those residing in the rural areas. This was found to be not significant. Individuals who were aware of their oral health status were 0.9 times less likely to utilize oral health care services as opposed to those who were not aware of their oral health status. This was found to be not significant.

It was noted that individuals who had experienced oral pain in the past twelve months prior to the interview were 14.5 times more likely to utilize oral healthcare services than those who had not experienced any oral pain. This variable was noted to be highly significant. Wealth has a positive influence on oral health services utilization with individuals in the higher wealth indexes being 1.7 times more likely to utilize oral health services than those in the lower wealth indexes. This was found to be highly significant.

4.3 Discussion of results.

From the analysis it can be noted that need characteristics followed by enabling factors have been shown to have an effect on oral health service utilization.

The main reason as to why individuals sought oral health services was due to experiencing pain in the oral region. This finding was highly significant and it conforms to the findings of Bommireddy et al (2014), Uguru (2014) and the MOH-K oral health survey (2015) who also noted that a

majority of patients sought oral health services due to toothache. Pain affects the physical, social and psychological well-being of an individual due to its multi-dimensional nature. Oral pain may lead to difficulty with everyday tasks such as eating, speech and ability to carry out work, attend school and other social functions therefore reducing productivity. The quality of life of those experiencing oral pain is also greatly affected. This may therefore necessitate absenteeism from school or work so that one may seek treatment. Respondents will mainly seek curative oral health services to relieve the acute symptoms of pain and discomfort. This also indicates that majority of individuals were not aware that other oral health services such as preventive and promotive services were available and that these services could aid in preventing or alleviating oral pain much earlier.

Individuals who had attained higher levels of education utilized oral healthcare services more than those having attained lower levels of education. This was expected as higher levels of education exposes individuals to more awareness on treatment options and reduces levels of ignorance of oral health care issues. The results conform to the findings of Kanyi (2010) and Nagarjuna (2016) who found that respondents whose level of education was higher than primary school level were more likely to be informed on dental health and the varying treatment options available. Education provides opportunities for individuals to gain knowledge and skills that will aid them in gaining access to information on how to improve and maintain their health. Education has been identified as a major social determinant of health. Those having little to no formal education may also have less employment opportunities that provide them with health promoting benefits such as medical or dental insurance coverage that may aid in covering the costs of oral health services. They may end up working in low salaried jobs that do not offer such benefits therefore hindering utilization of oral health services. Education also exposes individuals to healthier lifestyle and dietary choices thus improving their overall health not only for themselves but also to the immediate family members and the community at large.

An increase in age reduces the likelihood of oral health service utilization. Respondents within the age range of 45 to 59 years were less likely to seek oral health services. This resonates with the findings of Liu et al (2015), who noted that visits for oral health care treatment were low among older individuals. As an individual grows older, their health stock begins to deteriorate much faster. Oral Health may not be highly prioritized as opposed to systemic health therefore respondents may

opt to focus on their general well being more-so as there is a rise in non-communicable chronic illnesses. Visits to seek oral health services may therefore only arise in cases of severe pain or emergencies as they seek curative oral health services and rarely will they seek preventative oral health services.

There exists a positive relationship between being rich and utilization of oral health care services. Curative oral health services in Kenya are highly subsidized in public health facilities but the fees are prohibitive to majority of low income earners in the community. Individuals falling within the higher wealth indexes are more likely to earn or be involved in high income generating activities thus enabling them to have higher ability to pay for oral health services. Individuals who earn less income have more competing financial needs and therefore may not seek oral health services as regularly as those with higher incomes. This conforms to the findings of Motlagh (2019) who noted that those having higher income levels showed higher chances of utilizing dental services.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATION

5.1 Introduction

This chapter summarizes the findings in relation to determinants affecting oral health care services utilization in Kenya. This chapter provides conclusions based on the findings, gives policy recommendations and further areas of research.

5.2 Summary of findings and conclusions.

The main objective of the study was to identify the main determinants of utilization of oral healthcare services. The study used the 2015 STEPS survey, a nation-wide survey carried out by the Ministry of Health and the Kenya National Bureau of Statistics (KNBS). A logit model was estimated to analyze the data with the dependent variable being utilization of oral healthcare services.

The independent variables were age of the individual, level of education, place of residence, knowledge of oral health, oral pain and the wealth index of the respondents. The odds of a respondent utilizing oral health services due to the presence of oral pain was 14.6 times whereas the odds of an individual in the 45 to 59 age group not seeking oral health services was 0.72. Those having attained tertiary education were 1.5 times more likely to utilize oral health services and those who were in the rich wealth index were 1.78 times more likely to utilize oral health services. These were found to be significant. The other variables under consideration were not found to be statistically significant.

It is evident that the perceived need for oral health care services brought about by the presence of oral pain and the enabling factors represented by the wealth index is a major determinant in oral healthcare utilization.

5.3 Policy recommendations.

Education on oral health and awareness needs to be carried out to the public. Individuals should be sensitized to use oral health care services not only when in pain, but also to receive information

and direction on how to carry out good oral hygiene practices so as to maintain their oral status. Preventative and promotive oral health programs at the primary health care level are of great importance. These programs can impart knowledge to individuals on how to improve and maintain their oral health and when to seek curative oral health services at higher levels of care. Early diagnosis of less complicated disorders can be carried out and treated and referral for more complicated cases can be carried out in a timely manner.

Lack of financial access to health care is a major barrier to utilization of oral health services. There is need for oral health programmes to be formulated that are highly subsidized to aid those who are not financially able to afford expensive curative procedures.

5.4 Areas for further research

The study considered the socio-economic determinants of utilization of oral health services in Kenya. However, there is need to carry out research on financing of oral health care services. The uptake of dental insurance through the National hospital insurance fund (NHIF) or private health insurance providers can be studied and the role they play in aiding access to oral health care services. With health services being devolved to the county level, further studies on the effect of devolution in provision of oral health care services can be carried out.

REFERENCES

- Ajayi, D. M., and Arigbede, A. O. (2012) Barriers to oral health care utilization in Ibadan, South West Nigeria. *African Health Science*, 12(4), 507–513.
- Alamoudi, N. (1999). The Prevalence of crowding, attrition, midline discrepancies and premature tooth loss in the primary dentition of children in Jeddah, Saudi Arabia. *Journal of Clinical Pediatric Dentistry*. 24(1) 53–58.
- Andersen, R., & Newman, J.F. (1973). Societal and Individual Determinants of Medical Care Utilization in the United States. *The Milbank Memorial Fund Quarterly: Health and Society*, 51(1), 95-124.
- Bommireddy, V. S., Pachava, S., Ravoori, S., Sanikommu, S., Talluri, D., and Vinnakota, N. R. (2014). Socio-economic Status, Needs, and Utilization of Dental Services among Rural Adults in a Primary Health Center Area in Southern India. *Journal International Oral Health: JIOH*, 6(6), 56.
- Clementino, M. A., Gomes, M.C., de Almeida Pinto-Sarmiento, T.C., Martins, C.C., Granville-Garcia, A.F., Paiva, S.M. (2015). Perceived impact of dental pain on the quality of life of preschool children and their families. *PLoS one*, 10(6), e0130602
- Dolan, T. A., & Atchison, K. A. (1993). Implications of access, utilization and need for oral healthcare by the non-institutionalized and institutionalized elderly on the dental delivery system. *Journal of Dental Education*, 57(12), 876-887.
- Fotedar, S., Sharma K. R., Bhardwaj V., Sogi, G. M. (2013). Barriers to the utilization of dental services in Shimla, India. *European Journal of General Dentistry*. (2) 2, 139
- Gakii J. (2013). Demand for Healthcare in Kenya: The Effect of Health Insurance Nairobi. Kenya Institute for Public Policy Research and Analysis.

- Kanyi W. (2010). Factors influencing utilization of dental conservation methods in adults in Gatanga division, Thika District, Kenya. Master of Public health. School of Health Sciences, Kenyatta University.
- Liu, L., Zhang, Y., Wu, W., & Cheng, R. (2015) Characteristics of dental care-seeking behavior and related socio-demographic factors in a middle-aged and elderly population in northeast China. *BMC Oral Health* 15(1), 66.
- Masiga M.A. (2017). Determinants of the utilization of oral healthcare among female caregivers of children with HIV/AIDS in Nairobi City County, Kenya. Doctor of Philosophy in Medical Anthropology, University of Nairobi.
- Ministry of Health (MOH). (2015). Kenya. Oral Health Survey 2015.
- Ministry of Health (MOH). (2015). Kenya STEPwise Survey for Non-Communicable diseases Risk factors 2015 Report.
- Motlagh, S.N., Ghasempour, S., Bajoulvand, R., Hasanvand, S., Abbasi-Shakaram, S., Imani-Nasab, M. H. (2019). Factors affecting demand and utilization of dental services: Evidence from a developing country. *Shiraz E-medical Journal online* 20(12):e89076 doi.org/10.5812/semj.89076
- Mwabu, G., Ajakaiye, O. (2007). The demand for Reproductive health services: Frameworks of Analysis. *erepository.uonbi.ac.ke*
- Nagarjuna, P., Reddy, V. C. S., Sudhir, K. M., Kumar, R. K., Gomasani, S. (2016) Utilization of dental health-care services and its barriers among the patients visiting community health centers in Nellore District, Andhra Pradesh. A cross sectional, questionnaire study. *Journal Indian Association Public Health Dentistry* 14(4), 451.
- Natifah, C.S., Yaw, S.L., Zurina, A.B., Khairiyah, A.M., Rozihan, M., Sararaks, S., Low, L.L., Haniza, M.A., Nordin, S., Riyanti, S., Balkish, N.M. (2011). Load of Oral Health Illness, Oral Health Seeking Behavior and Oral Healthcare Utilization in Malaysia (NHMS 2011). 15th National Institute of Health (NIH) Scientific Meeting 13 June 2012.

- Petersen, P.E., Bourgeois D., Ogawa H., Estupinan-Day S., Ndiaye C. (2005). The global burden of oral diseases and risks to oral health. *Bulletin of the World Health Organization*. 83(9), 661-9.
- Rosenzweig, M., R. & Schultz, T., P. (1983). Estimating a Household Production Function: Heterogeneity, the Demand for Health Inputs, and Their Effects on Birth Weight. *Journal of Political Economy*, 91(5): 723-746.
- Subramani, P., Nagappan, N. Perceived and normative needs, utilization of oral healthcare services, and barriers to utilization of dental care services at peripheral medical center: Poonjeri, Mamallapuram, India. *Journal of Dental Research and Review*, 4, 58-62.
- Uguru, N.P. (2014). Access and Utilization of Routine Dental Services among Different Socio-Economic Groups in Enugu State, South East Nigeria. Department Of Health Administration and Management, Faculty of Health Sciences and Technology, University Of Nigeria, Enugu Campus.
- United States. Public Health Service. Office of the Surgeon General, National institute of Dental, & Craniofacial Research (US). (2000). Oral health in America: a report of the Surgeon General. National Institute of Dental and Craniofacial Research.
- Varenne, B., Petersen, P., E, Fournet, F., Msellati, P., Gary, J., Ouattara, S....& Salem, G. (2006) Illness-related behavior and utilization of oral health services among adult city-dwellers in Burkina-Faso: evidence from a household survey. *BMC health services research*, 6(1), 164.
- Watt, R. G. (2005). Strategies and approaches in oral disease prevention and health promotion. *Bulletin of the World Health Organisation*, 83,711-718.
- Wooldridge, J., M. (2002). Econometric analysis of cross section and panel data. Cambridge, MA: The MIT Press.

