SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

PREVALENCE OF PERIODONTAL DISEASE AMONG PREGNANT WOMEN ATTEENDING ANTENATAL CLINIC IN SEFWI-WIAWSO MUNICIPAL HOSPITAL IN THE WESTERN REGION

BY

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THIS DISSERTATION SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE

JULY, 2016
DECLARATION

I, Paul Noah-Quarm hereby declare that this proposal is a result of my independent work. References to other works have been duly acknowledged. I further declare that this Dissertation has not been submitted for award of any degree in this institution or other universities elsewhere.

PAUL NOAH-QUARM               DATE
(STUDENT)

DR. ERNEST TEI MAYA               DATE
ACADEMIC SUPERVISOR
DEDICATION

I dedicate this work to my late mother Madam Hannah Donkor who has been my sole role model and source of strength. I will always have you at heart.
ACKNOWLEDGEMENTS

I would like to thank the almighty God for seeing me through this course. Without His love and mercies I would not have gotten this far.

I wish to express my deepest appreciation to my wife, Elizabeth Ben for her constant support and encouragement, and to my dear children, Ama Kyekye Ezanenwi, Kouofi Gouane Ezanenwi and Akoua Adwobene Ezanenwi.

To Dr. Ernest Tei Maya, my academic supervisor for his insightful guidance during the conduct of this research I say thank you.

My thanks goes to all lecturers of the school and staff especially to those in the Department of Population, Family and Reproductive Health for their dedication.

I acknowledge Dr. Francis Boakye Takyi for whipping up my interest to do this course.

To my Medical Superintendent Dr. Edward Osei Appiah and the entire Hospital Management and Staff of Sefwi-Wiawso Municipal Hospital I say God bless you.

Thanks to you Dominic Amissah, Community Oral Health Officer and your staff at Dental Unit of the Hospital for your amazing job.

Finally, I thank the Municipal Health Directorate and my colleagues whose proof reading of this thesis contributed to its quality for acceptance.
ABSTRACT

INTRODUCTION

Recent studies have linked periodontal disease in pregnancy to poor pregnancy outcome such as low birth weight, pre-term delivery and still birth. These outcomes are of public health concern since low birth weight and pre-term infants stand the risk of feeding difficulty, thermal instability and delayed brain development. They may also suffer from chronic diseases such as diabetes, heart and kidney diseases later in their lives. Hormonal changes coupled with poor oral hygiene makes pregnant women more susceptible to periodontal disease. Their knowledge about the disease and good oral hygiene practices could help reduce their susceptibility.

OBJECTIVES

This study sought to determine the prevalence of periodontal disease among women attending antenatal clinic at Sefwi-Wiawso Municipal Hospital. It also assessed their knowledge of periodontal disease, assess their attitudes towards oral hygiene and identify the factors associated with periodontal disease in pregnancy.

METHODS

A cross sectional descriptive study was undertaken. Convenient sampling was used to select 156 pregnant women. Interview was used to collect data. In addition, they had oral examination. Their periodontal status were assessed with the use of Community Periodontal Index of Treatment Needs (CPITN) score. They were interviewed on their knowledge of periodontal disease, their attitudes towards oral hygiene and other factors determined. Data was analysed using STATA 13.1. Logistic regression model was used to assess the association between periodontal disease and education as well as frequency of cleaning teeth.

RESULTS.

A total of 156 pregnant women were involved in the study. Mean age was 27.8 (±6.2) years, range 16-44 years with majority 52.6% in their third trimester. Majority of the respondents 60% have heard about periodontal disease with about 45% through the mass media. Majority presumed poor oral hygiene to be the cause of periodontal disease, 10% had symptomatic lesions out of which 82% being pain as their complaint and, 80% did not receive oral health education at antenatal clinic. Respondents generally showed positive attitude towards oral health as 56% cleaned their teeth twice a day and 95% use toothpaste and toothbrush. The CPITN revealed 75% had periodontal disease and higher education of secondary and above have odds ratio of OR=0.02 whiles frequency of cleaning their teeth more than once has odds ratio of OR=0.26

CONCLUSION

The prevalence of periodontal disease is high among pregnant women attending antenatal clinic in Sefwi-Wiawso Hospital. Although the women examined exhibited acceptable level of oral health knowledge and practices, the results showed some gaps in oral health education. Therefore, effort to prevent periodontal disease in pregnancy should be part of antenatal health education policy in the municipality and country.
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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ANC</td>
<td>Antenatal Clinic</td>
</tr>
<tr>
<td>CPITN</td>
<td>Community Periodontal Index and Treatment Needs</td>
</tr>
<tr>
<td>GDHS</td>
<td>Ghana Demographic Health Survey</td>
</tr>
<tr>
<td>Kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>LBW</td>
<td>Low Birth Weight</td>
</tr>
<tr>
<td>SWMHD</td>
<td>Sefwi-Wiawso Municipal Health Directorate</td>
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</table>
DEFINITION OF TERMS

Dental Calculus- This is a calcified plaque or a hard substance that is tightly bound to the teeth. It is also known as tartar.

Periodontal- Tissues around the teeth.

Dental Plaque- A colourless soft sticky film that contains bacteria and forms on the surface of the teeth and gums.

Periodontitis- Inflammation of the gum and tissues around the teeth.

Preterm- It is defined as babies born alive before 37 weeks of pregnancy are completed.

Low birth weight- It is birth weight less than 2.5 kilograms.
CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Oral health can be defined as a standard of health of the oral and related tissues which enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment and which contributes to general wellbeing (WHO, 1948).

Hunter in 1910 propounded a theory that said, bacteria and their products from local infection could be disseminated through the body and cause diseases in other organs and remote infections such as periodontitis and premature birth can be linked (Haerian-Ardakani et al, 2013)

Periodontal diseases are a group of infectious diseases resulting in inflammation of gingival and periodontal tissues and progressive loss of alveolar bone. Periodontal disease is the second most common oral disease and severe periodontitis which may affect tooth loss is found in over 20% of most adult population worldwide (Peterson et al, 2005). The periodontal infection is sustained by several bacteria, predominantly Gram negative, anaerobic, and microaerophilic bacteria that inhabit the sub gingival area.

Recent progress in identification and characterization of periodontal pathogens, as well as elucidation of potential systemic mechanisms of action of bacterial products and inflammatory cytokines have opened the way for a more realistic assessment of the systemic importance of periodontal disease.

Epidemiological and microbiological studies have lent credence to the concept that periodontal disease may be a separate risk factor for cardiovascular disease, cerebrovascular
disease, respiratory disease as well as still birth, pre-term delivery or low birth weight infants (Mokeem et al, 2006).

Acknowledgement and acceptance of the importance of oral health for systemic health has led to the significant research into the role of maternal oral health and pregnancy outcomes. During pregnancy, changes in hormone levels promote an inflammatory response that increases the risk of developing periodontal disease.

Low birth weight (LBW) is birth weight less than 2.5 kilograms (GDHS, 2014), is a significant public health issue in both developed and developing countries. This obstetric complication is usually as a direct result of pre-term labour, in which case it is referred to as pre-term delivery (less than 37 weeks) of low birth weight infants. These children are prone to have chronic diseases such as diabetes, hypertension later in life.

In Africa, LBW is around 12% of all live births. In Ghana, it is 10% in the United States, 7.3% (Center for Disease Control, 1999) and around 15% in Asia (Williams et al, 2000). Globally, about 16% of infants born in the world are LBW infants (Kramer, 1987). Various factors have been associated with delivery of LBW and among them is periodontal disease. Periodontal diseases are a group of infectious diseases resulting in inflammation of gingival and periodontal tissues and progressive loss of alveolar bone. The periodontal infection is began and sustained by several bacteria, predominantly Gram negative, anaerobic, and microaerophilic bacteria that inhabit the subgingival area. Host defence mechanism plays a vital role in the pathogenesis of periodontal disease by responding to the presence of bacteria in the mouth (Mokeem et al, 2006). Tissue destruction in periodontitis is mainly due to the instigation of immune cells by the cell wall component of microorganisms, such as lipopolysaccharide, which potently excite the production of host derived enzymes,
cytokines, and other pro-inflammatory mediators resulting in connective tissue destruction (Offenbacher et al, 1996).

As the inflammatory process progresses, the periodontal pockets deepen and more gum tissue and alveolar bones are destroyed. Often, destructive process has very mild symptoms. Eventually, food for the bacteria, host resistance as well as the nutritional status of the host, example presence of Vitamin C or Ascorbic acid contributes to the progress or abeyance of the disease. The disease can be prevented by good oral hygiene practices which is cheaper and easy to do (Mokeem et al, 2006).

1.2 Problem statement

Poor Oral health has adverse effect on general health. In pregnancy, it is even more serious. Pregnant women who have periodontal disease have a higher risk of giving birth to LBW children, preterm delivery and abortion which are of public health concern (World Oral Health Report, 2003).

Preterm infants account for 70% of all neonatal deaths globally. Even late preterm infants, those born between 34 and 36 weeks of gestation, have greater risk of feeding difficulty, thermal instability, respiratory distress syndrome, jaundice and delayed brain development (Raju TN, 2008).

Prematurity is responsible for almost 50% of all neurological complications in newborns, and lead to lifelong complications in health such as visual problems developmental delays, gross and fine motor delays, deafness and poor coping skills. Others are hypertension, diabetes and chronic kidney and liver diseases (Final Natality Data).
Globally, the prevalence of LBW among pregnant women with periodontal disease is about 16% of all live births, United States is 7.3%, Africa is 12%, and Asia is 15%, (Mokeem, 2006).

Furthermore, pregnancy complications extensively increase the burden to the nation by escalating health care bills and the emotional trauma to the families who experience an adverse pregnancy outcome (Wilder SR, 2008).

Complete prenatal healthcare should include an assessment of oral health, but this is often ignored (Allston, 2002)

Nevertheless, pregnancy is a time when women may be more motivated to make healthy changes (Sukkarwalla et al, 2015).

Periodontal disease can be prevented by good oral hygiene practices such as regular cleaning of the teeth and the oral cavity to keep the dental plaque in check (Nakaishi et al, 2006).

In Ghana, the prevalence of periodontal disease among pregnant women is 89% (Nuamah et al, 1998) and there is no provision for assessment at ANC.

This study therefore seeks to assess the prevalence of periodontal disease among expectant mothers attending ANC in Sefwi-Wiawso Municipal hospital. The results can be used to formulate a comprehensive ANC policy in future.

1.3 Research Questions

1. What is the prevalence of periodontal disease among pregnant women in Sefwi-Wiawso Municipality?

2. What are the factors that influence periodontal disease in pregnancy?

3. What do pregnant women attending ANC know about the causes of periodontal disease?
4. What is their attitudes towards oral hygiene?

5. Are they given oral health education by the reproductive health team at the ANC?

1.4 Objectives

1.4.1 General objective

To determine the burden of periodontal diseases among pregnant women in Sefwi-Wiawso Municipality.

1.4.2 Specific objectives

1. To determine the prevalence of periodontal disease in pregnant women in Sefwi-Wiawso
2. To assess the knowledge of periodontal diseases among respondents
3. To assess their attitudes towards oral hygiene.
4. To identify factors associated with periodontal disease in pregnancy

1.4.3 Conceptual framework

Pregnancy always comes with problems that put the women in the vulnerable state. In spite of their vulnerability, pregnancy also either compounds existing problems or creates new ones. Figure one below describe factors that aggravates the condition. Some of these factors are hormonal changes, poor oral hygiene practices and low level of education.

Progesterone and oestrogen levels rises during pregnancy and makes the gingiva and plain muscles very tortuous. This coupled with poor oral hygiene, puts them in a position that may compromise the integrity of the gums. The research that informal educational makes woman them better appreciate the adverse effect of periodontal disease. Their comprehension of the effects of the condition disease on pregnancy. This makes it easier for them to abide by any instructions given them as preventive measure.
Knowledge about the condition also makes one seek early medical attention when the need arises. This knowledge must be provided at the ANC. Absence of the aforementioned may lead to periodontal disease with its damning consequences on the outcome of the pregnancy.

**Figure 1: Conceptual framework of periodontal disease among pregnant women**
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Periodontal Disease

Periodontal disease literally means diseases around the teeth. Periodontal diseases are a group of conditions that cause inflammation and destruction to the supporting structures of the teeth (Heather & Boggess, 2008). These are chronic oral infections that are characterized by the presence of a biofilm matrix (plaque) that adheres to the periodontal structures and serves as a reservoir for bacteria (Nakaishi et al, 2006). Within the dental plaque biofilm is a complex structure of bacteria that are gram-negative anaerobic and microaerophilic bacteria that colonize on the tooth structures, initiate the inflammatory process, and can lead to bone loss and the recession of the gingival margins, resulting in periodontal pocketing and periodontal disease. This bacterial insult results in destruction of the periodontal tissues which precipitates a systemic inflammatory and immune response. The host response to the bacterial insult moderates the severity of the disease by activating the immune system to mediate the disease process. How well the host responds to the pathogenic bacteria determines how the disease is initiated and progresses. The gum become red, easily bleeds even on brushing, bad breath and taste (Bethesda, 2009). As the disease progresses, the gum tissue begin to recede, exposing root surfaces which may cause tooth sensitivity to temperature and pressure changes. Gum tissue may start to lose their normally tight attachment to the tooth causing pocket formation detectable by trained oral health practitioner during periodontal probing. As pocket formation progresses, supporting bone loss may be noted around the teeth. Abscess formation, collection of pus, swelling and discharge from the gum tissues are later sign of the disease. Ultimately, looseness and drifting of teeth occur as bone is lost in more advanced degrees of the disease and may also
be apparent as eating becomes more difficult or uncomfortable (American Academy of Periodontology).

2.2 Periodontal Disease and Pregnancy

Currently there is a strong association of periodontal disease and adverse pregnancy outcomes. Studies have shown that hormonal changes during pregnancy make them prone to periodontal disease especially, between the second and eight months. Rise in levels of the hormones progesterone and oestrogen have effect on the small blood vessels of the gums and makes it delicate and more permeable. This increases the woman’s susceptibility to oral infections by allowing disease causing agents to multiply and cause inflammation of the gums. This travels to the placenta and causes abortion, preterm birth, low birth weight infants and small-for-gestational age infants. The strength of association is 2-7 folds (Heather & Boggess, 2008).

In 1996, Offenbacher et al reported a potential association between maternal periodontal infection and delivery of preterm or low birth weight infant. He did a case-control study of 124 pregnant women and observed that women who delivered at <37 weeks of gestation or infant <2.5kg had a significantly worse periodontal infection than control women.

In another case control study, Xiong et al, (2006), did a review of existing studies on the topic. In all, 25 selected studies were categorised as follows; 13 case-control, 9 cohort and 3 controlled trials. The studies were conducted in 14 different countries that cut across continents. Of the 25 studies, 18 suggested that periodontal disease is a risk factor for preterm low birth weight, pre-eclampsia, decreased birth weight, and shortened gestational age or miscarriage or stillbirth.
In 2006, Vettore et al published a systematic review based on 36 studies. Twenty-six showed positive associations between periodontal disease and adverse pregnancy outcomes and 10 did not show any relationship. The authors concluded that, although 26 of the 36 studies included in this review consider a positive relationship between periodontal disease and adverse pregnancy outcomes, there is no sound scientific justification to recommend screening of periodontal disease in pregnant women as a means to reduce such outcomes.

Papapanou et al, (2013) in a systematic review involving 189 peer-reviewed publications found an association between maternal periodontal infection and low birth weight, small for gestational age, miscarriage and pre-eclampsia.

2.3 Attitudes towards Periodontal Disease and Oral Health Seeking Behaviours

Good oral health is fundamental component of pregnant woman’s overall health. So, to determine the proportion of dental service seekers of ANC clients at the State university Hospital in Lagos, Nigeria, Wanderer et al, (2009), conducted a cross-sectional study. Out of the 342 women used, 163 had reported to the Dentist. 24 did that during the pregnancy and 88 did that before their pregnancy due to pain. The majority 62% of those who never saw a dentist attributed their non-attendance to absence of pain. This means that the only driver for seeking dental care is pain.

In a related study by (Bukar et al, 2009), also in Nigeria found among 294 pregnant women studied, only 44 (15%) had previous encounter with the dentist.
2.4 Poor oral hygiene and periodontal disease

The onset of periodontal disease had earlier on been related to poor oral hygiene (Greene et al, 1961). It was explained that dental plaque which is always forming in the oral cavity, harbour’s the bacteria that insults the gingiva to start the inflammatory process.

A study by Valdez-Gonzalez et al, (2014) isolated Helicobacter Pylori (that is the bacteria found in the plaque) to be associated with periodontal disease,. The only way to keep the bacteria away is to maintain a clean mouth. They therefore recommended frequent mouth cleaning practices by the pregnant women.
CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Type and Design

This was a cross-sectional descriptive study carried out on pregnant women attending antenatal clinic at Sefwi-Wiawso Hospital in the Western Region of Ghana. The study determined the prevalence of periodontal diseases among pregnant women attending ANC in Sefwi-Wiawso Municipal Hospital.

3.2 Study Area

Sefwi-Wiawso Municipal Hospital is the referral Centre for the Municipality and other surrounding Districts due to the resources available. The RCH unit runs ANC clinics from Monday to Friday. On each clinic day new clients are registered and old clients come for followed up. An average of fifty (50) clients are seen every day. The clinic opens from 8.00 a.m. and are run by midwives. The registrants are issued an ANC folder unless they have one from their respective facility where they were referred. Focused ANC is practiced where a client is assigned to one midwife who takes care of her. Health education is given to the clients as they come for consultation on pre-determined topics such as danger signs in pregnancy, family planning and breastfeeding. The annual ANC attendance and deliveries were 9480 and 5504 respectively (SWMHD Annual Report, 2014)

3.2.1 Health facilities

The municipality has five sub-municipals with 28 listed health facilities. There are 3 hospitals; the Municipal Hospital at Sefwi-Wiawso, St. John of God Hospital (a CHAG Hospital at Sefwi-Asafo), and Greenshields Hospital. There are 2 clinics (1 CHAG and 1 private). There are 2 Health centres, 20 CHPS centres and 2 private maternity homes.
3.2.2 Occupation

The inhabitants are mostly farmers engaged in cocoa, palm oil and food crop farming. Sizeable number of the people are engaged in petty trading, carpentry, hairdressing and dressmaking.

3.2.3 Culture

Majority of the people in the municipal are Sefwis who speak Sefwi, but all of them can also speak Twi. Christianity is the predominant religion practiced in the municipal while a few are Moslem and adherent of Islam and Traditional religion.
3.2.5 Transport and communication

Sefwi-Wiawso is endowed with accessible road network that allows easy access to the adjoining communities and districts. All the major telecommunication networks are also available.

3.3 Variable

A variable is defined as the characteristics of the population that is to be measured.

Dependent variable

The outcome variable for my study is periodontal diseases.

Independent Variables

Pregnant women’s knowledge about periodontal disease

I. Level education

II. Level of awareness about the disease

Factors affecting periodontal disease in pregnancy

I. Hormonal changes

II. Poor oral hygiene practices

Pregnant women’s attitude towards oral care

I. Oral health seeking behaviours.
3.4 Study Population

The study population was made up of pregnant women attending ANC at Sefwi-Wiawso Municipal hospital during the specified study period and who satisfy the inclusion criteria.

Inclusion criteria

Pregnant women of all ages attending ANC at Sefwi-Wiawso Municipal Hospital.

Exclusion criteria

Pregnant women with chronic diseases such as diabetes, hypertension and renal disease before or after becoming pregnant. Women who declined to participate or who opted out were excluded.

3.5 Sampling

A random selection of a sufficiently large sample can be done and the findings extrapolated to cover the entire population.

3.6 Sample Size

The sample size was 156. This is adequate drawn to enable inferences to be made (about the population) and conclusions drawn. In determining the sample size, a 95% confidence interval and a 5% margin of error was applied.

A prevalence of 89% of periodontal disease among pregnant women in Ghana (Nuamah & Annan, 1998) was used to calculate the sample size for the study using the following formula:
Where \( d \) is margin of error, \( p \) = prevalence from previous study, \( q = (1-p) \), \( n \) is sample size

\[
N = \frac{z^2pq}{d^2}
\]

\[N = 1.96^2 \times (89) \times (11) \times (5)^2\]

\[N = 150\]

The minimum sample size per the calculation is 150 and 156 pregnant women attending ANC were used to account for uncertainties

**3.7 Sampling Procedure**

Selection of respondents was purely based on antenatal attendance.

The first twenty clients that registered in the morning at the antenatal clinic were picked for the interview and oral examination for the day. The oral examination was done at the Dental Clinic of the Hospital.

**3.8 Data Collection Techniques/ Tools**

The data was collected in three (3) phases

1. Review of antenatal records (folder) to look at their medical and drug history.

2. Face to face interview using a structured questionnaire

3. Clinical oral examination of respondents
Chart review was done by looking in the ANC card to review their medical records to exclude those who have chronic diseases such as diabetes, hypertension etc. Their drug history was also assessed to exclude those who are ineligible.

The data collection tool that was used for this study was a study specific structured questionnaire which was developed based on the objectives of the study and reviewed literature. The questionnaire composed of closed ended questions covers demographic information, knowledge of oral health and the material use for cleaning their teeth.

The questionnaire was designed in English, but the questions were asked in the local dialects which are Twi and Sefwi for better understanding of respondents who had challenges with the English language. Four well trained research assistants were employed for the data collection and were supervised by the researcher.

The prevalence of periodontal disease was determined through oral clinical examination with the use of Community Periodontal Index of Treatment Needs (CPITN scale: Community Periodontal Index of Treatment Needs is a scale used to diagnose periodontal disease. It is primarily a screening procedure which requires clinical assessment for the presence or absence of periodontal pockets, calculus and gingival bleeding with the use of a special CPITN periodontal probe. Six specified index teeth are examined in each jaw and the highest score for each sextant noted. Measures of gingival recession, tooth mobility, intensity of inflammation, precise identification of pocket depths or differentiation between supra- and sub gingival calculus are recorded. Individuals are assigned to one of four treatment need categories determined from their CPITN scores. Four tabulations provide an insight into the overall pattern of prevalence, severity and categories of treatment need. It ranges from 0 to 4 as follows:
0 = Healthy

1 = Bleeding on probing

2 = Supra and sub-gingival calculus

3 = Shallow pockets (3.5-5.5mm)

4 = Deep pockets (>6mm), using a calibrated periodontal probe.

Zero (0) means the gum is healthy and all others require treatment.

According to the code, treatment need was indicated, as code 0 regarded as healthy periodontal, code 1 need oral hygiene instruction (TN1), code 2 and 3 needed professional scaling (TN2). Whereas code 4 were regarded as complex treatment need.

3.9 Quality Control

3.9.1 Pre-test

Pre-testing the questionnaires for the study was carried out at Nsawora Health Centre in the Akontombra District of the Western Region of Ghana. This is not the area of study but the two districts share certain commonalities as a result of being a single district for a while before being divided into two.

This enabled the researcher to clarify the adequacy of the questions make the necessary corrections for the questionnaire for the actual study and estimate the approximate time for each questionnaire.
### 3.9.2 Validity and reliability

Four research assistants were trained for two days to make sure they understand the objectives and methodology of the study to ensure the process of data collection was uniform and data obtained was made uniform and of high quality. Emphasis was placed on techniques of data collection, rapport creation, assurance of privacy and confidentiality, the meaning of the items and correct ticking of responses provided. They are very fluent in the local dialects viz Twi and Sefwi. The research assistants and the data entry clerk were monitored closely to avoid mistakes.

Data collected was checked to ensure that information gathered was accurate. Errors detected during the data collection was discussed with the research assistants and necessary corrections were carried out with the respondent to ensure completeness of the questionnaire. The questionnaires were numbered before data entry to avoid entering one questionnaire two times. Data was however entered twice by two data entry persons to make sure data was correctly entered.

Oral examination was done by the Community Oral Health Officer in the dental clinic using the calibrated dental probe.

### 3.9.3 Data processing and analysis

Descriptive statistics was used to analyse the generated background characteristics of the respondents and the main variables under study. The percentages, proportions and frequencies, mean, median and standard deviation calculated for age. The results are presented in tables.

Data was entered in Excel spread sheet and exported into STATA 13.1 (Stata Corp LP, College Station, TX, USA) for the analysis.
Pearson’s Chi square ($\chi^2$) was used to determine association between the outcome and explanatory variables. A p-value of less than 0.05 shows an association.

Binary logistic regression was employed to analyse the odds of the prevalence of maternal periodontitis.

The multivariate logistic regression analysis was used to determine the strength of the association between the explanatory and outcome variables that had significant associations, confidence interval of 95% and p-value of 5% was considered significant for all statistical procedures.

3.9.4 Ethical consideration
Ethical clearance to conduct the study was obtained from the Ghana Health Service Ethical Review Committee. Permission was also obtained from the Western Regional Director of Health Services, the Municipal Director of Health service, the Medical Superintendent of the Hospital and the Municipal Chief Executive.

3.9.5 Privacy and confidentiality
Participants were urged to participate at their own will without conditions attached. They were briefed on the research and the indirect benefits were offered, then left to decide whether to participate in the interview or not.

The privacy and confidentiality of the respondents was assured. Participants were made to understand that there are no incentives for participation and they can withdraw at any time during the study. The procedures that were used will not cause any physical or mental harm. Participants signed or thumb printed an informed consent form to get their approval before participating in this research. Respondent below 18 years’ consent were sought from either their partners, parents or guardians before they were allowed to participate. The privacy of
the respondents were ensured during the interview and the discussion process as well as data collected kept confidential.
CHAPTER FOUR

4.0 Introduction

4.1: Socio-Demographic Characteristics

Table 4.1 presents information on the socio-demographic characteristics of the study respondents. The study covered 156 pregnant women aged between 16 and 44 years (a 100% response rate. The mean age of the respondents was 27.8 years (SD=± 6.2) with majority of them 47 (30.1%) falling in 26-30 age category.

More than half of the respondents 80 (51.3%) had basic education while 32.7% had up to tertiary education. Majority of the respondents 141 (90.4%) were Christians and more than half 81 (51.9%) were married. Regarding gestational period of the respondents, most of them 82 (52.6%) were in their third trimester (7-9 months). (Table 4.1)
Table 4.1: Socio-demographic characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency N=156</th>
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</tr>
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<td>25-29</td>
<td>47</td>
<td>30.1</td>
</tr>
<tr>
<td>30-34</td>
<td>35</td>
<td>22.4</td>
</tr>
<tr>
<td>35-39</td>
<td>25</td>
<td>16.0</td>
</tr>
<tr>
<td>40-44</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Educational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>25</td>
<td>16.0</td>
</tr>
<tr>
<td>Primary</td>
<td>80</td>
<td>51.3</td>
</tr>
<tr>
<td>Secondary</td>
<td>20</td>
<td>12.8</td>
</tr>
<tr>
<td>Tertiary</td>
<td>31</td>
<td>19.9</td>
</tr>
<tr>
<td>Marital status</td>
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<td></td>
</tr>
<tr>
<td>Married</td>
<td>81</td>
<td>51.9</td>
</tr>
<tr>
<td>Not married</td>
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<td>19.9</td>
</tr>
<tr>
<td>Co-habiting</td>
<td>44</td>
<td>28.2</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>141</td>
<td>90.4</td>
</tr>
<tr>
<td>Muslim</td>
<td>15</td>
<td>9.6</td>
</tr>
<tr>
<td>Gestational period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First trimester</td>
<td>19</td>
<td>12.2</td>
</tr>
<tr>
<td>Second trimester</td>
<td>55</td>
<td>35.3</td>
</tr>
<tr>
<td>Third trimester</td>
<td>82</td>
<td>52.6</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparous</td>
<td>40</td>
<td>25.6</td>
</tr>
<tr>
<td>Multiparous</td>
<td>116</td>
<td>74.4</td>
</tr>
</tbody>
</table>

4.2: Knowledge about Periodontal Disease

Table 4.2 presents information on respondents’ knowledge about periodontal disease and oral health history. Majority of the respondents 94 (60.3%) have heard about the disease with the majority 36 (38.3%) of those who knew about the disease getting their information from the radio, 27 (28.7%) got it through friends while 25 (26.6%) got it from health workers or a health facility. Regarding oral health education at ANC, 127 (81.4%) said they had not received any oral health education at the ANC whereas the others said they have. In relation to the cause of periodontal disease, the majority 135 (86.5%) presumed poor oral hygiene to be the cause of the disease whiles 10 (6.4%) attributed the cause to heredity. With regards to the respondents’ oral health history, most of the respondents 139 (89.1%) indicated they
have had no oral conditions or complaint. Among those who have had oral conditions before, majority of them 14 (82.4%) described the nature of their complaint as painful tooth, 3 (17.6%) experienced gum bleeding and 2 (11.8%) complained of gum swelling. However, almost all of them 16 (94.1%) resorted to self-medication rather than seeing a Doctor or a Dentist for remedy. In the index pregnancy, 23 (14.7%) of them reported to have lost at least a tooth following the oral condition suffered. Also the number of respondents who had symptomatic oral lesion were 17 (10.9%). Furthermore, most of the 16 (94.1%) resorted to self-medication to remedy the condition.
Table 4.2: Knowledge about periodontal disease

<table>
<thead>
<tr>
<th>Statements</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heard of periodontal disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>62</td>
<td>39.7</td>
</tr>
<tr>
<td>Yes</td>
<td>94</td>
<td>60.3</td>
</tr>
<tr>
<td>Source of information about periodontal disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td>27</td>
<td>28.7</td>
</tr>
<tr>
<td>Radio</td>
<td>36</td>
<td>38.3</td>
</tr>
<tr>
<td>Health worker/facility</td>
<td>25</td>
<td>26.6</td>
</tr>
<tr>
<td>Television</td>
<td>6</td>
<td>6.4</td>
</tr>
<tr>
<td>Receive oral health education at ANC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>127</td>
<td>81.4</td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>18.6</td>
</tr>
<tr>
<td>Cause of periodontal disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor oral hygiene</td>
<td>135</td>
<td>86.5</td>
</tr>
<tr>
<td>Bleeding gum</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td>Gum swelling</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>Ever had any oral health complaints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>139</td>
<td>89.1</td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>10.9</td>
</tr>
<tr>
<td>Nature of the complaint* (n=17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>14</td>
<td>82.4</td>
</tr>
<tr>
<td>Bleeding gum</td>
<td>3</td>
<td>17.6</td>
</tr>
<tr>
<td>Gum swelling</td>
<td>2</td>
<td>11.8</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>17.6</td>
</tr>
<tr>
<td>Treatment or remedy received (n=17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-medicated</td>
<td>16</td>
<td>94.1</td>
</tr>
<tr>
<td>Saw a Doctor/Dentist</td>
<td>1</td>
<td>5.9</td>
</tr>
<tr>
<td>Lost a tooth before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>133</td>
<td>85.3</td>
</tr>
<tr>
<td>Yes</td>
<td>23</td>
<td>14.7</td>
</tr>
<tr>
<td>How many (n=23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 tooth</td>
<td>16</td>
<td>69.6</td>
</tr>
<tr>
<td>2 teeth</td>
<td>5</td>
<td>21.7</td>
</tr>
<tr>
<td>3 teeth</td>
<td>2</td>
<td>8.7</td>
</tr>
<tr>
<td>First pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>116</td>
<td>74.4</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>25.6</td>
</tr>
<tr>
<td>Any oral health complaints in this pregnancy (n=116)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>103</td>
<td>88.8</td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>11.2</td>
</tr>
<tr>
<td>Nature of complaint (n=13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>9</td>
<td>69.2</td>
</tr>
<tr>
<td>Bleeding gum</td>
<td>1</td>
<td>7.7</td>
</tr>
<tr>
<td>Gum swelling</td>
<td>3</td>
<td>23.1</td>
</tr>
<tr>
<td>Treatment received (n=13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-medicated</td>
<td>9</td>
<td>69.2</td>
</tr>
</tbody>
</table>
Saw a Doctor/Dentist | 4 | 30.8
Lose a tooth after the condition (n=13) | 11 | 84.6
Yes | 2 | 15.4

*multiple responses was given

4.3 Attitude towards Oral Hygiene

Table 4.3 presents information on respondents’ attitude towards oral hygiene both in their current and previous pregnancies as well as their belief in the myth of losing a tooth in a pregnancy.

A greater number of the respondents 85 (54.5%) said they cleaned their teeth twice in a day before becoming pregnant. However, a slightly higher number of them 88 (56.4%) cleaned their teeth twice a day in their index pregnancy. Furthermore, most of the respondents 149 (95.5%) indicated using toothpaste and toothbrush to clean their teeth and 7 (4.5%) used chewing stick. Respondents generally showed positive attitude towards oral health. The majority 118 (84.6%) did not believe in the myth that a woman loses a tooth in pregnancy.
Table 4.3: Attitude toward oral hygiene

<table>
<thead>
<tr>
<th>Statements</th>
<th>Frequency =156</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Believe in one pregnancy, one tooth loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>118</td>
<td>84.6</td>
</tr>
<tr>
<td>Yes</td>
<td>38</td>
<td>15.4</td>
</tr>
<tr>
<td>Frequency of brushing teeth in a day during pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once</td>
<td>68</td>
<td>43.6</td>
</tr>
<tr>
<td>Twice</td>
<td>88</td>
<td>54.5</td>
</tr>
<tr>
<td>Frequency of brushing teeth in a day before pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once</td>
<td>71</td>
<td>45.5</td>
</tr>
<tr>
<td>Twice</td>
<td>85</td>
<td>54.5</td>
</tr>
<tr>
<td>Materials used to clean teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toothbrush and toothpaste</td>
<td>149</td>
<td>95.5</td>
</tr>
<tr>
<td>Chewing stick</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Had any education in oral health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>116</td>
<td>74.4</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>25.6</td>
</tr>
</tbody>
</table>

4.4 Prevalence of Periodontal Disease

Table 4.4 shows the oral health status of respondents after oral examination. The oral examination results revealed majority of the respondents 101(64.7%) had calculus as against 38 (24.4%) who had a healthy mouth. In summary, the prevalence of periodontal disease among the respondents was 118 (75.4%). However, the prevalence was highest among the third trimester 74.4 % ( 61/82), first trimester 73.9% (14/19) with the second trimester being the least 60 % (33/55)

Table 4.4: Results showing prevalence of periodontal disease among the respondents

<table>
<thead>
<tr>
<th>Examination</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>38</td>
<td>24.4</td>
</tr>
<tr>
<td>Bleeding</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>Calculus</td>
<td>101</td>
<td>64.7</td>
</tr>
<tr>
<td>Pocket 4-5mm</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>Pocket 6mm or more</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Periodontal Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>38</td>
<td>24.4</td>
</tr>
<tr>
<td>Periodontal disease</td>
<td>118</td>
<td>75.6</td>
</tr>
</tbody>
</table>
4.5 Potential Factors Associated with Periodontal Cases among Pregnant Women

Table 4.5 presents information on potential factors associated with periodontal disease among pregnant women. A bivariate analysis showed that educational status, number of times respondents brushed their teeth before and during pregnancy are significantly associated with periodontal disease in pregnancy. Age, marital status, gestational period and materials used to clean teeth were found not to be associated with periodontal disease in pregnancy. However, after controlling for other factors, it was only educational level, and brushing of teeth in the index pregnancy that were found to be significantly associated with periodontal disease in pregnancy. Table 4.5
Table 4.5: Potential factors associated with periodontal disease among pregnant women

<table>
<thead>
<tr>
<th>Factors</th>
<th>Periodontal disease, n(%)</th>
<th>Chi-square P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Healthy</td>
<td>Periodontal case</td>
</tr>
<tr>
<td>Age in years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>3(17.7)</td>
<td>14(82.3)</td>
</tr>
<tr>
<td>20-24</td>
<td>9(30.0)</td>
<td>21(70.0)</td>
</tr>
<tr>
<td>25-29</td>
<td>14(29.8)</td>
<td>33(70.2)</td>
</tr>
<tr>
<td>30-34</td>
<td>8(22.9)</td>
<td>27(77.1)</td>
</tr>
<tr>
<td>35-39</td>
<td>4(16.0)</td>
<td>21(84.0)</td>
</tr>
<tr>
<td>40-44</td>
<td>0(0.0)</td>
<td>2(100.0)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>23(28.4)</td>
<td>58(71.6)</td>
</tr>
<tr>
<td>Single</td>
<td>7(22.6)</td>
<td>24(77.4)</td>
</tr>
<tr>
<td>Co-habiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and less</td>
<td>2(1.9)</td>
<td>103(98.1)</td>
</tr>
<tr>
<td>Secondary</td>
<td>11(55.0)</td>
<td>9(45.0)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>25(80.7)</td>
<td>6(19.3)</td>
</tr>
<tr>
<td>Period of pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First trimester</td>
<td>5(26.3)</td>
<td>14(73.7)</td>
</tr>
<tr>
<td>Second trimester</td>
<td>12(21.8)</td>
<td>43(78.2)</td>
</tr>
<tr>
<td>Third trimester</td>
<td>21(25.6)</td>
<td>61(74.4)</td>
</tr>
<tr>
<td>Heard of periodontal disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26(27.7)</td>
<td>68(72.3)</td>
</tr>
<tr>
<td>No</td>
<td>12(19.4)</td>
<td>50(80.6)</td>
</tr>
<tr>
<td>Received oral education at the ANC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8(27.6)</td>
<td>21(72.4)</td>
</tr>
<tr>
<td>No</td>
<td>30(23.6)</td>
<td>97(76.4)</td>
</tr>
<tr>
<td>Frequency of brushing teeth in a day during pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once</td>
<td>3(4.4)</td>
<td>65(95.6)</td>
</tr>
<tr>
<td>Twice</td>
<td>35(39.8)</td>
<td>53(60.2)</td>
</tr>
<tr>
<td>Frequency of brushing teeth in a day before pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once</td>
<td>8(11.3)</td>
<td>63(88.7)</td>
</tr>
<tr>
<td>Twice</td>
<td>30(35.3)</td>
<td>55(64.7)</td>
</tr>
<tr>
<td>Materials used to clean teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tooth brush and paste</td>
<td>36(24.2)</td>
<td>113(75.8)</td>
</tr>
<tr>
<td>Chewing stick</td>
<td>2(28.6)</td>
<td>5(71.4)</td>
</tr>
<tr>
<td>Had any education in oral heath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12(30.0)</td>
<td>28(70.0)</td>
</tr>
<tr>
<td>No</td>
<td>26(22.4)</td>
<td>90(77.6)</td>
</tr>
</tbody>
</table>

*p<0.05
4.6 Logistic Regression of the Potential Factors Associated with Periodontal Disease among Respondents

Table 4.6 presents the logistic regression analysis of the potential factors associated with periodontal cases among respondents. The results showed a significant association between educational status of the respondents and having an oral condition. Table 4.6.

Table 4.6: Logistic regression of the potential factors associated with periodontal cases among respondents

<table>
<thead>
<tr>
<th>Factors</th>
<th>Periodontal case, n(%)</th>
<th>Unadjusted OR(95%CI)</th>
<th>Adjusted OR(95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Healthy</td>
<td>Periodontal case</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2(1.9)</td>
<td>103(98.1)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Educational status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and less (ref)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>11(55.0)</td>
<td>9(45.0)</td>
<td>0.02(0.00-0.08)*</td>
</tr>
<tr>
<td>Tertiary</td>
<td>25(80.7)</td>
<td>6(19.3)</td>
<td>0.004(0.00-0.02)*</td>
</tr>
<tr>
<td><strong>Frequency of teeth cleaning in pregnancy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once (ref)</td>
<td>3(4.4)</td>
<td>65(95.6)</td>
<td>1</td>
</tr>
<tr>
<td>Twice</td>
<td>35(39.8)</td>
<td>53(60.2)</td>
<td>0.07(0.02-0.24)*</td>
</tr>
<tr>
<td><strong>Frequency of teeth cleaning before pregnancy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once (ref)</td>
<td>8(11.3)</td>
<td>63(88.7)</td>
<td>1</td>
</tr>
<tr>
<td>Twice</td>
<td>30(35.3)</td>
<td>55(64.7)</td>
<td>0.23(0.10-0.55)*</td>
</tr>
</tbody>
</table>

*p<0.05; OR=Odds ratio; CI=confidence interval; ref= reference group of the categories
CHAPTER FIVE

5.0 DISCUSSIONS

5.1 Introduction

This chapter discusses the outcome of the research and its implications.

5.2 Prevalence of Periodontal Disease

This study was conducted to determine the prevalence of periodontal disease among pregnant women attending ANC at Sefwi-Wiawso Municipal Hospital which is a semi-urban community in Ghana. The prevalence of periodontal disease among pregnant women attending ANC was a little over 75%. Of this, 65% had calculus and 5% had gingivitis and periodontitis. The measurement was done with the use of CPITN score.

A study in Ghana among pregnant and non-pregnant women attending the outpatient clinic of the department of obstetrics and gynaecology of Korle-Bu Teaching Hospital reported about 90% prevalence among the pregnant women (Nuamah & Annan, 1998). There are several reasons that could account for the difference. Among them is the year of the study which is almost 20 years. This could mean a lot of people are now aware of their oral health needs and therefore practice more oral hygiene now than before. Furthermore, Korle-Bu Teaching Hospital is a tertiary referral centre and most of their clients are likely to be having medical conditions which brought them to the facility to see a specialist whereas respondents in Sefwi-Wiawso were only coming for their routine ANC services.

In the Nuamah & Annan’s study, only women in their second and third trimesters were used whereas in the current study, pregnant women of all trimesters were examined and the prevalence is highest among the third and first trimesters 74.4% and 73.9% respectively with the second trimester being the least 60%. Heather & Boggess, (2008) who found the
prevalence to be highest among the second and third trimesters. Similar studies conducted in Uganda on determinants of periodontal health in pregnant women (Wandera et al, 2012), reported prevalence rate of 67%. In that study only pregnant women with 7 months (third trimester) gestational age were examined and therefore had a limited scope than this current study. Conversely, the prevalence among the third trimester in this study is similar to that of Wandera et al, 2012.

**Knowledge about periodontal disease**

The study revealed that 60% of respondents knew about periodontal disease. Of this, more than 80%, presumed the cause to be poor oral hygiene. Their main source of information (45%) is the mass media (radio and Television) (45%) and (27%) from health workers.

Majority (80%) reported they had no oral health education at the ANC. This is probably because, Doctors and RCH Staff do not regard oral health care as part of ANC and do not refer pregnant women to dental clinic for care. This may be a cause for increasing oral health issues during pregnancy. This is no surprise since the ANC booklet does not talks about oral health.

In a survey of oral health knowledge and practices of pregnant women in a Nigerian teaching hospital, (Abiola A, Olayinka A, Mathilda B, Ogunbiyi O, Modupe S, Olubunme O, 2011), it was found that only 7.5% knew about periodontal disease. Of this, about 30% presumed that it was caused by sugar. Only 1% presumed the cause to be poor oral hygiene. A few of respondents (10%) reported in this current study, had symptomatic lesions that suggested periodontal disease.
5.3 Attitude towards oral hygiene

More than half of the respondents cleaned their teeth twice a day with majority (85%) using toothpaste and toothbrush. This is consistent with a Nigerian study on oral health among antenatal attendees in Calabar (Bassey GO, Anyanechi CE, Ekabua KJ, Ekabua JE, 2010), which found a strong relationship between the frequency of cleaning (irrespective of the kind of cleaning material used) and periodontal disease in pregnancy. It was also found that the popular method of cleaning was the use of toothpaste and toothbrush. Those who cleaned more than once a day, either did not have the condition or would only need oral hygiene instructions. About 10% of the respondents who had symptomatic lesions resorted to self-medication for remedy instead of seeking help from the dental clinic.

Other contributory factors to maternal periodontitis

Level of education of respondents is found to be strongly associated with periodontal disease in pregnancy. The higher the level of education the less likely one would have the disease. Respondents with education from secondary school and above were found to be less likely to have the disease. This is because people with higher educational level usually have good comprehension of instructions than the others. This is consistent with the results of a study in North Eastern Nigeria among pregnant women attending ANC in the University of Maiduguri Teaching Hospital and Federal Medical Centre Yola (Bukar, 2012). The authors reported that the level of education of respondents was strongly associated with periodontal disease in pregnancy.

Another factor that was found to be significant was the frequency of cleaning. Respondent who cleaned more than once a day were less likely to have the disease. This is because bacteria plaque is a single most important cause of periodontal disease and its control helps in keeping the disease under check (Valdez-Gonzalez et al, 2014)
Majority (55%) reported cleaning their teeth twice a day. Greater number of them 95% use modern methods of cleaning their teeth by the use of toothbrush and toothpaste. This is consistent with a study in a Nigerian Teaching Hospital in Borno State, 90% reported they used toothpaste and toothbrush to clean their teeth.

In the current study, 15% believed in the myth that a tooth for a pregnancy and as many as 10% lost their teeth in the index pregnancy. This belief affects the attitudes of the pregnant women to seek medical care when they have symptomatic oral lesions as they take it to be normal.

5.4 Explanation of Findings and Implications

The oral examination conducted using CPITN index of periodontal disease, revealed that a greater number of the respondents had oral conditions that needed the attention of the dentist. These women until the oral examination, did not have any idea of their oral health status and therefore did not seek treatment. This is because most of them have calculus and will need scaling and polishing as remedy. Others would also need oral hygiene instructions without necessarily taking medicine.

The level of education of the respondent was found to be significant in controlling periodontal disease in pregnancy. Those who had secondary education and above had good attitude towards oral care. The level of education improves one’s wealth of knowledge because of better comprehension of instructions and the desire for information. This can also influence them greatly if they had education in oral health at the ANC.
5.5 Strengths and Limitations

The study is the first of its kind in the Municipality according to the Municipal Health directorate, the subject matter is an area they wanted to explore so as to help evaluate their efforts to improve reproductive health care.

The limitations are that the study was limited to pregnant women who attended ANC and cannot be extrapolated to those who do not.

The study was carried out in Sefwi-Wiawso and cannot be generalized beyond Sefwi-Wiaawso
CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The prevalence of periodontal disease among pregnant women attending ANC at the Sefwi-Wiawso Municipal Hospital was 75.6%. Even though about 20% of the respondents had symptomatic oral lesions and lost a tooth loss in the index pregnancy majority used toothpaste and toothbrush to clean their teeth two times a day. The attitude towards seeking oral health care was poor as those who had symptoms resorted to self-medication. Majority did not receive any oral health education from the reproductive and child health staff.

Close to half of the respondents did not know about periodontal disease. Mass media was the main source of information on periodontal disease. About 80% did not receive oral health education at the antenatal clinic.

The main contributory factors of maternal periodontitis were frequency of oral care, level of awareness, formal education and oral health as well as gestational age. Furthermore, 15% hold the view that a tooth for a pregnancy is normal. 10% lost at least a tooth in the index pregnancy.

6.2 Recommendations

- The Hospital management should incooperate oral health education into the routine health education at ANC.

- The Hospital management should make dental examination a part of ANC routine services for all pregnant women; at least have one examination during the course of each pregnancy before term.
• The Hospital management should intensify their Information, Education and Communication in oral health through the mass media since quiet a number had it as their source of information.

• The Municipal Health Directorate should conduct a community-based study to include both ANC attendees and non ANC attendees to give a better understanding of the distribution of the disease.

• The Ghana Health Service should include oral health education as part of RCH routines in the antenatal record book to serve as a reminder to the staff.

• There should be further studies on periodontal disease among pregnant women and the effect on outcome of pregnancy.
REFERENCES


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APPENDICES

Appendix I: Questionnaires

Introduction
I am a student from the School of Public Health, University of Ghana conducting a research on maternal periodontitis. I would like to take about 15 minutes of your time and ask you a few questions regarding your health and conduct oral examination which may help improve service delivery. Issues to be covered will include oral health seeking behaviour before and during this pregnancy, and your knowledge regarding periodontal disease. All information collected will be treated as confidential and no one will be able to trace any information back to you.

INSTRUCTIONS
Please tick the appropriate box eg [✓] or give brief answers where applicable.

SECTION (A)
DATE: ...........................................

ID No: ________________________________

AGE (completed years) [   ]

What is your educational level? No education [   ] Primary [   ] Secondary [   ] Tertiary [   ]

What is your marital status? Married [   ] Not married [   ] Co-habiting [   ]

What is your religious affiliation? Christian [   ] Muslim [   ] Traditional [   ]
SECTION B:

1. How old is your pregnancy in months?  
   1.1-3 [ ]  2.4-6 [ ]  3.7-9 [ ]

2. Have you heard of periodontal disease before?  
   1. No [ ]  2. Yes [ ]

   If YES, where?  
   1. Friend(s) [ ]  2. Radio [ ]  3. Health worker/facility [ ]

   Other (Specify) …………………………………..

3. Do you receive oral health education at the ANC?  
   1. No [ ]  2. Yes [ ]

4. What do you think is the cause of periodontal disease?  
   1. Poor oral hygiene [ ]  2. Hereditary [ ]  3. Germs [ ]

5. Have you had any oral health complaints in this pregnancy?  
   1. No [ ]  2. Yes [ ]

6. What was the nature of the complaint? (Tick all that are applicable)  

7. What treatment or remedy did you seek?  
   1. Self-medicated [ ]  2. Saw a Doctor/Dentist [ ]

8. a) Have you lost a tooth?  
   1. No [ ]  2. Yes [ ]

   b) If yes how many……………………

9. Is this your first pregnancy?  
   1. No [ ]  2. Yes [ ]

10. If NO (previous pregnancy)  
    a. Did you have any oral health complaints?  
       1. No [ ]  2. Yes [ ]

    b. What is the nature of the complaint?  
       1. Pain [ ]  2. Bleeding [ ]  3. Gum swelling [ ]

    c. What remedy did you seek?  
       1. Self-medicated [ ]  2. Saw a Doctor/Dentist [ ]

    d. Did you lose a tooth?  
       1. No [ ]  2. Yes [ ]

11. Do you believe in one pregnancy, one tooth loss?  
    1. No [ ]  2. Yes [ ]
12. How many times do you brush your teeth in a day now that you are pregnant?
   1. None [ ] 2. Once [ ] 3. Twice [ ] 4. Thrice or more [ ]

13. How many times were you brushing your teeth before you became pregnant?
   1. None [ ] 2. Once [ ] 3. Twice [ ] 4. Thrice or more [ ]


15. Have you had any education in oral health? 1. No [ ] 2. Yes [ ]
   If YES, where? ..........................................................................................................

SECTION C

PERIODONTAL EXAMINATION

This was done using the CPITN index

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<td>3/1</td>
<td>36/37</td>
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Code:
0 = Healthy
1 = Bleeding
2 = Calculus
3 = Pocket 4 – 5mm
4 = Pocket 6mm or more
Your rights as a Participant

This research has been reviewed and approved by the Ethical Review Committee of the Ghana Health Service. If you have any questions about your rights as a research participant you can contact the Ethical Review Coordinator on 0507041223 (Ms. Hannah Frimpong).

Do you have any questions to ask me…..(if yes, note questions below)

Voluntary agreement form for clients 18 years and above

The above document describing the benefits, risks and procedures for the research topic ‘periodontal disease among pregnant women attending ANC in Sefwi-Wiawso Municipal Hospital’ has been read and explained to me. I have been given an opportunity to ask any questions about the research. I agree to participate as a volunteer.

Name………………………………………………………Date……………………..

Signature/thumbprint…………………………………………………………………

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Name………………………………………………Date…………………………….

Signature/Thumbprint………………………………………………………………

Interviewer statement

I………………………………………………..the undersigned, have explained to the subject in the language he/she understand and the subject has agreed to take part in the study.

Signature of interviewer………………………………………………..
Appendix II: Infomed Consent Form

CONSENT FORM

Form number [     ]

Project little: prevalence of periodontal disease among pregnant women attending ANC in
Sefwi-Wiawso Municipal Hospital

Name and address of Principal Investigator

Paul Noah-Quarm, Department of Population Family and Reproductive Health, School of
Public Health, University of Ghana, Legon, Accra.

Mobile: 0204677652 Email Mail Address: ezanenwi@yahoo.com

Institution affiliated

School of Public Health, University of Ghana, Legon, Accra

Introduction

I am a student from the School of Public Health, University of Ghana conducting a research
on maternal periodontitis. I would like to take about 15 minutes of your time and ask you a
few questions regarding your health and conduct oral examination which may help improve
service delivery. Issues to be covered will include oral health seeking behaviour before and
during this pregnancy, and your knowledge regarding periodontal disease. All information
collected will be treated as confidential and no one will be able to trace any information
back to you.
Procedure

The study procedure will involve questions-responses and examination. Questions to be asked will include information about your background characteristics, knowledge on periodontal disease, oral health seeking behaviours, etc. and conduct oral examination in the Dental Clinic.

Risks

You will be expected to answer some questions. You will not be judged by the answers you provide by anyone related to the study neither will the answers you give have a negative effect on your current and future management. Furthermore, the oral examination will give you a little discomfort in the dental chair.

Benefit (s):

Direct benefit will not be obtained from the questionnaire, however the information provided by you and other clients will aid in the formulation of strategies. Again, if found to have the disease, you will be treated and the cost taken up by the NHIS.

You are at liberty to ask any questions concerning the topic during the interview.

Right to refuse

Your consent to participate in this study is voluntary, you are not under any obligation to do so, and you are at liberty to withdraw from this study at any point in time. However, I will appreciate if you can complete it.

Anonymity and confidentiality

Be assured that any information given will be used purely for the purpose of research. Any information given will be treated with utmost confidentiality.
Your rights as a Participant

This research has been reviewed and approved by the Ethical Review Committee of the Ghana Health Service. If you have any questions about your rights as a research participant you can contact the Ethical Review Coordinator on 0507041223 (Ms. Hannah Frimpong).

Do you have any questions to ask me….. (if yes, note questions below)

Voluntary agreement form for clients 18 years and above

The above document describing the benefits, risks and procedures for the research topic ‘periodontal disease among pregnant women attending ANC in Sefwi-Wiawso Municipal Hospital’ has been read and explained to me. I have been given an opportunity to ask any questions about the research. I agree to participate as a volunteer.

Name………………………………………………………Date……………………..

Signature/thumbprint…………………………………………………………………

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Name………………………………………………Date……………………………

Signature/Thumbprint………………………………………………………………

Interviewer statement

I………………………………………………..the undersigned, have explained to the subject in the language he/she understand and the subject has agreed to take part in the study.

Signature of interviewer…………………………………

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