ORAL MORBIDITY AND ORAL HEALTH RELATED QUALITY OF LIFE IN PREGNANT WOMEN - A CROSS SECTIONAL COMPARATIVE STUDY

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Dissertation submitted in partial fulfillment of the requirement for the award of the degree of Master of Public Health

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CERTIFICATE

I here by certify that the dissertation titled **"Oral Morbidity and Oral Health Related Quality of Life in Pregnant Women– A Cross Sectional Comparative Study"** is a bonafide record of original research work undertaken by Dr Amritha Geevarghese in partial fulfillment of the requirement for the degree of Masters of Public Health under my guidance and supervision.

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DECLARATION

I here by declare that this dissertation titled **"Oral Morbidity and Oral Health Related Quality of Life in Pregnant Women– A Cross Sectional Comparative Study"** is the result of original research and has not been submitted for award of any degree/diploma at any other university or institution of higher education.

Thiruvanathapuram, Kerala **Amritha Geevarghese**

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ACRONYMS AND ABBREVIATIONS

Community Periodontal Index for Treatment Needs	**CPITN**
Confidence Interval	**CI**
Decayed Missing and Filled Teeth Index	**DMFT**
Extra Oral Examination	**EOE**
Health Related Quality of Life	**HRQoL**
Intra Oral examination	**IOE**
Odds Ratio	**OR**
Oral Health Impact Profile	**OHIP**
Oral Health Related Quality of Life	**OHRQoL**

ABSTRACT

Objectives: The objectives of the study were to assess the difference in oral health (morbidity) between pregnant and non-pregnant women and also to identify the perceived oral health related quality of life between pregnant and non-pregnant women.

Methods: Pregnant women with (n=150; mean age 23.8±3.01) and non-pregnant women (n= 150; mean age 25.2± 3.35) participated in this cross sectional comparative study. They were interviewed to collect information on background details, pregnancy, dietary pattern and oral hygiene habits as well as practices; and the oral health impact profile questionnaire was used to capture the perceived oral health quality of life. Oral examination recorded using the CPI calibrated probe and entered in the WHO 1997 oral health assessment form. Analyses of the data were done using SPSS 17.

Results: On analysis it was observed that the periodontal health was poorer in pregnant women as compared to non-pregnant women (P<0.001). The Mean of Decayed Missing and Filled teeth (DMFT) index scores were not significantly different between pregnant and non-pregnant women (7.0±2.6 and 6.3±2.3 respectively). DMFT score did not show any significant difference between the two groups when adjusted for other variables. The perceived Oral Health Related Quality of Life (OHRQoL) was significantly low among pregnant women (P <0.001). The frequency of temperomandibular joint disorder, extra oral abnormality, intra oral ulcers and pigmentations were observed to be high among pregnant women than the comparison group. Oral hygiene practice, dental care seeking pattern and number of pregnancies were observed to influence the periodontal health and OHRQoL (P < 0.001).

Conclusion: Oral health as well as the perceived OHRQoL were poorer among pregnant women when compared to non-pregnant women

Chapter 1

Background and Introduction

1.1 Background and Introduction

The mouth is an obvious portal of entry to the body, and oral health reflects and influences general health and well being. Good oral health is not merely having good teeth. Oral health is a state of the mouth and associated structures where disease is contained; future disease is inhibited, the occlusion is sufficient to masticate food and the teeth are of a socially acceptable appearance.[1] Pregnancy is a dynamic state characterized by physiological and pharmacokinetic alterations that affect two organisms simultaneously.[2] Oral health is usually affected by hormonal changes during puberty, menstruation, pregnancy and menopause. Pregnancy constitutes a special physiological state characterized by a series of temporary adaptive changes in body structure, as the result of an increased production of estrogens, progesterone, among other hormones. The systemic effect of pregnancy extends beyond the reproductive system to physical and physiological changes which can have an impact even on healthy women. Most of the pregnant women experience various discomforts during her nine months of pregnancy. The oral cavity is also affected by such endocrine actions, and may present both transient and irreversible changes as well as modifications that are considered pathological. Oral tissues are known to be affected by pregnancy, with the most frequent and greatest changes occurring in the gingival tissue. Oral changes mostly seen among the pregnant women are pregnancy gingivitis, periodontitis and pregnancy epulis. Other changes during pregnancy are tooth surface loss usually related to vomiting when severe, increased mobility of teeth, and changes in the severity of oral aphthae, xerostomia and

mucosal bleeding.[3] Increase in tooth decay during pregnancy may be a result of changes in diet and oral hygiene. It is not very surprising to see relatively high proportion of pregnant women demonstrating periodontal disease.[4]

Dental disease is caused by bacterial infection. During pregnancy, hormone levels in your body continue to increase. These increased levels of hormones encourage your body to increase its blood supply to your gingival tissue. This increased blood flow may result in the gum disease known as gingivitis, which is when the gums are swollen and continue to bleed easily.[5]

The tooth mobility reported during pregnancy is mostly due to diseases affecting the periodontal ligaments. Pregnancy in itself could only modify other conditions which cause dental diseases.

Pregnant mothers with dental disease are seven times more likely to have premature or low birth weight babies because of the infection. Mother's oral health is very important for baby's dental health as well as general health. The use of preventive measures in the intrauterine stage can avoid several diseases, among these, dental caries. But less than one half of women receive dental care during pregnancy. Mother's oral health is very important for baby's dental health as well as general health. Studies suggest that treating periodontal disease in pregnancy may reduce the risk of poor pregnancy outcomes.[6]

Teeth and oro-facial structures play an important role in a person's social life from a very early age. Oral diseases cause considerable amount of physical pain and suffering, Impairment of function and reduced quality of life.[7] This will be even worsened during pregnancy where the health of a woman is already compromised. Pain related to oral diseases and the diseases by itself restricts normal activities and socialization of an

individual. Henceforth oral health is a determinant of an individual's quality of life. Studies among adult population are showing high Oral health impact scores, mainly associated with higher dental anxiety, caries status and psychological distress, which is usually higher among the pregnant women. All these will affect the Oral Health Related Quality of Life (OHRQoL).

High levels of oral diseases also have an impact on the oral-health-related quality of life (OHRQoL). The oral health impact profile (OHIP) measures the perceptions of the social impact of oral disorders on the well-being of an individual. Dental anxiety and psychological distress associated with pregnancy can affect the oral health of women. OHIP can be a very useful tool to capture this impact on the quality of life of the individual.

Kerala has good overall health indicators and is well ahead of most Indian states as quoted from the national family health survey (NFHS)-2, Kerala. In spite of these achievements in health, the oral disease prevalence is high and oral health is low priority area. Oral diseases because of their high prevalence are a major public health problem. New York State Department of Health, has come with a data of prevalence of periodontal diseases among women of reproductive age, which is estimated to be 37 to 46 percent and can be up to 30 percent among pregnant women.[8]

A study from Karnataka gives data on prevalence of gingivitis and periodontitis and found that it is more common in females (75.2 percent, 32.8 percent) than in males (65.9 percent, 24.2 percent). As age advances from 15 to 55 years periodontitis increased from 18 percent to about 57 percent.[9] A community based study in Trivandrum, Kerala showed a prevalence of 65.3 percent of periodontitis.[10] In Trivandrum, 33 percent of adult in the age group 35- 40 yrs had deep periodontal pockets indicating severe periodontitis

and around 80 percent of 25-30 year old had shallow pocket indicating mild to moderate form of disease.[11]

In India, dental caries has increased from point prevalence of 40 to 50 percent with an average DMFT (Caries Index) of 1.5 to four in rural areas and five in urban areas during 1980 to 1990.[12] A study from Pondicherry, among women aged 15 years and above, reports a prevalence of 40 percent for dental caries, 27.3 percent missing teeth due to caries and 13.2 percent missing teeth from other causes.[13]

In epidemiology oral measures are made using indices. This index measures the pathological damages or the process to the tissue. DMFT is used to measure the tooth decay, number of missing teeth and number of filled teeth. The Community Periodontal Index for Treatment needs (CPITN) is used for measuring the extent of periodontal diseases. These indices too have limitations; it fails to describe how the disease affects the functioning and well being of the individual. Measures of oral health-related quality of life (OHRQoL) are increasingly being used in descriptive population-based research as a means of capturing nonclinical aspects of oral health that patients deem most relevant to their overall health and well-being.[14] Psychosocial factors are important in understanding pathways between socioeconomic position, oral health status and OHRQoL. The definition of health by the World Health Organization (WHO), has been the key issue in the conception of Health Related Quality of Life (HRQoL) and, subsequently OHRQoL.[15]

Clinical indicators of oral diseases such as dental caries or periodontal diseases were not entirely suitable to capture the new concept of health declared by W.H.O, particularly the aspects of mental and social well-being. This is recommends the development and use of socio-dental indicators to capture non-clinical aspects of oral disease.[16]

1.2 Rationale

Knowledge about the oral condition among pregnant women is important and most of the time the complications arising from this can be minimized. Maternal oral health has significant implications for birth outcomes. And also maternal oral health influences the infant's oral health. However the mechanisms by which women are susceptible to dental loss during pregnancy have not been fully clarified. These oral health changes of a woman during pregnancy definitely influence the oral health related quality of life. In spite of these adverse outcomes of oral mucosal changes during pregnancy, access to dental care during pregnancy is impeded, in part, by a limited window of opportunity for treatment.

Regardless of the potential for improved oral health to improve pregnancy outcomes, public policies that support comprehensive dental services for vulnerable women of childbearing age are absent at the community research level, the concept of OHRQoL is especially vital to promote oral health care and access to care. The international literature abounds with epidemiological studies of oral health, though few studies offer information on the oral conditions characterizing pregnancy. Knowledge of oral conditions, derived from actual pregnancy or attributable to the circumstances associated with this special physiological state, and the related quality of life may allow early identification and management of such alterations thus helping dental professionals and health authorities to anticipate the associated service demands and costs. This study can contribute to rationale decision making with regard to oral health goals, setting priorities, oral health care planning and allocating resources. Assessing both patients' perceptions of health and disease status, helps to have accurate data, for promotion of health and for allocation of health resources.

Chapter 2

Literature Review

2.1 Oral Health and Pregnancy

Literature review shows that a pregnant woman's oral health and her pregnancy outcome are usually related. Hormonal changes combined with lack of routine exams and delays in treatment for oral disease, place pregnant women at higher risk for dental infections.[17] Studies have shown that prenatal risk due to oral diseases are mainly premature birth, low birth weight babies, pre-eclampsia, ulcerations of the gingival tissue, pregnancy granuloma, and tooth erosion, dry mouth, excessive salivation, tooth mobility, gingival bleeding.[18] Some studies have shown that pregnancy does not appear to constitute a risk factor for increased gingivitis and early periodontitis.[19] Extensive erosion of tooth enamel can be due to the nausea and vomiting experienced in pregnant women during this period.[20] By definition gingivitis is inflammation of the gingiva that does not result in clinical attachment loss. Periodontitis is inflammation of the gingival and the adjacent attachment apparatus and is characterized by loss of connective tissue attachment and alveolar bone.[21] Many other studies of similar background have shown that the periodontal health among the pregnant women is poor when compared to non-pregnant group.[22]

Studies have shown that the risk factors for poor oral health are, age, low socio-economic status, poor education, HIV infection, low dental care utilization, poor oral hygiene level, smoking, parity (i.e. number of children borne) psycho social stress and pregnancy.[23]

2.1.1 Pregnancy Gingivitis

Pregnancy gingivitis is one of the most common oral connective disorders to affect the pregnant women, this is usually reversible. This condition mostly appears in the anterior teeth, with no tissue attachment loss. This condition is characterized by red swollen gingival which bleeds easily. The cause of pregnancy gingivitis is possibly multifaceted: increased plasma female sex hormones, alteration in dental plaque and perhaps *Prevotella intermedia* in the subgingival plaque, plus alteration of the immunoresponse.[24] This is more common during second trimester and end of first trimester. During these trimesters, the number of gingival sites with bleeding on probing increases concomitantly with the percentage of *Prevotella intermedia* isolated.[25] It is usually seen, that there is a drop in the severity of gingivitis during the last months of pregnancy. Smoking, previous pregnancy and use of contraceptive can influence the health of the periodontium. Diseases like infective endocarditis, hepatitis B can affect periodontal disease. History of diabetes, leukaemia, neutrophil defects, hormonal disorders, Down's syndrome, usage of steroid hormones or drugs can also predispose to gingival overgrowth. A study from Sri-Lanka, pregnant women exhibited significantly higher levels of gingivitis than the non-pregnant women as well as progressive increase in gingival inflammation with advancement in the stage of pregnancy.[26]

2.1.2 Dental Caries

Cavities or decay can increase during or after pregnancy. The inflamed gums that many pregnant women experience can be tender so they may avoid brushing and flossing. This will lead to plaque accumulation. With the increase in fetal size, the capacity of the stomach decreases. To compensate, frequent small meals and sugary snacks are common. With more plaque present and more available sugars, there is an increase in decay. Some

of authors consider an increase in caries during pregnancy to be caused by negligence of treatment; because the hormonal alterations and the hyperacidity of the saliva are not sufficient to cause caries.[27] Being pregnant may make the already existing dental disease worse. The environmental factors may include hyperacidity induced by lack of hygiene resulting in bacterial action on food debris thus producing lactic acid, hence more tooth decay. Another hypothesis concerning hyperacidity is that due to nausea and vomiting during pregnancy, there is an increase in salivary hyperacidity, thus producing more decay. Changes in salivary composition in late pregnancy and during lactation may temporarily predispose to dental caries and erosion. Pregnancy in itself could only modify other conditions which cause caries. High levels of *Streptococcus mutans* in the mother can be considered as an indicator of caries risk among the children. To significantly reduce the microbial burden of caries in the child's mouth it's important to control the bacterial transmission of *Streptococcus mutans* from mother to child. Though it is widely believed that pregnancy is harmful to the teeth, its effect on the initiation or progression of caries is not clear.[28]

2.1.3 Pregnancy Granuloma (Epulis or Pregnancy Tumor)

A pregnancy granuloma (also called a pyogenic granuloma or pregnancy tumor) is a growth on the gums that occurs in 2 to 10 percent of pregnant women.[29] Pregnancy tumor is a misnomers as they are not actually tumors nor are they cancerous. They appear has red nodules, found usually near the upper gum line. They can also be found elsewhere in the oral cavity. They bleed easily and can ulcerate or crust over. The cause of pregnancy granulomas is unknown, although trauma, hormonal influences, viruses and blood vessel malformations have been suspected. Poor oral hygiene increases the risk of a pregnancy granuloma.

2.1.4 Biochemical Changes in the Oral Cavity during Pregnancy

During pregnancy progesterone levels are usually elevated. This enhances capillary permeability and dilatation, resulting in increased gingival exudates. Progesterone enhances the production of PGE2, while oestradiol showed a bi-directional effect (inhibition at a lower concentration of 0.4 mg/ml and stimulation at a higher concentration of 20 mg/ml).[30]

The elevated levels of oestrogens in pregnancy cause changes in keratinisation of the gingival epithelium and alter the connective tissue ground substance.[31] The decreased keratinisation of the gingivae, together with an increase in epithelial glycogen, results in decreased effectiveness of the epithelial barrier, the direct dependence between progesterone and estrogens increasing and the intensification of gingivitis clinical manifestation can be explained by this.[32] In pregnant women the destructive process of gingiva can be explained as the direct tissue damage resulting from plaque bacterial products and the other is by the indirect damage through bacterial induction of the host inflammatory and immune responses.[33]

2.2 Oral Health Related Quality of Life and Oral Health Measures

Health problems may affect quality of life but such a consequence is not inevitable.[34] The term quality of life can be defined subjectively as well as objectively. This concept of Quality of life is likely to be subjective to time and are modified by phenomena such as coping, expectancy and adaptation.[35] Quality of life is concerned with the degree to which a person enjoys the important possibilities of life.[36]

The clinical indices like CPITN and DMFT are all objective measures and can only reflect the end-point of the disease processes.[37] The impact of the oral disease

process on function or psychosocial well-being cannot be indicated by the above indices. In previous studies which assessed the association between objective measures of dental disease such as presence of dental caries or periodontal attachment loss and patient's response on the oral status, it is seen that the relationship was weak and objective measures have limitation to accurately reflect patients' perceptions.[38-40]

The WHO classification of impairment, disability and handicap, and attempts to capture all possible functional and psycho-social outcomes of oral disorders explains the conceptual framework for measuring oral health status.[41,42] Previous studies have indicated that around 160 million work hours a year are lost due to oral disorders.[43,44] According to the social, cultural, political and practical contexts, the concept of health and quality of life may differ.[45]

The psychometric properties of such patient's perception based oral health measures aids in making comparisons between populations with different problems using these scale. Lockers conceptual model for measuring oral health status included feelings like pain, psychological discomfort and also subcategories of disability- physical, psychological and social diaability.[41]

Based on these theories and models, many oral health status measurements have been developed to capture the influence of oral health on function or psychosocial well.[41,35]

The various oral health measures and dimensions[35,46-47] are given in Table 2.1.

Table 2.1 Oral health measures and dimensions

Name of measure	Author	Dimensions	No. of questions
Sociodental Scale	Cushing et al. 1986	Chewing talking, smiling, laughing, pain appearace.	14
RAND Dental Index	Dolan et al. 1991	Pain, worry, conversation	3
General Oral Health Assessment Index (GOHAI)	Atchison and Dolan 1990	Chewing, eating, social conacts, appearance, pain, worry, self consciousness	12
Dental Impact Profile	Struass and Hunt 993	Appearance, eating, speech, confidence, happiness, social life, relationships	25
Oral Health Impact Profile	Slade and Spencer1994	Function, pain, physical disability, psychological disability, handicap	49
Subjective Oral Health Status	Locker and Miller 1994	Chewing, speaking, symptoms, eating, communication, social relations	42
Oral Health Quality of Life Inventory	Cornell et al. 1997	Oral health, nutrition, self rated oral health, overall quality of life	56
Dental Impact on Daily Living	Lea and Sheiham	Comfort, appearance, pain, daily activities, eating	36
Oral Health- Related Quality of Life	Kressin et al. 1996	Daily activities, social activities, conversation	3
Oral Impact on daily Performances	Adulyanon et al. 1996	Performance in eating, appearance, speech, oral hygiene, sleeping, appearance, emotions	9
UK Oral Health Quality of Life	Mc Grath and Bedi 2001	Eating, appearance, speech, breath, odor, social life, romantic relationship, confidence, sleep, mood	16

2.3 Oral Health Impact Profile

The Oral Health Impact Profile (OHIP) is used to measure people's perceptions of the social impact of oral disorders on their well-being.[48] OHIP is based on a model of oral health adapted for dentistry by Locker from WHO for general health.[49] The Questions included in OHIP 49 is based on seven dimensions from Locker's model of oral health, they are, Functional Limitation, Physical Pain, Psychological Discomfort, Physical disability, Psychological Disability and Handicap.[50] Most of the oral health surveys of national samples of adults have not included measures of subjective oral health. But there are few exception like, the 1998 UK Adult Dental Health Survey and the 1999 Australian National Dental Telephone Interview Survey.[51,52] Both of these surveys used the 14-item Oral Health Impact Profile questionnaire (OHIP-14) which is a shorter version of OHIP.[53] The 49 questions in the OHIP describing the consequences of oral diseases were derived from 535 statements obtained in the interview with 64 dental patients in Adelaide Australia.[47,49] This instrument as an advantage, as it measures the social consequences which are considered more important by the patient.[35,54]

Respondents have to indicate how frequently they experienced each problem within a reference period, for example 12 months on a five-point Likert scale. Marking options for the five point scale were: 'Very often', 'Fairly often', 'Occasionally', 'Hardly ever' and 'Never'. 'Don't know' option were offered for each question. If a question does not apply to the respondent, an option of 'do not apply' is also provided. For example denture related questions for non denture wears (number 17, 18, and 30).[18]

OHIP has a total score as well as seven subscale scores based on seven dimensions. Total OHIP scores are calculated by adding the individual scores. Another method is by recording the impact. An impact is recorded if an item has scored above the

thresh hold value. The simple impact score is calculated by counting the number of items that have scored above the threshold value. The weights used for the seven subscales ranged from 0.747 to 2.55. Reliability of the instrument was done for the first time in Australia. This same instrument has been translated and validated in many languages and was use for various studies.[53-55]

The OHIP - 49 and sub scale score increases as the subjects oral health status changes from Healthy to unhealthy. The mean OHIP and sub scale scores is usually high in subjects who had a perceived dental treatment need compared to those who did not.[48,53]

2.4 Impact of Oral Disorders

Psychosocial impact of the oral diseases often diminishes the Quality of life. Dental caries and periodontal diseases play the highest burden of oral diseases in the world.[56] The impact of oral diseases on individuals and, communities resulting from pain, suffering impairment of function and poor quality of life is considerably high. These can lead to restriction on ones social life and inhibits intimacy.[57] Oral disorders alters the self confidence, the self image and over all well being of an individual. Previous studies have shown that the presence of tooth loss, higher age, and female gender were found to be statistically significantly associated with a higher OHRQoL impact.[15] A study among pregnant and non-pregnant women in Karnataka India identified the predictors for Oral health related quality of life were considered as pregnancy number, decayed, missing, filled teeth scores, and Gingival Index scores. Also the mean OHIP score was found to be high among the pregnant women.[20] In a study among Adult aged 18 and older in New York it was reported that around 53.7 percent reported to be affected on at least one daily performance by oral problems.[58]

In the North Carolina study in 1991, 50 percent of the study population felt that teeth influenced appearance to others, facial appearance to themselves, eating and chewing and comfort.[37]

In a study from Uganda, 62 percent of students attending secondary schools in Uganda experienced at least one impact in preceding six months in a study using Oral Impact on Daily Performance Indicator.[59] In the UK study among adults aged 16 and over, 75 percent believed that their oral health either enhanced or reduced their Quality of Life.[60]

Toothache and chewing difficulty were noted as the strongest factors in causing oral disadvantage, in a two year follow up study in Florida. 47 percent in the study experienced at least one oral disadvantage during the two year (1993-1994).[61] In a study that used clinical, functional, experiential, and psychosocial impact measures to document the oral health, status and burden of oral disorders in a population of adult aged 50 years; 30.8 percent were found to be dissatisfied with some aspect of their oral health status.[39]

2.4.1 Functional Limitation

Most frequent consequences of oral disorders are limitation of function. In a study among community dwelling South Australians aged 60 and above, discomfort while eating were reported among 6 percent of those who had one or more teeth missing.[47] Oral health status of an adult population aged 18 years in New York, which was subjectively reported, younger subjects were as likely to be compromised by oral conditions as older subjects on all measures except ability to chew. The largest percentage of 41 percent was reported for functional limitation in a 2-year study in Florida.[61] Many studies have reported that these functional limitations are linked to a poor diet which is low in nutrition and fiber content.[57]

2.4.2 Physical Pain

Sixteenth century French surgeon Ambroise Pare remarked that toothache was the greatest and most eternal of all pains.[57] The UK 1998 survey reports that in 40 percent of dentate adults the most frequently experienced problem during 12 months was oral pain and 3 percent had experienced pain very often during this period.[62] In subjectively reported Oral health status in a community study one third of subjects reported having one or more of nine oral pain symptoms in four weeks preceding the study, toothache was reported by 5.4 percent and sensitivity by 20.8 percent.[58] In a study among subjects aged 50 and over 37.2 percent reported oral or facial pain in the previous four weeks.[39] In a study among Brazilian population using Oral Health Quality of Life instrument, 735 of the subjects reported that they had sensitivity in their teeth and 46 percent took medications to relieve oral pain in past three months.[63]

2.4.3 Psychological Discomfort

The second most frequently experienced problems were psychological in nature, self consciousness, feeling tense, difficulty relaxing or embarrassment. In a study to determine whether the British public perceived oral health is important to Quality of Life (QOL) eight percent of dentate adults reported being severely affected by their oral health.[62] In a study among persons 50 years and above 24 percent reported being self conscious about their appearance at least occasionally because of problems with their mouth or dentures, 22 percent reported feeling uncomfortable at least occasionally.[57] In a Canadian study that used of adults aged above 50 years, 18.7 percent worried a great deal about their oral health and 30.8 percent were dissatisfied with some aspect of their oral health status, 50.5 percent reported that they were worried about the health and 40.6 percent about the appearance of teeth and gums.[39] In a study in France in 2000, 52.8

percent were worried or concerned about their oral health, 42.9 percent were nervous or self-conscious because of oral problems in a study conducted.[64]

2.4.4 Psychological Disability

Psychological problems like lack of sleep are associated with dental pain or discomfort. This was reported in a survey of elderly Floridians. [65] In a Canadian study it was reported that those with acute or chronic oro-facial pain experienced sleep disturbances. [65] The Brazilian study also reports that 15.5 percent reports that oral health interfered with sleep.[39]

2.4.5 Physical Disability

The North Carolina study reported that 10.45 of the blacks in the study group avoided smiling and 10.2 percent had difficulty in brushing their teeth.[66] The main Physical disability reported in studies where smiling and chewing.[57,65]

2.4.6 Social Disability

Diseases alter the normal pattern of an individual's life. Oro facial complex definitely play an important role in communication, personality and self esteem. As a consequence of the damage to self image the social life of an individual will be interfered. The New York Ontario study among 18 year old persons, it was reported that seven percent had limiting conversation with others because of poor oral health. And around 19 percent reported being embarrassed at least sometime in life by the appearance or health of their teeth.[58]

2.4.7 Handicap

Impact of an acute condition is measured in terms of disability days by the United States National Health Survey (NHS). When a person restricts ones activities due to illness based on social and cultural knowledge and beliefs. Subjects who have no regular dentist and those who perceive poor oral health reported three times more likely to report work loss when compared to those who have regular dental visits and good oral health.[68]

Chapter 3

Objectives and Research Methods

3.1 Objectives

1. To assess the difference in oral health (morbidity) between pregnant and non-pregnant women.
2. To assess the perceived oral health related quality of life between pregnant and non-pregnant women using the oral health impact profile.

3.2 Methods

3.2.1 Study Design

A cross sectional comparative study on Oral health and perceived oral health quality of life.

3.2.2 Study Setting

Study was conducted in the outpatient departments of Obstetrics and Gynecology and outpatient department of Pediatric and Immunization at the Women and Child Hospital, Thycaud, Trivandrum. This is a one of the largest maternal and child care hospital in the district which comes under the public sector. They have regular ante natal clinics as well as immunization and pediatric clinic from where study participants were recruited. Consent to conduct the study in both the departments were obtained from the Superintend of the Women and Child Hospital, Thycaud, Trivandrum.

3.2.3 Study Population

The study population included women in various stages of pregnancy, reporting for antenatal check up and the comparison group were women who were not pregnant for

at least the last 6 months (as reported by the respondents based on the last menstrual cycle) who accompanied their children to pediatric and immunization clinic at the same hospital. This specific population was selected because the objective of this cross sectional study is to estimate the prevalence of oral disease during pregnancy and its influence on the quality of life. The selected group is considered to be representative of the pregnant population. The study group included pregnant women in the age group of 18 to 49 years (clinically confirmed pregnancy status by a gynecologist/ obstetrician). The comparison group consists of non-pregnant women of the same age group (18-49 years). Women who have had history of epilepsy and are under medication, women under concurrent antibiotic therapy, mentally disabled, cardiac problems, and severely ill patients or HIV/AIDS patients were excluded from the study.

3.2.4 Sample Size

The sample size calculation was done using the Epi Info Statcalc. With an expected prevalence of periodontitis being 55 percent in pregnant women and 35 percent in non-pregnant the sample size was calculated to be 138 pregnant and 138 non-pregnant women. Adjusting for non respondents a sample size of 150 pregnant and 150 non-pregnant was finalized.

3.2.5 Sample Selection Procedures

The study sample was selected based on systematic random sampling. On an average 150 outpatients visit the antenatal clinic per day (as estimated from the hospital records), we conducted a minimum of seven observations per day. Every eighth patient was approached and if the subjects met the inclusion criteria as well as agreed to participate, they would be included in the study. If unwilling or did not fulfill the inclusion criteria, the next patient in the sequence was considered. Each day the first

participant was randomly selected from the outpatient register by means of a draw. The comparison group was selected randomly among the mothers of children registered for immunization and attending pediatric clinics (after six months of birth). First participant and sampling interval was estimated similar to that of the pregnant group.

3.2.6 Data Collection Techniques

Data were collected through interview and oral examination. Interview had two parts one using structured interview schedule to capture the background details, socio economic status reproductive history and pregnancy status, dietary pattern self perception, dental care seeking pattern. Secondly, translated and validated version of Oral Health Impact Profile Questionnaire (Annexure III). Oral Health Impact Profile (OHIP) was used as a measure of the social impact of problems that may compromise oral health. Duration for a single interview and the oral examination was around 20 to 30 minutes. All the interviews were performed by the principal investigator.

3.2.6a Interview Schedule

The interview schedule included details on background details, socio economic status reproductive history and pregnancy status, dietary pattern, self perception, dental care seeking pattern; self reported pain, oral health status, general health, frequency of dental visit, dental hygiene practice. Reasons for not seeking dental care, during pregnancy were also gathered. Information on frequency and pattern of consumption of sugary food, change in dietary pattern in last 6 months was explored to identify risk behavior for poor oral health. Interview was carried out by the principal investigator to all the participants (Annexure II).

3.2.6b Clinical Examination

Clinical Examination was done to assess the oral health status. All the clinical examination for both pregnant and non-pregnant women was performed by a trained dentist. Oral examination was done using standardized calibrated probes, explorer and mouth mirror and was recorded on WHO 1997 oral health assessment form (which was modified for the study purpose). The World Health Organization Criteria was followed to register decayed, missing, and filled teeth. Extra oral abnormalities, dentofacial anomalities, tempromandibular dysfunctions, periodontal status, prosthetic status and oral mucosal disorders were recorded.

Community Periodonatal Index for Treatment Needs (CPITN): The periodontal status was measured using CPITN index. The Community Periodontal Index Probe (CPI Probe) was used to assess the status of periodontium. This probe is calibrated which helps in measuring the depth of the periodontal pocket. The probe has a 0.5 mm ball tip with a black ring between 3.5mm and 5.5mm and rings at 8.5mm and 11.5mm from the ball tip. The mouth is divided into sextants defined by tooth numbers 18-14,13-23,24-28,38-34,33-43 and 44-4. Index teeth 17/16,11,26/27 in upper jaw and 47/46,31,36/37 were examined. The highest score was recorded as the score for the sextant. Information on the loss of attachment was also collected from the same index teeth.

Table 3.1 Scoring for CPITN index

Findings	Code
Pathologic pockets >= 6 mm deep	4
Pathologic pockets 4-5 mm deep	3
Supragingival or subgingival calculus	2
Gingival bleeding after gentle probing	1
No signs of periodontal disease	0

Table 3.2 Treatment needs scoring

Maximum Score	Treatment Recommendation
0	No need for additional treatment
1	Need to improve personal oral hygiene
2	Need for professional cleaning of teeth, plus improvement in personal oral hygiene
3	Need for professional cleaning of teeth, plus improvement in personal oral hygiene
4	Need for more complex treatment to remove infected tissue

DMFT index was used to count of the number of: Decayed (D), Missing (M) and Filled (F) teeth in a person's mouth. DMFT: is a count of the number of decayed, extracted, filled teeth in a person's mouth. DMFT describes the amount - the prevalence - of dental caries in an individual and is obtained by calculating the number of decayed, missing, filled teeth.

3.2.6c Oral Health Impact Profile

The OHIP was translated into local language Malayalam by professional translator. The tool was independently translated by a dentist who is familiar with English and Malayalam. This OHIP tool was previously used in Trivandrum for a dissertation study on Assessing the Oral Health Related Quality of Life among Dental Care seeking Adults by Dr Manju Renjith Darwin. Validation of the Malayalam version of OHIP was done in this study. This tool was also administered to the participants by the principal investigators.

3.2.7 Study Period

June 1st of 2009 to August 25th 2009.

3.2.8 Variables

3.2.8a Dependent Variables

Oral health disorders, Impact of oral disorder as given by OHIP scores.

3.2.8b Independent Variables

Age, Location, Educational Status, Occupational status, Pregnancy status, Tobacco use, Dietary pattern, Oral hygiene habits.

3.2.8c Socio Economic Variables

Socio Economic Status, Monthly income, Type of family.

3.2.8d Gestational Variable

Last date of menstruation, pregnancy status, current gestational age, number of previous deliveries, number of pregnancy.

3.2.8e Antenatal Variables

Type of ANC provider, number of antenatal visits, referral to dentist.

3.2.8f General Health

Self reported general health, history of diabetics, history of hypertension, excessive vomiting.

3.2.8g Dietary Variable

Type of diet, craving towards sweets, change in diet.

3.2.8h Oral Health

Perception of oral health during pregnancy, pain or infection, bleeding while brushing, dental care seeking pattern, last dental visit, oral hygiene habits, probing depth, soft tissue abnormalities, tempromandibular joint disorder, bleeding on probing, calculus, periodontal pocket depth, number of decayed, number of missing, number of filled, prosthetic status.

3.2.9 Data Collection

Data was collected during the month of June up to August end from pregnant women who visited Women and Child Hospital, Thycadu, for antenatal checkups and non-pregnant mothers who visited with their children for immunization at the immunization and pediatric clinic of the same hospital. The outpatient clinic for both the clinics starts at 8:00 am in the morning. For the pregnant women had to register in the antenatal registration counter if it is their first visit and then obtain the antenatal check up card. They are registered in the daily outpatient register as well. Similarly for the non-pregnant women they had to register their children in the outpatient register of the immunization clinic prior to immunization. During piloting it was difficult to convince the patient as their priority was to consult the doctor/obtain immunization for children and not participate in the study. This difficulty was overcome with the help of the duty doctor who requested the patients to cooperate with the investigators. Interview schedule was administered by the principal investigator and the oral examination was performed by a co investigator, on all the participants.

3.2.10 Ethical Considerations

The study received the ethical clearance from the Institutional Ethics Committee, Sree Chitra Tirunal Institute of Medical Science and Technology. As pregnant women

constitute the vulnerable population, the interview or the oral examination was carried out only after obtaining a prior informed written consent. Informed written consent in Malayalam was obtained from the participant before commencement of interview. The participant had the freedom to withdraw from the study at any point of time and this information was provided in the consent form. Only those who consented without any compulsion were included in the study. The principal investigator was responsible for retaining the confidentiality of the data obtained. Interviews were carried out only when the participants were comfortable and care was taken to minimize the discomfort during the interview. The data was made accessible to the researcher alone. The information obtained was used exclusively for research purpose. Participants were also given oral hygiene instructions after the interview (Annexure I).

3.2.11 Data Analysis

The data entry was done in using EpiData programme. All statistical analyses were carried out with SPSS 17.0 (SPSS for Windows®, SPSS Inc., Chicago, IL, USA). Data cleaning was done prior to analysis. Coding and recoding of the data were done as required. Descriptive data and frequency was obtained for all the variables included in the study. Bivariate analysis, stratified analysis and logistic analysis was done before obtaining the final results. Intergroup comparisons were carried out by ANOVA. Bivariate analysis using Chi-square test was done to estimate the risk. Multivariate analysis was done by using Multiple Logistic Regression and Multiple Linear Regression. Logistic Regression was used to assess the predictors for poor oral health. Linear regression analysis was used to asses the effect of various variables on OHRQoL.

Chapter 4

Results

4.1 Sample Characteristics

4.1.1 Background Variable

Total of 312 subjects participated in the study. Twelve cases had to be excluded as they were either incomplete or in the OHIP questionnaire, more than 9 items were missing or were in 'Don't Know' category. Finally, the data of 150 pregnant and 150 of comparison groups were entered and analyzed. The mean age of the study participants was 24.5 $\pm$3.3 years. It ranged from 18 to 32 years. Of these participants 64.3 percent were house wives. The mean age for pregnant women was 23.8 $\pm$3.0 years, and this ranged from 18 to 31years in this group. And among the comparison group the mean age was 25.2 $\pm$3.4 years and ranged from 18 to 32 years. 84.7 percent of the pregnant women were house wives. And among non-pregnant group 64 percent were house wives. About education73.6 percent had been to school and only 26.4 percent had educational qualification beyond higher secondary level of schooling. Of the study population, 54 percent had nuclear family and 62 percent of the study population followed Hindu religion.

Table 4.1 Frequency distribution of Age, Type of family, Religion, Education, Occupation

Variables	Pregnant (N=150) N (%)	Non Pregnant (N=150) N (%)
Age (Yrs)		
18-24 yrs	92 (61.3)	63 (42.0)
25-29 yrs	54 (36)	70(46.7)
≥ 30 yrs	4 (2.7)	17(11.3)
Type of family		
Nuclear	88 (58.7)	74 (49.3)
Joint	61(40.7)	75 (50.0)
Religion		
Hindu	89 (59.3)	97 (64.7)
Christian	37 (24.7)	31 (20.7)
Muslim	24 (16.0)	22 (14.7)
Education		
Primary	1 (0.7)	———
Secondary School	67 (44.7)	45 (30.0)
Higher Secondary	40 (26.7)	68 (45.3)
Graduate	33 (22)	35 (23.3)
Post Graduate	5 (3.3)	———
Others	4 (2.7)	2 (1.3)
Occupation		
Housewife	127 (84.7)	96 (64.0)
Agriculture	———	1 (0.7)
Daily wage laborer	4 (2.7)	10 (6.0)
Self employment	12 (8.0)	25 (16.7)
Private employee	7 (4.7)	16 (10.7)
Government employee	———	2 (1.3)

4.1.2 Place of Residence

Among the study participants 58 percent (pregnant 60 percent and non-pregnant 56 percent) were from rural setting.

Table 4.2 Frequency table for location in pregnant and non-pregnant

Location	Pregnant (N=150) N (%)	Non Pregnant (N=150) N (%)
Urban	60 (40.0)	66 (44.0)
Rural	90 (60.0)	84 (56.0)

4.1.3 Socio Economic Status (SES)

SES was categorized based on the monthly income of the respondent's family. An income of less than Rs 5000 was classified in the low income group; the middle income group had a range from Rs 5000 to Rs 10,000 and people who had monthly income above Rs 10,000 belonged to high income group. Among the study population 71.3 percent had monthly income below Rs 5000 and belonged to low income category. Below poverty line cards (BPL) cards was used by 60.3 percent of the study population. The majority of the study belonged to low socioeconomic status this could be due to the peculiarity of the study setting.

Table 4.3 Frequency table for showing distribution of socio economic status

Monthly income	Pregnant N (%)	Non Pregnant N (%)
High	———	1 (0.7)
Middle	46 (30.7)	38 (25.3)
Low	104 (69.3)	110 (73.3)
BPL Card		
Yes	83 (41.3)	98 (34.0)
No	62 (55.3)	51 (65.3)

4.1.4 Habits

None of the respondents smoked and only 9.3 percent of the study population had the habit of chewing tobacco. In pregnant women 12 percent reported habit of chewing tobacco when compared to 6.7 percent among non smokers.

Table 4.4 Percentage of tobacco users (chewing)

Chewing Tobacco	Pregnant N (%)	Non Pregnant N (%)
Yes	18 (12.0)	10 (6.7)
No	132 (88.0)	140 (9.3)

4.2 General Health

General health was categorized into high, moderate and poor, in which 64.3 percent of the respondents reported (self) to have moderate level of health. Only 135 (45 percent) were currently under medication. This included folic acid tablets and vitamin tablets. Only 10.3 percent reported history of hypertension and eight percent reported history of diabetics.

Table 4.5 Distribution of self reported general health and current and drug use

General Health	Pregnant N (%)	Non Pregnant N (%)
Good	9 (6.0)	46 (30.7)
Moderate	101 (67.3)	92 (61.3)
Poor	40 (26.7)	12 (8.0)
Current Medication		
Yes	104 (69.3)	31 (20.7)
No	46 (30.7)	119 (79.3)
History of Hypertension		
Yes	25 (16.7)	6 (4.0)
No	116 (77.3)	140 (93.3)
Missing	9 (6.0)	4 (2.7)
History of Diabetes		
Yes	17 (84.0)	7 (4.7)
No	126 (11.3)	137 (91.3)
Missing	7 (4.7)	6(4.0)

4.2.1 Vomiting

The response for vomiting was collected in six categories; this was further categorized into two, based on presence of vomiting and absence of vomiting for the ease of doing bivariate analysis. Of the total participants 46 percent had complaints of vomiting (vomiting either once or more than once in a week or more than once a day or only for first three month). As expected the frequency was high among pregnant women.

Table 4.6 Frequency distribution of vomiting status

Vomiting(group)	Pregnant N(%)	Non Pregnant N(%)
Vomiting absent	13 (8.7)	149 (99.3)
Vomiting present	137 (91.3)	1 (0.7)

4.3 Pregnancy Details

Only 42.7 percent of the study population was pregnant for first time. 57.7 percent had been pregnant for more than one time. Among pregnant women 68.7 percent had been pregnant for more than one time but only 48.7 percent were yet to be delivered this could be due to increased number of abortion or fetal death. The study participants reported that 75.7 percent of them to be multiparious.

Table 4.7 Pregnancy and delivery details

	Pregnant N(%)	Non Pregnant N(%)
Gravida		
Pregnant for first time	47 (31.3)	80 (53.3)
Pregnant for more than once	103 (68.7)	70 (46.7)
Parity		
Not yet delivered	73 (48.7)	———
Delivered once or more than one time	77 (51.3)	150 (100)

4.4 Dietary Pattern

4.4.1 Sweet Consumption

Sweet consumption on a weekly basis was found to be higher in pregnant than the non-pregnant women (42.7 percent). The daily sweet consumption was found to be higher among non-pregnant group and majority preferred to have sweets in between each meal.

Table 4.8 Sweet consumption in pregnant and non-pregnant women

	Pregnant N(%)	**Non Pregnant N(%)**
Sweet consumption grouped		
Daily	34 (22.7)	64 (42.7)
Weekly	116 (77.3)	86 (57.3)

4.4.2 Change in Dietary Pattern

No change in diet in the past one month was reported by 57.3 percent of the total. The reference period was kept as one month. Among those who reported change in diet, 63.3percent were pregnant women and 22 percent were non-pregnant. On doing a bivariate analysis a significant difference was reported in change in diet between both the groups. That is the pregnant group had a significant change in their diet in last one month compared to non-pregnant.

Table 4.9 Results of bivariate analysis and frequency distribution for diet change

	Pregnant N(%)	**Non Pregnant N(%)**	**P value**
Change in diet in last 1 month			
No change	55 (36.7)	117 (33.0)	0.001
Change in diet	95 (63.3)	33 (22.0)	

4.5 Dental Care Seeking Pattern

4.5.1 Dental Visits

The data on this variable was collected in six categories and this was further categorized into two as never visited dentist and ever visited dentist. The ever visited a dentist group was further categorized into two - those who had visited within the last 6 months and those who did not. Of the study participants around 32.7 percent had never visited a dentist. Among the 202 who had ever visited a dentist, 27.3 percent had made a visit within last 6 months and 40.6 percent had not made any visit in last six months time. Proportion of non-pregnant women who have made a dental visit within last 6 months was more than the proportion of pregnant women.

Table 4.10 Frequency of dental visit

	Pregnant N(%)	**Non Pregnant N(%)**
Dental visit		
Never	60 (40.0)	38 (25.3)
Ever	90 (60.0)	112 (74.7)

Table 4.11 Proportion of pregnant and non-pregnant women who ever visited dentist

	Pregnant N(%)	**Non Pregnant N(%)**
Last dental visit		
≤ 6 months	14 (15.6)	68 (60.7)
> 6 months	76 (84.4)	44 (39.3)

4.5.2 Barriers to Care during Pregnancy

Barrier to dental care during pregnancy was reported to be mainly due to the concerns for safety of child. This was reported by 51.7 percent of the participants. Lack of need was another major reason reported. The concern for safety of child was reported to

be the top most reason for not seeking dental care by pregnant women (62.7 percent) as compared to 40.7 percent in non- pregnant.

Table 4.12 Barriers to care

Barriers to care during pregnancy	Pregnant N(%)	Non Pregnant N(%)
Lack of need	30 (20.0)	63 (42.0)
Fear of pain	13 (8.7)	11 (7.3)
Concerns for safety of child	94 (62.7)	61 (40.7)
Financial consideration	13 (8.7)	15 (10.0)

4.6 Oral Hygiene Habits and Awareness

4.6.1 Frequency of Brushing, Mode of Brushing and Agent of Brushing

Only 42.7 percent of the study population had the habit of brushing their teeth more than one time a day. Almost 58 percent and 56.7 percent of the non-pregnant women and pregnant women respectively reported to have a habit of brushing once a day. Proportion of people who brushed more than once a day, was more among non-pregnant women than pregnant women. Mode of brushing was found to be tooth brush in 94 percent of the study population. Majority of the population (93 percent) used tooth paste and tooth brush.

Table 4.13 Frequency of brushing comparison between pregnant and non-pregnant

Frequency of brushing grouped	Pregnant N(%)	Non Pregnant N(%)
Once	85 (56.7)	87 (58.0)
More than one time	65 (43.3)	63 (42.0)

4.6.2 Professional Cleaning

Only 92 (44 percent) of the people had professional cleaning of the teeth done at some point of time. 39.1 percent of pregnant women had professional cleaning of teeth done. The frequency of women who have had cleaning of teeth done at some point of time were more among non-pregnant group; 49.1 percent belonged to this group. 55.3 percent were found to have never done cleaning of teeth even though they have had a visit to the dentist.

Table 4.14 Percentage distribution of professional cleaning

Dental cleaning grouped	Pregnant N (%)	Non Pregnant N (%)
Never	56 (60.9)	58 (50.9)
Ever	36 (39.1)	56 (49.1)

4.6.3 Self Reported Dental Problems in Last Six Months, Bleeding and Self Reported Pain

Frequency of self reported dental complaints was found to be high among pregnant women when compared to non-pregnant. The probability of having self reported dental problems was 1.94 times higher in pregnant women as compared to non-pregnant. Bleeding from gums while brushing, was significant on bivariate analysis. The risk of having gingival bleeding was found to be significantly high (3.3 times) in pregnant women when compare to non-pregnant. Similarly pregnant women reported to have experienced more dental pain than the comparison group. Dental pain was four times higher among pregnant women than in non-pregnant women.

Table 4.15 Frequency and bivariate analysis of Dental complaints, Bleeding, Self reported pain

	Pregnant N (%)	**Non Pregnant N (%)**	**OR (95% C.I) P value**
Dental problems in last 6 months No	58 (38.7)	82 (54.7)	1 Reference
Yes	92 (61.3)	68 (45.3)	1.94 (1.22-3.00) 0.005
Bleeding while brushing No	51 (34)	95 (65.3)	1 Reference
Yes	99 (66.0)	55 (34.0)	3.35 (2.00-5.33) < 0.001
Self reported pain No	129 (86.0)	144 (96.0)	1 Reference
Yes	21 (14.0)	6 (4.0)	3.90 (1.54-9.91) 0.002

4.6.4 Dental Advice

Of the total respondents, 37.3 percent reported to have not received any advice on oral health. Those who have had obtained advice about oral health, was either from the health professional or family members. Oral health awareness from advices was identified to be high among non-pregnant (74 percent). Only 25.3 percent of pregnant women received advice from health professional when compared to 43.3 percent among non-pregnant. About 30 percent of the nonpregnant and 26 percent of the pregnant women received advise on oral health from family members. The health professionals included medical doctor, dentist, gynecologist, health worker or a nurse.

4.7 Oral Examination

To measure the oral health morbidity oral examination was done.

4.7.1 Community Periodontal Index

CPITN scoring was used to measure the periodontal status of the study participant. The scores were recorded as continuous variable. Later, it was categorized as binary variable based on the presence of periodontal pockets and need of treatment. Analysis was done with both binary variable and continuous variable. The CPITN scores ranged from zero to four. For the pregnant group the minimum CPITN score was one and maximum was four. For the non-pregnant group it ranged from zero to four. The results of descriptive analysis showed that the mean CPITN score for the study participant to be 2.60±1.01. The Mean CPITN score was taken for each index teeth; it was found that the mean CPITN score in total as well as for each tooth was found to be higher in pregnant women. Only 2.7 percent of the study population did not have any signs of periodontal diseases. All the pregnant women suffered from some degree of periodontal disease. Presence of periodontal pocket and need for intense treatment was observed in 75.3 percent of pregnant women when compared to 55.3 percent of non-pregnant. On doing Chi- square analysis it was observed that pregnant women had six time more chance of having high CPITN scores, with deep periodontal pockets (more than4mm) when compared to the comparison group, the non-pregnant. One way ANOVA results showed that the mean total CPITN score (without grouping) was significantly high among the pregnant women as compared to non-pregnant groups.

The mean number of sextants with CPITN score of zero and one was found to be high among non-pregnant group. The mean number of sextants with CPITN score of two and three was significantly higher among pregnant group as compared to non-pregnant group.

Table 4.16 Descriptives and results of ANOVA for CPITN score

Variables	P value	Pregnant (N=150)		Non Pregnant (N=150)	
		N	Mean ± SD	N	Mean ± SD
Mean CPITN total	<0.001	150	3.08±0.81	150	2.12±0.96
Mean CPITN of Upper right	0.001	150	2.44±0.94	150	1.41±1.10
Mean CPITN of Upper middle	0.180	150	1.21±0.95	150	0.74±0.79
Mean CPITN of Upper left	0.006	150	2.21±1.03	150	1.35±1.09
Mean CPITN of Lower left	0.009	150	2.20±1.04	150	1.41±1.02
Mean CPITN of Lower middle	0.098	150	1.41±1.09	150	0.83±0.84
Mean CPITN of Lower right	0.005	150	2.21±1.03	150	1.48±1.08
CPITN-O (mean number of sextant)	0.910	150	0.80±1.14	150	1.93± 1.85
CPITN-1 (mean number of sextant)	0.065	150	1.04±1.19	150	1.66±1.31
CPITN-2 (mean number of sextant)	<0.001	150	2.27±1.28	150	1.74±1.39
CPITN-3 (mean number of sextant)	0.030	150	1.43±1.27	150	0.58±0.96
CPITN-4 (mean number of sextant)	0.075	150	0.44±0.70	150	0.08±0.29

Table 4.17 Bivariate analysis of CPITN score

	Pregnant N (%)	Non Pregnant N (%)	Odds ratio (95% C.I) P value
No pockets and simple treatment required	37 (24. 7)	100 (66.7)	1 (Reference)
Pockets present intensive treatment needed	113 (75.3)	50 (33.3)	6.10 (3.69-9.10) < 0.001

4.7.2 Decayed Missing and Filled Teeth (DMFT)

DMFT index measured the number of decayed missing and filled teeth in an individual. The DMFT scores ranged from zero to thirteen. In non pregnant women and non pregnant women DMFT score ranged from zero to eleven and zero to fifteen

respectively. This scores where categorized into two groups based on median. The mean DMFT was 6.63 ±2.44. It is observed that the mean DMFT scores were similar in pregnant and non-pregnant women. Separate frequency distribution and descriptive analysis was performed for decayed missing and filled teeth. Number of decayed teeth ranged from 1 to 13. Among the respondent 95.3percent reported to have decayed teeth. When the mean of number of decayed teeth in study group and comparison group were analyzed using ANOVA, it was observed that the mean number of decayed teeth was comparatively more in pregnant women than the other. P value was found to be less than 0.001. Number of missing teeth ranged from one to six. Even though the frequency was high among pregnant women, on analysis this variable did not show a difference between two groups. Number of filled teeth ranged from zero to six. Mean number of filled teeth was found to be higher in non-pregnant group. But when the total DMFT scores were grouped based on median, an association was observed between pregnancy status and high DMFT scores; the risk of having high DMFT was 1.5 times more in pregnant women. This association observed could be due to grouping based on median DMFT score (high DMFT score and low DMFT score).

Table 4.18 Descriptives of Total DMFT, Decayed, Filled and Missing teeth

Variables	Pregnant (N=150)		Non Pregnant (N=150)	
	N	Mean ± SD	N	Mean ± SD
Mean DMFT scores	150	7±2.52	150	6.27±2.21
Mean of num of decayed teeth	150	5.35±2.37	150	3.39±1.85
Mean of num of Missing teeth	150	1.24±1.23	150	1.24±1.34
Mean of num of filled teeth	150	0.95±1.38	150	1.06±1.34

Table 4.19 Frequency distribution and results of Bivariate analysis of DMFT

Variable	Pregnant N (%)	Non Pregnant N (%)	O.R (95% CI)
Total DMFT (Based on median)			
DMFT ≤ 6	66(44.0)	83(55.3)	1 (Reference)
DMFT > 6	84(56.0)	67(44.7)	1.54 (1.00- 2.48)

4.7.3 Temperomandibular Joint (TMJ) Examination

TMJ examination revealed 40.7 percent of the total participants to have TMJ abnormality. Abnormality was measured and graded as signs, symptoms, tenderness, clicking and reduced jaw movement. The proportion of women with TMJ abnormality was more among the pregnant group. Tenderness on palpation of TMJ was reported by 16 percent of the pregnant women. Among the type of abnormality this was reported to be the chief abnormality both among pregnant and non-pregnant. On examination almost 66 percent of non-pregnant women had normal TMJ functions; whereas only 52 percent of pregnant women had no abnormality on examination of TMJ. The chance of having TMJ abnormality was 1.7 times high in pregnant women when compared to non-pregnant women.

Table 4.20 Bivariate analysis of TMJ examination

TMJ Assessment	Pregnant N (%)	Non Pregnant N (%)	OR (95% CI) P value
Normal	79 (52.7)	99 (66.0)	1 (Reference)
Abnormal	71 (47.3)	51 (34.0)	1.74 (1.09-2.77) 0.019

4.7.4 Extra Oral Examination

Extra oral abnormality was generally low, only 17.7 percent of the total had extra oral abnormality on clinical examination. Of the 53(17.7 percent) people with extra oral abnormality, Thirty three (22 percent) of them were where pregnant and Twenty (13.3 percent) were non-pregnant. The association between TMJ abnormalities and pregnancy was significant. The chance of having TMJ abnormality was 1.8 times higher in pregnant women as compared to non- pregnant. More percentage of pregnant women reported to have extra oral abnormality than non-pregnant women.

Table 4.21 Bivariate analysis of extra oral examination

Extra oral examination	Pregnant N (%)	Non Pregnant N (%)	OR (95% CI) P value
Normal	117 (78.0)	130 (86.7)	1 (Reference)
Abnormal	33 (22.0)	20(13.3)	1.83 (1.06-3.37) 0.045

4.7.5 Intraoral Examination

Intra oral ulcers were present in almost 45 percent of the pregnant women and 12 percent of non-pregnant women. The pregnant women reported to have six times more chance of having oral ulcers than non-pregnant women.

Table 4.22 Bivariate analysis of intra oral examination

Ulcers	Pregnant N (%)	Non Pregnant N (%)	OR (95% CI) P value
Absent	82 (54.7)	132 (88)	1 (Reference)
Present	68 (45.3)	18 (12.0)	6.08 (3.37-10.95) < 0.001

4.8 Oral Health Impact Profile (OHIP)

Total of 312 participants, four cases were eliminated as they had more than nine responses in 'don't know' category and the rest of six was eliminated either because their interview was incomplete or refused oral examination. Of the 300 cases entered, there were only 292 people with natural teeth alone and 8 with removable partial dentures.

The simple count OHIP scores based on the thresh hold fairly often/very often) had values between zero and forty-nine. Using fairly often/very often thresh hold, 294 (98 percent) of the participant recorded at least one impact. The mean number of impacts is 12.6, standard deviation of 8.55 and median score was. 42.7 reported more than 12 impacts. On ANOVA analysis the mean of simple count OHIP score for pregnant women was significantly higher than for non-pregnant group. This was 15.79 $\pm$8.55 and 9.32 $\pm$7.25 for pregnant and non-pregnant respectively. The max range of OHIP score for pregnant women was 40 and the max impact for non-pregnant women was 28. The results of bivariate analysis showed that the risk of having poor oral health quality of life (high OHIP score) was 3.2 times higher in pregnant women than in non-pregnant women. For doing a bivariate analysis, total OHIP score was categorized as poor quality of life (high impact) and better quality of life (low impact) based on the median score of OHIP. Higher the impact poorer is the quality of life.

Table 4.23 Bivariate analysis and descriptive of total OHIP (simple count)

OHIP (Based on median)	Pregnant N (%)	Non Pregnant N (%)	OR (95% CI) P value
Low impact	57 (38.0)	100 (66.7)	1 (Reference)
High impact	93 (62.0)	50 (33.3)	3.22 (2.03-5.23) < 0.001

4.8.1 OHIP Sub Scale- Seven Dimensions

The sub scale scores for the seven dimensions were calculated separately using the weights specified for each individual question of the subscales. This weighted scores were added to give the subscale scores. The total weighted score for accessing the oral impact was calculated by adding weighted, standardized sub scale scores. The weighted subscale score were standardized (Z scores). The subscale score was calculated by additive method.

The Table 4.24 gives the mean standard deviation and minimum and maximum values scored for each subscale. The mean of Physical pain subscale (19.36) was found to be the highest when compared to rest of the subscales. When compared with study group and comparison group, the mean score for physical pain is high among the pregnant than the non-pregnant (21.74 and 16.97 respectively). When the mean of all the seven subscale is compared it is seen that the pregnant women shows a higher mean value than the non-pregnant. The descriptive statistics of weighted standardized total OHIP score also showed that the OHIP score of pregnant women to be higher than non-pregnant (Table 4.25). The weighted standardized method also showed similar trend as simple additive method in all analysis. The maximum impact was 14.04 for pregnant group and 9.42 for non-pregnant women. The weighted standardized total OHIP score showed a mean value of 0.000, with a standard deviation of 5.67. The score ranged from – 17.19 to 14.04. The mean score for pregnant women was significantly higher than that of non-pregnant women. The standardized weighted total OHIP (z score) was further categorized into 2 based on median (0.62) for bivariate analysis. It was found that the pregnant women had 5.8 times more chance to have high oral impact i.e, poor oral health quality of life when compared to Non-pregnant group.

Table 4.24 Descriptive OHIP sub scales

Sub Scale	Pregnant			Non Pregnant		
	Min	**Max**	**Mean ±SD**	**Min**	**Max**	**Mean ±SD**
Functional Limitation	6.08	29.93	17.45±5.44	0.00	23.68	11.77±5.06
Physical Pain	5.84	34.79	21.74±5.66	4.44	32.59	16.97±5.58
Psychological Discomfort	6.06	38.19	21.69±6.56	0.00	31.92	15.13±7.05
Physical Disability	5.15	33.59	15.73±5.10	0.13	28.10	11.26±5.21
Pschycological Disability	6.11	35.53	18.79±6.09	0.00	29.37	14.00±6.43
Social Disability	4.73	35.96	21.78±6.40	0.00	33.25	16.76±7.42
Handicap	6.64	33.71	20.73±5.92	0.00	33.71	15.77±6.30

Table 4.25 Mean total OHIP (Z Score)

Pregnant Mean ± SD	**Non Pregnant Mean ± SD**	**ANOVA P value**
2.78 ±5.26	-2.78 ±4.61	< 0.001

4.9 Pregnant Women

Data was collected and analyzed for Pregnant women separately 157 pregnant women participated in the study but only 150 cases had completed both the interview and oral examination successfully. Pregnant women in all the trimester participated in the study. Pregnant women in their second trimester were more when compared to first trimester and third trimester. Of the total participant, 41.3 percent belonged to second trimester when compared to 31.3 and 27.3 percent in first and second trimester respectively. The type of antenatal care received for all the pregnant women was from the government sector hospital. Only around 6 percent of these cases were referred to dentist by their medical doctor during their antenatal consultation. The most common oro-facial

problem reported by the pregnant women was sensitivity of teeth. Of the 150 pregnant women, 113 (75.3) reported as they have experienced sensitivity of teeth during this period. The women in the second trimester reported highest frequency of oral ulcers, facial pigmentation and halitosis. Increased salivation was seen more among women in the first trimester.

Figure 4.1 Frequency distribution of pregnant women in each trimester

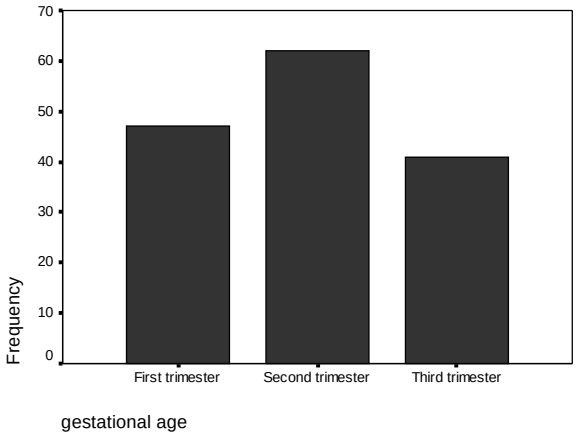

Table 4.26 Oral problems during pregnancy

Variable	1st Trimester (N=47)	2nd Trimester (N=62)	3rd Trimester (N=41)
Salivation	42 (89.4)	38 (61.3)	17 (41.5)
Biting power	8 (17.0)	21 (33.9)	24 (58.5)
Tooth sensitivity	33 (70.2)	49 (79.0)	31 (75.6)
TMJ pain	17 (36.2)	18 (29.0)	13 (31.7)
Facial pigmentation	3 (6.4)	19 (30.6)	11 (26.8)
Oral ulcers	10 (21.3)	50 (81.6)	29 (70.6)
Halitosis	20 (42.6)	39 (62.9)	19 (46.3)

4.10 Factors Affecting Oral Health

Bivariate analysis was performed to identify the factors that has an association with poor oral health and poor OHRQoL in general. This was done for the combined sample. Few of the variables that were found to have significant association is presented in the following session.

4.10.1 Dental Visits and Oral Health

The subjects, who reported to have not made a visit to the dentist in last 6 months reported to have high total decayed, missing and filled teeth index score. The proportion of people in this group had high DMFT score. The chance of having high DMFT score is 2.35 times more in this group. DMFT was categorized based on the median score of 6. Above the median was considered as high DMFT score and below the median was low DMFT score.

Dental Visit also showed a significant difference in CPITN score. Those who reported to have not visited a dentist in last six months ad 4.48 times more risk of having poor periodontal health with deep periodontal pockets (≥ 4 mm) which requires intensive treatments. High and low CPITN scores was based on the treatment needs classification. CPITN score 0, 1, 2 was combined as periodontal pocket which requires less intensive treatment (low CPITN score) and score 3 and 4 was combined as presence of periodontal pockets and intensive treatment need (high CPITN score). The self reported pain was significantly high among who reported to have not visited a dentist in last six months. It was observed that there was a significant associations between dental visits and bleeding from gums while brushing

Table 4.27 Influence of dental visits on CPITN scores

Dental visit	Low CPITN score (N=100)	High CPITN* score(N=102)	Odds ratio (95 %CI)/ P value
Less than or equal to 6 months (N=82)	58 (70.7)	24 (29.3)	1 (Reference)
More than 6 months (N=120)	42 (35.0)	78 (65.0)	4.48 (2.44-8.22) < 0.001

Table 4.28 Association of Dental visit with DMFT scores with Odds ratio

Dental visit	Low DMFT scores(N= 96)	High DMFT scores(106)	Odds ratio (95 %CI)/ P value
Less than or equal to 6 months (N=82)	49 (59.8)	33 (40.2)	1 (Reference)
More than 6 months (N=120)	47 (39.2)	73 (60.8)	2.35 (1.29-4.09) 0.004

Table 4.29 Dental visit and self reported pain

Dental visit	Absence of self reported pain (N=186)	Presence of self reported pain (N=16)	Odds ratio (95 %CI)/ P value
Less than or equal to 6 months (N=82)	80 (97.6)	2 (2.4)	1 (Reference)
More than 6 months (N=120)	106 (88.3)	14 (11.7)	5.28 (1.16-23.92) 0.017

Table 4.30 Association of bleeding while brushing with dental visit

Dental visit	Bleeding absent	Bleeding present	Odds ratio (95 %CI) / P value
Less than or equal to 6 months (N=82)	53 (64.6)	29 (35.4)	1 (Reference)
More than 6 months (N=120)	49 (40.8)	71 (59.2)	2.64 (1.48-4.73) 0.001

4.10.2 Frequency of Brushing

Frequency of brushing was categorized into two for performing bivariate analysis. A significant association was observed between self reported frequency of brushing with DMFT and CPITN score. Frequency of brushing showed a protective effect on CPITN and DMFT scores. Proportion of people who brushed more frequently had better periodontal health and low DMFT score.

Table 4.31 Frequency of brushing and CPITN

Frequency of brushing	Low CPITN score (N=137)	High CPITN score (N=163)	OR (95% CI) P Value
Once a day (N=172)	70 (40.7)	102 (59.3)	1 (Reference)
More than one time a day (N=128)	67 (52.3)	61 (47.7)	0.62 (0.39-0.96) 0.045

Table 4.32 Association of brushing and DMFT score

Frequency of brushing	Low DMFT score(N=149)	High DMFT score(N=151)	OR(95% C.I) P Value
Once a day (N=172)	75 (43.6)	97 (56.4)	1 (Reference)
More than one time a day (N=128)	74 (57.8)	54 (42.2)	0.56 (0.35-0.89) 0.015

4.10.3 Bleeding while Brushing

The risk of having bleeding from gums while brushing is 3.44 times higher in those with deep periodontal pockets (high CPITN score). Bleeding while brushing was significantly associated with the total DMFT score. The chance of having bleeding from gums while brushing was 1.8 times high in those who reported high DMFT score

Table 4.33 Bleeding while brushing and CPITN

CPITN	Bleeding While Brushing Absent (N=146)	Bleeding While Brushing Present (N=154)	OR (95% CI) / P value
Low CPITN score (N=137)	89 (65.0)	48 (35.0)	1 (Reference)
High CPITN score (N=163)	57 (35.0)	106 (65.0)	3.44 (2.14-5.55) < 0.001

Table 4.34 Bleeding while brushing and DMFT

DMFT	Bleeding While Brushing Absent (N=146)	Bleeding While Brushing Present (N=154)	OR (95% CI) / P value
Low DMFT score (N=149)	84 (56.4)	65 (43.6)	1 (Reference)
High DMFT score (N=151)	62 (41.1)	89 (58.9)	1.85 (1.17-2.93) 0.008

4.10.4 Gravida

The periodontal status is observed to be poor among women who have had one or more than one pregnancies. The risk of having periodontal pockets of depth of 4mm or more is 2.58 times more in this group.

Table 4.35 Gravida and CPITN

Gravida	Low CPITN score (N=137)	High CPITN score (N=163)	P value
Pregnant for first time (N=127)	75 (59.1)	52 (40.9)	1 (Reference)
Pregnant for more than once (N=173)	62 (35.8)	111 (64.2)	2.58 (1.61-4.13) < 0.001

4.10.5 Gestational Age

The difference in total CPITN scores and total DMFT scores were compared between the three gestational age group women. When first trimester was taken as reference group it was observed both women in second and third trimester had poor periodontal health (high CPITN score)when compared to first trimester. Similarly the DMFT score was also significantly high in second and third trimester when first trimester was taken as reference group

Table 4.36 Proportion of pregnant women with High CPITN scores in each trimester

CPITN	1st trimester (reference)	2nd trimester	P Value	3rd trimester	P Value
Low CPITN score	29(61.7)	3(4.8)	< 0.001	5(12.2)	< 0.001
High CPITN score	18(38.3)	59(95.2)		36(87.8)	

Table 4.37 Proportion of pregnant women with High DMFT scores in each trimester

CPITN	1st trimester (reference)	2nd trimester	P Value	3rd trimester	P Value
Low DMFT score	31 (66.0)	24 (38.7)	0.005	11 (26.8)	< 0.001
High DMFT score	16 (34.0)	38 (61.3)		30 (73.2)	

4.11 Multivariate Analysis

The logistic regression was done to identify the significant predicators for oral health morbidity measures, both CPITN and DMFT. The CPITN and DMFT scores were converted into binary variables using median as cut-off values. To assess the effect of various variables on OHRQoL linear regression was performed.

4.11.1 Multivariate Analysis of CPITN Score

Multiple logistic regression modeling was done to study the association of various factors with the periodontal health. Variables that were assumed to have an influence on periodontal health were entered in the model. The model had an overall percentage agreement of 66. The CPITN score showed a significant difference in pregnancy when adjusted for all other variables in the model. Risk of having poor periodontal health, deep periodontal pocket which requires intense treatment is 4.41 times more in pregnant women when adjusted for all other variables. Frequency of brushing, frequency of dental visits, self reported pain, number of pregnancy also showed a significant association with poor periodontal health (when adjusted for other variables).

Table 4.38 Results of Multiple Logistic regression analysis- Dependent variable: Community periodontal index

Predictor Variable	Adjusted OR	95% CI	P value
Parity			
Nulliparous	1	Reference	
Multiparous	3.05	0.16-4.53	0.528
Vomiting			
No	1	Reference	
Yes	1.25	0.91- 5.32	0.939
Frequency of brushing			
Once	1	Reference	
More than one time	0.42	0.26-0.94	0.008
Dental visit			
Within 6 months	1	Reference	
More than 6 months	2.56	1.29-5.07	0.001
OHIP			
Low impact	1	Reference	
High impact	1.78	0.65 -3.87	0.786
Pain			
Absent	1	Reference	
Present	3.25	1.68-7.33	0.040
DMFT			
Low	1	Reference	
High	1.51	0.93-7.06	0.601
Bleeding while brushing			
Absent	1	Reference	
Present	2.03	0.98-4.19	0.151
Pregnancy status			
Nonpregnant	1	Reference	
Pregnant	4.41	2.22-8.74	<0.001
Gravida			
Once	1	Reference	
More than once	1.75	1.33 -4.08	0.003

4.11.2 Multivariate Analysis of DMFT Scores

The results of multivariate logistic regression analysis for DMFT showed that there was no significant difference between pregnant and non-pregnant women in DMFT scores when adjusted for other variables. Only total CPITN, frequency of brushing and frequency of dental visit showed a significant p value when adjusted for all other variable. DMFT score was taken as the dependent variable. Over all percentage of this model obtained through logistic regression analysis was 52.5 percent.

Table 4.39 Results of Multiple logistic regression analysis- Dependent variable: DMFT

Predictor Variable	Adjusted OR	95% CI	P value
Parity			
Nulliparous	1	Reference	
Multiparous	1.40	0.53-3.77	0.068
Vomiting			
No	1	Reference	
Yes	1.14	0.16-8.77	0.630
Frequency of brushing			
Once	1	Reference	
More than one time	0.56	0.42-0.98	0.028
Dental visit			
Within 6 months	1	Reference	
More than 6 months	1.97	1.01-3.88	< 0.001
OHIP			
Low impact	1	Reference	
High impact	2.04	0.70-6.09	0.136
Pain			
Absent	1	Reference	
Present	1.76	0.79-3.98	0.444
CPITN			
Pockets absent	1	Reference	
Pockets present	1.99	1.21-3.97	0.017
Bleeding while brushing			
Absent	1	Reference	
Present	1.64	0.91-3.01	0.107
Pregnancy status			
Nonpregnant	1	Reference	
Pregnant	1.03	0.12-8.17	0.982

4.11.3 Multivariate Linear Regression for Oral Health related Quality of Life

Multiple linear regression analysis was done to identify the predictors for oral health related quality of life. For this the standardized weighted total OHIP score (Z score) was taken as dependent variable. The regression analysis was done with oral health variables and factors that had an effect on OHRQol was considered in the model. From the model it was observed that the mean Oral health quality of life was significantly different among pregnant and non-pregnant. The mean score was high among pregnant women as compared to non-pregnant group when adjusted for all other significant variables. Out of the variables entered only pregnancy status was significant.

Table 4.40 Results of Multiple Linear Regression analysis- Dependent variable OHIP (Z score)

Predictor Variable (Dichotomous)	Comparison Group	Regression Coefficient	Std Error	P value
Parity (Multiparous)	Nulliparous	0.35	1.12	0.752
Vomiting (Yes)	Vomiting present	-2. 92	2.42	0.229
Frequency of brushing (More than one time)	Brushing once a day	-0.25	0.74	0.732
Dental visit (More than 6 months)	Within 6 months	-1.25	0.84	0.141
Pain (Present)	Absence of pain	2.16	1.38	0.122
High DMFT score (High)		0.18	0.74	0.800
Number of missing teeth (Missing teeth present)	No missing teeth present	0.60	0.76	0.432
High CPITN Score (Pockets present)	No pockets present	1.41	0.82	0.087
Bleeding while brushing (Present)	Absence of bleeding while brushing	-0.38	0.75	0.614
Pregnancy status (Pregnant)	Non pregnant	8.71	2.62	**0.001**

Chapter 5

Discussion and Conclusions

5.1 Discussion

At par with other published literature the results of this study also presents the periodontal health of the pregnant women to be poor when compared with their non-pregnant counterpart. However, it is seen that in this study there is no difference in mean score of decayed, missing and filled teeth index score between the groups. The risk could be high among the pregnant women as there oral hygiene during this period is comparatively poor when compared to non-pregnant group. Looking at the data on Oral Health Related Quality of Life, this study directs towards the fact that the oral health impact is high among the pregnant women when compared to their counter parts in the study. High oral health impact indicates a poor Oral Health Related Quality of life. This was reflected by the mean OHIP scores between the study group and comparison group. Pregnant women experienced week periodontium. In the study more percentage of pregnant women reported to have deep periodontal pockets and bleeding gums. His can be explained by the hormonal changes and poor oral hygiene. It is observed that the proportion of women who had the habit of brushing more than once a day is low among pregnant women. The number of decayed teeth was more than number of missing and filled teeth. In this study the presence of decayed teeth was observed to be high in pregnant women when compared to non-pregnant women ($p < 0.05$). The reason could be poor oral hygiene and munching of food in small intervals. On oral examination it was observed that number of filled teeth was more and dental care seeking pattern was better in non-pregnant women. It is observed that in this study the pregnant women are less

frequent in their dental visits though they reported to have more dental problems in last six months. The main barrier in seeking dental care was identified to be fear for the safely of the child. The risk factors that showed significant association with poor periodontal health other than pregnancy status were, number of pregnancy, frequency of brushing and dental visit. Being pregnant increased the chance of having poor periodontal health ($p< 0.001$). It is observed that brushing of teeth more than one time a day had a protective effect on the periodontal health. Multiparous women had high scores of CPITN index. Multiparous women, complaints of vomiting and pain, less frequent dental care visits, missing teeth, high CPITN score, high DMFT score and pregnancy status showed significant association with OHRQol. When adjusted for all other variables it as observed that the mean OHIP score was different between two groups. Pregnancy increased the oral impact and there by reduced OHRQoL. A women who have had at least one or more than one delivery presented with high oral impact and there by poor OHRQol. This could be because each time the Pregnancy period compromised the oral health of a woman. Self reported pain definitely had an influence on Oral health impact profile. It is observed in this study that in seven subscale of OHIP the pain subscale showed the highest mean score. This was identified to be high among pregnant women. The risk of having filled teeth was 2 times more in multiparous women when compared to those who have not yet delivered. This could be because; the number of decayed teeth increases as the oral hygiene habits becomes poor during pregnancy period This study was also able to point out that the CPITN and DMFT scores where significantly high among women in their second and third Trimester when compared to first trimester. Majority of the study participants belonged to the low socio-economic group with very little awareness on oral health care and did not know exactly the diagnosis of their problems.

5.2 Conclusion

This study was able to conclude that the oral morbidity in pregnant women is comparatively low when compared to non-pregnant women. This definitely influenced their perceived Oral health related Quality of life and Need for treatment. The study shows the Dental health is also perceived to be an important determinant for the well being. The fear of safety of the child was the main barrier which prevented most of the women to seek dental treatment even when they had difficulty. This clearly shows the lack of knowledge and awareness about the safety of treatment. If pregnancy modifies perceptions of oral health and dental care in women, it may contribute to women's avoidance of dental treatment while pregnant. Therefore it is important to give increased attention to the oral health needs and behaviors of pregnant women.

Study participants lacked knowledge about the preventive strategies and oral hygiene maintenance. Majority of the respondents reported bleeding while brushing. Though they had problems during the pregnancy period, it was ignored and majority reported that they were never referred for any dental checkups during their antenatal visits. Almost all the subjects reported to have had oral pain during the past. On oral examination it was observed that the frequency of oral mucosal lesions including the oral ulcers where more among the pregnant women. The periodontal status was poor among the pregnant women when compared to non-pregnant. The mean CPITN scores were observed to be higher among pregnant group. The mean number of sextants with CPITN scores of two and three was also significantly high among pregnant group than non-pregnant group. Number of decayed teeth and missing teeth were found to be high among the pregnant women where as the number of filled teeth were more among the non-pregnant women. This could be because the frequencies of dental visits were comparatively high among non-pregnant group. But the mean total DMFT score was

found to be almost similar in both the groups. Among the pregnant group both the CPITN scores and DMFT were found to be higher among second and third trimester when compared to women in their first trimester. The oral health related quality of life measured in seven dimensions and pain subscale showed the highest impact in pregnant women than non-pregnant women. The study population had high physical disability, psychological disability, and social disability subscale of OHIP. This could be because the oral health problems restricted their social interaction. Also this could have influenced their self-consciousness and limited their confidence. The oral health related quality of life was definitely poor among women who have had complaints of acute pains, vomiting. High DMFT scores were able to predict poor Oral health related Quality of life. Subjects with poor periodontal health, with bleeding gums and periodontal pocket also reported high oral health impact. DMFT score especially the Missing tooth is a major determinant of oral health related quality of life as it can lead to functional limitation. This can affect the diet of an individual as well. Oral health impact did not have a significant difference between pregnancy trimesters.

This study was able to bring out the burden of oral diseases during pregnancy when compared to non-pregnant women; as well as the effect of pathological disease status on daily quality of life of an individual was highlighted. There by enabling easier understanding of burden of oral diseases. This study warrants attention toward the oral health needs of pregnant women. A coordinated effort from the dental and obstetric communities to establish guidelines could benefit maternal oral health and prenatal outcomes. Also further studies should be designed to see if women who experienced adverse pregnancy outcomes had any differences in oral morbidity when compared with women who had normal deliveries.

Strength of the Study

Only one person (the researcher) conducted the interviews for data collection. Another trained dental clinician performed all the clinical examination independently. This was to eliminate any inter-observer variability in the data collected. One of the foremost strengths of this study is the use of both clinical indicators of oral health status and a multi-item OHRQoL scale. This study has used the OHIP consisting of 49 questions instead of OHIP 14 the shorter form.

Limitations of the Study

All the limitations of a hospital based cross sectional study are applicable to this study also. The periodontal status was measured using CPITN index. Though this tool being endorsed by the world health organization for recording the periodontal status, simple have international uniformity; some of the authors have questioned the using of this index in measuring periodontal status. The partial recording approach of the CPITN leads to under estimation of prevalence of periodontal pockets. Usually the perceived impact of oral health on quality of life is low among women, in this study the mean OHIP score is slightly lower than that of other studies, this could be because the study participants where below 35 years old and they usually show low impact of oral disease on quality of life. The recall bias was another drawback of this study, as the reference period of the OHIP 49 was six months. The study included predominantly low socioeconomic population because of the peculiarity of the study setting.

5.3 Recommendations

This study directs attention towards emphasizing the importance of maintaining a good oral hygiene during and after pregnancy. This can be achieved through strengthening oral health awareness in pregnant women through educating them and making them more prepared. It is very important to consider oral health as a integral part of general health.

The pregnant women during their gestational period should be encouraged to seek medical and dental, as failure to treat developing problems can affect the health of both the mother and the unborn child.

The ideal model of antenatal care for pregnant women should include integrated and multi professional treatment, which should include general dentists, pediatric dentists, gynecologist-obstetricians, pediatric physicians and nutritionists. Considering the association of maternal and infant oral health and between periodontal infection and general health and well-being, oral health care should be emphasized for all individual especially in reproductive aged and pregnant women. Pregnant women need to be educated this will enable the women to prevent oral diseases both in themselves and their babies. This can be done during antenatal visits or through community based programmes. The impact of oral diseases is not limited to the mothers alone. Studies have shown that the oral health of a child can be predicated to a certain extent based on mother's oral health. Patients should be encouraged to schedule elective dental treatment during the first and second trimester but seek prompt care for acute dental problems. First trimester and early second trimester is suggested to be considerably safe for dental treatments. The safety of the dental treatment during pregnancy should be made aware. It

is very important to educate the pregnant women about the home care there by maintenance of good oral hygiene during this period.

In general, the dental treatment is expensive there for its important we focus on preventive programmes to decrease the dental disease burden. Minimal dental treatment at early stage of the disease can bring down the need for complex dental treatment, which is difficult for the majority of the community to afford. Public dental care system should be strengthened to provide better restorative and rehabilitation services. This will definitely benefit people in low socio economic group. The oral health quality of life instrument, the OHIP which was used in this study provides information about the 'burden of illness' within populations and the effectiveness of health services in reducing the burden of illness. This will definitely help the policy makers to plan oral health programmes so as to meet the perceived needs of the population. To close the gap in reduction of poor maternal oral health and child health outcomes, current maternal and child health initiatives should be complemented with alternate approaches, including more emphasis on preconception oral health promotion strategies among women of childbearing age.

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Annexure 1

CONFIDENTIAL

Only for research purpose

Oral Morbidity and Oral Health Related Quality of Life (OHRQoL) during Pregnancy: A Cross-Sectional Comparative Study

Achutha Menon Centre for Health Science Studies
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY
Thiruvananthapuram, Kerala, 695011

Consent Form For Interview Schedule and Oral Examination

Dear Sir/Madam

Good Morning / Good Afternoon. I am Dr Amritha Geevarghese, a student of Masters in Public Health at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

As a part of the course requirement I am conducting a research project on "Oral Morbidity and Oral Health Related Quality of Life (OHRQoL) during Pregnancy". Purpose of this study is to compare the oral health of pregnant women with non pregnant women and its influence on the life quality of individuals. For this I would like to ask you some related questions and also examine your mouth (with a probe and mirror). This will take about 30 minutes of your time.

This study is purely for research purpose and your identity will be kept confidential. The information given by you will not be disclosed to anyone under any circumstances anywhere in the public at any time. The participation is voluntary, and you are free to refuse to participate at any point of time, without fear of harm or penalty. You may choose not to answer any question you do not wish to and also refuse oral examination. There is no direct benefit for you from this study but your co-operation will add greatly to scientific knowledge and benefit the society.

If you have any questions you may ask me Dr Amritha Geevarghese (dramrithag@gmail.com) at the number 9895696455. Or contact the ethics committee

member secretary, IEC, SCTIMST, Anoopkumar Thekkuveettil (anoop@sctimst.ac.in) at the number 2520256/7.

If you agree to participate in this study, please indicate your consent by signing on the space provided.

Are you willing to participate in this study?

Consent Statement:

I understand the purpose of this study and I am willing to participate in this study. I understand that I can withdraw from the study at any point of time. I also consent for the investigators to carry out the oral check-up for me.

Yes: ☐ **No:** ☐

If you are not willing to participate, thank you for your time.

Signature of the participant	Signature of witness	Signature of investigator
(Or Thumb impression)	(In case oral consent)	
Date:	Date:	Date:

രഹസ്യ സ്വഭാവമുള്ളവ

ഗവേഷണ ഉദ്ദേശത്തിനു മാത്രം

അച്യുതമോനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസ്

ശ്രീ ചിത്തിര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസ് ആൻഡ് ടെക്നോളജി, തിരുവനന്തപുരം, കേരള – 695 011

അഭിമുഖ നടപടികൾക്കും വാചക പരീക്ഷയ്ക്കും വേണ്ടിയുള്ള സമ്മതപത്രം

പ്രിയപ്പെട്ട സർ,

നമസ്കാരം. ഞാൻ ഡോ. അമൃതാ ഗീവർഗ്ഗീസ് ബി. തിരുവനന്തപുരം ശ്രീ ചിത്തിര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയുടെ ഭാഗമായ അച്യുതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിൽ, മാസ്റ്റേഴ്സ് ഇൻ പബ്ളിക് ഹെൽത്തിലെ ഒരു വിദ്യാർത്ഥിയാണ്.

പഠന പദ്ധതിയുടെ ആവശ്യകത അനുസരിച്ച് ഞാൻ ' വദനരോഗങ്ങളും, വദനരോഗ സംബന്ധിയായ ജീവിത നിലവാരവും, ഗർഭിണികളായ സ്ത്രീകളിൽ – ഒരു സാമൂഹ്യ പരിച്ഛേദ താരതമ്യപഠനം' എന്ന വിഷയത്തെ കേന്ദ്രീകരിച്ച് ഒരു ഗവേഷണ പ്രബന്ധം തയ്യാറാക്കി വരുന്നു. ഈ പഠനംകൊണ്ടു ഉദ്ദേശിക്കുന്നത് ഗർഭിണികളായ സ്ത്രീകളുടെ യും ഗർഭിണികളല്ലാത്ത സ്ത്രീകളുടെയും വായുടെ വിത്യാസവും അതു സംബന്ധമായ ജീവിത നിലവാരവും പഠിക്കുവാനാണ്. ഇതിനായി ബന്ധപ്പെട്ട ചില ചോദ്യങ്ങൾ ചോദിക്കുവാനും, നിങ്ങളുടെ വായ് പരിശോധിക്കുവാനും (പ്രോബും. മിററും ഉപയോഗിച്ച്) ഞാൻ ഉദ്ദേശിക്കുന്നു. നിങ്ങളുടെ ആശുപത്രി രേഖകളും ഇതിനായി ആവശ്യമുണ്ട്. ഇതിലേക്ക് നിങ്ങളുടെ അരമണിക്കൂർ സമയം വേണ്ടി വരും.

ഈ പഠനം ഗവേഷണ ഉദ്ദേശത്തിനായി മാത്രമുള്ളതാണ് നിങ്ങളുടെ വ്യക്തി വിവരങ്ങൾ പൂർണ്ണമായും രഹസ്യമായി സൂക്ഷിക്കുന്നതുമായിരിക്കും. നിങ്ങൾ നൽകുന്ന വിവരങ്ങൾ ഒരു പൊതു സ്ഥലത്തു വെച്ചും യാതൊരു സാഹചര്യത്തിലും ആരോടും തന്നെയും വെളിപ്പെടുത്തുന്നതല്ല. ഇതിൽ പങ്കെടുക്കുവാനോ, പങ്കെടുക്കാതിരിക്കാനോ നിങ്ങൾക്ക് സ്വാതന്ത്ര്യമുള്ളതും, യാതൊരു പിഴയോ കുറ്റമോ കൂടാതെ നിങ്ങളുടെ പങ്കാളിത്തം പിൻവലിക്കാവുന്നതാണ്. നിങ്ങൾക്ക് ഉത്തരം നൽകുവാൻ താല്പര്യമില്ലാത്ത ചോദ്യങ്ങൾ അവഗണിക്കാവുന്നതും വാചാപരീക്ഷ നിരസിക്കാനാവുന്നതുമാണ്. ഈ പഠനത്തിൽ പങ്കാളിയാകുന്നതിലൂടെ നേരിട്ടുള്ള ഒരു പ്രയോജനവും നിങ്ങൾക്ക് ലഭിക്കുന്നില്ലെങ്കിലും നിങ്ങളുടെ സഹകരണം ശാസ്ത്രീയ അറിവ് വികസിക്കുവാൻ കാരണമാകുന്നു എന്നതിലൂടെ സമൂഹത്തിന് പ്രയോജനപ്പെടുന്നു.

നിങ്ങൾക്ക് എന്തെങ്കിലും സംശയമുണ്ടെങ്കിൽ എന്നെ, ഡോ. അമൃതാ ഗീവർഗ്ഗീസ് (dramrithag@gmail.com) 9895696455 എന്ന നമ്പരിൽ ബന്ധപ്പെടുകയോ, അല്ലെങ്കിൽ അനൂപ്കൂമാർ തെക്കു വീട്ടിൽ (anoop@sctimst.ac.in) നെ (എതിക്സ് കമ്മിറ്റി മമ്പർ സെക്രെട്ടറി, ഐഇസി, എസ് സി റ്റി ഐ എം എസ് ടി) 2520256/7 എന്ന നമ്പറിലോ ബന്ധപ്പെടാവുന്നതാണ്.

നിങ്ങൾക്ക് ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ താല്പര്യമുണ്ടങ്കിൽ, നിങ്ങളുടെ സമ്മതം പ്രത്യേകമായി തന്നിട്ടുള്ള സ്ഥലത്ത് ഒപ്പു വച്ച് സൂചിപ്പിക്കേണ്ടതാണ്.

നിങ്ങൾക്ക് ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ താല്പര്യമുണ്ടോ?

സമ്മത വാക്യം

ഞാൻ ഈ പഠനത്തിന്റെ ഉദ്ദേശ്യം മനസ്സിലാക്കുകയും, ഇതിൽ പങ്കാളിയാകുവാൻ താല്പര്യപ്പെടുകയും ചെയ്യുന്നു. ഏതൊരവസരത്തിലും ഇതിൽ നിന്നും പങ്കാളിത്തം പിൻവലിക്കാമെന്നും ഞാൻ മനസ്സിലാക്കുന്നു. ഗവേഷകർക്ക് എന്റെ വായ് പരിശോധിക്കുവാനുള്ള സമ്മതവും ഇതൊടൊപ്പം നൽകുന്നു.

അതെ ☐ അല്ല ☐

നിങ്ങൾക്ക് പങ്കെടുക്കുവാൻ താല്പര്യമില്ലെങ്കിൽ, നിങ്ങളുടെ സമയം ചെലവഴിച്ചതിന് നന്ദി.

പങ്കാളിയുടെ ഒപ്പ് (അല്ലെങ്കിൽ) (വിരലടയാളം)	സാക്ഷിയുടെ ഒപ്പ് (വാക്കാൽ സമ്മതമാണെങ്കിൽ)	പരിശോധകന്റെ ഒപ്പ്
തീയതി:	തീയതി:	തീയതി:

Annexure – 2

S.No.	
Pregnant/ non pregnant	Date
Institution- W & C	
Ward Name:	Ward No:

ORAL MORBIDITY AND ORAL HEALTH RELATED QUALITY OF LIFE IN PREGNANT WOMEN
– A CROSS SECTIONAL COMPARATIVE STUDY

Achutha Menon Centre for Health Science Studies
Sree Chithra Tirunal Institute for Medical Sciences and Technology
Thiruvananthapuram-11

Interview Schedule

Background information:

1. Name 2. Age

3. Address:

Panchayath…….. Block ……. District……..

4. Religion:	Hindu ☐ Christian ☐ Muslim ☐ Others ☐
5. Marital Status:	Married ☐ Divorced ☐ Single ☐ Widow ☐
6. Educational status of mother (completed)	Illiterate ☐ Primary (1-7th std) ☐ Secondary School(8th -10th) ☐ Higher Secondary(11th – 12th Std) ☐ Graduate ☐ Post-Graduate ☐ Others ☐ Specify……

7. Occupation:	Housewife ☐ Agriculture ☐ Daily wage laborer ☐ Self employment ☐ Private employee ☐ Government employee ☐ Others Specify……. ☐
8. Habits use of any form of tobacco If Yes, Chewing Smoking	Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐

Socioeconomic characteristics

9. Type of family	Nuclear ☐ Joint ☐
10. Where would you place yourself in these socio economic statuses	High >10000 ☐ Middle 5000-10,000 ☐ Low <5000 ☐
11. Does your family have BPL card	Yes ☐ No ☐

Reproductive History:

12. Past obstetric history

No of Pregnancy	Yr. of preg.	Outcome	Date/Month/Year of delivery	PT/LBW/ PLBW/Normal

13. Date of last menstruation	Less than 1 month ☐ Two to four months ☐ Four to six months ☐ More than six months ☐

Medical History

14. How is your general health	Good ☐ Moderate ☐ Poor ☐

15. Are you currently under any medication	Yes ☐ No ☐ If Yes, Specify…….
16. Do you have any history of Diabetics	Yes ☐ No ☐
17. Do you have any history of Hypertension	Yes ☐ No ☐
18. Do you have frequent vomiting If Yes, How frequently	Yes ☐ No ☐ Once a week ☐ 1–3 times a week ☐ 4–7 times a week ☐ More than once a day ☐
19. How often do you consume sweets/sweetened foods or drinks (other than tea or coffee)	Daily ☐ Atleast once a week ☐ Less than once weekly ☐
20. When were these sweets/sweetened foods or drinks	During meals ☐ In between meals ☐ During and In between meals ☐
21. Is there any change in your dietary pattern since last 1 month If yes what was the change	Yes ☐ No ☐ Increased consumption of sweets ☐ Decreased consumption of sweets ☐ Others ☐ Specify---------

Oral Health

22. How often do you brush your teeth	Once ☐ Twice ☐ More than two ☐ Occasional ☐
23. With that do you clean your teeth	Tooth brush ☐ Fingers ☐ Others ☐ Specify……. ☐

24. What is the you use to clean your teeth cleaning agent that	Tooth powder ☐ Tooth paste ☐ Ash ☐ Salt ☐ Sand ☐ Others ☐ Specify……
25. Does it bleed from the gums while you brush	Yes ☐ No ☐
26. How would you describe your oral health	Good ☐ Moderate ☐ Poor ☐
27. Did you have any dental problem in the last 6 months If Yes, specify…….	Yes ☐ No ☐
28. When was your last dental visit	Last week ☐ One month back ☐ Three months back ☐ Six months back ☐ More than six months ☐ Never ☐
29. On that visit, what treatment was carried out	Examination ☐ Cleaning ☐ Filling ☐ Extraction ☐ OthersSpecify…… ☐
30. Have you ever undergone professional cleaning of teeth If Yes, When?	Yes ☐ No ☐ Last week ☐ One month back ☐ Three months back ☐ Six months back ☐ More than six months ☐

31. Have you ever received any advice on oral health care If yes from whom	Yes ☐ No ☐ General Doctor ☐ Dentist ☐ Gynecologist/obstetrician ☐ Health workers ☐ Nurse ☐ Family members ☐
32. Which do you think would be the possible barriers to dental care during pregnancy	Lack of perceived need to see a dentist ☐ A fear of pain ☐ Concerns about the safety of their unborn child ☐ Financial consideration ☐

To pregnant women

33. Current gestational age	First trimester ☐ Second trimester ☐ Third trimester ☐
34. Type of ANC provider	Health worker ☐ Government hospital ☐ Private consultation ☐ Private hospital ☐ None ☐ Others ☐ Specify…….
35. Were you referred for any dental examination during antenatal check up	Yes ☐ No ☐
36. Is there any change in oral health since pregnancy	Excessive salivation ☐ Sensitivity of teeth ☐ TMJ pain ☐ Facial hyper pigmentation ☐ Aphthous ulcers ☐ Halitosis ☐

വദനരോഗങ്ങളും, വദനരോഗ സംബന്ധിയായ ജീവിത നിലവാരവും, ഗർഭിണികളായ സ്ത്രീകളിൽ - ഒരു സാമൂഹ്യ പരിച്ഛേദ താരതമ്യപഠനം

രഹസ്യ സ്വഭാവമുള്ളത്

ഗവേഷണ ഉദ്ദേശ്യത്തിനു മാത്രം

ക്രമ നമ്പർ	
കേസ് / കൺട്രോൾ നമ്പർ	തീയതി
സ്ഥാപനം - ഡബളിയു & സി	
വാർഡിന്റെ പേര് :	വാർഡ് നമ്പർ

അച്യുത മേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസ്

ശ്രീ ചിത്തിര തിരുന്നാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസ് ആൻഡ് ടെക്നോളജി

തിരുവനന്തപുരം -11

അഭിമുഖ പദ്ധതി

1. പേര് 2. വയസ്സ്

3. മേൽവിലാസം

പഞ്ചായത്ത് ---------- ബ്ലോക്ക് ---------- ജില്ല

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4. മതം	ഹിന്ദു	☐
	ക്രിസ്ത്യൻ	☐
	മുസ്ലീം	☐
	മറ്റുള്ളവ	☐
5. വൈവാഹിക നില:	വിവാഹിത	☐
	വിഹാബന്ധം വേർപെടുത്തിയ ആൾ	☐
	അവിവാഹിത	☐
	വിധവ	☐
6. വിദ്യാഭ്യാസ നിലവാരം	അക്ഷരാഭ്യാസം ഇല്ലാത്ത	☐
	പ്രൈമറി (1 -ക്ലാസ്സു വരെ)	☐
	സെക്കൻഡറി (8 - 10 ക്ലാസ്സുവരെ)	☐
	ഹയർ സെക്കൻഡറി (11 -12 ക്ലാസ്സുവരെ)	☐
	ബിരുദം	☐
	ബിരുദാനന്തര ബിരുദം	☐
	മറ്റുള്ളവ വ്യക്തമാക്കുക	

7. തൊഴിൽ	വീട്ടമ്മ ☐ കൃഷി ☐ ദിവസ വേതന തൊഴിലാളി ☐ സ്വയം തൊഴിൽ ☐ സ്വകാര്യ ഉദ്യോഗം ☐ സർക്കാർ ഉദ്യോഗം ☐ മറ്റുള്ളവ വ്യക്തമാക്കുക ☐
8. ഇവയിൽ ഏതെങ്കിലും പതിവായി ഉപോയോഗിക്കാറുണ്ടോ ഉണ്ട് എങ്കിൽ	ഉണ്ട് ☐ ഇല്ല ☐ മുറുക്കാൻ ഉണ്ട് ☐ ഇല്ല ☐ പാൻ ഉണ്ട് ☐ ഇല്ല ☐ പുകയില ഉണ്ട് ☐ ഇല്ല ☐

സാമൂഹിക സാമ്പത്തിക വിശദാംശങ്ങൾ

9 കുടുംബഘടന	അണുകുടുംബം ☐ കൂട്ടു കുടുംബം ☐
10. താഴെപ്പറയുന്നവയിൽ ഏത് സാമൂഹിക സാമ്പത്തിക വിഭാഗത്തിൽ നിങ്ങൾ ഉൾപ്പെടും	ഉയർന്ന (> 10,000) ☐ മിതമായ (5000 – 10,000) ☐ താഴ്ന്ന (25,000) ☐
11. നിങ്ങളുടെ കുടുംബത്തിന് ബി.പി.എൽ കാർഡുണ്ടോ?	ഉണ്ട് ☐ ഇല്ല ☐

പ്രത്യുല്പാദന ചരിത്രം

12 പൂർവ്വകാല ഗർഭചരിത്രം.

ഗർഭങ്ങളുടെ എണ്ണം	ഗർഭ കാല വർഷം	ഗ്രാവിഡ	പാരിറ്റി	ഗർഭ കാലയളവ്	റിസൾട്ട്	പ്രസവ തീയതി/ മാസം / വർഷം	പിടി / എൽ ബി ഡബ്ലിയു / പിഎൽബി ഡബ്ലിയു / സാധാരണ

(വിവരപ്പട്ടിക രേഖകളുമായി ഒത്തു നോക്കുക)

13. അവസാനം (കഴിഞ്ഞ) ആർത്തവം ഉണ്ടായ തീയതി	1 മാസത്തിൽ കുറവ് ☐ 1–4 മാസങ്ങൾ ☐ 4–6 മാസങ്ങൾ ☐ 6 മാസത്തിൽ കുടുതൽ ☐

മെഡിക്കൽ ഹിസ്റ്ററി

14. ശരീരത്തിന്റെ പൊതുവെയുള്ള ആരോഗ്യനില	വളരെ നല്ലത് ☐ മിതമായ ☐ മോശമായ ☐
15. നിങ്ങൾ ഇപ്പോൾ ഏതെങ്കിലും ചികിത്സയിലാണോ.	ആണ് ☐ അല്ല ☐ ആണെങ്കിൽ വ്യക്തമാക ----------
16. നിങ്ങൾ പ്രമേഹമുള്ള ആളാണോ?	ആണ് ☐ അല്ല ☐
17. നിങ്ങൾ രക്താധി സമ്മർദ്ദമുള്ള ആളാണോ.	ആണ് ☐ അല്ല ☐
18. നിങ്ങൾക്ക് തുടർച്ചയായി ഛർദ്ദിയുണ്ടായിണ്ടോ? ഉണ്ടെങ്കിൽ എപ്പോഴൊക്കെ -	ഉണ്ട് ☐ ഇല്ല ☐ ആഴ്ചയിലൊരിക്കൽ ☐ ആഴ്ച.യിൽ1-3 പ്രാവശ്യം ☐ ആഴ്ചയിൽ 4-7 പ്രാവശ്യം ☐ ദിവസത്തിൽ1ൽ കൂടുതൽ ☐
19. എപ്പോഴൊക്കെ നിങ്ങൾ മധുരപലഹാരങ്ങൾ / മധുരമുള്ള ആഹാരവസ്തുക്കൾ /പാനീയങ്ങൾ (ചായയും , കാപ്പിയും, കൂടാതെ)	ദിവസവും ☐ ആഴ്ചയിലൊരിക്കലെങ്കിലും ☐ വിരളമായി ആഴ്ചയിലൊരിക്കൽ ☐
20. എപ്പോഴാണ് നിങ്ങൾ മേൽപ്പറഞ്ഞ മധുരപലഹാരങ്ങൾ / മധുരമുള്ള ആഹാര വസ്തുക്കൾ /പാനീയങ്ങൾ (ചായയും, കാപ്പിയും കൂടാതെ) കഴിക്കുന്നത്.	ഭക്ഷണത്തോടൊപ്പം ☐ ഭക്ഷണത്തിന്റെ ഇടവേളകളിൽ ☐ ഭക്ഷണത്തോടൊപ്പവുംഭക്ഷണത്തിന്റെ ഇടവേളകളിലും ☐
21. കഴിഞ്ഞ ഒരു മാസമായിട്ട് നിങ്ങളുടെ ഭക്ഷണ ക്രമത്തിൽ എന്തെങ്കിലും മാറ്റം വന്നിട്ടുണ്ടോ? ഉണ്ടെങ്കിൽ എന്ത് മാറ്റം	ഉണ്ട് ☐ ഇല്ല ☐ മധുരത്തിന്റെ അധികമായ ഉപയോഗം ☐ മധുരത്തിന്റെ ഉപയോഗത്തിലുള്ള അളവുകുറവ് ☐ മറ്റുള്ളവ ☐ വ്യക്തമാക്കുക ----------

വായുടെ ആരോഗ്യം

22. എപ്പോഴൊക്കെ നിങ്ങൾ പല്ല് തേയ്ക്കാറുണ്ട്	ഒരു പ്രാവശ്യം ☐ രണ്ട് പ്രാവശ്യം ☐ രണ്ടിൽ കൂടുതൽ ☐ വല്ലപ്പോഴും ☐

23. എന്തുപയോഗിച്ചാണ് നിങ്ങൾ പല്ലുകൾ വൃത്തിയാക്കുന്നത്	ടൂത്ത് ബ്രഷ് ☐ വിരലുകൾ ☐ മറ്റുള്ള ☐ വ്യക്തമാക്കുക---------
24. പല്ല് വൃത്തിയാക്കുവാൻ എന്ത് പദാർത്ഥമാണ് നിങ്ങൾ ഉപയോഗിക്കുന്നത്	ടൂത്ത് പൗഡർ ☐ ടൂത്ത് പേസ്റ്റ് ☐ ചാരം ☐ ഉപ്പ് ☐ മണ്ണ് ☐ മറ്റുള്ളവ ☐ വ്യക്തമാക്കുക----------
25. പല്ല് തേയ്ക്കുമ്പോൾ നിങ്ങളുടെ മോണകളിൽ നിന്ന് രത്കം വരാറുണ്ടോ?	ഉണ്ട് ☐ ഇല്ല ☐
26. നിങ്ങളുടെ ദന്ത ആരോഗ്യത്തെ എങ്ങനെ വിശേഷിപ്പിക്കാം.	നല്ലത് ☐ മിതമായ ☐ മോശമായ ☐
27. കഴിഞ്ഞ ആറ് മാസങ്ങൾക്കിടയിൽ നിങ്ങളുടെ പല്ലുകൾക്ക് എന്തെങ്കിലും തരത്തിലുള്ള കുഴപ്പം ഉണ്ടായിട്ടുണ്ടോ?	ഉണ്ട് ☐ ഇല്ല ☐ ഉണ്ടെങ്കിൽ വ്യക്തമാക്കുക----------
28. അവസാനമായി നിങ്ങൾ ഒരു ദന്തവിദഗ്ദനെ സന്ദർശിച്ചത് എപ്പോൾ?	കഴിഞ്ഞ ആഴ്ച ☐ ഒരു മാസം മുമ്പ് ☐ മൂന്നു മാസങ്ങൾക്കു മുമ്പ് ☐ ആറു മാസങ്ങൾക്കു മുമ്പ് ☐ ആറിൽ കൂടുതൽ മാസങ്ങൾ ☐ ഒരിക്കലുമില്ല ☐
29. അപ്പോഴുള്ള സന്ദർശന സമയത്ത് എന്ത് ചികിത്സയാണ് നിങ്ങൾക്ക് ലഭിച്ചത്	പരിശോധന ☐ ദന്തശുചീകരണം ☐ കേട് അടയ്ക്കൽ ☐ പല്ലെടുക്കൽ ☐ മറ്റുള്ളവ ☐ വ്യക്തമാക്കുക----------
30. എപ്പോഴെങ്കിലും നിങ്ങളുടെ പല്ലുകൾ ഒരു ദന്ത ഡോക്ടറുടെ മേൽനോട്ടത്തിൽ വൃത്തിയാക്കിയിട്ടുണ്ടോ? ഉണ്ടെങ്കിൽ എപ്പോൾ ?	ഉണ്ട് ☐ ഇല്ല ☐ കഴിഞ്ഞ ആഴ്ച ☐ ഒരു മാസം മുമ്പ് ☐ ആറു മാസങ്ങൾക്കു മുമ്പ് ☐ ആറു മാസങ്ങളിൽ കൂടുതൽ ☐

31. ദന്താരോഗ്യ പരിപാനത്തെക്കുറിച്ച് നിങ്ങൾക്ക് ആരിൽ നിന്നെങ്കിലും ഉപദേശം ലഭിച്ചിട്ടുണ്ടോ? ഉണ്ടെങ്കിൽ, ആരിൽ നിന്ന്	ഉണ്ട് ☐ ഇല്ല ☐ ☐ ഡോക്ടർ ☐ ദന്ത ഡോക്ടർ ☐ സ്ത്രീരോഗ വിദഗ്ദൻ ☐ ആരോഗ്യ പ്രവർത്തകർ ☐ നഴ്സ് ☐ കുടംബാംഗങ്ങൾ
32. ഗർഭകാലത്തെ ദന്തപരിപാലനത്തിന് തടസ്സമാകുന്ന ഘടകങ്ങളായി നിങ്ങൾ പരിഗണിക്കുന്നത് എന്തൊക്കെ	☐ ദന്തഡോക്ടറെ സന്ദർശിക്കേണ്ട ആവശ്യം ഇല്ലാതിരിക്കുക ☐ വേദനയോടുള്ള ഭയം ☐ ജനിക്കാനിരിക്കുന്ന കുഞ്ഞിന്റെ സുരക്ഷിതത്വത്തെക്കുറിച്ചുള്ള ആകുലതകൾ ☐ സാമ്പത്തിക കാരണങ്ങൾ

ഗർഭിണികൾക്കായി

33. ഇപ്പോഴത്തെ ഗർഭാവസ്ഥയുടെ ഘട്ടം	☐ ആദ്യത്തെ ത്രൈമാസ ഘട്ടം ☐ ആറാമത്തെ ത്രൈമാസ ഘട്ടം ☐ മൂന്നാമത്തെ ത്രൈമാസ ഘട്ടം
34. ഏത് തരം ഗർഭകാലപരിചരണമാണ് ലഭിച്ചത്	☐ ആരോഗ്യ പ്രവർത്തകൻ ☐ സർക്കാർ ആശുപത്രി ☐ സ്വകാര്യ ഡോക്ടറുടെ ചികിത്സ ☐ സ്വകാര്യ ആശുപത്രി ☐ ഇതൊന്നുമല്ല ☐ മറ്റുള്ളവ വ്യക്തമാക്കുക----------
35. നിങ്ങൾക്ക് പ്രസവത്തിനുമുമ്പുള്ള പരിശോധനകളുടെ ഫലമായി ഒരു ദന്തഡോക്ടറെ സന്ദർശിക്കാനുള്ള നിർദ്ദേശം കിട്ടിയിട്ടുണ്ടോ.	ഉണ്ട് ☐ ഇല്ല ☐
36. ഗർഭാവസ്ഥ തുടങ്ങിയതിനുശേഷം നിങ്ങളുടെ ദന്താരോഗ്യത്തിൽ എന്തെങ്കിലും മാറ്റം വന്നിട്ടുണ്ടോ?	☐ ഉമിനീരിന്റെ കൂടുതലായുള്ള ഉല്പാദനം ☐ പല്ലുകളുടെ സംവേദന ശക്തി ☐ പല്ലുകളിൽ പുളിപ്പ് ☐ താടിയെല്ലിന്റെ വേദന ☐ മുഖത്തെ പാടുകൾ ☐ വായിലെ അൾസർ ☐ വായ്നാറ്റം