

**DENTAL ANXIETY AMONG PREGNANT WOMEN ATTENDING
SECONDARY CARE HOSPITALS IN WEST GODAVARI
DISTRICT,**

ANDHRA PRADESH

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**Dissertation submitted in partial fulfilment of the requirements for the award of the
degree of Master of Public Health**



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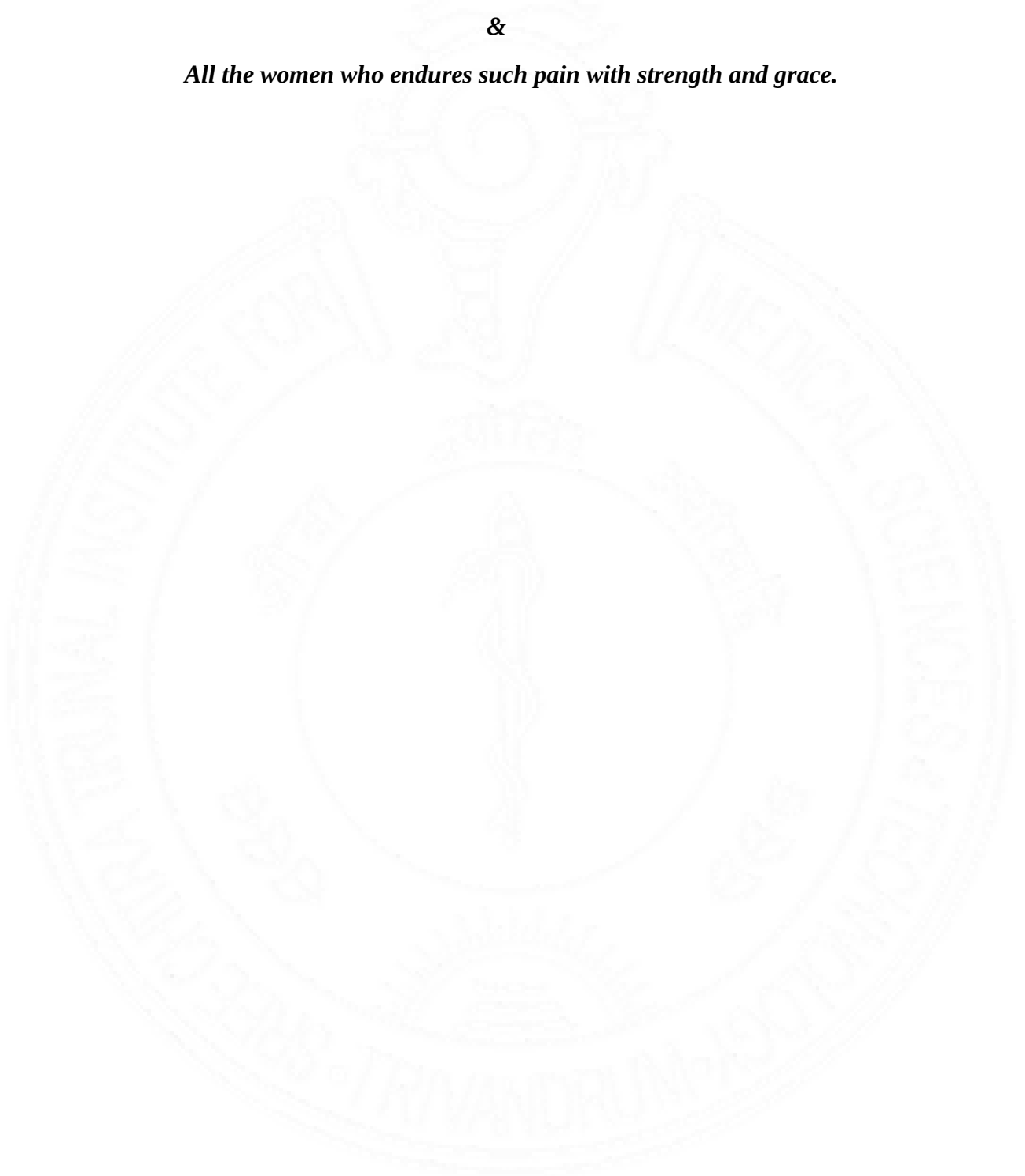
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***Dedicated to Amma, Nanna, and Anna,
Who believed in a girl who dared to dream.***

&

All the women who endures such pain with strength and grace.



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DECLARATION

I hereby declare that this dissertation titled “**Dental Anxiety among Pregnant Women Attending Secondary Care Hospitals in West Godavari District, Andhra Pradesh**” is a bonafide record of my original research work. This dissertation has not been submitted, either in part or in full, to any other university or institution for the award of any degree or diploma. All sources of information, including published and unpublished works of other authors, have been appropriately cited and acknowledged within the text.



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CERTIFICATE

This is to certify that the dissertation entitled “**Dental Anxiety among Pregnant Women Attending Secondary Care Hospitals in West Godavari District, Andhra Pradesh**” is a Bonafide record of the research work undertaken by Dr Harika kumari.P in partial fulfilment of the requirements for the award of the degree of “Master of Public Health” under my guidance and supervision.



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GLOSSARY OF ABBREVIATIONS

GBD - Global Oral Health Status

NCD - Non- communicable disease

UHC - Universal health coverage

WHO - World Health Organization

OHQoL - Oral Health Related Quality Of Life

GAD - Generalized Anxiety Disorder

PrA - Pregnancy-related anxiety

DH - District Hospital

AH -Area Hospitals

CHC - Community Health Centres

HIV/AIDS - Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome

OPD - Outpatient Department

DMFT- Decayed, Missing, and Filled Teeth

CPITN-C - Community Periodontal Index of Treatment Needs – Clinical

CPI - Community Periodontal Index

ANUG Acute necrotizing ulcerative gingivitis

MDAS - Modified Dental Anxiety scale

CDAS - Corah's Dental Anxiety Scale

ABSTRACT

Background:

During pregnancy, hormonal changes can negatively impact the oral cavity, increasing the need for dental visits and treatment. However, many pregnant women tend to delay or avoid oral care as a result of increased anxiety. Recognizing dental anxiety in pregnant women plays a crucial role in ensuring both maternal and fetal well-being. Hence, the study aimed to assess oral health status, treatment needs, dental anxiety and influencing factors among pregnant women.

Methods:

A cross-sectional study was conducted among 304 pregnant women aged 18–49 years attending secondary care hospitals in the west Godavari district for antenatal visits. The WHO Oral Health Assessment form was used to assess the oral health status and the Modified Dental Anxiety Scale (MDAS) for dental anxiety. The data was analyzed using the open-source statistical software R-4.3.2 version for Windows. The prevalence and 95% confidence interval for dental anxiety was estimated, and the factors were identified through cross-tabulations and binary logistic regression models.

Results:

While considering the oral health status, all participants needed some form of treatment. Based on MDAS scores, 46.7 per cent of participants were less anxious, 49% were moderate to highly anxious and 4.3 per cent were identified with severe anxiety (phobic). The proportion of participants with moderate to high levels of dental anxiety was 53.3 per cent (95% CI: 48-59). Participants with past negative dental experiences, those who were aware of the impact of oral health on pregnancy, those in need of treatment, and those with moderate to severe GAD scores were found to be significantly more anxious.

Conclusion:

The study observed that the need for dental checkups is inevitable during pregnancy as all participants were observed to be required to undergo some form of treatment, and a considerable proportion of participants reported dental anxiety. The findings highlight the importance of addressing oral health status and dental anxiety during pregnancy from a public health perspective.

CHAPTER-1

INTRODUCTION

1.1 Background and Introduction

The Global Oral Health Status (GBD) report states that 3.5 billion individuals worldwide suffer from oral diseases, with three out of four of those cases occurring in low- and middle-income nations (The Global Status Report on Oral Health, 2022). The number of oral diseases has been rising internationally over the past few years, suggesting that people may have a limited access to oral health care services, particularly preventive and rehabilitative treatments. Untreated dental conditions impact social engagement, productivity, well-being, and overall quality of life, which in turn elevates the economic burden. Despite being significant public health challenges worldwide, oral health problems are often overlooked by the public. (The Global Status Report on Oral Health, 2022).

Socioeconomic disparities in oral diseases are frequently observed among marginalized and vulnerable populations, who bear a high burden of these conditions. Although most oral diseases are preventable through population-level measures, they remain widespread. In response to the lack of attention to oral diseases, A significant resolution (WHA74.5) was adopted by the World Health Assembly in May 2021, acknowledging the necessity of including oral health care treatments into universal health coverage (UHC) initiatives and firmly integrating oral health into the non-communicable disease (NCD) agenda (World Health Assembly report, 2021).

Two National oral health surveys in India were conducted by the Dental Council of India in 2004 and the Ministry of Health and Family Welfare in 2007(Mathur DV et al., 2004;

Operational Guidelines National Oral Health Program, 2017). Oral health has a significant impact on general health, but in many low- and middle-income countries like India, access to quality services remains inadequate. Dental services are predominantly offered by private providers, and most of them are expensive, remaining unaffordable for many people, which prevents timely treatment. This contributes to an additional burden of non-communicable diseases. The National Oral Health Survey of India reported that the prevalence of dental caries is 50 percent among 5-year-olds, 52.5 percent among 12-year-olds, 61.4 percent among 15-year-olds, 79.2 percent among adults aged 35-44, and 84.7 percent among older adults aged 65-74. Additionally, periodontal diseases were found in 55.4 percent of 12-year-olds, 89.1 percent of adults aged 35-44, and 79.3 percent of those aged 65-74 (Mathur DV et al., 2004).

According to report in 2007, India has more than 250 dental institutions, graduating 15,000 to 20,000 dentists each year (Sundharam, 2007). While the dentist-to-population ratio in urban areas is around 1:10,000, it is even lower in rural regions (Oral health workforce, 2023). However, despite the availability of dental professionals, the utilization of dental services remains low.

In children, poor oral health can impact their growth, behaviour, school attendance, and learning abilities (Jackson et al., 2011). In adults, severe cavities, missing teeth, temporomandibular joint disorders, malocclusion of teeth, anxiety, and oral infections all impact social interactions and behaviour.

Among the geriatric population, Poor oral hygiene can contribute to periodontal disease, tooth loss, xerostomia, mucosal lesions, and ill-fitting dentures, which in turn affect their ability to masticate. The poor oral health status results in a reliance on soft foods that are high in carbohydrates and low in fibre, protein and less nutritious, ultimately compromising overall health in older adults (Vaddi et al., 2024).

Maternal oral health plays a role in determining birth outcomes and infant oral health. Pregnancy involves numerous physical and physiological changes due to the increased production of hormones. These hormonal fluctuations also cause both reversible and irreversible changes in the oral cavity during pregnancy (Silva de Araujo Figueiredo et al., 2017).

Pregnant women are especially more prone to gingival and periodontal diseases, as well as pregnancy granulomas (Boggess and Edelstein, 2006). Maternal oral bacteria can be transmitted to the new-born, and a higher level of cariogenic bacteria in the mother increases the infant's risk of developing caries. Treating oral health problems before pregnancy, during pregnancy, or during labour could help improve the mother's health, the baby's birth outcomes, and the child's dental health (Caufield et al., 1993). Studies among adults have shown that high oral impact scores are linked to increased levels of dental anxiety, cavities, and psychological stress, often observed more in pregnant women. (Appukuttan et al., 2015).

Oral health plays a crucial role in social well-being, as oral diseases can limit daily activities and social interactions, negatively affecting quality of life.

Dental anxiety is stressful stimulus to particular context which affects all ages irrespective of socioeconomic status and results in delayed dental visit and avoidance of treatment (Asl et al., 2017; Locker et al., 1999a). Several factors like, age, gender, poor oral health status, lack of awareness, negative dental experiences, myths, beliefs which contributes to dental anxiety and literature suggest that females and young individuals are more anxious when compared with men (Appukuttan et al., 2015; Malvania and Ajithkrishnan, 2011). People with high dental anxiety tend to have poor oral health, which negatively impacts their overall oral health- related quality of life (Mehrstedt et al., 2007).

Dental anxiety has an impact on both the individual and also dental professionals, as anxious patients may not cooperate during treatment. It represents a major challenge in accessing oral health care, making it essential to recognize and manage such patients effectively.



CHAPTER-2

LITERATURE-REVIEW

2.1 Oral Health during Pregnancy

According to WHO, “Oral health is the state of the mouth, teeth, and orofacial structures that allows individuals to carry out vital activities like eating, breathing, and speaking. It also includes psychosocial aspects such as self-confidence, overall well-being, and the ability to socialize and work without experiencing pain, discomfort, or embarrassment” (Oral Health, WHO).

Pregnancy is a dynamic state in which body undergoes series of changes both physical and physiological. Pregnancy induces temporary adaptive alterations in the endocrine and immune systems leads to increased production of the oestrogen, progesterone and gonadotropin hormones. These hormonal changes increases the vascular permeability resulting in inflammation in the body as well as in oral epithelium (Lindhe and Brånemark, 1967; Silva de Araujo Figueiredo et al., 2017).

Hormonal changes can significantly impact the oral cavity, leading to Inflammation in gingiva and adjacent tooth structures, which causes bleeding and severe discomfort, and also decreased salivary secretion.

The altered PH of saliva, combined with improper oral hygiene practices, facilitates the accumulation of plaque on tooth surfaces. This promotes bacterial metabolism of sugars, resulting in acid production and dental caries. If left untreated, the continued build-up of plaque results in destruction periodontal tissues leads to loss of attachment between the tooth and adjacent bone results in mobility of tooth ultimately leads tooth loss (Thakur et al., 2024).

The oral cavity of pregnant women is often exposed to gastric acid due to morning sickness or severe vomiting, leading to tooth erosion and enamel dissolution, which results in tooth sensitivity and it cause wearing of the enamel surface, over time, this can lead to the development of dental caries (Yashesvi Ambardar et al., 2021).

2.2 Oral Health Issues among Pregnant Women

2.2.1 Dental Caries

Dental caries is demineralization of tooth structure (enamel and dentine) and it results from acidic by-products produced when bacteria metabolize sugars. Dental caries is chronic diseases develops over long time leads to destruction of enamel, dentine and infects the pulp tissue. If left untreated leads to severe discomfort, pain and abscess formation. Inflammation of gingival tissue due to hormonal change leads to accumulation of plaque, change in diet pattern, in between meal snacking, decrease in salivary PH and dryness of mouth. Inadequate oral hygiene causes food debris to accumulate on the tooth surface and promoting the production of lactic acid, which increases the risk of dental caries (Silva de Araujo Figueiredo et al., 2017; Velosa-Porras and Rodríguez Malagón, 2023). Pregnant women often experiences nausea and vomiting and increases acidity and erosion of enamel and dentine structures is seen which causes irreversible damage to tooth structures. If there are any previously existing dental diseases, pregnancy makes it worse (Amin and Shetty, 2020).

2.2.2 Pregnancy Gingivitis

Pregnancy gingivitis is common among pregnant women mostly during the second and third trimesters due to change in progesterone and oestrogen levels heighten gingival inflammation, causing bleeding, pain, and discomfort. This is characterized by inflamed, red gums that can bleed easily. Alteration in the immune response, increased plasma female

sex hormones, accumulation of plaque in gestation period increases susceptibility to infection (Silva de Araujo Figueiredo et al., 2017).

Periodontitis is a chronic infection of the gums and their supporting structures, bacteria infiltrate periodontal fibers, leading to the destruction of the periodontium, which results in pocket formation and eventually causes tooth mobility and loss. It has been linked to preterm births and the delivery of small-for-gestational-age infants (Boggess and Edelstein, 2006).

Maternal oral bacteria can be transmitted to the new-born, and a higher level of cariogenic bacteria in the mother increases the infant's risk of developing caries. Treating oral health problems before pregnancy, during pregnancy, or during labour could help improve the mother's health, the baby's birth outcomes, and the child's dental health (Caufield et al., 1993). Atherosclerosis, chronic obstructive lung disorders, bacterial endocarditis, and preterm low birth weight have all been connected to periodontitis in mothers. Additionally, there is a direct relationship between diabetes and periodontal health (Chen et al., 2022; Operational Guidelines National Oral Health Program, 2017).

2.2.3 Oral Mucosal Lesion (Pregnancy Granuloma)

Pyogenic granuloma also known as “Granuloma or Pregnancy tumour” is a nonspecific inflammatory, non-cancerous lesion usually more common in the anterior upper gingival area which is pink to red lobule. It grows rapidly, varied in size, and tends to bleed profusely when touched during the second trimester of pregnancy (Silva de Araujo Figueiredo et al., 2017). The causes of granuloma is unknown, however literatures has reported that the pathogenesis of lesion is due to alteration in hormonal change during pregnancy.

2.2.4 Dental Fluorosis

Excess intake of fluorosis during the tooth formation leads to dental fluorosis. It can affect both child and adult teeth. Fluoride is like a double edge sword, small quantities protects the enamel and dentinal structures from caries, whereas excess amount of fluorosis is problematic. In mild fluorosis, slight discoloration and white opaque patches a bands of opaque lines are observed on the enamel surface. Moderate fluorosis includes thickness of these patches and lines involving the dentinal structures results in the white cloudy or chalky white appearance of entire tooth. While erupting pitting of enamel is observed and hypo mineralised enamel leads to fractures after eruption. In Severe fluorosis, discoloration of tooth and brown stains are observed; at this phase enamel is hypo mineralised, which tends to chip off easily and make the tooth more susceptible to decay (DenBesten and Li, 2011). Excessive consumption of fluoride by mother possibly harm the developing embryo and foetus as fluoride crosses from mother to foetus through placenta (Goyal et al., 2020; Gupta et al., 1993).

2.3 Dental Anxiety

“Dental anxiety is defined as the response to a stressful stimulus that is specific to the dental context and its recognition should be established by reference to its origin” (Asl et al., 2017). This anxiety can affect individuals across all age groups and social classes and is frequently reported as a reason for inconsistent dental visits or delaying or avoiding necessary oral health care (Locker et al., 1999a). Even when treatment is needed, many people hesitate due to this anxiety. It is a subjective feeling triggered by dental procedures, with causes that may range from clearly identifiable factors to more vague concerns (Humphris et al., 2009). Several elements contribute to dental anxiety, including

family and social influences, general tendencies toward fear, pain or traumatic experiences, past negative experiences, and certain personality traits (Bergdahl and Bergdahl, 2003).

2.3.1 Sociodemographic Factors Associated with Dental Anxiety

Age and Gender

The primary source of dental anxiety is fear of pain and lack of control. It was found that women and younger people are more anxious than men (Appukuttan et al., 2015; Liddell and Locker, 1997; Locker et al., 1999b; Malvania and Ajithkrishnan, 2011). Behaviour and attitude toward the pain and desire to control vary between males and females. Women's experience and understanding of dental pain are different from men. Individual perception and ability to handle the dental situation, as well as lack of control over the situation, makes women more anxious towards dental situations. In contrast, elder individuals possess better coping strategies and experiences towards dental situations, which reduces psychological stress, less desire to control at the dentist makes them less anxious when compared with younger individuals (Gupta et al., 2015a; Liddell and Locker, 1993, 1997).

Education and Occupation

Dental anxiety is significantly influenced by factors such as education, employment, socio economic status and geographic location. Individuals with low socio economic status, particularly uneducated, unemployed, and financially dependent individuals face many challenges to handle the stressful situation, resulting in heightened anxiety in dental treatments (Acharya, 2008; Appukuttan et al., 2015; Deogade and Suresan, 2016; Gupta et al., 2015b; Malvania and Ajithkrishnan, 2011).

According to Acharya, there is a decrease in the dental anxiety scores with increasing education and occupational status; housewives and younger individuals are more anxious

than other professions (Acharya, 2008). The study of Malvania and Ajithkrishnan, Appukuttan et al., also suggests the same; an increase in mean dental anxiety score is associated with a low level of education (Appukuttan et al., 2015; Malvania and Ajithkrishnan, 2011).

The majority of women residing in rural areas are unemployed and financially dependent, often facing challenges in accessing the services which leads to reduced utilization of dental services (Malvania and Ajithkrishnan, 2011; Phoosuwan et al., 2024). Oral health practices and knowledge among these socially disadvantaged women, especially daily labourer and migrant workers, are poor, and they are more susceptible to oral diseases; prevalence is even high among pregnant women (Adeniyi, 2020; Boggess and Edelstein, 2006). Most of these groups are unable to afford preventive and curative treatments.

2.3.2 Behavioural Factors (Cynical Hostility) Associated with Dental Anxiety

Cynical hostility is a psychological trait where individuals are overly suspicious, mistrustful, and believe that others have bad intentions. A cynical perspective on their surroundings makes them less socially interactive and leads to a lack of trust towards health care professionals and facilities, which leads to harmful behaviors and negative health outcomes that are often influenced by socioeconomic status, education, and occupation of individuals (Acharya et al., 2019; Haukkala, 2002). Hostility has its roots in childhood and is influenced by negative experiences happened during childhood and also by maternal parenting style, which affects the behaviour in later stages of life (Raikkonen et al., 2000; Suominen-Taipale et al., 2009).

According to Acharya et al., socioeconomic status has a mediating effect on cynical hostility and dental anxiety; the trend of cynical hostility decreases with increasing trends

of socioeconomic status(Acharya et al., 2019). These individuals have limited ability to express anger, and less social interaction develops due to social anxiety; they feel more holistic towards others, and a lack of control during the treatment process and a fear of experiencing pain during dental treatment may help develop dental anxiety (Acharya et al., 2019; DeWall et al., 2010; Mettovaara et al., 2006).

Hostility not only affects general health but also oral health, according to Mettovaara et al. Individuals with high cynical hostility are tend to brush their teeth less, results in poor oral health and also affects dental attendance and quality of life. The habit of brushing and its frequency often developed during childhood; development of a positive attitude and receiving social support is essential, and it can be enhanced through effective parenting style (Khan et al., 2022; Mettovaara et al., 2006; Suominen-Taipale et al., 2009)

The study done by Suominen-Taipale et al. suggests that individuals with cynical hostility often neglects their oral health. This type of attitude is more common among low socioeconomic groups, where resources are constrained with limited access to dental care, highlights how this personality trait mediates the link between socioeconomic factors and dental care (Haukkala, 2002; Suominen-Taipale et al., 2009).

2.4 Dental Attendance during Pregnancy

Literature has shown that there are several barriers that impact dental attendance during pregnancy, such as physiological conditions, lack of information, fear and anxiety, myths and beliefs, negligence of dental care, employment and financial barriers, attitude of health care professionals, transportation facilities, and family and social support (Rocha et al., 2018).

Hormonal changes during pregnancy result in physiological changes that result in nausea, vomiting, and also discomfort with the position of the dental chair and use of dental

materials, and most women having bleeding gums and tooth pain are considered normal during pregnancy, Which often limits their use of dental services during this period. (George et al., 2012; Le et al., 2009).

Neglecting oral health and giving low priority towards dental care often affects dental attendance and leads to postponement, which results in poor oral health. When it is coupled with insufficient information from health care professionals about changes that occur during the period of pregnancy, there is a risk of these changes being perceived as normal (Detman et al., 2010; Rocha et al., 2018).

A stigma is associated with the patient doctor relationship, shame of one's own oral cavity, and fear of criticism. According to George et al., factors such as perceived low credibility of dental procedures, scepticism about diagnosis, and concern about expenses of treatment serve as barriers to seeking dental care (George et al., 2012; Rocha et al., 2018).

Dental anxiety and fear associated with dental treatment, influenced by factors such as the surrounding environment, sound of drilling machine, anaesthesia, and lack of control during procedure and past negative experiences can heighten anxiety and act as barriers for utilization of oral health services (AlRatroot et al., 2022; Haukkala, 2002; Le et al., 2009; Phoosuwan et al., 2024; Rocha et al., 2018).

Literature has shown that beliefs and myths significantly contribute to avoiding dental care during pregnancy. This includes fear of miscarriages and haemorrhage and inadequate foetal development. When it coupled with advice from family and friends about their experiences or recommendations to use traditional remedies and hence this lack of family support discouraged them from seeking oral health services (Acharya, 2008; Detman et al., 2010; Rocha et al., 2018).

The cost of dental treatment, particularly for preventive and curative services, is often high and includes additional expenses due to transportation, long distances to clinics, and time constraints due to long waiting periods for procedures, further complicating access. In low- and middle-income countries, women are often financially dependent on their partners and have to accompany them to clinics, which creates an opportunity cost that leads to further discouragement in seeking dental care (Adeniyi, 2020; George et al., 2012; Le et al., 2009; Rocha et al., 2018).

Professional barriers also is reported, and it includes some dentists feeling uncomfortable providing treatment during pregnancy, advising them to come after delivery. In addition to that concern, healthcare professionals are also concerned to the safety of undergoing dental procedures during pregnancy. The lack of infrastructure in public facilities leads to low-quality care and awareness of government programs further limits the utilization of dental services (Detman et al., 2010; Le et al., 2009; Rocha et al., 2018).

2.5 Oral Health Related Quality Of Life (OHQoL)

Oral health related quality of life (OHRQoL) is a “multidimensional concept that represents people comfort in eating, sleeping, and social interaction, as well as their self-esteem and their satisfaction with oral health”(Journal of the California Dental Association, 2000).

According to locker, health issues have potential impact on quality of life but consequences is not inevitable (Allen, 2003). Quality of life is subjective, meaning that it mostly depends on personal feelings, experiences or opinions and may varies according to social, cultural, political and practical situations, making it different for everyone.

The concept of quality of life changes over time as society, technology and medicine advance. Disease and poor health can make life less enjoyable and harder, but this does not always have to be the case. People’s attitude towards health changes over time with

experience and coping strategies, allowing them to manage their health issues effectively and maintain a good quality of life (Allen, 2003; Journal of the California Dental Association, 2000; Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation, 1993).

Oral health may not be life threatening, but it affects individuals in many ways, remains a public health concern. OHRQoL is an essential aspect of overall health and well-being and is acknowledged by the WHO as a key component of the Global Oral Health Program (The world oral health report 2003: continuous improvement of oral health in the 21st century - the approach of the WHO Global Oral Health Programme, 2003). Some conditions like oral cancers are life threatening. While other conditions like chronic periodontal infections, dental caries, malocclusion, fluorosis and dental anomalies, and pain related issues like pulpitis and dental treatments also affects quality of life.

Tooth loss impacts chewing ability, changes the dietary choices and nutritional intake and affects aesthetics which may interfere with ability to communicate and laugh freely which can limits the self-esteem. Literature have shown that dental caries negatively affect both adults and children, with especially early childhood caries significantly impacting the quality of life (Hernández et al., 2015).

Facial appearance play a crucial role in communication and social interactions, craniofacial disorders, malocclusion, and even treatment can influences the quality of life by affecting both functional and esthetical ability. Similarly, fluorosis characterised by white and brown patches on teeth make them less attractive, negatively affecting a person's smile, self-confidence, and social interactions (DenBesten and Li, 2011; Hernández et al., 2015).

Locker framework for measuring the oral health status highlights the impact of oral diseases. loss of tooth leads to impairment which results in disability involving difficulty

in doing daily tasks like eating, speaking and handicap reflects the social and psychological consequences, such as reduced social interaction due to embarrassment (Locker, 1988).

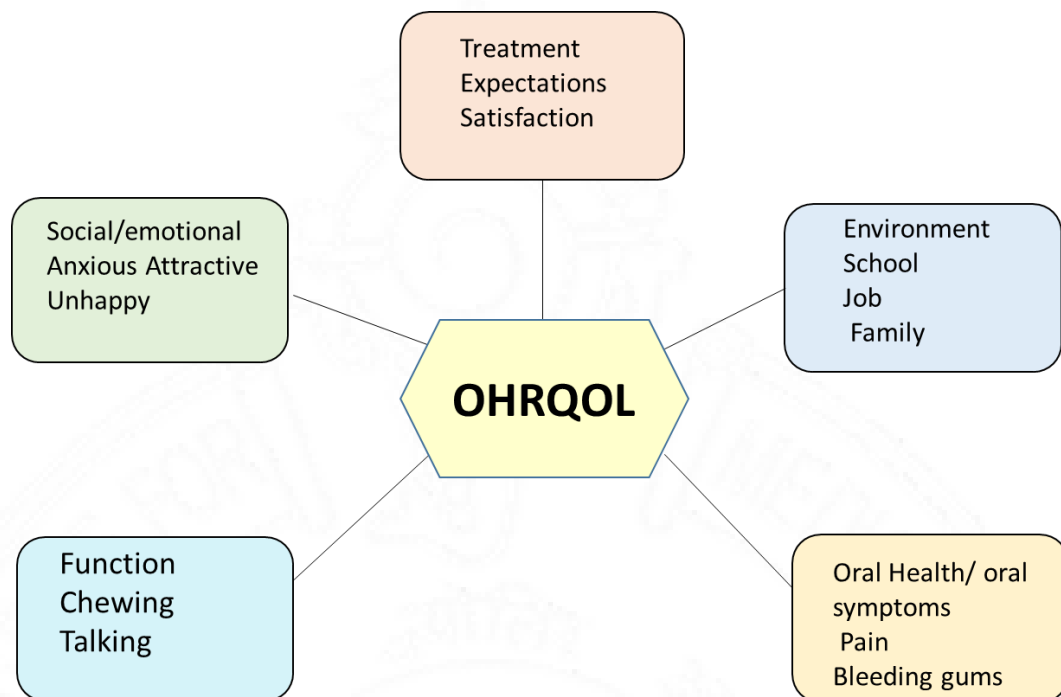


Figure 2. 1 Diagrammatic Representation of Factors affecting Oral Health related Quality of Life

Source: Oral Health Related Quality of Life (Hernández et al., 2015)

According to Samami et al., reports that an increase in anxiety have negative impact on oral health related quality of life, highlighting anxious individuals are more likely to avoid treatment and neglect, this leads to development of oral health issues, the cycle of anxiety and avoidance tends to exacerbate the situation and reduces the quality of life (Araujo et al., 2023; Samami et al., 2024).

Literature shows that poor periodontal status significantly affects the quality of life in pregnant women compared to non-pregnant women. Additionally, multiparous women tend to have poor oral health quality of life. Periodontal status and dental caries are

important contributors of oral health related quality of life (Acharya and Bhat, 2009; Geevarghese et al., 2017).

2.6 General Anxiety Disorder

Generalized Anxiety Disorder (GAD) is a mental health condition marked by excessive and ongoing worry or fear about everyday situations or activities, lasting for a minimum of six months. It is among the most prevalent mental disorders, impacting approximately 20 percent of adults annually, and is often associated with symptoms such as irritability and difficulty concentrating. Factors contributing to GAD include poor health, low socioeconomic status (income, employment and education), stress, and being a female (Munir and Takov, 2025).

Literature suggests that younger women are twice as likely to develop GAD compared to men. Pregnancy is a period during which anxiety may worsen or even begin. Phillips et al. report that 10.8 percent of pregnant women are affected by GAD (Ali, 2018; Phillips et al., 2007; Watterson et al., 2017). Sarah Araji et al. has observed that pregnant women with GAD have increased anxiety in third trimester and women with GAD are more likely to develop pregnancy-related anxiety (PrA) (Araji et al., 2020).

Higher anxiety levels are observed in case of high risk pregnancies, labour, a history of miscarriages, new diagnosed illnesses, conditions like pre-gestational diabetes, hypertension, thyroid disorders, prolonged hospitalization, and foetal complications (Araji et al., 2020). A study shows that one-third of women who experienced anxiety during pregnancy remained anxious during the early postpartum period, with half continuing to experience anxiety into the late postpartum period (Nakić Radoš et al., 2018).

Maternal anxiety during pregnancy significantly impacts infant outcomes, including an elevated risk of preterm deliveries, restricted foetal growth, and low birth weight. Prenatal anxiety is also associated with delayed child development and impaired cognitive abilities. Research indicates that children born to women with high anxiety levels are more likely to exhibit behavioural problems (Araji et al., 2020; Loomans et al., 2011).

Nazir et al reports that pregnant women who are visiting dentist regularly had low levels of general anxiety disorder (GAD) when compared with women who visits only when they are in pain or for treatment, suggesting for regular dental visits contributes to better mental well-being during pregnancy (Nazir et al., 2022).

2.7 Rationale

Dental anxiety is a major barrier in seeking the Dental care, which often leads to delayed or avoidance of dental care and reduced dental attendance, resulting in Poor oral health and reduced Quality of life (Appukuttan et al., 2015). Poor maternal oral health has a significant effect on pregnancy outcomes and also influences infants' oral health. Literature has shown that women are generally more anxious about dental treatments than men (Malvania and Ajithkrishnan, 2011), and most of the people believe that dental care should be avoided during pregnancy.

According to available published literature, there is a scarcity of studies specifically related to Dental anxiety among pregnant women in India. Recognizing and managing populations with Dental anxiety plays an important role for maternal health. This study seeks to address this knowledge gap by assessing the prevalence of Dental anxiety and its cofactors. This study can contribute to planning for the oral health care and developing a targeted oral health programs for pregnant women, thereby improving access to dental care and ultimately supporting better maternal oral health outcomes.

CHAPTER-3

OBJECTIVES AND METHODOLOGY

3.1 Objectives

The objectives of the study are to assess the oral health status, treatment needs and estimate the prevalence of dental anxiety among pregnant women who are identified with need for a dental checkup or treatment. Also the study aims at assessing the factors associated with oral health status and dental anxiety. The specific objectives are provided below.

Primary Objective

1. Assessing the oral health status and the need for dental check-up or treatment among pregnant women aged 18-49 years who attend antenatal visits.
2. To estimate the prevalence of dental anxiety among pregnant women aged 18-49 years who are identified with need for a dental check-up or Treatment.

Secondary objective

1. To determine the factors associated with oral health status among pregnant women aged 18-49 years who attend antenatal visits.
2. To determine the factors associated with dental anxiety among pregnant women aged 18-49 years who are identified with a need for Dental check-up or Treatment.

3.2 Methods

3.2.1 Study Period

January 1st 2025 to June 1st2025.

3.2.2 Study Design

A **cross sectional survey** with dental examination were conducted and documented dental anxiety, oral health status and treatment needs among pregnant women.

3.2.3 Study Setting

Study was conducted in the outpatient department of Obstetrics and Gynaecology at the selected District Hospital, Area Hospitals and Community Health Centres (CHC), in the West Godavari district, Andhra Pradesh during the period of January 2025-March 2025. Pregnant women who attended the gynaecology departments for their antenatal visits were recruited for the study. Permission was obtained from District Coordinator of Hospital Services (DCHS) to conduct the study on respected Hospitals, west Godavari district, Andhra Pradesh.

3.2.4 Study Population

The study population comprises women at various stages of pregnancy who are attending the District Hospital, Area Hospitals, and Community Health Centres (CHCs) in the West Godavari district for antenatal check-ups. This specific group was selected as the study aims to assess oral health status, identify treatment needs and to estimate prevalence of dental anxiety during pregnancy through a cross-sectional design. The participants are considered representative of the broader pregnant population. Eligible participants were pregnant women aged 18 to 49 years, with clinically confirmed pregnancy status as diagnosed by a gynaecologist or obstetrician

Inclusion criteria

Pregnant women who are willing to participate and Telugu as their Mother Tongue.

Exclusion criteria

Pregnant women who are mentally disabled, severely ill or affected with HIV/AIDS or who are not willing to participate were excluded.

3.2.5 Sample Size

In India, the prevalence of dental anxiety in adults population are ranging from 46%-58.2%.(Appukuttan et al., 2015; Malvania and Ajithkrishnan, 2011; Marya et al., 2012). No published literature related to dental anxiety among pregnant women in India was found in the literature search, hence the prevalence was taken from a study conducted among pregnant women attending dental institution in Sri Lanka, where a prevalence of dental anxiety was reported as 61.7 percent (Ekanayake et al., 2023).

Sample size was calculated using the formula
$$n = \frac{z^2 \times p \times q}{d^2}$$

where $z = 1.96$ for 95% confidence level, and $p = 0.617$.

The estimated sample size was 91 for an absolute precision of 10 % ($d = 0.01$) for the confidence interval. Further multiplied by a design effect of 2, the sample size became 182. According to Payal et al., 60% of women visiting antenatal care may refer to dental visit (Payal et al., 2017). Therefore to achieve 182 pregnant women with referral, 304 pregnant women were decided to include in the study. Further, the Sample size was adjusted for non-respondent rate of 10%, and the final sample size was 338 which was rounded to 340.

3.2.6 Sample Selection Procedures

Cluster sampling technique was used as sampling strategy. There are 8 hospitals (1 District hospital, 4 Area hospitals, 3 Community Health Centers) in the west Godavari district out of which 5 hospitals were selected randomly using a computer generated list, sixty eight

participants from each Hospital were decided to be included and also it was decided to take approximately 22 pregnant women from each trimester who are visiting the Obstetrics and Gynaecology OPD .

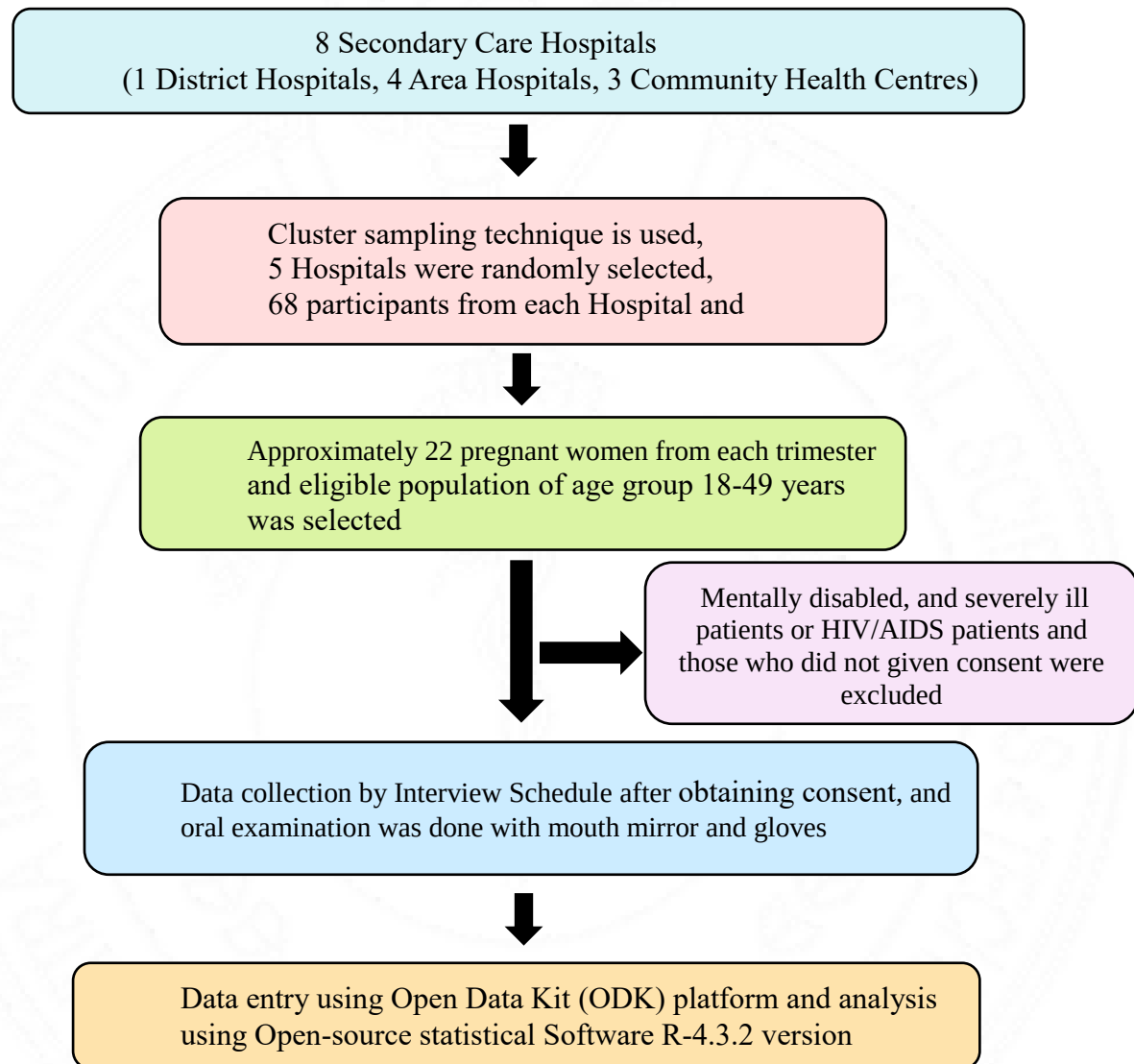


Figure 3. 1 Flow chart of Study Methodology

3.2.7 Data Collection Techniques

Pregnant women attending the obstetrics and gynaecology outpatient department for antenatal visits who was willing to participate were approached for data collection at the selected hospitals.

Data was collected using an interview schedule prepared in English and then translated to Telugu. The study tool consisted of 3 sections.

3.2.7.1 Section - A

Background details of study participants

The interview schedule included information about demographic details, socio economic status, medical history and pregnancy status, oral hygiene practices, dietary pattern, dental care seeking patterns, frequency of dental visits and questions about general anxiety disorder.

General anxiety disorder (GAD)

GAD-7 is a seven item scale ranges from nervousness to fear of something awful happening and uses a 4-point Likert scale, where scores of 0, 1, 2, and 3 are assigned to the response categories: “not at all” (0), “several days” (1), “more than half the days” (2), and “nearly every day” (3) (Spitzer et al., 2006). The total GAD-7 score for the seven items ranges from 0 to 21. The interpretation of the scores is as follows: 0–4 indicates minimal anxiety, 5–9 indicates mild anxiety, and 10–14 indicates moderate anxiety (Spitzer et al., 2006)

3.2.7.2 Section –B

Oral examination was conducted to assess the oral health status and treatment needs. All clinical examinations for the pregnant women was performed by the Principal Investigator,

who is a qualified Dental Surgeon. The oral examination was carried out using a mouth mirror, explorer, periodontal probe and CPITN-C probe to assess periodontal status, and findings were recorded on a modified version of the WHO Oral Health Assessment Form 2013, adapted for the study. The examination included the identification of decayed, missing, and filled teeth, periodontal status, prosthetic status, dental trauma, oral mucosal lesions, and the urgency of treatment, all of which was documented according to the World Health Organization criteria.

DMFT Index is used for counting the number of Decayed (D), Missed (M), and Filled (F) teeth in individual oral cavity. It is an irreversible Index describes the oral health status of an individual by counting the prevalence of dental caries, missing tooth and filled tooth.

Community Periodontal Index (CPI) modified was used to measure periodontal status. The CPI Index modified is assessed by using CPITN-C probe. This probe is used to measure pocket depth and to detect gingival bleeding. The probe has a 0.5mm ball tip with black ring between 3.5mm and 5.5mm and rings at 8.5mm and 11.5mm from the ball tip. All teeth were examined for absence or presence of gingival bleeding and periodontal pockets.

3.2.7.3 Section - C

Dental anxiety was assessed by **Modified Dental Anxiety scale (MDAS)** (Humphris et al., 1995) which is widely used dental anxiety scale all over the world. This was modified from the original Corah's Dental Anxiety Scale (CDAS)(Corah, 1969). It has been found to be reliable and valid cross culturally, and has been translated into different languages in India (Appukuttan et al., 2012; Gupta et al., 2015a). The MDAS is a 5-item questionnaire which includes a series of five questions to be presented to the participants and they are asked to rate the level of anxiety they would feel in specific dental situations. The responses were recorded on a 5-point scale: 'not anxious' (1), 'slightly anxious' (2), 'fairly anxious' (3),

'very anxious' (4), and 'extremely anxious' (5). The total score, which ranges from 5 (not anxious) to 25 (extremely anxious), is the sum of the responses to all five items. A cutoff score of 19 or higher indicates participants with high dental anxiety or potentially dental phobia (Humphris et al., 1995). MDAS is validated in different states of India, Cronbach alpha was 0.83 for Tamil (Appukuttan et al., 2012) and Kannada (Gupta et al., 2015c) versions of MDAS.

The MDAS was forward translated from English to Telugu by two translators, fluent in English and having Telugu as their native language; the two Telugu-translated versions were back translated into English by two other translators. A reconciled version by the investigator was used for the assessment of dental anxiety in the study population.

The duration of a single interview and oral examination was completed approximately within 20 to 30 minutes. All the interviews and oral examination was performed by Principal Investigator who is a Dental Surgeon.

3.2.8 Variables used for the analysis

Dependent Variables

The oral health status was assessed using bleeding on probing, periodontal pocket depth of 4-5mm, periodontal pocket depth of 6mm or more, healthy periodontium, dental erosion, dental trauma and DMFT score.

All the participants were found to be required some form of treatment and hence the variable treatment need was considered for further analysis. Categories of treatment needs were consolidated into two categories, 'preventive or prompt treatment' and 'immediate treatment or referral for comprehensive evaluation' for ease of doing further analysis.

Dental anxiety scores were categorised into four mild, moderate, high and severe anxiety and it was further categorised into two dental anxiety present (moderate to severe) and absent for further analysis.

Independent Variables

Socioeconomic variables

Age, Educational Status, Occupational status, Monthly income, Type of family.

Gestational Variable

Pregnancy status, Gestational age, Gravida.

General Health

Self-reported general health, History of Disease or Condition, Medication for Disease or Condition, Frequency of vomiting, oral hygiene habits.

Dietary Variable

Frequency of eating Fruits, Biscuits or cakes, Sweets or Candy, Soft drinks, Tea and Coffee with sugar.

3.2.9 Data Analysis

The data was collected using pen and paper by PI and later entered in Open Data Kit (ODK) platform. All statistical analyses were done using Open-source statistical software R-4.3.2 version for windows. Data cleaning was performed before analysis, with coding and recoding of data done as necessary. Descriptive and frequency tables were generated for all variables included in the study. Bivariate analysis was used to assess the individual relationships between each predictor variable and the outcome, employing Chi-squared

tests, t-tests, and one-way ANOVA. Binary logistic regression analyses were performed to explore the association between various independent variables and the outcomes of interest.

3.2.10 Ethical Considerations

The study was conducted only after obtaining the approval from Institutional Ethics Committee of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCT/IEC/2345/DECEMBER/2024). As pregnant women constitutes the vulnerable population, Informed consent for participation in the study was obtained from the participants beforehand. The informed written consent, provided in Telugu, was secured prior to the start of the interview.

Participant information was provided with information of study and contact details of principal investigator as well as the details of the member secretary of the Institutional Review Board.

Participants were informed that they could withdraw from the study at any time, without the need for an explanation or facing any consequences. They were informed about the voluntary nature of their participation, the study's objectives, and the potential benefits and risks that were associated with their involvement.

The Principal Investigator prioritized protecting the privacy and confidentiality of the participants. Interviews were carried out only when the participants were comfortable and minimize the discomfort during the interview. The data collected was solely for research purposes. Participants were also provided with oral hygiene instructions following the interview.

CHAPTER-4

RESULTS

This chapter presents the analysis and the key findings of the participants' from cross sectional survey conducted among the 304 pregnant women attending Secondary care Hospitals. It begins with a description of study participants' characteristics, and followed by overview of their oral health status and dental anxiety. Then the chapter explores the factors associated with oral health status and dental anxiety highlights the significant factors identified in the multivariate regression model, all organised according to the study objectives.

4.1 Background characteristic of study participants

The mean age of the study participants was 24.7 ± 3.9 SD, with ages ranging from 18 to 40 years. Approximately 32.2 percent of the participants were in the 18-22 age group. Among the participants, 82.2 percent were housewives with minimal involvement in formal employment.

Regarding educational qualifications, 34.5 percent of individuals had completed secondary-level education, 27.3 percent possessed a graduate degree, and 5.6 percent held a postgraduate qualification. Of the study participants 87.5 percent belongs to nuclear family and 64.1 percent of the study participant's followed Hindu religion. Nearly 44 percent of the participants reported a monthly household income of 20000 or below (Table 4.1).

Table 4. 1 Frequency distribution of sociodemographic details.

Variable	N = 304¹
Maternal Age (years)	
18-22	98 (32.2)
23-24	69 (22.7)
25-26	54 (17.8)
Above or equal to 27	83 (27.3)
Type of Family	
Nuclear	266 (87.50)
Joint	38 (12.50)
Religion	
Hindu	195 (64.1)
Christian	105 (34.5)
Muslim	4 (1.4)
Education	
Illiterate	10 (3.3)
Primary School	14 (4.6)
Secondary School	105 (34.5)
Inter or Diploma	75 (24.7)
Graduate	83 (27.3)
Post-Graduation	17 (5.6)
Occupation of Respondent	
Housewife	250 (82.2)
Daily wage laborer	9 (3.0)
Self Employed	4 (1.3)
Private Employee	35 (11.5)
Government employee	2 (0.7)
Student	4 (1.3)
Monthly family Income	
<15000	67 (22.0)
15000-20000	67 (22.0)
21000-30000	112 (36.9)
>30000	58 (19.1)
1 n (%)	

4.1.1 Perceived General Health of the study participants

Perceived general health was categorised into good, moderate and poor, with 47.1 percent of participants reported a moderate level of health. Only 17.8 percent of participants reported having a disease or condition and were on current medication. Among them, 14.1 percent were diagnosed with thyroid disorders, while two participants each reported having diabetes and hypertension. A total of 39.1 percent of participants experienced vomiting, and of these, 48.3 percent experienced it more than once a day (Table 4.2).

Table 4. 2 Distribution of Medical history and Perceived general health

Variable	N = 304 ¹
Perceived General Health	
Good	156 (51.3)
Moderate	143 (47.1)
Poor	5(1.6)
History of Disease or Condition	
No conditions reported	250 (82.2)
Hypertension	2 (0.7)
Diabetes	2 (0.7)
Thyroid	43 (14.1)
Others	7 (2.3)
Any one of the above Disease or Condition	
Yes	54 (17.8)
No	250 (82.2)
Vomiting present	
Yes	119 (39.1)
No	185 (60.9)
How much frequent episodes(N =119)	
1-3 Times Week	26 (22.0)
4-7 Times Week	35 (29.7)
More Than Once Day	57 (48.3)
1 n (%)	

4.1.2 Pregnancy characteristics

The study participants who experienced pregnancy for the first time was 43.1 percent (Table 4.3), while 56.9 percent had been pregnant more than once. Regarding gestational age, the women in different trimesters were taken proportionately during the data collection, however the women in first trimester was slightly lesser compared to other two groups.

Table 4. 3 Distribution of Gravida and Gestational age

Variable	N = 304 ¹
Gravida	
First Pregnancy	131(43.1)
Second Pregnancy	147(48.4)
Third Pregnancy	18 (5.9)
Fourth Pregnancy	8 (2.6)
Gestational Age	
First Trimester	96 (31.6)
Second Trimester	103 (33.9)
Third Trimester	105 (34.5)
1 n (%)	

4.1.3 Questions related to Dietary Pattern of the study participants

Frequent intake of fruits among study participants were 71.4 percent. About two third of participants reported consuming biscuits or cakes frequently, and 56.3 percent reported a higher frequency of sweet or candy intake. The results indicate that participants who consume soft drinks occasionally was 64.4 percent and majority consumes coffee occasionally only (Table 4.4).

Table 4. 4 Distribution of dietary habits among pregnant women

Variable	N = 304¹
Fruit Consumption	
Frequently	217 (71.4)
Occasionally	87 (28.6)
Biscuits or Cakes Consumption	
Occasionally	119 (39.2)
Frequently	185 (60.8)
Sweets or Candy Consumption	
Occasionally	133 (43.7)
Frequently	171 (56.3)
Soft Drinks Consumption	
Occasionally	196 (64.4)
Frequently	108 (35.6)
Tea Consumption	
Occasionally	166 (54.6)
Frequently	138 (45.4)
Coffee Consumption	
Occasionally	248 (81.6)
Frequently	56 (18.4)
¹ n (%)	

4.2 Dental Care Seeking Pattern and Oral health status

4.2.1 Dental care seeking behaviour

The information provided by the participants about their dental visit was classified into three groups, those who visited within or equal to one year, more than one year and those who never visited a dental facility (Table 4.5). Among the study participants, 45.7 percent had made a visit more than one year ago and 44.4 percent had never visited a dentist.

Among those who had visited a dentist at least once, 43.8 percent reported the reason to visit to dentist because of pain in teeth or gums or for treatment. Around seven percent of participants who ever visited dental facility had negative experience.

Table 4. 5 Dental Care Seeking behavior among study participants

Variable	N = 304¹
Last Dental Visit	
Less than or equal to 1 year	30 (9.9)
More than 1 years	139 (45.7)
Never	135 (44.4)
Purpose of Visit*(N=169)	
Consultation with no specific reason	95 (56.2)
Pain in teeth or for Treatment	74 (43.8)
Negative Experiences (N=169)	
Yes	12 (7.1)
No	157 (92.9)
1 n (%),*Women who never visited a dental clinic were excluded	

4.2.2 Oral Hygiene Habits

Table 4. 6 Oral hygiene habits of participants

Variable	N = 304¹
Frequency of brushing	
Once Day	244 (80.3)
Twice a Day	60 (19.7)
Cleaning Materials	
Paste	293 (96.4)
Powder	11 (3.6)
1 n (%)	

Around 20 percent of the study participants reported brushing their teeth twice daily while others reported brushing their teeth once daily. Majority of the participants use tooth paste and tooth brush to maintain their oral hygiene (Table 4.6).

4.2.3 Perceived Dental Problems in Last One Year

Table 4.7 presents self-reported oral health problems. Respondents reported a range of oral health issues affecting both their daily functioning and emotional well-being. Dental pain or discomfort was found among 53 percent of participants, and about 36.2 percent reported bleeding while brushing. The difficulty in biting and chewing food was reported by 51.3 and 54.3 percent of the participants, respectively. Dry mouth affected over 44.4 percent of participants, nearly one third of the participants experienced tense due to their teeth condition (33.2 %) and interruption of sleep was reported by 34.8 percent of participants. About 14.5 percent of the study participants reported avoiding smiling because of their teeth condition and 17.8 percent experienced difficulty in doing daily activities.

Table 4. 7 Perceived Oral Health problems in the Past 12 Months

Perceived conditions (Answered yes)	N = 304¹
Pain or discomfort	161 (53.0)
Bleeding gums while brushing	110 (36.2)
Difficulty in Biting Food	156 (51.3)
Difficulty in Chewing Food	165 (54.3)
Dry Mouth	135 (44.4)
Tense due to teeth condition	101(33.2)
Avoid Smiling because of Tooth condition	44(14.5)
Interruption of Sleep	106 (34.8)
Difficulty doing Usual Activities	54 (17.8)
1 n (%)	

4.2.4 Oral Health Awareness

Only 21.7 percent of women were aware that poor oral health has an effect on pregnancy. A significant portion, 61.2 percent believe That dental treatment should be postponed during pregnancy and 52.6 percent reported postponement of dental treatment during pregnancy. Only 13.2 percent participants received advice from health care providers about oral healthcare during pregnancy (Table 4.8).

Table 4. 8 Oral health awareness and Treatment behavior

Variable	N = 304 ¹
Received oral health advice from healthcare provider during antenatal visit	
Yes	40 (13.2)
No	264(86.8)
Whether aware of having poor oral health can affects the pregnancy	
Yes	66(21.7)
No	238 (78.3)
Is it necessary to avoid dental treatment during pregnancy	
Yes	186 (61.2)
No	118 (38.8)
Dental treatment postpone during pregnancy	
Yes	160 (52.6)
No	144(47.4)
1 n (%)	

4.2.5 Oral Health Status

Table 4.9 shows that 36.8 percent perceived oral health as good, 42.2 percent perceived their oral health status as moderate, 21 percent perceived their oral health as poor.

Table 4. 9 Perceived oral health status among study participants

Variable	N = 304 ¹
Perceived Oral Health status	
Good	112 (36.8)
Moderate	128 (42.2)
Poor	64 (21.0)
1 n (%)	

Table 4.10 describes the oral health status of pregnant women participated in the study. The mean and SD, median and range of teeth with different conditions were presented in the table.

The number of bleeding teeth ranges from 0 to 32 with a median of 7. The number of teeth with pocket of 6mm or more ranges 0 to13 with median of 0. Average number of teeth with healthy periodontium was 27.5 ± 4.3 (Mean, SD), with median of 28, with a range of 8 and 32.

Table 4. 10 Oral health status of pregnant women participated in the study

Number of teeth with	Mean $\pm$ SD	Minimum	Median	Maximum
Bleeding on Probing	9 ± 9	0	7	32
Pocket 4-5 mm	1.58 ± 3.02	0	0	16
Pocket ≥ 6 mm	0.66 ± 2.03	0	0	13
Healthy Periodontium	27.5 ± 4.3	8	28	32
Decayed Missed Filled or Treated Teeth (DMFT)	4.84 ± 3.65	0	4	20
Dental Trauma	0.09 ± 0.47	0	0	3
Dental Erosion	0.21 ± 0.46	0	0	2

Table 4.11 shows that 87.8 percent of respondents had a DMFT condition in at least one tooth. Presence of bleeding among the participant with at least one tooth is 76 percent. Among the participants 19.1 percent had dental erosion of teeth and 26.3 percent were affected by dental fluorosis.

Most participants (90.1 %) did not have any oral mucosal lesions, while, 5.9 percent had candidiasis, two percent experienced ulceration, and one percent was diagnosed with acute necrotizing ulcerative gingivitis (ANUG).

Table 4. 11 Oral health condition present among study participants

Conditions present	N = 304¹
Bleeding on probing	231 (76.0)
Decayed Missed Filled or Treated Teeth (DMFT)	267 (87.8)
Dental Erosion	58 (19.1)
Dental Fluorosis	80(26.3)
Dental Trauma	14 (4.6)
Oral mucosal lesions	
NO	274 (90.1)
Ulcerations	6 (2.0)
Acute necrotizing ulcerative gingivitis (ANUG)	3 (1.0)
Candidiasis	18 (5.9)
abscess	2 (0.7)
Others	1 (0.3)
1 n (%)	

Regarding the treatment needs for the participants, Table 4.12 shows 27.3 percent required preventive or routine care, 27.3 percent study participants in need of prompt treatment and 36.8 percent require immediate care due to pain or infection. Additionally, 8.6 percent of

participants required a comprehensive medical or dental referral. Overall, all participants were found to be in need of some form of treatment.

Table 4. 12 Treatment needs for the participants

Treatment needs	Frequency (%)
No treatment needed	0 (0.0)
Preventive or routine treatment needed	83 (27.3)
Prompt Treatment needed	83 (27.3)
Immediate treatment due to pain or infection	112 (36.8)
Reference for Comprehensive evaluation or medical /dental treatment	26 (8.6)

4.3 General anxiety disorder (GAD) among study participants

General anxiety disorder among the study participants was assessed by using GAD scores. The responses to each item of the GAD scale are shown in tables 4.13, along with the distribution of total score obtained by the participants.

According to the total score for each participant, 47.7 percent of participants reported minimal anxiety, while 34.6 percent experienced mild anxiety, 12.8 percent reported moderate anxiety and severe anxiety affects 4.9 percent of the study population, over the last two weeks.

Table 4. 13 General anxiety disorder (**GAD**) responses to different items and distribution of combined score

Variable	Not at all	Several days	More than half the days	Nearly every day
Feeling anxious	118 (38.8)	119 (39.1)	41 (13.5)	26 (8.6)
Not able to control worry	203 (66.8)	65 (21.4)	28 (9.2)	8 (2.6)
Worry about different things	115 (37.8)	109 (35.9)	63 (20.7)	17 (5.6)
Trouble relaxing	181 (59.5)	83 (27.3)	31 (10.2)	9 (3.0)
Feeling restless	217 (71.4)	49 (16.1)	27 (8.9)	11 (3.6)
Easily annoyed or irritable	84 (27.6)	39 (12.8)	131 (43.2)	50(16.4)
Feeling afraid of something awful might happen	160 (52.6)	82 (27.0)	37 (12.2)	25 (8.2)
GAD Score	N = 304 ¹			
Minimal Anxiety (0-4)	145 (47.7)			
Mild Anxiety (5-9)	105 (34.6)			
Moderate Anxiety (10-14)	39 (12.8)			
Severe Anxiety (15-21)	15 (4.9)			
1 n row(%),N = 304				

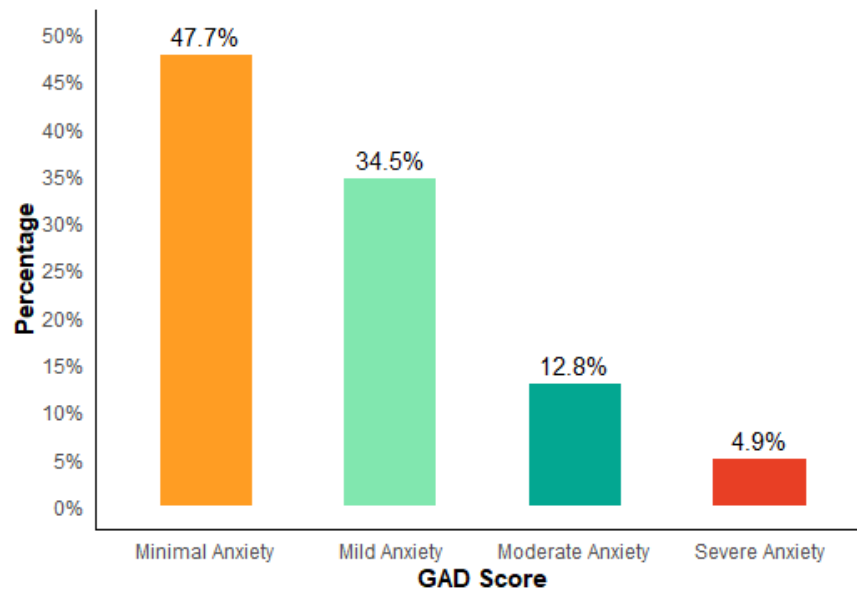


Figure 4. 1 Distribution of General anxiety disorder (GAD)

4.4 Dental anxiety among pregnant women

Table 4.14 presents the responses to each item of the Modified Dental Anxiety Scale (MDAS), which measures the anxiety towards different aspects of dental treatment.

Table 4. 14 Responses to the items of MDAS scale

Variable	Not Anxious	Slightly Anxious	Fairly Anxious	Very Anxious	Extremely Anxious
Feeling About Tomorrow's Treatment	199 (65.5)	67(22.0)	26.(8.5)	10 (3.3)	2 (0.7)
Feeling About Waiting	115(37.8)	101 (33.2)	67 (22.1)	16 (5.3)	5(1.6)
Feeling About Drilling	82 (27.0)	96 (31.6)	90 (29.6)	30(9.8)	6 (2.0)
Feeling About cleaning	174 (57.2)	75 (24.7)	41(13.5)	11 (3.6)	3(1.0)
Feeling About Injection	92 (30.3)	74 (24.3)	77(25.3)	47(15.5)	14(4.6)
N = 304, 1 n row (%)					

The total score of MDAS was illustrated using a histogram which shows that the score is highly skewed (Figure 4.2).

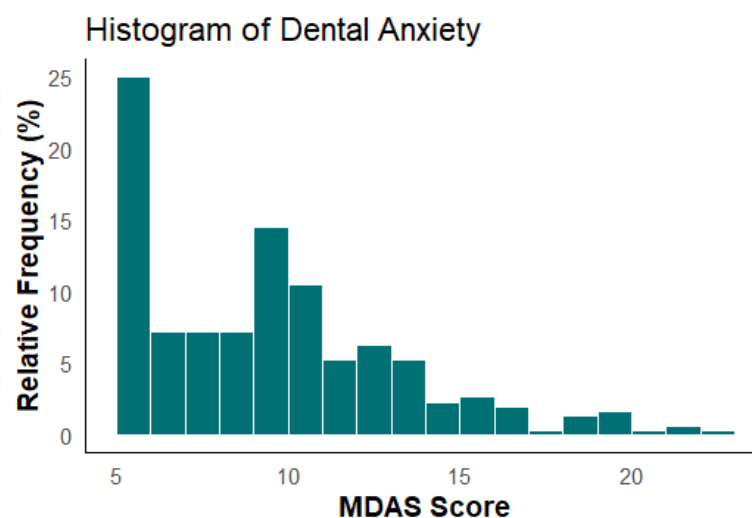


Figure 4. 2 Distribution of Modified Dental Anxiety Scale (MDAS) Scores among Pregnant Women.

The MDAS score was initially categorised into four such as 5-9, 10-15, 16-18 and above 19 to indicate mild, moderate, high, and severe anxiety or phobic, respectively. Later it was consolidated into two as dental anxiety present (moderate to severe) and absent (mild) for ease of doing further analysis.

Among the study participants 46.7 percent experienced mild or less anxiety, 44.1 percent had moderate anxiety, while 4.9 percent of study participants experienced high anxiety and 4.3 percent were phobic. The proportion of women with moderate to severe dental anxiety was estimated as 53.3 percent with 95 percent confidence interval ranging from 48-59 percent (Table 4. 15).

Table 4. 15 Prevalence and 95% confidence interval of Dental Anxiety among pregnant women

Characteristic	N = 304 ¹	95% CI ^{2f}
MDAS Score		
Mild anxiety (5-9)	142 (46.7)	(41,52)
Moderate Anxiety(10-15)	134 (44.1)	(38, 50)
High Anxiety(16-18)	15. (4.9)	(2.9, 8.2)
severe Anxiety (≥19)	13 (4.3)	(2.4, 7.4)
Dental Anxiety		
Dental Anxiety Absent (Mild)	142 (46.7)	(41,52)
Dental Anxiety Present (Moderate to Severe)	162 (53.3)	(48,59)

1 n row(%),2 CI = Confidence Interval for prevalence

4.5 Oral Health Status and Associated Factors

The average number of teeth with different oral health conditions were analysed with respect to the maternal and gestational age, and the results were provided in tables 4.16 and 4.17.

Table 4. 16 Comparison of Oral Health Conditions across Maternal Age.

Number of teeth with	Maternal age		p-value ²
	Aged 24 and below N = 167 ¹	Above 24 years N = 137 ¹	
	Mean±SD	Mean±SD	
Bleeding on Probing	8.29 ± 8.05	10.63 ± 9.29	0.021
Pocket 4-5 mm	1.12 ± 2.56	2.13 ± 3.43	0.005
Pocket ≥6 mm	0.45 ± 1.65	0.93 ± 2.39	0.049
Healthy Periodontium	27.73 ± 3.68	27.23 ± 4.87	0.300
Decayed Missed Filled or Treated Teeth (DMFT)	4.65 ± 3.73	5.08 ± 3.55	0.300
Dental Trauma	0.08 ± 0.43	0.12 ± 0.52	0.600
Dental Erosion	0.19 ± 0.46	0.24 ± 0.46	0.400
¹ (Mean ± SD), ² Welch Two Sample t-test			

The average number of teeth with bleeding on probing among pregnant women aged 24 years and below was 8.29 ± 8.05 (Mean, SD), whereas among those above 24 years, it was 10.63 ± 9.29. This difference is statistically significant, indicating a difference between maternal age and bleeding on probing.

The average number of teeth with shallow pocket of 4-5mm among 24 years and below was 1.12 ± 2.56, whereas for above 24 years age group, it was 2.13 ± 3.43, and the difference between two groups was statistically significant (Table 4.16). No other conditions were found significantly different between the two age groups of pregnant women.

Table 4. 17 Comparison of Oral Health Conditions across Gestational Age (Trimesters)

Number of teeth with	Gestational age			Pvalue ²
	First Trimester N = 96 ¹	Second Trimester N = 103 ¹	Third Trimester N = 105 ¹	
	Mean(SD)	Mean(SD)	Mean(SD)	
Bleeding on Probing	7.57 ± 8.04	9.55 ± 8.44	10.76 ± 9.30	0.032
Pocket 4-5 mm	1.17 ± 2.61	1.54 ± 3.11	1.98 ± 3.24	0.160
Pocket ≥6 mm	0.96 ± 2.42	0.42 ± 1.43	0.64 ± 2.12	0.169
Healthy Periodontium	27.71 ± 4.03	27.64 ± 4.33	27.18 ± 4.42	0.799
Decayed Missed Filled or Treated Teeth (DMFT)	4.88 ± 3.84	4.59 ± 3.59	5.07 ± 3.56	0.629
Dental Trauma	0.08 ± 0.47	0.08 ± 0.39	0.13 ± 0.54	0.646
Dental Erosion	0.21 ± 0.46	0.17 ± 0.45	0.26 ± 0.48	0.437
¹ Mean ± SD, ² one way ANOVA				

Table 4.17 presents oral health condition among pregnant women across different trimesters, the average number of teeth with bleeding on probing in first trimester was 7.57 ± 8.04, and it increases with second and third trimesters and shows statistical significant association between bleeding on probing and gestational age. No other conditions showed a significant difference between gestational ages.

The variable ‘treatment needs’ was considered for a detailed analysis of factors associated with oral health status as the treatment need is a component of different oral health conditions and their severity. It was observed that all the participants needed some form of treatment. The variable treatment needs was dichotomised as “need for a preventive or prompt treatment” as well as “need for an immediate treatment or referral” for further analysis.

Table 4. 18 Demographic and pregnancy related factors Vs Treatment needs

Characteristic	Preventive or Prompt Treatment, N = 166 ¹	Immediate Treatment or Referral, N = 138 ¹	p-value ²
Maternal Age			
Aged 24 years or below	98 (58.7)	69 (41.3)	0.110
Above 24 years	68 (49.6)	69 (50.4)	
Education			
Secondary school or below	62 (48.1)	67 (51.9)	0.049
Above Secondary school	104 (59.4)	71 (40.6)	
Occupation of Respondent			
Others	30 (55.6)	24 (44.4)	0.900
Housewife	136 (54.4)	114 (45.6)	
Type of Family			
Nuclear	150 (56.4)	116 (43.6)	0.100
Joint	16(42.1)	22 (57.9)	
Monthly family Income			
Below 30000	108 (52.4)	98 (47.6)	0.300
Above or equal to 30000	58 (59.2)	40 (40.8)	
Gravida			
First Pregnancy	64(48.9)	67 (51.1)	0.080
Second Pregnancy and more	102 (59.0)	71 (41.0)	
Gestational Age			
First Trimester	55 (57.3)	41 (42.7)	0.600
Second Trimester	58 (56.3)	45 (43.7)	
Third Trimester	53 (50.5)	52 (49.5)	
¹ n row (%), ² Pearson's Chi-squared test			

Table 4.18 presents that 50.4 percent pregnant women aged above 24 years required immediate treatment or referral for comprehensive evaluation, whereas 41.3 participants aged 24 or below are in need of immediate treatment or referral, which was not statistically

significant. A statistical significant variation was observed between women in different strata of education (51.9% vs 40.6%).

There was a difference of 14 percent was observed for the immediate treatment or referral need between women in joint or nuclear family, which was not found to be statistically significant. Among participants in their first pregnancy, 51.1 percent required immediate treatment or referral for comprehensive evaluation, whereas women in their second pregnancy or higher, over 41 percent required immediate treatment or referral. This was also found marginally significant, suggesting some evidence for an association between gravida and treatment needs (Table 4.18).

Table 4.19 describes, among participants with good perceived oral health, the majority (85.7%) needed only preventive or prompt treatment, however among participants with perceived poor oral health, and majority (87.5 %) required immediate treatment or referral.

Immediate treatment or referral need was 50 percent among those who consume soft drinks occasionally but the proportion was 37 percent among those who consume soft drinks regularly, which was observed to be a statistically significant association.

The need for immediate treatment or referral was 42.7 percent among those who consumes coffee occasionally but it was 57.1 percent among those who consume coffee frequently. This was found marginally significant, suggesting some evidence for an association between Coffee consumption and Treatment needs.

The factors associated with treatment needs were further analysed using binary logistic regression models. All variables with a statistical significance below 10 percent level of alpha ($p < 0.10$) were considered for this analysis. In the multiple regression models, the factors were adjusted for each other (Table 4.20).

Table 4. 19 Perceived oral health and dietary practices Vs Treatment needs

Characteristic	Preventive or Prompt Treatment, N = 166 ¹	Immediate Treatment or Referral, N = 138 ¹	p-value ²
Perceived Oral Health			
Good	96 (85.7)	16 (14.3)	<0.001
Moderate	62 (48.4)	66 (51.6)	
Poor	8 (12.5)	56 (87.5)	
Frequency of Cleaning			
Twice a Day	31 (51.7)	29 (48.3)	0.600
Once Day	135 (55.3)	109 (44.7)	
Dental Visit			
1 year and below	13 (41.9)	18 (58.1)	0.130
Above 1 years	153 (56.0)	120 (44.0)	
Fruit Consumption			
Frequently	123 (56.7)	94 (43.3)	0.300
Occasionally	43 (49.4)	44 (50.6)	
Biscuits or Cakes Consumption			
Occasionally	63 (52.9)	56 (47.1)	0.600
Frequently	103 (55.7)	82 (44.3)	
Sweets or Candy Consumption			
Occasionally	68 (51.1)	65 (48.9)	0.300
Frequently	98 (57.3)	73 (42.7)	
Soft Drinks Consumption			
Occasionally	98 (50.0)	98 (50.0)	0.030
Frequently	68 (63.0)	40 (37.0)	
Tea Consumption			
Occasionally	95(57.2)	71 (42.8)	0.300
Frequently	71 (51.4)	67 (48.6)	
Coffee Consumption			
Occasionally	142 (57.3)	106 (42.7)	0.051
Frequently	24 (42.9)	32 (57.1)	

¹ n row (%), ² Pearson's Chi-squared test

Table 4. 20 Factors associated with treatment needs – results from Binary logistic regression analysis.

Variable	Unadjusted odds ratio			Adjusted odds ratio		
	OR ¹	95% CI	p-value	AOR ²	95% CI	p-value
Education						
Secondary school and below						
Above Secondary school	0.63	0.40, 1.00 0.63	0.050	0.90	0.51, 1.60	0.700
Gravida						
First Pregnancy	1.00	—		1.00	—	
Second Pregnancy or more	0.66	0.42, 1.05	0.080	0.45	0.25, 0.80	0.007
Perceived Oral Health						
Good	1.00	—		1.00	—	
Moderate	6.39	3.46, 12.4	<0.001	6.49	3.45, 12.8	<0.001
Poor	42.0	17.8, 111	<0.001	52.9	21.4, 147	<0.001
Soft Drinks Consumption						
Occasionally	1.00	—		1.00	—	
Frequently	0.59	0.36, 0.95	0.030	0.54	0.29, 0.97	0.044
Coffee Consumption						
Occasionally	1.00	—		1.00	—	
Frequently	1.79	1.00, 3.24	0.052	2.36	1.16, 4.87	0.018

¹ OR = Odds Ratio, ² AOR = Adjusted odds ratio, CI = Confidence Interval, N = 304

Participants when compare with first pregnancy, women in second pregnancy or more pregnancy had 34 percent lower odds of requirement in immediate treatment or referral, and was only marginally significant in simple logistic regression (unadjusted analysis).

However, after adjusting for other variables, 55 percent less odds of requiring immediate dental treatment or referral among participants who are in second pregnancy or more was observed, which was statistically significant, shows a relationship between Gravida and Treatment needs (Table 4.20).

Perceived oral health was found to be a significant factor even when it was adjusted for the effect of other variables indicating a strong relationship between perceived oral health and increasing treatment needs.

Frequent consumption of soft drinks showing a lower risk for immediate treatment or referral. Whereas participants who consume coffee frequently show 2.36 times odds of requirement in immediate treatment or referral. Both were statistically significant in adjusting analysis.

4.6 Dental anxiety and associated factors

Table 4.21 describes the analysis exploring factors associated with dental anxiety. Maternal age, type of family, gravida and gestational age were not showing any significant association with dental anxiety.

Dental anxiety is more common among participants with education up to secondary schooling or below compared to those with above secondary schooling (62.8% Vs 46.3%, $P=0.004$).

Dental anxiety among pregnant women who are housewives was 56.4 percent whereas the dental anxiety among other women was 38.9 percent only ($P=0.019$).

Monthly income of the participants was significantly associated with dental anxiety, where, 58.3 percent of women with a monthly family income of 30000 or below had dental anxiety as compared to 42.9 percent among those with a family monthly income of 30,000 or above. Type of family was also not significantly associated with dental anxiety (Table 4.21).

Table 4. 21 Socio-demographic and maternal factors associated with dental anxiety

Characteristic	Dental Anxiety Absent, N = 142 ¹	Dental Anxiety Present, N = 162 ¹	p-value ²
Maternal Age			
Aged 24 years or below	72 (43.1)	95 (56.9)	
Above 24 years	70 (51.1)	67 (48.9)	
			0.200
Education			
Secondary school or below	48 (37.2)	81 (62.8)	
Above Secondary school	94 (53.7)	81 (46.3)	
			0.004
Occupation of Respondent			
Others	33 (61.1)	21 (38.9)	
Housewife	109 (43.6)	141 (56.4)	0.019
Type of Family			
Nuclear	128 (48.1)	138 (51.9)	
Joint	14 (36.8)	24 (63.2)	0.200
Monthly family Income			
Below 30000	86 (41.7)	120 (58.3)	
Above or equal to 30000	56 (57.1)	42 (42.9)	
			0.012
Gravida			
First Pregnancy	62 (47.3)	69 (52.7)	
Second Pregnancy or more	80 (46.2)	93 (53.8)	
			0.900
Gestational Age			
First Trimester	43 (44.8)	53 (55.2)	
Second Trimester	49 (47.6)	54 (52.4)	
Third Trimester	50 (47.6)	55 (52.4)	>0.900
¹ n row (%), ² Pearson's Chi-squared test			

The results from cross tabulation examining dental anxiety associated with oral hygiene and dental care seeking practices are presented in Table 4.22.

Table 4. 22 Oral hygiene and Dental care seeking practices associated with Dental Anxiety

Characteristic	Dental Anxiety Absent, N = 142 ¹	Dental Anxiety Present, N = 162 ¹	p-value ²
Frequency of Cleaning			
Twice a Day	32 (53.3)	28 (46.7)	0.300
Once Day	110 (45.1)	134 (54.9)	
Dental Visit			
Less than 1 year	12 (38.7)	19 (61.3)	0.300
More than 1 years	130 (47.6)	143 (52.4)	
Negative Experiences*			
No	139 (49.1)	144 (50.9)	0.002
Yes	3 (14.3)	18 (85.7)	
Oral Health Advice from Healthcare Provider			
Yes	13 (32.5)	27 (67.5)	0.053
No	129 (48.5)	135 (51.1)	
Aware of Oral Health Effects on Pregnancy			
Yes	43 (65.2)	23 (34.8)	<0.001
No	99 (41.6)	139 (58.4)	
Avoid Treatment due to Pregnancy			
No	69 (58.5)	49 (41.5)	0.001
Yes	73 (39.2)	113 (60.8)	
1 n row (%),2 Pearson's Chi-squared test			
*Negative experiences was asked to those who ever had a dental visit; However for this analysis, those who never visited were considered as having no negative experiences.			

Dental anxiety was significantly high among those who had an earlier negative experience during dental visits (85.7 Vs 50.9, P=0.002), and significantly lower among those who

aware of oral health effects on pregnancy (34.8 Vs 58.4, $P < 0.001$). Among participants who avoided treatment during pregnancy, 60.8 percent had dental anxiety, as compared to 41.5 percent in the other group ($P = 0.001$).

Table 4. 23 General anxiety disorder and Oral Health status Vs Dental Anxiety

Characteristic	Dental Anxiety Absent, N = 142 ¹	Dental Anxiety Present, N = 162 ¹	p-value ²
GAD Score			
Minimal to Mild Anxiety	126 (50.4)	124 (49.6)	0.006
Moderate to Severe Anxiety	16 (29.6)	38 (70.4)	
Perceived Oral Health			
Good	71 (63.4)	41 (36.6)	<0.001
Moderate	54 (42.2)	74 (57.8)	
Poor	17 (26.6)	47 (73.4)	
Treatment need			
Preventive or Prompt Treatment	97 (58.4)	69 (41.6)	<0.001
Immediate Treatment or Referral	45 (32.6)	93 (67.4)	

¹ n row (%), ² Pearson's Chi-squared test

Table 4.23 describes how general anxiety disorder, perceived health status and treatment needs are associated with dental anxiety. Among Pregnant women whose general anxiety ranging from moderate to severe, 70.4 percent had dental anxiety as compared to 50 percent in the other group ($P = 0.006$). As self-perception of oral health worsens, the proportion of individuals with dental anxiety increases significantly. Participant who perceived their oral health as good showed a significantly lower proportion of dental anxiety as compared to

perceive health status of moderate or poor ($P<0.001$). Pregnant women who are in need of immediate dental treatment or referral, 67.4 percent had dental anxiety, as compared to 42 percent among those who need a preventive or prompt Treatment ($P<0.001$).

Table 4. 24 Factors associated with dental anxiety- results from Binary logistic regression analysis (unadjusted)

Characteristic	OR ¹	95% CI	p-value
Education			
Secondary school or below	1	—	
Above Secondary school	0.51	0.32, 0.81	0.005
Occupation of Respondent			
Others	1	—	
Housewife	2.03	1.12, 3.76	0.021
Monthly family Income			
Below 30000	1	—	
Above or equal to 30000	0.54	0.33, 0.87	0.012
Negative Experiences			
No	1	—	
Yes	5.79	1.91, 25.1	0.006
Aware of Oral Health Effects on Pregnancy			
Yes	1	—	
No	2.62	1.50, 4.69	<0.001
Avoid Treatment due to Pregnancy			
No	1	—	
Yes	2.18	1.37, 3.50	0.001
GAD Score			
Minimal to Mild Anxiety	1	—	
Moderate to Severe Anxiety	2.41	1.30, 4.66	0.007
Perceived Oral Health			
Good	1	—	
Moderate	2.37	1.42, 4.02	0.001
Poor	4.79	2.48, 9.60	<0.001
Treatment need			
Preventive or Prompt Treatment	1	—	
Immediate Treatment or Referral	3.09	1.88, 5.17	<0.001

¹ OR = Odds Ratio (unadjusted), CI = Confidence Interval, N = 304

The odds ratios and 95 percent confidence intervals for the significant factors associated with dental anxiety (identified through the cross tabulation and chi-square test of association) are provided in Table 4.24.

Table 4. 25 Factors associated with dental anxiety- results from Binary logistic regression analysis (Adjusted)

Characteristic	Model 1			Model 2		
	OR ¹	95% CI ¹	p-value	AOR ²	95% CI ¹	p-value
Education						
Secondary school or below	1					
Above Secondary school	0.71	0.42, 1.23	0.2			
Occupation of Respondent						
Others	1			1		
Housewife	1.68	0.84, 3.42	0.14	1.73	0.87, 3.47	0.120
Monthly family Income						
Below 30000	1			1		
Above or equal to 30000	0.66	0.37, 1.16	0.15	0.61	0.35, 1.06	0.080
Negative Experiences						
No	1			1		
Yes	6.73	1.99, 31.6	0.005	5.87	1.76, 27.3	0.009
Aware of Oral Health Effects on Pregnancy						
Yes	1			1		
No	1.89	0.96, 3.74	0.066	2.26	1.21, 4.33	0.012
Avoid Treatment due to Pregnancy						
No	1					
Yes	1.4	0.80, 2.44	0.2			
GAD Score						
Minimal to Mild Anxiety	1			1		
Moderate to Severe Anxiety	2.25	1.14, 4.62	0.023	2.3	1.17, 4.71	0.018
Treatment Need						
Preventive or Prompt Treatment	1			1		
Immediate Treatment or Referral	2.29	1.34, 3.94	0.003	2.64	1.61, 4.39	<0.001

¹ OR = Odds Ratio, ² AOR = Adjusted odds ratio, CI = Confidence Interval

Table 4. 26 Model Comparison Based on Log-Likelihood, P-value, AIC, and BIC

Model	Log Likelihood	P- value	AIC	BIC
Model - 1	-180.77	<0.001	383.55	424.44
Model -2	-183.84	<0.001	381.68	407.70

In the multiple regression models, initially all the variables were adjusted for each other, however, the variable perceived oral health was excluded from the model to eliminate any over adjustment as it is highly correlating with treatment needs (Model-1). A backward stepwise selection procedure was then employed to identify the best fit model (Model -2).

After adjusting for variables in the first model the variables negative experiences, GAD score and treatment need were found to be the significant predictors of dental anxiety. The variable aware of oral health effect on pregnancy was marginally significant in the model-1.

Model -2 also significantly identified the variables negative experiences, GAD scores and Treatment need. In addition, the variable “aware of oral health effect on pregnancy was found significant in model-2, which was only marginally significant in model-1

CHAPTER-5

DISCUSSION

Dental anxiety contributes to avoidance or delay of dental care among pregnant women. Despite the increased need for dental care during pregnancy, many women tend to postpone or avoid dental visits due to anxiety, related to dental procedures. According to available published literature, there is a scarcity of studies specifically related to dental anxiety among pregnant women in India.

Therefore, the present study was carried out to evaluate the oral health status, treatment needs, and dental anxiety among pregnant women. The findings of the study are discussed in the following sections.

5.1 The study participants and their characteristics

Pregnant women for this study were not selected from the general population but were recruited from secondary care hospitals. These hospitals were chosen as the study settings because they provide antenatal care to large number, including those referred from primary health care centres. The selection from these hospitals ensures reasonable coverage of both rural and urban population and included pregnant women from various income and educational background, which ensures reasonable representation. However, since the participants were not drawn from the general population, the findings may not be fully generalizable to all pregnant women, especially those who do not seek antenatal care in Government hospital settings. Additionally, coordinating with hospital staff and managing data collection within the busy outpatient departments required careful coordination and adaptability. Despite these challenges, the study successfully achieved good coverage of

the target group and provided valuable insights into the oral health status and anxiety levels among pregnant women attending secondary-level healthcare facilities.

During data collection, several challenges were encountered. Some participants were concerned about dental examinations during pregnancy and hesitant to open the mouth during examination.

Regarding gestational age, women from all three trimesters were proportionately included; however, the number of women in the first trimester was slightly lower compared to the other two trimesters. A study conducted by Payal et al., also reported a similar distribution across trimesters (Payal et al., 2017). This could be attributed to lower number of antenatal visits typically scheduled during the first trimester.

Majority of participants had completed secondary schooling or higher and most of the respondents were housewives, indicating minimal engagement in formal employment, and less than half of the pregnant women reported a lower monthly income.

Half of the pregnant women self-reported their general health as good and few of them reported history of thyroid, it could be due to hormonal changes that happen during pregnancy (Singh et al., 2025).

An increased intake of sugars and in between meal snacking attributable to increased risk of dental caries. (Tungare and Paranjpe, 2025). The study findings indicate an increased consumption of fruits among pregnant women, reflecting a positive dietary behaviour, possibly influenced by nutritional advice received during antenatal visits or a prioritising healthy eating habit during pregnancy. However, frequent intake of biscuits, cakes and sweets was also reported by pregnant women, indicating the preference for sugary and processed food.

5.2 Oral health awareness and dental care seeking pattern among study participants

The present study observed that the frequency of dental visit was low among the participants. Only 10 percent of the participants had a dental visit within one year. The main barrier for oral health care seeking was identified to be fear for the safety to child, miscarriages and anxiety towards the dental procedures (Ekanayake et al., 2023; Nazir and Alhareky, 2020).

In the current study only half of the participants ever visited a dental setup and in which seven percent reported negative dental experience. A study conducted by Ekanayake et al. reported 43.7 percent had negative experience. However, the lower percentage observed in the present study could be attributed to a larger number of participants who had never visited a dentist and differences in accessibility to oral healthcare. Additionally, study done in Saudi Arabia by Nazir and Alhareky reported 18.5 percent had negative experience during previous dental visits (Nazir and Alhareky, 2020). The availability and access to dental care may be better in these countries, which may leads to more frequent visits and higher chances of different experiences.

While considering the oral health status according to the perceptions of study participants, a range of oral health issues affecting both their daily functioning and emotional well-being were reported. Half of the participants experienced dental pain or discomfort, along with difficulty in chewing and biting. More than one third of the participants reported bleeding while brushing, and similar proportion experienced dry mouth. These conditions may be developed due to hormonal changes occurs during pregnancy and it usually appears to increase with gestational age (Silva de Araujo Figueiredo et al., 2017). Additionally, about one-third of the participants reported sleep interruption due to tooth-related pain over the past year. A small proportion of participants also avoided smiling and difficulty in doing

usual activities because of their tooth condition, which could negatively impacts self-esteem and affect overall quality of life.

In the present study, the majority of participants had not received any oral health advice from healthcare providers during their antenatal visits, and most were unaware of the impact of poor oral health on pregnancy. In contrast, a study by Ekanayake et al. reported that 52.2 percent of women received oral health advice during pregnancy, and 43.5 percent were aware of association between oral health and pregnancy outcomes. Similar to the current findings, a study conducted in Sri Lanka also reported that a significant number of women believed dental treatment should be avoided during pregnancy (Ekanayake et al., 2023).

5.3 Oral health status, treatment needs and associated factors

Present study shows, a high proportion of participants were found to have dental caries, as indicated by DMFT scores. The average number of affected teeth was comparable with study conducted by Prabhudessai et al., in tertiary care hospitals reported with DMFT score of 3.42 ± 3.18 (Mean, SD) (Prabhudessai et al., 2023). However, the average value in the present study was and comparatively lower than the values observed in studies by Geevarghese et al. and Patil et al. where they reported 7 ± 2.52 and 6.17 ± 4.36 respectively (Geevarghese et al., 2017; Patil and Taretia, 2020).

A study conducted among pregnant women attending military hospital, reported prevalence of DMFT of 75 percent and mean DMFT 3.7 (Homsavath et al., 2024). While age is a significant factor in determining DMFT, the present study did not find a statistically significant association. However, there was a noticeable trend of higher DMFT scores in the older age group (Velosa-Porras and Rodríguez Malagón, 2023).

Majority of participants in the present study had bleeding on probing, indicating widespread of gingival inflammation. These findings are similar with study conducted by Homsavath et al., who reported 82 percent gingivitis, and 16 percent with pocket depth of more than or equal to 4mm (Homsavath et al., 2024). Singh et al., who observed 76 percent reports gingival bleeding (bleeding on probing) and 32 percent reported pocket of 4mm or more in their (Singh et al., 2021).

Gingival bleeding (bleeding on probing) in present study was found to increase with maternal age, with older participants showing an increased gingivitis and a significant association. It also increased with gestation age showing a progressive rise in gingivitis from first to third trimester. This could be attributed to alteration in hormones during pregnancy, which also have impact on oral cavity (Silva de Araujo Figueiredo et al., 2017).

Periodontal pocket condition of 4-5mm also observed a slight increase in older participants and slight increasing trend from first trimester to third trimester.

In present study, maternal age showed a significant association with bleeding on probing (BoP) and pocket depth 4-5mm, indicating that age may be an important predictor of periodontitis in pregnant women. Similar observation from study conducted by Karunachandra et al reported older pregnant women were more likely to experience more severe forms of periodontal disease, which is consistent with the findings of the present study (Karunachandra et al., 2012).

5.3.1 Dental Treatment Needs among Pregnancy women

Overall, all participants were found to be in need of some form of treatment. Nearly half of participants are in need of immediate treatment due to pain or infection or referral for comprehensive evaluation, and the remaining needed preventive or prompt treatment. A study conducted in Raichur district reported that 95 percent of pregnant women required

some form of treatment either oral prophylaxis or periodontal treatment, restorative, root canal treatment, extraction and prosthesis (Gupta and Acharya, 2016). Similar findings were observed among pregnant women in a study conducted in Karnataka, where they observed 100 percent women in pregnant group need for improving personal oral hygiene and 6.67 percent need for complex surgical procedures (Kashetty et al., 2018). A study conducted in Maharashtra reported 93.7 percent require some form of treatment needs, this emphasise the importance of oral health awareness and dental check-ups during pregnancy.

The present study observed women in their second or later pregnancies had significantly lower odds of requiring urgent care, suggesting that prior pregnancy experience may lead to better oral health awareness and practices. Perceived oral health emerged as a strong predictor for treatment needs. Participants who perceived their oral health as moderate or poor were substantially more likely to require immediate care, indicating the value of self-perception as an indicator during antenatal visits.

Dietary habits such as soft drinks and coffee consumption also showed associations. Frequent coffee consumption was linked with increased treatment needs, while soft drink intake showed a lower association, possibly due to underreporting or accompanying healthy behaviours. Finding from present study highlight that oral health needs among pregnant women are influenced by gravida status, self-perception, and dietary habits. Incorporating oral health assessments and behavioural evaluations into routine antenatal care can facilitate early identification of dental issues and timely treatment.

5.4 Dental anxiety and associated factors

Present study observed that less than 10 percent of participants had high to severe (phobic) anxiety, with an overall prevalence of moderate to severe anxiety of **53.3 percent (95% CI : 48-59)**. The study conducted among pregnant women in Sri Lanka reported a slightly

higher prevalence 61.7 percent (Ekanayake et al., 2023). This difference could be attributed to variations in oral health care access, service availability and geographical variations. Nazir and Alhareky et al. reported a 16.1 percent prevalence of dental phobia among pregnant women, which differs from the findings of the present study (Nazir and Alhareky, 2020). In India, studies on dental anxiety among adults population who are attending the dental institution have reported prevalence ranging from 46 percent to 58.2 percent, with higher levels of anxiety observed among females compared to males (Appukuttan et al., 2015; Deogade and Suresan, 2016; Malvania and Ajithkrishnan, 2011; Marya et al., 2012). This suggest that, despite of significant advancements in modern techniques and technologies aims to improve patient comfort, dental anxiety remains prevalent in the study population.

In the present study, while considering the responses to the individual items in the MDAS scale, 66 percent were not anxious when thinking about upcoming dental treatment. Anxiety levels were more varied while thinking about waiting for the dental procedures and drilling procedures. In contrast, dental cleaning was perceived as a relatively non-threatening procedure, as the nearly 57 percent of participants reported no anxiety. However, injections triggered a higher level of dental anxiety, with a considerable number of participants expressing mild to severe anxiety. Results highlights that drilling and injections are among the most anxiety-provoking aspects of dental treatment for pregnant women (Table 4.14).

Although the comparison of age group for dental anxiety did not show a statistical significance in present study, younger participant's shows higher anxiety levels. This trend is consistent with findings from a study conducted among pregnant women in Sri Lanka, which also reported a non-significant association but observed greater anxiety among younger age groups compared to older women (Ekanayake et al., 2023). Several previous

studies among the adult population reported that younger individuals generally show higher levels of anxiety compared to older individuals (Acharya, 2008; Appukuttan et al., 2015; Deogade and Suresan, 2016; Gupta et al., 2015b; Locker et al., 1999b).

Pregnant women with higher education levels exhibits lower levels of dental anxiety, however it did not show a statistically significant association in adjusted analysis. This is contrast with findings reported by Ekanayake et al. who suggested that education may play a protective factor against dental anxiety (Ekanayake et al., 2023).

Among the participants, those with lower monthly income reported higher level of dental anxiety compared to higher income, though the association was marginally significant. This results were supported by study conducted by AlRatroot et al. reported that there was no association found between monthly family income and dental anxiety (AlRatroot et al., 2022). However, other studies such as Ekanayake et al. (2023), reported a significant association, suggests that monthly family income may influence anxiety levels through financial barrier to dental care (Ekanayake et al., 2023).

Past traumatic dental experiences plays a crucial role in triggering dental anxiety levels and enhances fear related to dental procedures and further contributing to delay or avoidance of dental visits. The results from present study demonstrates influence of negative experiences on dental anxiety, shows a good statistical association, the participants who had negative experiences had higher levels of dental anxiety and results are consistence with several previous studies where increased dental anxiety was associate with past negative experiences (AlRatroot et al., 2022; Ekanayake et al., 2023; Nazir and Alhareky, 2020). Similar trends have also been observed in studies conducted among Indian population, reinforcing the association between negative past experiences and increased

dental anxiety (Acharya, 2008; Appukuttan et al., 2015; Deogade and Suresan, 2016; Malvania and Ajithkrishnan, 2011).

Pregnant women who were not aware of the effects of oral health on pregnancy showed higher levels of dental anxiety. Similarly the avoidance of treatment during pregnancy is also significantly associated with increased dental anxiety. Similar results was observed in previous studies (Ekanayake et al., 2023). This could be due to fear of unknown, and inadequate knowledge, myths regarding safety of child , fear of miscarriages, misconception regarding the dental procedures, which enhances the fear, ultimately contributing to increased dental anxiety. This finding emphasizes the crucial role of antenatal education in reducing anxiety by improving awareness and confidence in seeking timely dental care during pregnancy.

Pregnant women who were experiencing moderate to severe general anxiety disorder exhibits high levels of dental anxiety, showing a statistical significant association with dental anxiety. This findings are supported by study conducted by Nazir et al., which reported a strong associated between dental anxiety and general anxiety disorder (Nazir et al., 2022). The present study highlights that individuals with dental anxiety may also be more susceptible to broader psychological distress, and need for integrating maternal and oral health support during pregnancy.

Participants requiring immediate dental treatment or referral for a comprehensive evaluation were more likely to exhibit higher levels of dental anxiety compared to preventive or prompt treatment. This findings suggests that urgency or severity of oral health conditions may contribute to heightened emotional distress, possibly due to fear of pain, invasive procedures, or previous negative experiences.

5.5 Strengths and limitations

Researcher itself conducted the interviews and oral health examinations for data collection. The study addresses an unexplored area of maternal health by focusing oral health treatment needs and dental anxiety among pregnant women. A relatively large sample size and use of standardized tools (WHO Oral health assessment, DMFT Index and MDAS scale) enhance the reliability of findings. The inclusion of both clinical assessment and self-reported measures enhance the understanding of oral health status and associated psychological factors.

The study conducted in government healthcare facilities, which may limits generalizability to pregnant women attending private healthcare setting or those not seeking antenatal care. Self-reported measures may be subjected to recall bias. Additionally, the cross-sectional design limits the ability to establish causal relationships between dental anxiety and its associated factors.

5.6 Conclusion and Recommendations

The prevalence of dental anxiety among pregnant women were found to be high and significantly associated with factors such as past negative dental experience, treatment needs and general anxiety disorder (GAD). Awareness of the impact of oral health on pregnancy appeared to reduce anxiety. The findings highlight the significant need for preventive and therapeutic strategies to address dental anxiety and general anxiety disorder, as well as the oral health care treatment needs among pregnant women. Oral health should be recognized as integral component of general health, especially during pregnancy. Antenatal care should include routine oral health assessments and services, integrated as one health into maternal care.

Dental professionals should actively assess the extent to which dental anxiety prevents attendance and understand the individual's history of anxiety. Recognising factors which contribute to dental anxiety is essential for effective management. Training dentists in communication skills, behavioural modification techniques, and basic psychological interventions will improve patient care and management.

Building patient trust by regular communication, clearly explaining procedures, and emotional support during treatment can help reduce anxiety and encourage patients to adhere to the treatment and dental care.

Pregnant women should be encouraged to undergo regular oral health screenings in health care settings. This helps establish a sense of trust and control, and reduces anxiety. Knowledge regarding the safety of undergoing dental procedures during pregnancy must be widely promoted to clear misconceptions and encourage timely care either preventive or immediate care.

Preventive strategies such as oral health awareness and education during antenatal visits, should be emphasised, these interventions ensure pregnant women maintain good oral hygiene practices and reduce the risk of developing oral diseases, thereby improving outcomes in both mothers and their children.

Strengthening the public dental care system is essential to provide affordable and accessible services. Early intervention and preventive care can significantly reduce the need for complex, high-cost dental procedures in the future.

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ANNEXURE 1

**Achutha Menon Centre for Health Science Studies (AMCHSS)
Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST)
Trivandrum -11, Kerala.**

PARTICIPANT INFORMATION SHEET

Study title:

Dental Anxiety among Pregnant Women Attending Secondary care Hospitals in West Godavari District, Andhra Pradesh.

Affiliation: Achutha Menon Centre for Health Sciences Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala.

Greetings,

I am Dr Harika Kumari P, pursuing my Master of Public Health (MPH) at Achutha Menon Centre for Health Science Studies (AMCHSS), Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala. This study is being carried out as part of the course requirements for the MPH degree which I am currently undertaking. This study is being done under the guidance of Dr Jissa VT Professor at AMCHSS. If this information sheet contains any words or information that you do not understand, please feel free to clarify these. You may also ask any question related to this study.

Purpose of study

This research aims to assess the oral health status, treatment needs, and dental anxiety among pregnant women attending Secondary care hospitals such as District Hospital, Area Hospitals and CHCs for antenatal visits in West Godavari District, Andhra Pradesh. It will explore how dental anxiety affects dental visits and its impact on the oral health of pregnant women. Currently, there are no studies available on dental anxiety among pregnant women or the factors influencing dental anxiety and oral health status. The results of the study will help us to identify the problems and guide the development of oral health programs for pregnant women.

Procedure

The survey will take approximately 20–30 minutes of your time and will be conducted in private to ensure confidentiality. You will be asked a few questions about your socio-demographic profile, oral health practices and dental anxiety. I will also examine your oral cavity. If you feel any discomfort or find something difficult

to understand, you may stop me at any point, and I will take time to clarify your doubts before continuing. The collected data will be used for research purposes only.

Risks and discomforts

Participation in this study imposes no risk to your health. All the questions will be asked only after permission with proper privacy. The oral examination will involve inspection and palpation only, with no invasive procedures.

Benefits

By participating in this study, you'll undergo examination of the oral cavity and if you need further care from a dentist, we will help connect you with the dental department. We will also provide guidance on proper oral health practices.

Your participation will help us to assess the Oral health status and Dental anxiety among pregnant women, their Treatment needs and how Dental anxiety affects their oral health status. There may not be any direct benefit for you from this study, but your participation will provide valuable insights into the oral health of pregnant women. This information will help us to plan dental programs for the pregnant women.

Confidentiality

You will be interviewed and your oral cavity will be examined in private. All information related to you will be kept confidential and at no stage will your identity be revealed. A respondent identification number will be assigned to each participant which will help in maintaining the confidentiality of the data collected. Access to this respondent identification number will be restricted to those analyzing the data only.

Voluntary participation

Your participation in this study is purely voluntary which means you can decide whether to participate in the study or not. If at any stage you wish to discontinue, you are free to do so without any adverse consequences. No incentives will be provided for taking part in the study.

Funding:

I am doing this research at my own expense.

Contact information

If you have any questions, or concerns, or require further information about the study,

please feel free to contact me and for any queries about this study, you can get the Member Secretary, Institutional Ethics Committee (IEC) of SCTIMST.

1. Principal Investigator

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Thank you for considering participation in this study.

Sincerely,

Dr Harika Kumari P

ANNEXURE II

Dental Anxiety among Pregnant Women Attending Secondary care Hospitals in West Godavari District, Andhra Pradesh.

CONSENT FORM

Participant ID: _____

I have been invited to participate in the thesis titled “Dental Anxiety among Pregnant Women Attending Secondary care Hospitals in West Godavari District, Andhra Pradesh”. I have read the information provided about the study, or it has been explained to me, and I have had the opportunity to ask any questions. All my questions have been answered to my satisfaction. I understand that participating in this study involves minimal risk, and while there may be no immediate direct benefit, I am aware that my participation is voluntary and I will not receive any incentives. I also understand that my personal information will be kept confidential, and I have the right to withdraw my consent at any time of the study.

Participant Name: _____

Participant Signature /Thumb Impression

Place: _____

Date: _____

Signature of Witness
(In case of thumb impression)

I (The researcher) confirm that the participant had the chance to ask any questions about the study, and I answered them fully and accurately. I also confirm that the participant was not forced to give consent and has agreed to take part willingly and freely.

Name of the Researcher: _____

Signature of the Researcher

ANNEXURE III

Dental Anxiety among Pregnant Women Attending Secondary care Hospitals in West Godavari District, Andhra Pradesh.

Interview schedule

Section A: Questions for Demographic details, Oral Health Questionnaire and General Anxiety Disorder Questions.

Demographic details:				
Participant ID		□□□□		
District Hospital/Area Hospital/CHC				
1	Name			
2	Age			
3	Address:	Panchayat		
		Mandal/Taluk		
		District		
4	Religion	Hindu	1	☐
		Christian	2	☐
		Muslim	3	☐
		Others	4	☐
		Specify		
5	Marital Status	Married	1	☐
		Divorced	2	☐
		Widow	3	☐
		Other	4	☐
		Specify		
6	Educational status of respondent	Illiterate	1	☐
		No Formal Schooling	2	☐
		Primary School(1-5th std)	3	☐
		Secondary School(6th -10th)		
		Intermediate/Diploma (11th – 12th Std)	4	☐
			5	☐
		Graduate	6	☐
		Post-Graduate and above	7	☐
	8	☐		
7	Occupation of respondent	Housewife	1	☐
		Agriculture	2	☐
		Daily wage labourer	3	☐

		Self-employed	4	☐
		Private employee	5	☐
		Government employee	6	☐
		Others	7	☐
		Specify.....		
8	Occupation of spouse	Agriculture	1	☐
		Daily wage labourer	2	☐
		Self-employed	3	☐
		Private employee	4	☐
		Government employee	5	☐
		Others	6	☐
		Specify.....		

Socioeconomic characteristics

9	Type of family	Nuclear	1	☐
		Joint	2	☐
		Extended	3	☐
10	Total monthly income of your family			

Medical History

11	Are you pregnant for first time?	Yes	1	☐
		No	2	☐
11.1	If No, Including your current pregnancy, how many times have you been pregnant?	Second		☐
		Three		☐
		More than three		☐
12	Current gestational age	First trimester	1	☐
		Second trimester	2	☐
		Third trimester	3	☐
13	How is your general health?	Good	1	☐
		Moderate	2	☐
		Poor	3	☐
14	Do you have any history of any of these Disease/Condition?	Hypertension	1	☐
		Diabetes Mellitus	2	☐
		Asthma	3	☐
		Thyroid	4	☐
		Tuberculosis	5	☐
		Others	6	☐

		specify		
14.1	If yes, Are you currently under medication for any of the above mentioned Disease/Condition?	Hypertension Diabetes Mellitus Asthma Thyroid Tuberculosis Others specify	1 2 3 4 5 6	☐ ☐ ☐ ☐ ☐ ☐
15	Do you have frequent vomiting's?	Yes No	1 2	☐ ☐
15.1	If Yes, How frequently?	1–3 times a week 4–7 times a week More than once a day	1 2 3	☐ ☐ ☐

Oral Health Questionnaire

16	During the past 12 months, did your teeth or mouth cause any pain or discomfort? a. Yes b. No c. Don't know d. No answer	1 2 3 4	☐ ☐ ☐ ☐
17	How often do you clean your teeth? a. Never b. Once a month c. 2–3 times a month d. Once a week e. 2–6 times a week f. Once a day g. Twice or more a day	1 2 3 4 5 6 7	☐ ☐ ☐ ☐ ☐ ☐ ☐
18	Do you use any of the following to clean your teeth? (Read each item) a. Toothbrush b. Toothpicks c. Thread (dental floss) d. Chewstick e. Other Please specify	1 2 3 4 5	☐ ☐ ☐ ☐ ☐
19	How do you clean your teeth?	Tooth paste Tooth powder Charcoal	1 ☐ 2 ☐

		Salt Others specify	3 ☐ 4 ☐ 5 ☐
20	Does it bleed from the gums while brushing your teeth?	Yes No	1 ☐ 2 ☐
21	How would you describe your oral health?	Good Moderate Poor	1 ☐ 2 ☐ 3 ☐
22	How long is it since you last saw a dentist? a. Less than 6 months b. 6–12 months c. More than 1 year but less than 2 years d. 2 years or more but less than 5 years e. 5 years or more f. Never received dental care	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
23	What was the reason of your last visit to the dentist? a. Consultation/advise b. Pain or trouble with teeth, gums or mouth c. Treatment/ follow-up treatment d. Routine check-up/treatment e. Don't know/don't remember	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
24	On that visit, what treatment was carried out? a. Examination b. Cleaning c. Filling d. Extraction e. Others Specify	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
25	Do you have any prior negative dental experiences during treatment?	If Yes Specify..... NO	1 ☐ 2 ☐

26. Because of the state of your teeth or mouth, how often have you experienced any of the following problems during the past 12 months?					
	Very Often (4)	Fairly Often (3)	Some-Times (2)	No (1)	Don't Know(0)
(a) Difficulty in biting foods	☐	☐	☐	☐	☐
(b) Difficulty chewing foods	☐	☐	☐	☐	☐
(c) Difficulty with speech/trouble pronouncing words	☐	☐	☐	☐	☐
(d) Dry mouth	☐	☐	☐	☐	☐
(e) Felt embarrassed due to appearance of teeth	☐	☐	☐	☐	☐
(f) Felt tense because of problems with teeth or mouth	☐	☐	☐	☐	☐
(g) Have avoided smiling because of teeth	☐	☐	☐	☐	☐
(h) Had sleep that is often interrupted	☐	☐	☐	☐	☐
(i) Have taken days off work	☐	☐	☐	☐	☐
(j) Difficulty doing usual activities	☐	☐	☐	☐	☐
(k) Felt less tolerant of spouse or people who are close to you	☐	☐	☐	☐	☐
(l) Have reduced participation in social activities	☐	☐	☐	☐	☐

27. How often do you eat or drink any of the following foods, even in Small quantities? (Read each item)						
	Several times a day (6)	Every Day (5)	Several times a week (4)	Once a week (3)	Several times a month(2)	Seldom/ never (1)
a. Fresh fruit						
b. Biscuits, cakes, cream cakes						
c. Sweets/candy						
d. Lemonade, Coca cola or other soft drinks						
e. Tea with sugar						
f. Coffee with sugar						

28	Do you have habit of using any form of tobacco products? If Yes,	Yes No	1 ☐ 2 ☐
	1.Chewing	Yes No	1 ☐ 2 ☐
	2.Smoking	Yes No	1 ☐ 2 ☐
28.1.1	If yes, Which type of tobacco products do you chew? a. Betel quid b. Pan masala c. Gutkha d. Khaini e. Others Specify	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
28.2.1	If yes, Which type of tobacco products do you smoke? a. Chutta b. Bidi c. Cigarette d. Others specify	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
29	Have you received advice about oral health from a health care provider during antenatal visit?	Yes No	1 ☐ 2 ☐
30	Are you aware that having poor oral health can affect your pregnancy?	Yes No	1 ☐ 2 ☐
31	Can you tell me if it is necessary to avoid dental treatment during pregnancy?	Yes No	1 ☐ 2 ☐
31.1	Why you think dental treatment should avoid during pregnancy?		
32	Whether you postponed any Dental Treatment during pregnancy?(Including previous)	Yes No	1 ☐ 2 ☐

33	Generalized Anxiety Disorder scale (GAD-7)				
S/no.	Questions	Not at all	Several days	More than half the days	Nearly every day
33.1	Feeling nervous, anxious or on edge	0	1	2	3
33.2	Not being able to stop or control worrying	0	1	2	3
33.3	Worrying too much about different things	0	1	2	3
33.4	Trouble relaxing	0	1	2	3
33.5	Being so restless that it is hard to sit still	0	1	2	3
33.6	Becoming easily annoyed or irritable	0	1	2	3
33.7	Feeling afraid as if something awful might happen	0	1	2	3

For office coding: Total Score T_____ = _____ + _____ + _____)

Section B: Oral Health Examinations

ORAL HEALTH EXAMINATIONS

34. DMFT (Decayed, Missed, Filled tooth) Index																
Permanent teeth Status																
Condition (D/M/F)																
Upper	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Lower	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Condition (D/M/F)																

D- Decayed tooth M-Missing tooth F- Filled tooth																																																																							
Tooth count			Number																																																																				
Number of Teeth present																																																																							
Number of Caries Free Teeth																																																																							
Number of Decayed Teeth																																																																							
Number of Missing Teeth																																																																							
Number of Filled Teeth																																																																							
Total DMF teeth																																																																							
35. Community Periodontal Index (CPI)																																																																							
18 17 16 15 14 13 12 11 21 22 23 24 25 26 27 28 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td> <td rowspan="2" style="padding: 5px; vertical-align: middle;">Bleeding Pocket</td> </tr> <tr> <td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td><td style="width: 16.6%; height: 20px;"></td> <td rowspan="2" style="padding: 5px; vertical-align: middle;">Bleeding Pocket</td> </tr> <tr> <td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td> </tr> </table> 48 47 46 45 44 43 42 41 31 32 33 34 35 36 37 38																						Bleeding Pocket																																	Bleeding Pocket																
																Bleeding Pocket																																																							
																Bleeding Pocket																																																							
35.1	Gingival bleeding Score		35.2	Pocket Score																																																																			
	Absence of condition	0 ☐		Absence of condition	0 ☐																																																																		
	Presence of condition	1 ☐		Pocket 4-5 mm	1 ☐																																																																		
	Tooth excluded	9 ☐		Pocket 6mm or more	2 ☐																																																																		
	Tooth not present	X ☐		Tooth excluded	9 ☐																																																																		
				Tooth not present	X ☐																																																																		
36	Enamel fluorosis Present		Yes No		1 ☐ 2 ☐																																																																		
37	Dental erosion Severity ☐																																																																						

	a. No sign of erosion b. Enamel lesion c. Dentinal lesion d. Pulp involvement	0 1 2 3
	Number of teeth affected	□□
38	Dental trauma	□
	Status a. No sign of injury b. Treated injury c. Enamel fracture only d. Enamel and dentine fracture e. Pulp involvement f. Missing tooth due to trauma g. other damage h. Excluded tooth	1 2 3 4 5 6 7 8
	Number of teeth affected	□□
39	Oral mucosal lesions	□
	Condition a. No abnormal condition b. Malignant tumour (oral cancers) c. Leukoplakia d. d.Lichen planus e. Ulceration (aphthous herpetic, traumatic) f. Acute necrotizing ulcerative gingivitis (ANUG) g. Candidiasis h. Abscess i. other condition (specify if possible) j. Not recorded	1 2 3 4 5 6 7 8 9

40	Denture(s) Status a. No denture b. Partial denture c. Complete denture d. Not recorded	a. Upper ☐ b. Lower ☐ 0 1 2 9
41	Intervention urgency a. No treatment needed b. Preventive or routine treatment needed c. Prompt treatment (including scaling) needed d. Immediate (urgent) treatment needed due to pain or infection of dental and/or oral origin e. Reference for comprehensive evaluation or medical/ dental treatment (systemic condition)	☐ 0 1 2 3 4

Section C: Questions for Dental Anxiety

42.	The Modified Dental Anxiety Scale (MDAS)	
42.1	If you went to your dentist for treatment tomorrow, how would you feel? a. Not anxious b. Slightly anxious c. Fairly anxious d. Very anxious e. Extremely anxious	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
42.2	If you were sitting in the waiting room (waiting for treatment), how would you feel? a. Not anxious	1 ☐ 2 ☐

	b. Slightly anxious c. Fairly anxious d. Very anxious e. Extremely anxious	3 ☐ 4 ☐ 5 ☐
42.3	If you were about to have a tooth drilled, how would you feel? a. Not anxious b. Slightly anxious c. Fairly anxious d. Very anxious e. Extremely anxious	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
42.4	If you were about to have your teeth scaled and polished, how would you feel? a. Not anxious b. Slightly anxious c. Fairly anxious d. Very anxious e. Extremely anxious	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
42.5	If you were about to have a local anaesthetic injection in your gum, about an upper back tooth, how would you feel? a. Not anxious b. Slightly anxious c. Fairly anxious d. Very anxious e. Extremely anxious	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Thank you for your Participation

ANNEXURE IV

అచ్యుత మీనన్ సెంటర్ ఫర్ హెల్త్ సైన్స్ స్టడీస్ (ఎఎంసీహెచ్ఎస్ఎస్)
శ్రీ చిత్ర తిరునాళ్ ఇన్ స్టిట్యూట్ ఫర్ మెడికల్ సైన్సెస్ అండ్ టెక్నాలజీ
(ఎస్ సీటీఐఎంఎస్ టీ)
త్రివేండ్రం-11, కేరళ.

పాల్గొనేవారి సమాచార పత్రం

అధ్యయన శీర్షిక:

ఆంధ్రప్రదేశ్ లోని పశ్చిమగోదావరి జిల్లాలో సెకండరీ కేర్ ఆసుపత్రులకు
హాజరయ్యే గర్భిణీ స్త్రీలలో దంత ఆందోళన అంచన.

అనుబంధం: అచ్యుత మీనన్ సెంటర్ ఫర్ హెల్త్ సైన్సెస్ స్టడీస్, శ్రీ చిత్ర
తిరునాళ్ ఇన్ స్టిట్యూట్ ఫర్ మెడికల్ సైన్సెస్ అండ్ టెక్నాలజీ,
తిరువనంతపురం, కేరళ.

నమస్కారం,

నేను డాక్టర్ హరిక కుమారి పి, కేరళలోని త్రివేండ్రంలోని శ్రీ చిత్ర తిరునాళ్
ఇన్ స్టిట్యూట్ ఫర్ మెడికల్ సైన్సెస్ అండ్ టెక్నాలజీలోని అచ్యుత మీనన్ సెంటర్
ఫర్ హెల్త్ సైన్స్ స్టడీస్ (ఎఎంసీహెచ్ఎస్ఎస్) లో మాస్టర్ ఆఫ్ పబ్లిక్ హెల్త్ (ఎంపిహెచ్)
చదువుతున్నాను. నేను ప్రస్తుతం చేపడుతున్న ఎంపిహెచ్ డిగ్రీ కొరకు కోర్సు
ఆవశ్యకతల్లో భాగంగా ఈ అధ్యయనం చేపట్టబడుతోంది.

ఎఎంసీహెచ్ఎస్ఎస్లోని డాక్టర్ జిస్సా వీటీ ప్రొఫెసర్ ఆధ్వర్యంలో ఈ అధ్యయనం
జరుగుతోంది. ఈ సమాచార పత్రంలో మీకు అర్థం కాని సమాచారం లేదా పదాలు కాని
ఉన్నట్లయితే, దయచేసి వీటిని స్పష్టం చేయడానికి సంకోచించకండి. ఈ
అధ్యయనానికి సంబంధించిన ఏవైనా ప్రశ్నలను కూడా మీరు అడగవచ్చు.

అధ్యయనం యొక్క ఉద్దేశ్యం

ఆంధ్రప్రదేశ్ లోని పశ్చిమగోదావరి జిల్లాలో ప్రసవానంతర సందర్శనల కోసం జిల్లా
ఆసుపత్రి, ఏరియా ఆసుపత్రులు మరియు సిహెచ్ సిలకు హాజరయ్యే గర్భిణీ స్త్రీల
నోటి ఆరోగ్య స్థితి, చికిత్స అవసరాలు మరియు దంత ఆందోళనను అంచనా
వేయడం ఈ పరిశోధన లక్ష్యం. దంత ఆందోళన దంత సందర్శనలను ఎలా

ప్రభావితం చేస్తుందో మరియు గర్భిణీ స్త్రీల నోటి ఆరోగ్యంపై దాని ప్రభావాన్ని ఇది అన్వేషిస్తుంది. ప్రస్తుతం, గర్భిణీ స్త్రీలలో దంత ఆందోళన లేదా దంత ఆందోళన మరియు నోటి ఆరోగ్య స్థితిని ప్రభావితం చేసే కారకాలపై అధ్యయనాలు అందుబాటులో లేవు. అధ్యయన ఫలితాలు సమస్యలను గుర్తించడానికి మరియు గర్భిణీ స్త్రీల కోసం నోటి ఆరోగ్య కార్యక్రమాల అభివృద్ధికి మార్గనిర్దేశం చేయడానికి మాకు సహాయపడతాయి.

విధానము

ఈ సర్వే మీ సమయంలో సుమారు 20-30 నిమిషాలు పడుతుంది మరియు గోప్యతను ధృవీకరించడం కొరకు వ్యక్తిగతంగా నిర్వహించబడుతుంది. మీ సామాజిక-జనాభా ప్రొఫైల్, నోటి ఆరోగ్య పద్ధతులు మరియు దంత ఆందోళన గురించి మిమ్మల్ని కొన్ని ప్రశ్నలు అడుగుతారు. నేను మీ నోటిని కూడా పరిశీలిస్తాను. మీకు ఏదైనా అసౌకర్యం అనిపిస్తే లేదా అర్థం చేసుకోవడం కష్టంగా అనిపిస్తే, మీరు ఏ సమయంలోనైనా నన్ను ఆపవచ్చు మరియు కొనసాగడానికి ముందు మీ సందేహాలను నివృత్తి చేయడానికి నేను సమయం తీసుకుంటాను. సేకరించిన డేటా పరిశోధన ప్రయోజనాల కొరకు మాత్రమే ఉపయోగించబడుతుంది.

ప్రమాదాలు మరియు అసౌకర్యాలు

ఈ అధ్యయనంలో పాల్గొనడం వల్ల మీ ఆరోగ్యానికి ఎలాంటి ప్రమాదం ఉండదు. సరైన ప్రైవసీతో అనుమతి పొందిన తర్వాతే అన్ని ప్రశ్నలు అడుగుతారు. నోటి పరీక్షలో ఎటువంటి విధానాలు ఉండవు, మరియు నోటి పరీక్షమాత్రమే ఉంటుంది.

ప్రయోజనాలు

ఈ అధ్యయనంలో పాల్గొనడం ద్వారా, మీరు నోటి యొక్క పరీక్షకు లోనవుతారు మరియు దంతవైద్యుడి నుండి మీకు మరింత సంరక్షణ అవసరమైతే, మేము మిమ్మల్ని దంత విభాగంతో కనెక్ట్ చేయడంలో సహాయపడతాము. సరైన నోటి ఆరోగ్య పద్ధతులపై కూడా మేము మార్గదర్శకత్వం అందిస్తాము.

గర్భిణీ స్త్రీలలో నోటి ఆరోగ్య స్థితి మరియు దంత ఆందోళన, వారి చికిత్స అవసరాలు మరియు దంత ఆందోళన వారి నోటి ఆరోగ్య స్థితిని ఎలా ప్రభావితం చేస్తుందో అంచనా వేయడానికి మీరు పాల్గొనడం మాకు సహాయపడుతుంది, ఈ అధ్యయనం నుండి మీకు ప్రత్యక్ష ప్రయోజనం ఉండకపోవచ్చు, కానీ మీరు పాల్గొనడం గర్భిణీ స్త్రీల నోటి ఆరోగ్యంపై విలువైన అంతర్దృష్టులను అందిస్తుంది. గర్భిణీ స్త్రీల కోసం దంత కార్యక్రమాలను ప్లాన్ చేయడానికి ఈ సమాచారం మాకు సహాయపడుతుంది.

గోప్యత

మీరు ఇంటర్వ్యూ చేయబడతారు మరియు మీ నోటిని ప్రైవేట్ గా పరీక్షించబడుతుంది. మీకు సంబంధించిన మొత్తం సమాచారం గోప్యంగా ఉంచబడుతుంది మరియు ఏ దశలోనూ మీ గుర్తింపు బహిర్గతం చేయబడదు. సేకరించిన డేటా యొక్క గోప్యతను నిర్వహించడంలో సహాయపడే ప్రతి పార్థిసిపెంట్ కు ప్రతిస్పందకుడి గుర్తింపు నెంబరు కేటాయించబడుతుంది. ఈ ప్రతిస్పందకుడి గుర్తింపు సంఖ్యకు ప్రాప్యత డేటాను విశ్లేషించే వారికి మాత్రమే పరిమితం చేయబడుతుంది.

స్వచ్ఛంద భాగస్వామ్యం

ఈ అధ్యయనంలో మీరు పాల్గొనడం పూర్తిగా స్వచ్ఛందం, అంటే అధ్యయనంలో పాల్గొనాలా వద్దా అని మీరు నిర్ణయించుకోవచ్చు. ఏ దశలోనైనా మీరు నిలిపివేయాలని అనుకుంటే, ఎటువంటి ప్రతికూల పరిణామాలు లేకుండా చేయడానికి మీకు స్వేచ్ఛ ఉంది. అధ్యయనంలో పాల్గొనడం కొరకు ఎలాంటి ప్రోత్సాహకాలు అందించబడవు.

నిధులు:

నా సొంత ఖర్చులతో ఈ పరిశోధన చేస్తున్నాను.

కాంటాక్ట్ సమాచారం

ఒకవేళ మీకు ఏవైనా ప్రశ్నలు, లేదా ఆందోళనలు ఉన్నట్లయితే, లేదా అధ్యయనం గురించి మరింత సమాచారం అవసరమైతే, దయచేసి నన్ను సంప్రదించడానికి సంకోచించకండి మరియు ఈ అధ్యయనం గురించి ఏవైనా సందేహాల కొరకు, మీరు SCTIMST యొక్క సంస్థాగత నైతిక విలువల కమిటీ

(IEC) సభ్య కార్యదర్శిని పొందవచ్చు.

1. ప్రధాన పరిశోధకుడు

డాక్టర్ హారిక కుమారి పి.
ఎంపీహెచ్ స్టూడెంట్
ఎంపీహెచ్ఎస్ఎస్, ఎస్సీటీఐఎంఎస్సీ,
మెడికల్ కాలేజ్ (పీవో), తిరువనంతపురం-11
ఇమెయిల్ ఐడి: harika.indira@gmail.com
మొబైల్: +91 8330939679.

2. గైడ్

డాక్టర్ జిస్సా వి.టి.
సైంటిస్ట్ డి,
ఎంపీహెచ్ఎస్ఎస్, ఎస్సీటీఐఎంఎస్సీ,
మెడికల్ కాలేజ్ (పీవో), తిరువనంతపురం-11
ఇమెయిల్ ఐడి: jissa@sctimst.ac.in
మొబైల్ నెంబరు: 9497130421.

2. ఐఈసీ సభ్య కార్యదర్శి

డాక్టర్ శ్రీనివాస్ జి.
సభ్య కార్యదర్శి,
సంస్థాగత నైతిక విలువల కమిటీ,
ఎస్సీటీఐఎంఎస్సీ, త్రివేంద్రం 695011
కాంటాక్ట్ నెంబరు: 04712524689 (ఆఫీసు)
ఇమెయిల్ ఐడి: iec.mem.sec@sctimst.com

ఈ అధ్యయనంలో పాల్గొనడాన్ని పరిగణనలోకి తీసుకున్నందుకు
హృదయపూర్వక ధన్యవాదాలు.

డాక్టర్ హారిక కుమారి పి.

ANNEXURE V

ఆంధ్రప్రదేశ్ లోని పశ్చిమగోదావరి జిల్లాలో సెకండరీ కేర్
ఆసుపత్రులకు హాజరయ్యే గర్భిణీ స్త్రీలలో దంత ఆందోళనను
అంచనా వేయడం.

సమ్మతి పత్రం

పార్టిసిపెంట్ ఐడీ: _____

"ఆంధ్రప్రదేశ్ లోని పశ్చిమగోదావరి జిల్లాలో సెకండరీ కేర్ ఆసుపత్రులకు హాజరయ్యే
గర్భిణీ స్త్రీలలో దంత ఆందోళన" అనే థీసిస్ లో పాల్గొనడానికి నన్ను
ఆహ్వానించారు."

అధ్యయనం గురించి అందించబడ్డ సమాచారాన్ని నేను చదివాను, లేదా అది నాకు
వివరించబడింది, మరియు ఏవైనా ప్రశ్నలు అడిగేందుకు నాకు అవకాశం
లభించింది. నా ప్రశ్నలన్నింటికీ సంతృప్తికరంగా సమాధానాలు ఇచ్చారు. ఈ
అధ్యయనంలో పాల్గొనడం అనేది తక్కువ ప్రమాదాన్ని కలిగి ఉంటుందని మరియు
తక్షణ ప్రత్యక్ష ప్రయోజనం లేనప్పటికీ, నేను పాల్గొనడం స్వచ్ఛందమని మరియు
నేను ఎటువంటి ప్రోత్సాహకాలను పొందనని నాకు తెలుసు. నా వ్యక్తిగత సమాచారం
గోప్యంగా ఉంచబడుతుందని కూడా నేను అర్థం చేసుకున్నాను మరియు
అధ్యయనం యొక్క ఏ సమయంలోనైనా నా సమ్మతిని ఉపసంహరించుకునే హక్కు
నాకు ఉంది.

పాల్గొనే వ్యక్తి పేరు:

పాల్గొనే వ్యక్తి ఐడీ:

పాల్గొనేవారి సంతకం

/ బొటనవేలు ముద్ర

స్థలం:

తేదీ:

సాక్షి సంతకం

(బొటనవేలి ముద్ర వేసిన సందర్భంలో)

అధ్యయనం గురించి ఏవైనా ప్రశ్నలు అడిగే అవకాశం పాల్గొనేవారికి ఉందని నేను (పరిశోధకుడు) ధృవీకరిస్తున్నాను మరియు నేను వాటికి పూర్తిగా మరియు ఖచ్చితంగా సమాధానం ఇచ్చాను. పాల్గొనేవారు సమృత్తి ఇవ్వమని బలవంతం చేయలేదని మరియు ఇష్టపూర్వకంగా మరియు స్వేచ్ఛగా పాల్గొనేందుకు అంగీకరించారని కూడా నేను ధృవీకరిస్తున్నాను.

పరిశోధకుని పేరు:

పరిశోధకుని సంతకం

ANNEXURE VI

**ఆంధ్రప్రదేశ్ లోని పశ్చిమగోదావరి జిల్లాలో సెకండరీ కేర్
ఆసుపత్రులకు హాజరయ్యే గర్భిణీ స్త్రీలలో దంత ఆందోళన
అంచన.**

ఇంటర్వ్యూ షెడ్యూల్

సెక్షన్ ఎ: డెమోగ్రాఫిక్ వివరాలు, నోటి ఆరోగ్య, సాధారణీకరించిన ఆందోళన రుగ్మత స్కేల్

ప్రశ్నావళి కొరకు ప్రశ్నలు

జనాభా వివరాలు:				
పార్థిసిపెంట్ ఐడి		□□□□		
జిల్లా ఆసుపత్రి/ఏరియా ఆసుపత్రి/సీహెచ్సీ				
1	పేరు			
2	వయసు			
3	చిరునామా:	పంచాయితీ		
		మండలం/తాలూకా		
		జిల్లా		
4	మతము	హిందు	1	□
		క్రైస్తవుడు	2	□
		ముస్లిం	3	□
		ఇతరులు	4	□
		పేర్కొనండి.....		
5	వైవాహిక స్థితి	పెళ్లైన	1	□
		విడాకులు తీసుకున్నారు.	2	□
		భర్తలేని	3	□
			4	□

		ఇతర పేర్కొనండి	
6	ప్రతిస్పందకుని యొక్క విద్యా స్థితి	నిరక్షరాస్యుడు అధికారిక పాఠశాల విద్య లేదు ప్రాథమిక పాఠశాల(1-5వ తరగతి) మాధ్యమిక పాఠశాల (6 వ - 10 వ) ఇంటర్మీడియట్/ డిప్లోమా (11 నుంచి 12వ తరగతి) పట్టభద్రుడు పోస్ట్ గ్రాడ్యుయేట్ మరియు అంతకంటే ఎక్కువ	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
7	ప్రతిస్పందకుని యొక్క వృత్తి	ఇల్లాలు వ్యవసాయం దినసరి కూలీ స్వయం ఉపాధి.. ప్రైవేట్ ఉద్యోగి ప్రభుత్వ ఉద్యోగి ఇతరులు పేర్కొనండి.....	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
8	జీవిత భాగస్వామి యొక్క వృత్తి	వ్యవసాయం దినసరి కూలీ స్వయం ఉపాధి.. ప్రైవేట్ ఉద్యోగి ప్రభుత్వ ఉద్యోగి ఇతరులు పేర్కొనండి.....	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐

సామాజిక ఆర్థిక లక్షణాలు

9	కుటుంబ రకం	అణు కుటుంబం ఉమ్మడి పొడిగించబడింది	1 2 3	☐ ☐ ☐
10	మీ కుటుంబం యొక్క మొత్తం నెలవారీ ఆదాయం			

వైద్య చరిత్ర

11	మీరు మొదటిసారి గర్భవతిగా ఉన్నారా?	అవును కాదు	1 2	☐ ☐
11.1	ఒకవేళ లేదు అయితే, మీ ప్రస్తుత గర్భంతో సహా, మీరు ఎన్నిసార్లు గర్భవతి అయ్యారు?	రెండవ మూడు మూడు కంటే ఎక్కువ		☐ ☐ ☐
12	ప్రస్తుత గర్భధారణ వయస్సు	మొదటి త్రైమాసికం రెండవ త్రైమాసికం మూడవ త్రైమాసికం	1 2 3	☐ ☐ ☐
13	మీ సాధారణ ఆరోగ్యం ఎలా ఉంది?	యోగ్యమైన మితంగా పేద	1 2 3	☐ ☐ ☐
14	మీకు ఈ వ్యాధి/పరిస్థితి యొక్క ఏదైనా చరిత్ర ఉందా?	అధిక రక్తపోటు డయాబెటిస్ మెల్లిటస్ ఉబ్బసం థైరాయిడ్ క్షయ ఇతరులు పేర్కొనండి	1 2 3 4 5 6	☐ ☐ ☐ ☐ ☐ ☐
14.1	ఒకవేళ అవును అయితే, పైన పేర్కొన్న ఏదైనా వ్యాధి/పరిస్థితి కొరకు మీరు ప్రస్తుతం ఔషధాలు	అధిక రక్తపోటు డయాబెటిస్ మెల్లిటస్ ఉబ్బసం	1 2 3 4	☐ ☐ ☐ ☐

	వాడుతున్నారా?	థైరాయిడ్ క్షయ ఇతరులు పేర్కొనండి	5 6	☐ ☐
15	మీకు తరచూ వాంతులు అవుతున్నాయా?	అవును కాదు	1 2	☐ ☐
15.1	ఒకవేళ అవును అయితే, ఎంత తరచుగా?	వారానికి 1-3 సార్లు వారానికి 4-7 సార్లు రోజుకు ఒకటి కంటే ఎక్కువసార్లు	1 2 3	☐ ☐ ☐

ఓరల్ హెల్త్ ప్రశ్నావళి

16	గడిచిన 12 నెలల కాలంలో, మీ దంతాలు లేదా నోరు ఏదైనా నొప్పి లేదా అసౌకర్యాన్ని కలిగించాయా? a. అవును b. కాదు c. తెలియదు d. సమాధానం లేదు	1 2 3 4	☐ ☐ ☐ ☐
17	మీరు మీ దంతాలను ఎంత తరచుగా శుభ్రపరుస్తారు? a. ఎన్నడూ లేదు b. నెలకు ఒకసారి c. నెలకు 2-3 సార్లు d. వారానికి ఒకసారి e. వారానికి 2-6 సార్లు f. రోజుకు ఒకసారి g. రోజుకు రెండు లేదా అంతకంటే ఎక్కువ	1 2 3 4 5 6 7	☐ ☐ ☐ ☐ ☐ ☐ ☐
18	మీ దంతాలను శుభ్రం చేయడం కొరకు మీరు ఈ		

	క్రిందివాటిలో దేనినైనా ఉపయోగిస్తారా? (ప్రతి అంశాన్ని చదవండి) a. టూత్ బ్రష్ b. టూత్ పేస్ట్ c. థ్రెడ్ (దంత ప్లోస్) d. పుల్లలు నవలడం e. ఇతర దయచేసి పేర్కొనండి	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
19	దంతాలను ఎలా శుభ్రం చేసుకుంటారు?	పంటి పేస్ట్ టూత్ పౌడర్ బొగ్గు ఉప్పు ఇతరులు పేర్కొనండి	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
20	మీ దంతాలను బ్రష్ చేసేటప్పుడు చిగుళ్ళ నుండి రక్తస్రావం అవుతుందా?	అవును కాదు	1 ☐ 2 ☐
21	మీ నోటి ఆరోగ్యాన్ని మీరు ఎలా వివరిస్తారు?	యోగ్యమైన మితంగా పేద	1 ☐ 2 ☐ 3 ☐
22	మీరు చివరిసారిగా దంతవైద్యుడిని చూసినప్పటి నుండి ఎంత కాలం అయింది? a. 6 నెలల కంటే తక్కువ b. 6-12 నెలలు c. 1 సంవత్సరం కంటే ఎక్కువ కానీ 2 సంవత్సరాల కంటే తక్కువ d. 2 సంవత్సరాలు లేదా అంతకంటే ఎక్కువ కానీ 5 సంవత్సరాల కంటే తక్కువ e. 5 సంవత్సరాలు లేదా అంతకంటే ఎక్కువ f. ఎప్పుడూ దంత సంరక్షణ పొందలేదు	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	

23	దంతవైద్యుడిని మీరు చివరిసారిగా సందర్శించడానికి కారణం ఏమిటి? a. సంప్రదింపులు/సలహాలు b. దంతాలు, చిగుళ్ళు లేదా నోటితో నొప్పి లేదా ఇబ్బంది c. చికిత్స/ ఫాలో-అప్ ట్రీట్ మెంట్ d. రొటీన్ చెకప్/ట్రీట్ మెంట్ e. తెలియదు/గుర్తు లేదు	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
24	ఆ సందర్భంలో, ఎటువంటి చికిత్స నిర్వహించబడింది? a. పరీక్ష b. శుభ్రత c. ఫిల్లింగ్ d. పళ్ళు తీయడం e. ఇతరులు పేర్కొనండి	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
25	చికిత్స సమయంలో మీకు మునుపటి ప్రతికూల దంత అనుభవాలు ఉన్నాయా?	అవును కాదు ఒకవేళ అవును అయితే పేర్కొనండి.....	1 ☐ 2 ☐

26. మీ దంతాలు లేదా నోటి స్థితి కారణంగా, గత 12 నెలల్లో దిగువ పేర్కొన్న ఏవైనా సమస్యలను మీరు ఎంత తరచుగా అనుభవించారు?					
	చాలా తరచుగా (4)	తరచుగా (3)	కొన్ని-కాలాలపాటు (2)	లేదు (1)	తెలియదు (0)
(ఎ) ఆహారాన్ని కొరకడంలో ఇబ్బంది	☐	☐	☐	☐	☐
(బి) ఆహారాన్ని నమలడంలో ఇబ్బంది	☐	☐	☐	☐	☐
(సి) మాట్లాడటంలో ఇబ్బంది/పదాలను ఉచ్చరించడంలో ఇబ్బంది	☐	☐	☐	☐	☐
డి) నోరు పొడిబారడం	☐	☐	☐	☐	☐
(ఇ) దంతాలు కనిపించడం వల్ల ఇబ్బందిగా అనిపించడం	☐	☐	☐	☐	☐
(ఫి) దంతాలు లేదా నోరు సమస్యల కారణంగా ఉద్రిక్తంగా అనిపించింది	☐	☐	☐	☐	☐
(గి) దంతాల కారణంగా నవ్వడం మానుకున్నాను	☐	☐	☐	☐	☐
(హి) తరచుగా అంతరాయం కలిగించే నిద్రను కలిగి ఉండటం	☐	☐	☐	☐	☐
(ఐ) పని నుండి రోజుల తరబడి సెలవు తీసుకున్నాను	☐	☐	☐	☐	☐
(జె) సాధారణ కార్యకలాపాలు చేయడంలో ఇబ్బంది	☐	☐	☐	☐	☐
(కె) మీకు దగ్గరగా ఉన్న వారితో, జీవిత భాగస్వామి లేదా వ్యక్తుల పట్ల తక్కువ సహనాన్ని కలిగి ఉండటం	☐	☐	☐	☐	☐

(1) సామాజిక కార్యకలాపాల్లో పాల్గొనడం తగ్గిందాను	☐	☐	☐	☐	☐
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27. కిందివాటిలో ఏవైనా చిన్న పరిమాణంలో కూడా మీరు ఎంత తరచుగా తింటారు లేదా త్రాగుతారు? (ప్రతి అంశాన్ని చదవండి)

	రోజుకు ఎన్నోసార్లు (6)	ప్రతి రోజు (5)	వారంకు ఎన్నో సార్లు (4)	వారంకు ఒక ఒకసారి (3)	నెలకు ఎన్నో సార్లు (2)	అరుదుగా/ ఎన్నడూ లేదు (1)
a. తాజా పండ్లు						
b. బిస్కెట్లు, కేకులు, క్రీమ్ కేకులు						
c. స్వీట్లు/మిఠాయిలు						
d. నిమ్మరసం, కోకోలా లేదా ఇతర శీతల పానీయాలు						
e. చక్కెరతో కూడినటీ						
f. చక్కెరతో కాఫీ						

28	మీకు ఏదైనా రకమైన పొగాకు ఉత్పత్తులను ఉపయోగించే అలవాటు ఉందా? ఒకవేళ అవును అయితే,	అవును కాదు	1 ☐ 2 ☐
	1. నమలడం	అవును కాదు	1 ☐ 2 ☐
	2. ధూమపానం	అవును కాదు	1 ☐ 2 ☐

28.1.1	ఒకవేళ అవును అయితే, మీరు ఏ రకమైన పొగాకు ఉత్పత్తులను నమలుతారు? f. తమలపాకు కూడిన పొగాకు g. పాన్ మసాలా h. గుట్కా i. ఖైన్ j. ఇతరులు పేర్కొనండి	1 2 3 4 5	☐ ☐ ☐ ☐ ☐
28.2.1	ఒకవేళ అవును అయితే, మీరు ఏ రకమైన పొగాకు ఉత్పత్తులను ధూమపానం చేస్తారు? e. చుట్ట f. బీడిలు g. సిగరెట్టు h. ఇతరులు పేర్కొనండి	1 2 3 4 5	☐ ☐ ☐ ☐ ☐
29	ఆసుపత్రి సందర్శన సమయంలో మీరు ఆరోగ్య సంరక్షణ ప్రదాత నుండి నోటి ఆరోగ్యం గురించి సలహా పొందారా?	అవును కాదు	1 ☐ 2 ☐
30	నోటి ఆరోగ్యం మీ గర్భధారణను ప్రభావితం చేస్తుందని మీకు తెలుసా?	అవును కాదు	1 ☐ 2 ☐
31	గర్భధారణ సమయంలో దంత చికిత్సను నివారించడం అవసరమా అని అనుకుంటున్నారా?	అవును కాదు	1 ☐ 2 ☐
31.1	గర్భధారణ సమయంలో దంత చికిత్సను ఎందుకు నివారించాలని మీరు అనుకుంటున్నారు?		
32	గర్భధారణ సమయంలో మీరు ఏదైనా దంత చికిత్సను వాయిదా వేశారా? (మునుపటితో సహా)	అవును కాదు	1 ☐ 2 ☐

33	సాధారణీకరించిన ఆందోళన రుగ్మత స్కేల్ (జిఎడి-7)				
గత రెండు వారాలుగా, మీరు ఎంత తరచుగా కింది సమస్యల వల్ల ఇబ్బంది పడ్డారా?					
(మీ సమాధానాన్ని సూచించడానికి “✓” ఉపయోగించండి)					
సంఖ్య	ప్రశ్నలు	అస్సలు లేదు	చాలా రోజులు	సగం కంటే ఎక్కువ రోజులు	దాదాపు ప్రతి రోజు
33.1	ఆందోళన, ఆత్రుతల లేదా ఒత్తిడిలో ఉన్న అనుభూతి	0	1	2	3
33.2	ఆందోళనను ఆపలేకపోవడం లేదా అదుపు చెయ్యలేకపోవడం	0	1	2	3
33.3	విభిన్న విషయాల పట్ల చాలా ఎక్కువ ఆందోళన చెందడం	0	1	2	3
33.4	విశ్రాంతి ఉండడంలో ఇబ్బంది పడటం	0	1	2	3
33.5	అవిశ్రాంతిగా ఉండటంలో, నెలకడగా కూర్చోవడం కూడా చాలా కష్టం అనిపించటం	0	1	2	3
33.6	తొందరగా చికాకు పడడం లేదా విసుకు చెందడం	0	1	2	3
33.7	ఘోరమైనది ఏదైనా జరుగుతుందేమో అని భయపడడం	0	1	2	3

(ఆఫీస్ కోడింగ్ కోసం: మొత్తం స్కోరు T___ = ___ + ___ + ___)

సెక్షన్ సి: దంత ఆందోళన మరియు సాధారణ ఆందోళనకు ప్రశ్నలు

42	మాడ్జిఫైడ్ డెంటల్ యాంగ్లబీ స్కేల్ (ఎండిఎఎస్)	
42.1	మీరు రేపు చికిత్స కోసం మీ దంతవైద్యుడి వద్దకు వెళితే, మీకు ఎలా అనిపిస్తుంది? a. ఆందోళన ఉండదు b. కొద్దిగా ఆందోళన ఉంటుంది c. మధ్యస్థ ఆందోళన ఉంటుంది d. ఎక్కువ ఆందోళన ఉంటుంది e. విపరీతమైన ఆందోళన ఉంటుంది	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
42.2	మీరు దంత చికిత్స కోసం వేచి ఉండే గదిలో కూర్చుని ఉన్నప్పుడు మీకు ఎలా అనిపిస్తుంది? a. ఆందోళన ఉండదు b. కొద్దిగా ఆందోళన ఉంటుంది c. మధ్యస్థ ఆందోళన ఉంటుంది d. ఎక్కువ ఆందోళన ఉంటుంది e. విపరీతమైన ఆందోళన ఉంటుంది	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
42.3	మీ పంటిని రంధ్రం చేయబోతున్నట్లయితే, మీకు ఎలా అనిపిస్తుంది? a. ఆందోళన ఉండదు b. కొద్దిగా ఆందోళన ఉంటుంది c. మధ్యస్థ ఆందోళన ఉంటుంది d. ఎక్కువ ఆందోళన ఉంటుంది e. విపరీతమైన ఆందోళన ఉంటుంది	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
42.4	మీరు మీ దంతాలను శుభ్రం చేసి, మెరుగుపరచుకోబోతున్నట్లయితే, మీకు ఎలా అనిపిస్తుంది? a. ఆందోళన ఉండదు b. కొద్దిగా ఆందోళన ఉంటుంది c. మధ్యస్థ ఆందోళన ఉంటుంది	1 ☐ 2 ☐ 3 ☐

	d. ఎక్కువ ఆందోళన ఉంటుంది e. విపరీతమైన ఆందోళన ఉంటుంది	4 5	☐ ☐
42.5	మీ చిగుళ్ళలో, పై వరుసలో గల వెనుక పంటి గురించి స్థానిక మత్తుమందు ఇంజెక్షన్ చేయబోతున్నట్లయితే, మీకు ఎలా అనిపిస్తుంది? a. ఆందోళన ఉండదు b. కొద్దిగా ఆందోళన ఉంటుంది c. మధ్యస్థ ఆందోళన ఉంటుంది d. ఎక్కువ ఆందోళన ఉంటుంది e. విపరీతమైన ఆందోళన ఉంటుంది	1 2 3 4 5	☐ ☐ ☐ ☐ ☐

మీ భాగస్వామ్యానికి ధన్యవాదాలు

*Note: Section B is the WHO oral health assessment form that should be filled by a Dental professional

ANNEXURE VII

IEC APPROVAL COPY

	श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम तिरुवनन्तपुरम - ६९५०९९, केरल, इंडिया
	SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM Thiruvananthapuram - 695 011, Kerala, India (An Institute of National Importance under Govt. of India)
Grams : Chitramet, Phone : +91-471-2443152, Fax : +91-471-2550728 / 2446433, E-mail : sct@sctimst.ac.in, Website : www.sctimst.ac.in	

Institutional Ethics Committee
CDSO Registration No: ECR/189/Inst/KL/2013/RR-24
DHR Registration No: EC/NEW/INST/2022/2775

SCT/IEC/2345/DECEMBER/2024

15.01.2025

Dr. Ponnamanda Harika Kumari
MPH Student, AMCHSS
SCTIMST, Thiruvananthapuram

Dear Dr. Ponnamanda Harika Kumari,

The Institutional Ethics Committee held on 30th December, 2024, reviewed and discussed your application to conduct the study titled "DENTAL ANXIETY AMONG PREGNANT WOMEN ATTENDING SECONDARY CARE HOSPITALS IN WEST GODAVARI DISTRICT, ANDHRA PRADESH" (IEC /2345) .

Principal Investigator	Dr. Ponnamanda Harika Kumari, MPH Student, AMCHSS, SCTIMST
Co-Principal Investigator(s)	Dr. Jissa VT, Scientist D, AMCHSS, SCTIMST
Duration of the study	6 months

The following members of the Ethics Committee were present at the meeting held on 30th December, 2024

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Dr. Manoj Murhekar	MD (Preventive & Social Medicine)	Male	Social Scientist	No
2.	Dr. Annapurna.Y	MD	Female	Basic Medical Scientist	No
3.	Adv. Priya Kaimal	LLM, MBL	Female	Legal Expert	No
4.	Dr. Indu PV	MBBS, DPM, MPhil, PhD	Female	Clinician	No
5.	Dr. Rejish Kumar	MBBS, MD, DNB	Male	Clinician	No
6.	Smt. Rekha Radhakrishnan	M.A (Eng.), B.Ed	Female	Lay person	No
7.	Dr. Biju Soman	MBBS, MD, DPH, MSc, DLSHTM	Male	Basic Medical Scientist	Yes
8.	Dr. Syam K	MBBS, MD, DM	Male	Clinician	Yes
9.	Dr. Srinivas G	PhD	Male	Basic Medical Scientist (Member Secretary)	Yes

1

The following documents were reviewed:

Original submission

1. IEC Application Form
2. Permission letter
3. Funding details and Budget
4. Covering letter addressed to the Chairperson, IEC, SCTIMST dated 09.12.2024 forwarded by HOD
5. Interview schedule in English and Telugu
6. Consent Form in English and Telugu
7. Participant Information Sheet in English and Telugu
8. Checklist Form
9. Proposal
10. Declaration Form
11. CV of PI and Co-PI

Revised submission

1. Covering letter addressed to the Chairperson, IEC, SCTIMST dated 13.01.2025
2. IEC recommendation letter dated 09.01.2025
3. Response to IEC comments
4. Permission letter
5. Proposal
6. Consent Form in English and Telugu
7. Participant Information Sheet in English and Telugu
8. Interview schedule in English and Telugu
9. CV of PI and Co-PI

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team / Guide who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,



Dr. G. Srinivas
Member Secretary, IEC

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST, THIRUVANANTHAPURAM



ANNEXURE VIII
DCHS PERMISSION LETTER

OFFICE OF THE DISTRICT COORDINATOR OF HOSPITAL SERVICES:
BHIMAVARAM, WEST GODAVARI DISTRICT

Rc.No.167/Est/W.G.Dist/2024.

Dated:25.10.2024.

Sub: DSH - DCHS WG DIST – Study on Assessment of oral Health Status and Dental Anxiety among Pregnant Women attending DH/AH's/CHCs in West Godavari District – Permission Accorded - Regarding.

Ref: Request Letter submitted by Dr.Harika Kumari.P, MPH, AMCHSS, Dt: 25.10.2024

<<<>>>

Permission is accorded for Dr.HarikaKumari.P, who is undergoing the Master of Public Health (MPH) Program at AMCHSS to study "Assessment of Oral Health Status and Dental Anxiety among pregnant women attending the District Hospital/Area Hospitals/CHCs in West Godavari District.


District Coordinator of Hospital Services,
West Godavari District, Bhimavaram.
WEST GODAVARI DISTRICT

To
Dr.HarikaKumari.P.
Copy to all the Medical Superintendents/Medical Officers of DH/AH/CHC, W.G.Dt.

ANNEXURE IX

SIMILARITY REPORT

full thesis, final draft By: Harika 50353 As of: Apr 28, 2025 4:28:15 PM 16,818 words - 129 matches - 34 sources	Similarity Index 8%
Mode: Similarity Report ▼	
paper text:	
ABSTRACT Background: During pregnancy, hormonal changes can negatively impact the oral cavity, increasing the need for dental visits and treatment. However, many pregnant women tend to delay or avoid oral care as a result of increased anxiety. Recognizing dental anxiety in pregnant women plays a crucial role in ensuring both maternal and fetal well-being. Hence,	
the study aimed to assess oral health status, treatment needs , dental anxiety and	5
influencing factors among pregnant women. Methods: A cross-sectional study was conducted among 304 pregnant women aged 18–49 years attending secondary care hospitals in the west Godavari district for antenatal visits. The	
WHO Oral Health Assessment form was used to assess the oral health status and the	33
Modified Dental Anxiety Scale (MDAS) for dental anxiety. The data was analyzed using the open-source statistical software R-4.3.2 version for Windows. The prevalence and 95% confidence interval for dental anxiety was estimated, and the factors were identified through cross-tabulations and binary logistic regression models. Results: While considering the oral health status, all participants needed some form of treatment. Based on MDAS scores, 46.7 per cent of participants were less anxious, 49% were moderate to highly anxious and 4.3 per cent were identified with severe anxiety (phobic). The proportion of participants with moderate to high levels of dental anxiety was 53.3 per cent (95% CI: 48-59). Participants with past negative dental experiences,	
those who were aware of the impact of oral health on pregnancy	8
, those in need of treatment, and those with moderate to severe GAD scores were found to be significantly more anxious. Conclusion: The study observed that the need for dental checkups is inevitable during pregnancy as all participants were observed to be required to undergo some form of treatment, and a considerable proportion of participants reported dental anxiety. The findings highlight	