Original Research Article

Oral Health Status of Pregnant and Nursing Women Reported to a Tertiary Care Medical Research Institute in Western Odisha: A Cross-Sectional Study

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Abstract:

Aim: The major objective of this study was to raise awareness of oral hygiene among expectant mothers in order to prevent dental and oral illnesses, and the secondary objective was to develop a government-level policy to address the issues.

Method: A cross-sectional study was carried out in the Department of Dentistry and Department of Obstetrics & Gynaecology, Veer Surendra Sai Institute of Medical and Research Institute (VSSIMSAR), Burla, Sambalpur, Odisha, India. The study was based on oral examinations of the pregnant women as population, for 6 months, based on different inclusion and exclusion area.

Result: Statistical analysis revealed that Age ($\beta = 0.02$, $p < 0.002$), maternal characteristics ($\beta = 0.11$, $p < 0.002$), education ($\beta = 0.05$, $p = 013$), subjective health status ($\beta = 0.26$, $p < 0.002$), sleep duration ($\beta = 0.06$, $p = 0.002$), breakfast frequency ($\beta = 0.15$, $p < 0.002$), unmet dental care needs ($\beta = 0.34$, $p < 0.002$), and depression ($\beta = 0.01$, $p = 0.002$), which are the main variables responsible for maternal oral care.

Conclusion: The following conclusion can be used to wrap up the study. When a woman is pregnant, oral hygiene is normally ignored. There is a possibility that more periodontal issues will develop as a result.

Introduction

Most women, who are of reproductive age, experience pregnancy as a physiological phenomenon. Numerous hormonal changes that take place during pregnancy render women more susceptible to a wide range of opportunistic infections and illness [1]. Throughout this period, oral hygiene is frequently ignored, which increases the risk of periodontal and gingival disorders. Streptococcus viridans may cause heart infections as a result of gingivitis and periodontitis [2]. Dental caries is a result of dental plaque, which is why there is a rise in its incidence during this period [3]. According to studies, pregnant women are more likely to ingest

fermentable carbohydrates such as sugary meals and cold drinks to avoid ketosis related to nausea and vomiting *(hyperemesis gravidarum)*, which can result in oral health issues [4]. Additionally, hormonal shifts and alterations in the oral cavity's environment weaken blood vessel walls and promote gum swelling, making pregnant women more susceptible to periodontitis because these alterations encourage bacterial growth due to increased acidity in saliva [5].

According to past research, women are more likely to be edentulous than men, and tooth loss has been linked to both pregnancy and childbirth more frequently [6]. Women in the 18-34 age range who are at childbearing stage, believe they have oral health issues. This was evident in 33.6% of those aged 18-24 years , 41.1% of those aged 25-29 years, and 40.6% of those aged 30-34 years [7]. Recent research on the topic of dental health and breastfeeding has revealed an adverse association between the number of natural teeth still present and the length of nursing in menopausal women [8]. Pregnant women who report to government-sponsored medical research institutions, mostly come from low socioeconomic backgrounds and they typically neglect their oral health owing to ignorance and lack of awareness to oral health hygiene. This study seeks to investigate details into the dental and oral issues, which are prevalent in the society amongst pregnant women who report to such an institution and thereby tries to offer a solution to solve these problems.

Methodology

This study was carried out in Department of Dentistry and Department of Obstetrics & Gynaecology, Veer Surendra Sai Institute of Medical and Research Institute (VSSIMSAR), at Burla, Sambalpur, Odisha, India, for the duration of 6months from the date of approval by the ethics committee. The study population consisted of pregnant women reporting to O&G Department and later referred to the Department of Dentistry, VSSIMSAR, Burla. The study design consisted of oral examination of pregnant women with the help of a stomatoscopes (mouth mirror) and dental probes. The examination was based on questions asked after taking their consent. The sample size was estimated to be 300 and the sampling technique used was by asking questions to pregnant patients after the oral examination.

Inclusion criteria included pregnant women beyond 12 weeks of the gestation period, whereas exclusion criteria were non-pregnant women, those below 18years of age and those below 12 weeks of the gestation period. Tools, techniques and interventions included a stomatoscope (mouth mirror) and a dental probe used to examine the oral cavity with informed consent. No intervention was made.

Data collection methods consisted of findings from the oral examination and questions asked. Data management was done by investigators and data was analyzed by a statistician using the latest SPSS software. There was no conflict of interest of any kind. The study was duly approved by the ethics committee of the institute.

Results

300 people were studied in this investigation. Recordings of the patient's baseline characteristics were made. Participants' average age was 32.4 years, and 64.7% of them were pregnant women. In terms of education, 55.4% were classified as having "Three-year university or higher" degrees. The average rating for oral health was 3.08 points. The average rating for subjective health state was 3.53, the average rating for depression was 11.3, and the average rating for stress was 2.03. Less than five breakfasts each week made up 50.1% of

the total. When asked if they had unmet dental care needs, 76.6% of respondents said "No," whereas 60.5% reported getting less than 7 hours of sleep.

Table 1: Oral health status and relationship of variables

Variable	Categories	Oral Health Status (Mean± SE)	r	P-Value
General Characteristics				
Age <18 years	Pregnant	3.12±0.02	-0.04	0.031
Education	≤ 3 Years of University	3.04 ± 0.01	-2.90	<0.003
	≥ 3 Years of University			
Maternal Characteristic	Breastfeeding	3.01± 0.01	-4.81	<0.002
Health Status				
Sleep Duration	≥ 7	3.07 ± 0.01	-1.3	0.141
Stress			-0.12	<0.002
Subjective Health status			0.27	<0.002
Depression			-0.21	<0.002
Unmet Dental Health	No	3.18 ± 0.03	14.50	<0.002
	Yes	3.01 ± 0.02		
Frequency of Breakfast	≥ 4	3.09 ± 0.01	-7.81	<0.002

Table 1 depicts the participant relationship variables. Age (r = 0.04, p = 0.031), depression (r = 0.21, p <0.002), and stress (r = 0.12, p <0.002) were inversely proportional to oral health status, according to the outcomes of the correlation analysis. The relationship between oral health status and subjective health status was shown to be significantly positive (r = 0.27, p <0.002). Pregnant participants' oral health status was significantly better (t = 4.81, p <0.002), as were those who graduated from a three-year college or higher (t = 2.91, p = 0.003), ate breakfast 4 days or more (t = 7.81, p <0.002), and said "No" to the question about unmet dental care needs (t = 14.50, p <0.002).

Table 2: Oral Health Status-Related Factors

Variable	Categories	SE	T	β	P-Value
General Characteristics					
Age <18 years	Pregnant	0.001	-4.11	-0.02	<0.002
Education	≤ 3 Years of University	0.023	-2.48	-0.05	0.013
Maternal Characteristic	Breastfeeding	0.022	-4.32	-0.11	<0.002
Health Status					
Sleep Duration	≥ 7	0.024	2.97	0.06	0.002
Stress	-	0.016	-0.91	-0.01	0.371
Subjective Health status	-	0.016	15.67	0.26	<0.002
Depression	-	0.003	-5.91	0.26	<0.002
Unmet Dental Health	No	0.34	0.033	10.28	<0.002
Frequency of Breakfast	≥ 4	-0.15	0.023	-6.47	<0.002

The parameters listed in Table 2 those were connected to oral health status were examined using a multiple regression model. In terms of general characteristics, the following were significant: age (β = 0.02, p <0.002), maternal characteristics (β = 0.11, p < 0.002), education (β = 0.05, p = 013), subjective health status (β = 0.26, p <0.002), sleep duration (β = 0.06, p = 0.002), breakfast frequency (β= 0.15, p <0.002), unmet dental care needs (β = 0.34, p <0.002), and depression (β= 0.01, p= 0.002).

Discussion

The establishment of environments and the management of oral health during pregnancy and nursing are crucial, which can lessen the most harmful oral health variables in pregnant women's life cycles. Therefore, the purpose of this study was to investigate characteristics associated with oral health status in relation to pregnancy and breastfeeding in order to prepare basic data for maternal oral health promotion programmes. Better oral health was linked to younger maternal ages, pregnancy, and education levels of at least three years in universities. This confirms the conclusions of earlier research results that, oral health declines with lesser levels of education [9,10]. Recently, The management of dental and oral health has grown more significantly, as the average age of first-time mothers has increased. Therefore, adequate efforts to enhance oral health care and services for pregnant women with low educational backgrounds must be implemented with Governmental policy support.

Breastfeeding has been linked to maternal water loss and dental and oral health issues in lactating mothers [11], and lactation is linked to a decrease in the mother's ability to absorb calcium [12]. In order to prevent dehydration, healthcare professionals should make an effort to educate patients. Better oral health was associated with higher subjective health status.

Poorer dental and oral health was associated with higher depression scores. Decreased depression scores were associated with a lower incidence of periodontal disease, according to studies examining the relationship between depression and periodontal disease in pregnant women [13]. Previous studies have shown a connection between mental health issues including stress and depression and the development of periodontal disease. Stress immediately affects the immune system of the body, which results in a number of physical changes. Stress-related changes in the immune system have been linked to the development of heart disease and diabetes as well as periodontal illnesses such as acute gingivitis and acute periodontitis. Stress-related cortisol release affects the foetus through the placenta and may result in neurological disorders [14,15].

In particular, it has been demonstrated that, the mental health issues of pregnant women are linked to negative health outcomes in the foetus, such as low birth weight. They also affect the fetus's mental conduct after birth [16]. Premature birth is one of the harmful effects of depression in pregnant women [17]. Therefore, in order to promote maternal and foetal health, stress and depression must be aggressively screened and managed. In order to address this issues, a social and family support network must be established, because many women have postpartum depression.

Periodontal disease is highly likely in those who slept fewer than six hours because insufficient sleep duration alters the saliva and mouth microenvironment, resulting in diseases such as dental caries and periodontal disease [18]. According to studies, alterations in sleep patterns are brought on by a variety of physiological

and physical changes during pregnancy, where sleep disturbances are a regular occurrence [19]. According to Kızılırmaket al. [20], learning throughout pregnancy increases sleep quality and reduced depression symptoms. Therefore, the oral health care programme for expectant women should be taken into account as regards to the significance of sleep.

Limitation of the Study

Data that concentrate on pregnant women's oral health are insufficient. Further research is required focusing on the association between mother breastfeeding and oral health status during pregnancy, through follow-up calls through a cohort study. Additionally, socio cultural variables and attitudes toward oral health have been identified as barriers in managing overall dental and oral health in pregnant and nursing women. Therefore, additional research is necessary to support these assertions.

Conclusions

The features and health conditions of pregnant women were compared, as to how well their dental and oral health was doing in this study. These findings demonstrated relationships between maternal oral health status and age, education, subjective health status, depression, sleep duration, and unmet dental needs. The research can be concluded using the assertion that follows. Oral hygiene is normally neglected when a lady is pregnant. More periodontal problems may arise as a result of this. Based on the findings of this study, a systematic survey should be carried out regularly to completely comprehend the state of maternal oral health on a nationwide scale To enable thorough oral health education, institutional programmes and guidelines should be standardized.

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