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Original Research Article

A mixed method study to assess orodental problems and barriers to utilisation of orodental care in pregnant ladies of Himachal Pradesh

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ABSTRACT

Background: The hormonal changes along with decreased salivation during pregnancy result in many orodental problems. The existing orodental conditions worsen due to barriers to the utilisation of orodental care during pregnancy. The objective of this study is to assess orodental problems and barriers to utilisation of orodenatl care in pregnant ladies
Methods: Sample size is calculated using Cochran's formula. The Purposive sampling technique was used to select hospitals and pregnant women from OPD of the gynecology and obstetrics department of hospitals selected in Himachal Pradesh. Using DMFT and CPI index, interview schedules the study's specific objectives are achieved.
Results: Out of a sample of 112, 92.8% of pregnant women had dental caries, 34.8% of pregnant women had got restorative treatment and 25.8% had their teeth extracted. The majority of pregnant women (51.8%) had dental calculus and (29.5%) shallow periodontal pockets. The system, personal, and caregiver-related barriers are responsible for the underutilisation of orodental care among pregnant women.
Conclusions: This study concluded many pregnant women face orodental problems along with a major factor of lack of dental education and no dental insurance associated with their orodental problems.

Keywords: Pregnant women, Healthcare, Dental problems, Barriers, Periodontal health status

INTRODUCTION

Oral health is often overlooked as a critical component of overall health, with developed countries giving it equal importance. In India, oral health care remains the most neglected aspect of health.[1] World health organisation (WHO) defines oral health as oral to embarrassment health is the state of the mouth, teeth and orofacial structures that enable individuals to perform essential functions such as eating, breathing and speaking, and encompasses psychosocial dimensions such as self-confidence, well-being and the ability to socialize and work without pain, discomfort, and embarrassment.[2] As a result of impaired oral health, oral disease, which is preventable, is the most common non-communicable disease that affects people throughout their lifetime, causing pain, discomfort, and disfigurement. Reports estimated that around 3.5 billion people worldwide are affected by oral disease, out of which around 2 billion, surprisingly suffer from dental caries only. Additionally, 3 out of 4 people living in middle-income countries are affected by dental issues.[3] According to the Global Oral Health Status Report (GOHSR) by the WHO in November 2022, India has the highest number of cases of caries of permanent teeth and severe periodontal disease, with a global caseload of 18.1% and 20.3% respectively.[4]

Women fall under the vulnerable group as, during puberty, pregnancy, and menopause, they face physiological changes along with non-physiological

conditions such as hormonal contraception and hormonal therapy that affect their oral health to a major extent.[5] During pregnancy, increased acidity in the mouth due to hormonal changes, more consumption of a sugary diet due to cravings, and less attention towards preventive dental care altogether result in worsening oral health conditions.[6] Tooth decay, gingivitis, gingival hyperplasia, pyogenic granuloma, salivary changes, and facial pigmentation are some of the major changes that can be seen during pregnancy.[7] Studies have shown that poor oral health of mothers results in negative pregnancy outcomes such as pre-term deliveries or underweight babies.[8] Eventually, during pregnancy, when a pregnant woman feels discomfort or pain due to any dental problem, it is very difficult for her to lie on her back for an extended period, thus also making it not possible for the dentist to give any dental treatment, especially in the first and third trimesters.[9] Most of the problems that are related to oral health during pregnancy can simply be prevented by regular dental check-ups before or during the antenatal period of pregnancy.[10] But as one or another barrier is present in high and low-income countries across the globe, it results in underutilisation of orodental care by pregnant women.[11-13] The contributing factors responsible for dental problems are mainly fear of dental treatment, expensive dental treatment, and a lack of awareness among ladies.[14] Literature on the oral health status of pregnant women is very limited in northern India. Concerning vulnerable groups, including pregnant women, this assessment regarding orodental problems is even more important because individuals who belong to such groups are more susceptible to negative health outcomes.[15] Thus, the current study not only finds the prevalence rate of dental caries among pregnant women in the first, second and third trimesters but also the barriers to the utilisation of orodental care among pregnant women. To our knowledge, this study is among the few of its kind to be conducted on pregnant women, highlighting their oro-dental status in the state of Himachal Pradesh.

METHODS

The current study followed a mixed-method approach with a cross-sectional exploratory research design. A purposive sampling technique was used for selecting hospitals in the state based on patients' footfall. The study population consisted of pregnant women (the first, second and third trimesters) attending OPD in obstetrics and gynaecology departments in selected private hospitals in Himachal Pradesh. Based on exclusion-inclusion criteria, the study population was selected using purposive sampling.

Inclusion and exclusion criteria

Inclusion criteria included the first, second and third trimesters pregnant women who gave consent. Exclusion criteria included; Women with systemic diseases such as Diabetes Mellitus, Cardiovascular disease, Hypertension, Osteoporosis, and Bacterial Pneumonia, which have an impact on oral health, present before pregnancy; Women came for follow-up and were included in a study earlier, Women coming for abortion or with labour pain, Women having high-risk pregnancies and Women who refused to open their mouths for check-ups.

The sample size for quantitative data was calculated using Cochran's formula. The sample size per hospital according to its patients' footfall was calculated using proportionate sampling. For the qualitative study, interviews among pregnant ladies were conducted until reaching the data saturation point, that is, until new themes or categories no longer appeared. Permission from the ethical committees of selected hospitals and authoritative bodies was also obtained before conducting research. Once the details of the study were explained, informed consent (in the Hindi language) was obtained from participants to ensure their voluntary participation with anonymity to be maintained. For those who were unable to read or sign the consent, the researcher made sure that they understood the study's purpose. To separate those from those who were literate, insertions of "X" on their consent form were done. Participants were assured that they would receive feedback, guidance, and treatment planning regarding their oral health.

The study was pretested with a pilot study on 18 pregnant women attending an OPD in obstetrics and gynaecology in October 2019. The tool was assessed for both validity and reliability. Cronbach's Alpha, which was 0.75, was used to confirm the reliability of the tool. For the final research, data collection was performed in two months, approximately from January 2020 to February 2020. The researcher visited the hospital every day except during holidays for data collection.

The interview schedule was used to record the sociodemographic factors of the participants. According to WHO criteria, pregnant women's oral health status was determined by recording decayed, missing, and filled teeth (DMFT) and the community periodontal index according to WHO criteria. Bleeding on probing and periodontal pockets were noted using CPI probes. Gloves, face masks, and sterilised instruments, including ice cream sticks, mouth mirrors, and explorers, were used during the checkup. Any other oral manifestation or lesion was also checked. For qualitative data, an interview guide was used among pregnant women to find barriers to the utilisation of orodental care. After data collection, participants were advised on the maintenance of oral health during pregnancy. Around 30-35 minutes were given to each participant.

The data entry was done using MS Excel. The database gathered was imported into the Statistical Package for the Social Sciences (SPSS) to perform statistical analyses. Descriptive data and frequency were obtained for different variables included in the study Coding and recording of data were done as required. Individual

DMFT was calculated using the formula D+F+M. Qualitative data analysis was done in six phases, including; familiarizing with the data; generating initial codes; theme identification; defining and naming themes; and producing reports. The data obtained was compiled and statistically analysed. The result was put together, and all the steps for research were completed in approximately six months.

RESULTS

A total of 112 pregnant women were selected from different hospitals in Himachal Pradesh.

Table 1: Sociodemographic factors.

Socio Demographic	Category	N (%)
Age in group (years)	20-25	15 (13.4)
	26-30	47 (42.0)
	31-35	40 (35.7)
	36-40	9 (8.0)
	41-45	1 (0.9)
Education	Illiterate	0 (0)
	Primary	0 (0)
	Secondary	24 (21.4)
	Graduate	45 (40.2)
	Post graduate	43 (38.4)
Number of pregnancies	1st	59 (52.7)
	2nd	44 (39.3)
	3rd	8 (7.1)
	4th	1 (0.9)
Women in trimester	First Trimester	24 (21.4)
	Second trimester	31 (27.7)
	Third trimester	57 (50.9)
Dependence for daily expenses	Self	47 (42.0)
	Husband	65 (58.0)
Monthly income (rupees)	Don’t know	2 (1.8)
	<25000	57 (50.9)
	26000-50000	43 (38.4)
	51000-75000	4 (3.6)
	>1lakh	6 (5.4)
Previous miscarriage	Yes	34 (30.4)
	No	78 (69.6)

The findings of this study showed that out of a sample of 112, 92.8% of pregnant women had dental caries, 34.8% had received restorative treatment, and 25.8% had missing teeth. The prevalence of decayed teeth is high, followed by missing teeth in DMFT (Table 2). The majority of pregnant women had four decayed, five missing, and one filled tooth in their oral cavity (Table 3). The majority of pregnant women (51.8%) had dental calculus and (29.5%) shallow periodontal pockets (Table 5). The mean CPI, by adding the mean values of gingival bleeding, dental calculus, and periodontal pockets was 1.96.

Analysis of qualitative data

From the samples of 25 pregnant women, themes depicting barriers to utilisation of orodental care are as follows; System barrier: Lack of Dental Insurance: Pregnant ladies emphasised the lack of dental insurance as a major barrier. “No, I don’t have any dental insurance” (Interview 2). “I don’t know; my husband knows better about it” (Interview 3). Lack of Dental Education: Lack of dental education at the community level was reported as a barrier to the utilisation of dental care by pregnant ladies. “No one ever gave such an education” (Interview 1). “Never, no one told me anything” (Interview 6). No Professional Dental Educator: No professional educator of dental care was reported as a barrier by pregnant ladies in this section, resulting in them taking dental-related knowledge from the media. “I have read about dentistry on the internet a lot” (interview 19). “Yes, family members give dental-related education” (Interview 22). Personal Barrier; Negligence to dental care: Pregnant ladies showed a pattern of being reluctant to even have dental checkups due to lack of current pain or any felt need. “I have the problem of food lodging but never had pain, so I didn’t visit the dentist” (Interview 15). “Undergone half RCT; after that, pain stopped, so I thought why to visit the dentist again” (Interview 2). “Never faced any problems, so I never visited the dentist” (Interview 10). The stress of pregnancy: The previous complications of pregnancy resulted in a phobia for pregnant ladies to undergo any dental treatment. “I had miscarriages four times; now I don't want to take any risk” (Interview 5). “I don’t want to go to the dentist because I already had three miscarriages” (Interview 17). Oral Health Beliefs: Different oral health beliefs emerged as a barrier from the words of pregnant ladies. “I thought these changes were normal in pregnancy” (Interview 20). “In my home, no one goes to the dentist; we prefer home remedies instead” (Interview 25). Time constraint: As reported, time constraints significantly decrease the chances of pregnant women getting dental-related facilities. “Because of my husband's job, I didn't get time” (Interview 1). “I am a working woman and never get time in my in-laws' home so I always have this time issue; otherwise, I would have got dental treatment a long time ago” (Interview 5). Dental fear: Based on the common experience of pregnant ladies, dental fear emerged as a barrier to the utilisation of orodental care. “I am afraid of injections” (Interview 4). “The doctor here says that I start crying just by looking at the injection” (Interview 13).

Table 2: Mean and standard deviation and contribution of decayed, filled, and missing factor.

Parameters	Decayed	Missing	Filled	DMFT
Mean±SD	3.61±2.27	0.48±0.97	0.74±1.27	4.82±2.72
Contribution in DMFT Index (%)	404/541=74.6	83/541=15.3	54/541=9.9	-

Table 3: Pregnant women with different numbers of decayed, missing and filled teeth.

No. of tooth	0	1	2	3	4	5	6	7-10
Decayed, N (%)	8 (7.1)	16 (14.3)	16 (14.3)	12 (10.7)	23 (20.5)	16 (14.3)	10 (8.9)	11 (9.8)
Missing, N (%)	83 (74.1)	12 (10.7)	12 (10.7)	4 (3.6)	1 (0.9)	83 (74.1)	12 (10.7)	-
Filled, N (%)	73 (65.2)	15 (13.4)	14 (12.5)	4 (3.6)	4 (3.6)	0 (0)	2 (1.8)	-

Table 4: Pregnant women with DMFT index.

DMFT Score	0	1	2	3	4	5	6	7	8	9	10-13
N (%)	3 (2.7)	10 (8.9)	8 (7.1)	17 (15.2)	20 (17.9)	10 (8.9)	19 (17)	5 (4.5)	10 (8.9)	2 (1.8)	8 (7.1)

Table 5: Prevalence of periodontal disease.

Variables	N (%)	Mean±SD
Healthy	4 (3.6)	0.04±0.18
Gingival bleeding alone	11 (9.8)	0.10±0.29
Dental calculus	58 (51.8)	1.48±0.50
Shallow pockets	33 (29.5)	0.29±0.45
Deep pockets	6 (5.4)	0.05±0.22

Care-giver Barriers; Cost factor: Participants believed that due to costly dental procedures, they didn't utilise orodental care "Dental procedures are very costly as compared to others" (Interview 16). "Mam, your dental is very bad, and it is very costly. I wanted to go for braces, but it was 32,000" (Interview 20). Previous bad experience: Pregnant ladies shared their terrible experience regarding past dental care, making them resistant to undergo any further dental treatment. "I was having pain regarding my last tooth, but the dentist removed my other tooth" (Interview 23). "Yes, I had pain regarding my wisdom tooth, so I visited a dentist in a military hospital, and there he extracted my wrong tooth. I shouldn't have gone for treatment" (Interview 25). Refusal from the dentist: Another barrier reported by pregnant women was a refusal from the dentist to perform dental treatment. "Yes, a few days ago, my filling broke, so I went to the dentist, but he refused to treat me, saying nothing can work due to pregnancy now" (interview 12). "I am having pain in my tooth, but the dentist said that he can't treat it now due to pregnancy. He told me to consult a gynaecologist for painkillers to give. I am using clove oil nowadays for pain" (Interview 14). No suitable dentist: One of the most common concerns expressed by participants was the lack of a nearby dentist. "My parents' home is in Jalandhar, so I prefer going to the dentist there only. I don't think there is any good dentist here" (Interview 18).

DISCUSSION

The current study examines the prevalence of oral diseases among pregnant women and the barriers they face to accessing dental care. The findings of the present study showed a high prevalence of decayed teeth and periodontal disease among pregnant women, explaining that most dental caries are left untreated due to irregular dental visits by pregnant women and the lack of preventive and restorative dental care at the community level. The findings align with previous research conducted in regions like Kerala and Maharashtra, South Africa (7.18±4.22), Iran (7.8±3.27), and Northern Iran (13±6) that showed higher mean (SD) DMFT as compared to the current study.[14-19] On the contrary, a study of Karnataka and Haryana showed a lower value of the mean (SD) DMFT, i.e., 2.13 (2.54) and 2.87 respectively, when compared with current research. In the current study, the mean (SD) of decayed, filled, and missing teeth among pregnant women is 3.61±2.27, 0.48±0.97, and 0.74±1.27, respectively. Similarly, a few studies also showed a mean value of decayed (2.06 ±2.5 and 2.73±1.03), missing (0.03±0.17 and 0.628±1.75), and filled teeth (0.04±0.27), which is quite lower than the figures mentioned in the current study.[20-21] The current study has also shown the high contribution of decayed teeth (74.6%), followed by missing teeth (15.3%), and filled teeth (9.9%) in DMFT. A similar pattern regarding the contribution percentage can be seen in other studies.[22-23] The reason attributed to this could be that pregnant ladies in Himachal Pradesh do not regularly attend oral health services due to the least priority given to dental problems, and lack of awareness.

In the current study, the mean CPI was 1.96, with dental calculus being the most prevalent issue, indicating the need for dental procedures such as scaling along with dental care instructions for the majority of pregnant women. A few studies also showed pregnant women with

a higher prevalence of dental calculus, followed by gingivitis and bleeding, which is quite similar to the current study.[21,23-24] In contrast, studies on pregnant women in Central India have also shown a higher CPI index when compared with the current study results. Iran's study showed a maximum number of pregnant women with healthy gingiva in contrast to the current study.[10,25] The barriers to utilisation of orodental care among pregnant women were characterised by different themes, including lack of dental education, no dental insurance, dental anxiety, self-neglect, oral health beliefs, refusal from the dentist, no suitable dentist, previous bad experiences, dental costs, time constraints, and the stress of pregnancy. Different studies have highlighted barriers to the utilisation of orodental care, which is quite similar to the current study findings.[13,15,26] Research has mentioned accepting oral problems as a part of pregnancy, employment, and dental staff attitudes toward patients as barriers, unlike the current study.[15,27] To overcome the barriers, different preventive programs and pregnancy-specific education programs should be conducted at the community level, thus improving knowledge and behaviour change among pregnant women for their own and their babies' health. An effective model focusing on preventive rather than curative treatment for managing the dental needs of pregnant women is the need of the hour. Also, interdepartmental collaboration is of utmost significance as far as the health of pregnant women is concerned. For instance, gynaecologists should stress the role oral health plays in pregnant women and refer them to the dentist for further education as well as for any oral health problems. In India, because of the high cost of oral health care, there is a low utilisation rate of oral health services, which results in widening the gap in oral health between different socioeconomic groups of the community.[28] Therefore, dental education should be imparted through public health programs among people by public health dentists in both the government and private sectors on a large scale. This can be effective only when the public health system of the country starts focusing on appointing public health dentists at grassroots levels of health systems, which is, to date, a distant dream. Across the country, less than 20% of PHCs have dentists, and there is no public health dentist at the Community Health Centre level.[28] Educating and addressing possible risks and myths, motivating pregnant women regarding oral health care, and providing dental health care at affordable prices altogether can result in decreasing the prevalence of dental disease in this vulnerable population. Knowledge about the existence of different dental insurances and their benefits should be explained while giving dental education. In addition, communications by health care workers, including dentists, physicians, and health workers at the ground level, to address oral health beliefs among pregnant women are essential. The study's scope was limited to a few hospitals, making it challenging to generalise the results. Additionally, the interview schedule was constrained by the short waiting time, as pregnant women were unwilling to wait after their regular checkups, highlighting a limitation of the study.

CONCLUSION

Oral health is an integral part of overall well-being and requires equal consideration. Pregnant women are at high risk of developing dental diseases due to a lack of dental knowledge, self-neglect; oral health beliefs, misconceptions, and the cultural stigma surrounding hospital visits in a country like India. It is important to bridge the gap between pregnancy and dental care by providing an anxiety-free environment for pregnant women. Community awareness programs are essential to addressing cultural taboos. The National Oral Health programs must be revamped to make oral health services more accessible, acceptable, and affordable for pregnant women. More focus of upcoming research should be on improving dental education among pregnant women and reducing the gap between vulnerable populations and oral health needs. Empowering and motivating pregnant women, along with affordable dental prices or the involvement of dental insurance, can substantially diminish dental problems in this at-risk group. Enhanced collaboration between gynaecologists, dentists, or public health workers is essential. Incorporating routine dental visits into antenatal care can significantly reduce dental issues. Preventive care should be emphasised to counter the cost of dental treatments and enhance oral health. Mother and child health programs should incorporate comprehensive dental education to mitigate adverse pregnancy outcomes and foster health for both mother and child.

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