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Knowledge, Attitude and Perception and Oral Health Status of Pregnant Women in Jaipur.

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Abstract

Background: Pregnancy is characterized by complex physical and physiological changes that have significant impact on almost every organ system of the body, including the oral cavity. Hormonal, immunologic, dietary, and behavioural changes associated with pregnancy are believed to be the contributing factors in causing elevation in oral conditions due to increased levels of sex hormones, oestrogen and progesterone.[1]

During pregnancy, oral and dental care requires special attention. Due to bad oral health in pregnancy, pregnant women can experience premature delivery, low birth weight baby, pre-eclampsia, gingival tissue ulcerations, pregnancy granuloma, gingivitis, pregnancy tumors (epulis gravidarum), loose teeth, mouth dryness, and dental erosions.[2]

Description of the epidemiological situation is the cornerstone of a successful preparation and implementation of the preventive program. It is important to know the oral health status of pregnant women in order to recommend effective preventive measures. Thus, the aim of the present study was to evaluate the oral health status of pregnant women in Jaipur.

Materials and methods: A descriptive cross- sectional study was conducted to access the oral health status among pregnant patients attending a Govt PDDU (Pandit Deen Dayal Upadhyaya) Hospital, Jaipur, Rajasthan.

Sample size estimation

Appropriate sample size was calculated by conducting a pilot study prior among 20 pregnant women. The awareness regarding their oral health was found among approximately 21.5% subjects. So, on keeping prevalence (p) as 21.5% in the following formula, the estimated sample size at 95% confidence interval and 5% margin of error was found to be 259.

Sample size was calculated using the formula

$$n = \frac{z^2 \times p \times q}{m^2}$$

The estimated sample size at 95% confidence interval was 259 and for better precision the required sample size was doubled to attain a total sample of 518 which was rounded off to 520 subjects.

Inclusion criteria

- Participants who were willing and gave written informed consent after being given duly explanation of whole purpose and procedure of the study.
- The pregnancies were confirmed through a clinical examination of the pregnant women by the qualified doctor.

Exclusion criteria

- Participants who did not wish to participate.
- Participants who were physically challenged or had systemic illness.
- Participants giving history of medications, current use of systemic corticosteroids, congenital heart disease, existing hypertension and diabetes before the pregnancy, and history of epilepsy, asthma, and chronic renal disease.

Data collection

The data was obtained through face-to-face interviews using a self-prepared questionnaire which includes questions regarding socio-demographic details. The trimester was determined among the study subjects by recording the LMP (last menstrual period). The pre – tested, pre – validated questionnaire was used to access the knowledge, attitude, and perception of pregnant women towards oral health and hygiene practices. For clinical Examination, WHO proforma for adults (2013)[3]was used to evaluate the oral health status among 520 study subjects.

The data so obtained was compiled systematically. Statistical procedures were carried out in 2 steps:

1. Data compilation and presentation
2. Statistical analysis

Statistical analysis was done using Statistical Package of Social Science (SPSS Version 21; Chicago Inc., USA).

Results

A total of 520 pregnant females, reporting in the department of gynaecology and obstetrics in Govt PDDU (Pandit Deen Dayal Upadhyaya) Hospital, Jaipur; were included in the study. The no. of participants in their 2nd trimester were evidently more in no. (38.7%) than the 1st (33.8%) and 3rd trimester (27.5%) participants. The socio – economic status of the women varied, with upper and upper - middle class being most prevalent (26.9% and 30.8%). The women were mostly educated (post- graduates – 24.8%, graduates – 38.1% and high school – 27.1%). Most of the women were un-employed 72.7%. Table 1 shows the frequency distribution of study subjects based on oral hygiene practices shows that all the subjects used toothbrush as their oral hygiene aid with majority using toothpaste as an adjunct (96.7%). Most of the subjects had mixed technique for brushing (78.3%).

Table 2 represents that most of the subjects were reluctant and had never visited any dentist (64.8%). Those who visited listed the main reasons for visiting dentist to be pain (11.47%), restorations (6.56%), prophylaxis (13.67%), routine (14.75%) and other reasons (53.55%) which included bleeding, halitosis etc. The reasons for not visiting dentist were safety concern (56.38%), time (11.87%), cost (17.49%), dental visits not being a priority (20.47%) and they have been advised against it (1.78). 57.1% of the participants complained of experiencing some kind of oral health problem. The main types of oral health problem experienced were swollen gums (34.68%). And bleeding gums (24.58%). Table 3 shows the distribution of population based on Decayed Teeth (DT), Missing Teeth (MT) Filled Teeth (FT). The mean of decayed teeth was more (0.43 ± 0.495). The prevalence of missing teeth (0.06 ± 0.241) and filled teeth (0.05 ± 0.226) was very

less. The mean DMFT of the study population was 1.21 ± 1.58. Gingival bleeding was present among 59% of the study population. Pocket was absent in 58.1% and 23.3% had a pocket of 4 – 5 mm and 18.7% had pocket of 6 or more mm. on examining loss of attachment, 51.7% had loss of attachment of 0- 3 mm, 12.5% had attachment loss of 4 – 5 mm, 17.1% had 6 -8 mm loss of attachment, 11.3% had a loss of 9 – 11mm and 7.3% had attachment loss of 12 mm or more. Almost half (49.8%) of the study population had fluorosis. Among the study population 33.7% required preventive treatment and 22.3% required prompt treatment.

Discussion

In a woman's life, the major physiological and hormonal changes occur in pregnancy. the most significant hormonal change is the increased production of oestrogens and progesterone. The production of these hormones gradually increases in pregnancy until the 8th month. During the last month of pregnancy, progesterone concentrations remain relatively constant, whereas oestrogen levels continue to rise.[1] Increased levels of sex hormones, oestrogen and progesterone, are related to increased permeability of oral vasculatures and decreased host immunocompetency. The tissues supporting the teeth, including the periodontium and especially the gingiva, are also affected.[4] Among the 520 study participants, most of the participants belonged to the age group of 19 – 24 (38%). Similar study was conducted by Saxena P et al in central India. All the participants used toothbrush and toothpaste as their oral hygiene aid. Mouthwash was used by only few participants which was contradictory to the results by Bu Shehab NME et al.[5] More than half of the participants have never visited a dentist. This result was in accordance with the results by Chinenye-Julius A.E et al[6] though contradictory results were found in the study done by Javali MA et al.[7] The possible reason for the conflicting results may be the literacy rate that was 90%. Those who did not visit the dentist gave the primary factor to be the foetal safety. This could be due to the reason that their obstetric provider did not encourage them to see a dentist during pregnancy or themselves lacked understanding about the importance of oral health in pregnancy. Similar results were reported in the study reports of Chacko V et al[8] and Avula et al.[9] Several reasons had been cited as barriers to seeking oral health care services among antenatal mothers. These include fear and anxiety of the treatment, low perception for dental problems and treatment, and misconception regarding effects of dental treatment on the developing foetus. Similar results were reported by Rogers SN [10], Dinas K et al [11] and Mangskau KA et al.[12] More than half of the study population perceived oral health problems. The most prevalent oral health problem was swollen gums, bleeding gums and painful gums. The results were in par with the report given by the American Dental Association that around 60% to 75% of pregnant women have gingivitis.[13] It has also been observed that levels of Bacteroides, Prevotella or Porphyromonas increase during pregnancy.[14] The mean DMFT index in pregnant women is higher in other members of the society. For example, the index determined in a study of pregnant women in Jerusalem was 15.5 ± 4.5,[15] while that of expectant mothers in Ahvaz, Iran, was 6.3 ± 23.01,[16] and of pregnant women in Arak, Iran, mean of DMFT was 5.2 ± 4.83.[17] The scenario in India is no different from other developed or developing countries. The available literature on the prevalence of dental caries in India shows a varied picture with prevalence of caries being very high in some areas and low in some areas. National Oral Health Survey in India which noted a prevalence of caries to be 53.8% The prevalence

decayed teeth, missing teeth and filled teeth was higher in the 2nd trimester. The reason for the increased prevalence is that the pregnant women are predisposed to the development of dental caries. Various factors have been suggested to explain this occurrence. It has been observed that there is an increase in appetite in pregnant women with frequent consumption of cariogenic foods.[18] As evidenced by the Miller's experiments, this leads to the fall of oral pH below the critical value leading to the development of caries. The incidence of caries is further enhanced by the occurrence of morning sickness which causes vomiting and reflux leading to erosion of the dental surfaces.[19] Gingival bleeding can be attributed to the fact that during pregnancy, there is an increase in the metabolism of Estrogen by gingiva and also prostaglandins that are synthesized, cause alterations in gingival tissues.[20] The immune system decreases due to change in hormonal (Estrogen and progesterone) levels, which has a bearing on the rate of collagen production; and hence body becomes unable to repair the gingiva.[21] The mechanisms underlying the increased severity of periodontal diseases during pregnancy were associated to increased vascular permeability, depression of the immune system, and shifts on the composition of supra and sub-gingival microbiota.[22] Hormonal changes during pregnancy, along with gastric acid exposure during recurrent morning sickness, result in increased acidity in the oral cavity that can erode dental enamel.[23,24] Furthermore, progesterone decreases plasma bicarbonate levels, thus contributing to the reduced pH. This, coupled with increased sugar consumption due to dietary cravings, increases the risk for Candida colonisation and dental caries. The results of the present study are in accordance with the study results by Vasiliauskiene et al[25] and Rakchanok et al.[26] The increase in mucosal lesion prevalence may be related to the increasing severity of gingival and periodontal changes, with gingival and periodontal tissues more vulnerable to the action of local irritants as plasma progesterone and oestrogen levels peak by the end of the third trimester.[27] Oestrogen also decreases keratinisation and results in the diminution of the effectiveness of the epithelial barrier.[28]

Conclusion

Emphasis should be made on the relationship of maternal oral health with foetal health and made awareness about the possible risk of preterm low birth weight due to periodontal infection. Oral health care services should be routinely integrated with prenatal care services for all the pregnant women. Specific preventive oral health care programme should be made an integral part of antenatal care by including a dentist or dental hygienist in the antenatal team along with gynaecologist and paediatrician. Their needs have to be met largely through prevention-oriented treatment plan by laying more emphasis on self- care measures and dental care should be provided depending on the trimester of pregnancy.

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Legend Tables

Table 1: Frequency distribution of study subjects based on oral hygiene practices

		Frequency (n)	Percentage (%)
Oral hygiene method	Toothbrush	520	100
Oral hygiene aids	Toothpaste	503	96.7
	Toothpaste and mouthwash	17	3.3
Frequency of brushing	No brushing	0	0
	Once a day	499	96.0
	Twice a day	21	4.0
Method of brushing	Horizontal	74	14.2
	Vertical	39	7.5
	Mixed	407	78.3

Table 2: Frequency distribution of study subjects based on attitude towards dental visit

		Frequency (n)	Percentage (%)
Dental visits	<2 months	73	14.0
	6- 12 months	51	9.8
	>12 months	59	11.3
	Never	337	64.8
Reason for dental visit	Pain	21	11.47
	Restoration	12	6.56
	Prophylaxis	25	13.67
	Routine	27	14.75
	Others	98	53.55
Constraints	Safety concern	190	56.38
	Time	40	11.87
	Cost	32	17.49
	Not a priority	69	20.47
	Advised against	6	1.78
Type of oral health problems faced	Bleeding gums	73	24.58
	Swollen gums	103	34.68
	Painful gums	57	19.19
	Sensitivity	27	9.1
	Food impaction	19	6.4
	Tooth pain	18	6.1

Table 3: Distribution of population based on Decayed Teeth (DT), Missing Teeth (MT) Filled Teeth (FT)

	Mean ± SD
Decayed Teeth (DT)	0.43 ± 0.495
Missing Teeth (MT)	0.06 ± 0.241
Filled Teeth (FT)	0.05 ± 0.226
DMFT	1.21 ± 1.58

Table 4: Distribution of population based on periodontal parameters among the study subjects

Variables		Frequency (N)	Percentage (%)
Gingival Bleeding	Absent	213	41.0
	Present	307	59.0
Periodontal Pocket	Absent	302	58.1
	4- 5mm	121	23.3
	6 Or More mm	97	18.7
Loss Of Attachment	0-3 mm	269	51.7
	4-5 mm	65	12.5
	6-8 mm	89	17.1
	9 - 11 mm	59	11.3
	12 mm or more	38	7.3
Fluorosis	Absent	261	50.2
	Present	259	49.8
Treatment needs	No treatment	229	44.0
	Preventive	175	33.7
	Prompt	116	22.3