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ORIGINAL ARTICLE

A Survey On Dental Knowledge and Gingival Health of Pregnant Women Attending Government Maternity Hospital, Chennai.

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ABSTRACT

Gingival diseases are quite common during pregnancy.

Aim: A study was done to determine dental knowledge and gingival health of pregnant women.

Materials and Methods: The survey was done on 208 antenatal women attending Government Maternity Hospital, Chennai. The dental knowledge was assessed by a close-ended questionnaire. Oral hygiene and gingival health were assessed using Oral Hygiene Index-Simplified and Gingival Index. Statistical analysis using McNemars Chi Square Test and Karl Pearson's Correlation test were done to evaluate the data.

Results: More than 96.6% (201) of the women had good dental knowledge. Mild, moderate and severe gingivitis was found to be 49.5% (103), 46.6% (97) and 3.8% (8), respectively. 7.2% (15), 66.8% (139) and 26% (54) had good, fair and poor oral hygiene, respectively. There was a statistically significant moderate positive correlation between the OHI-S and GI scores ($p = 0.001$, Karl Pearson's Correlation Coefficient = 0.57).

Conclusion: Women should be educated on good oral hygiene practices so as to minimise prevalence of gingivitis during pregnancy.

Keywords: Pregnancy, Gingivitis, Oral hygiene, Dental knowledge

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INTRODUCTION

It is a common belief that every pregnancy invites the loss of a tooth by the mother and some old wive's tales even include the father as a victim!(1)

Pregnancy has no direct causation on tooth loss, but there are a number of factors that influence the rapidity and progression of incipient or already well-established oral disease. The expectant mother may be involved in a multitude of extra activities, which can lead to a neglect of her own oral care and can result in dental problems which require extra attention during this phase. Current research implies periodontal disease may alter the systemic health of the patient and adversely affect the well being of the fetus by elevating the risk of low birth weight and preterm infants (2).

In 1877, Pinard recorded the first case of 'pregnancy gingivitis'. The occurrence of pregnancy gingivitis is extremely common, occurring in 30 to 100% of all pregnant women. It is characterized by erythema, edema, hyperplasia, pain and increased bleeding. Cases range from mild to severe inflammation that can manifest as either marginal enlargement or tumour like enlargement. High levels of progesterone cause an imbalance that may enhance the growth of the oral bacteria that can cause gingivitis. A woman's immune system may also be off killer during pregnancy and this may cause a greater susceptibility to gingivitis-causing bacteria (3). With these factors in mind, a study was done to determine the knowledge on oral health and gingival status of pregnant women.

Objectives

- To assess the knowledge, attitude and practices of oral hygiene and health problems encountered in pregnant women.
- To measure the oral hygiene status in pregnant women.
- To measure the prevalence of gingivitis in pregnancy.
- To compare the oral hygiene levels and the gingival status of the pregnant women.
- To associate the oral hygiene and

Table 1: Sample Distribution

Variables	Distribution	Frequency	Percentage
Age	<=20	27	13.0%
	21 -30	170	81.7%
	>30	11	5.3%
Pregnancy	I	89	42.8%
	II	93	44.7%
	III	20	9.6%
	IV	6	2.9%
Trimester	I	47	22.6%
	II	47	22.6%
	III	114	54.8%
Educational Qualification	Illiterate	21	10.1%
	Primary	14	6.7%
	Middle	37	17.8%
	High school	81	38.9%
	HSC	32	15.4%
	Degree	23	11.1%

gingival scores with the oral health knowledge and dental practices of pregnant women.

Materials and Methods

A cross sectional survey was carried out among women attending the antenatal outpatient department in Government Maternity Hospital, Chennai. Data was collected by visiting the Government Maternity Hospital, Egmore, Chennai. A brief introduction was given to the concerned authority about the purpose and nature of the study and prior permission obtained. A minimum sample size of 200 was decided. The study was carried out for a period of 3 weeks. On days of examination, around 10 – 15 subjects were selected for examination. Random sampling methodology was used to select the subjects from those attending the antenatal outpatient department. A specially designed questionnaire consisting of 15 close-ended questions was distributed and the patients were guided to fill the questionnaire. A single examiner carried out the clinical examination. The Gingival Index (GI) by Loe and Silness, 1963 and Oral Hygiene Index – Simpified (OHI-S) by Greene and Vermillion, 1964 were used to assess gingival status and oral hygiene levels of the selected women, respectively.

Statistical Analysis

McNemers chi square test was used to find the association between the oral hygiene and gingival health of the women.

Karl Pearson's Correlation Coefficient test used to find the correlate the oral hygiene scores and the gingival scores.

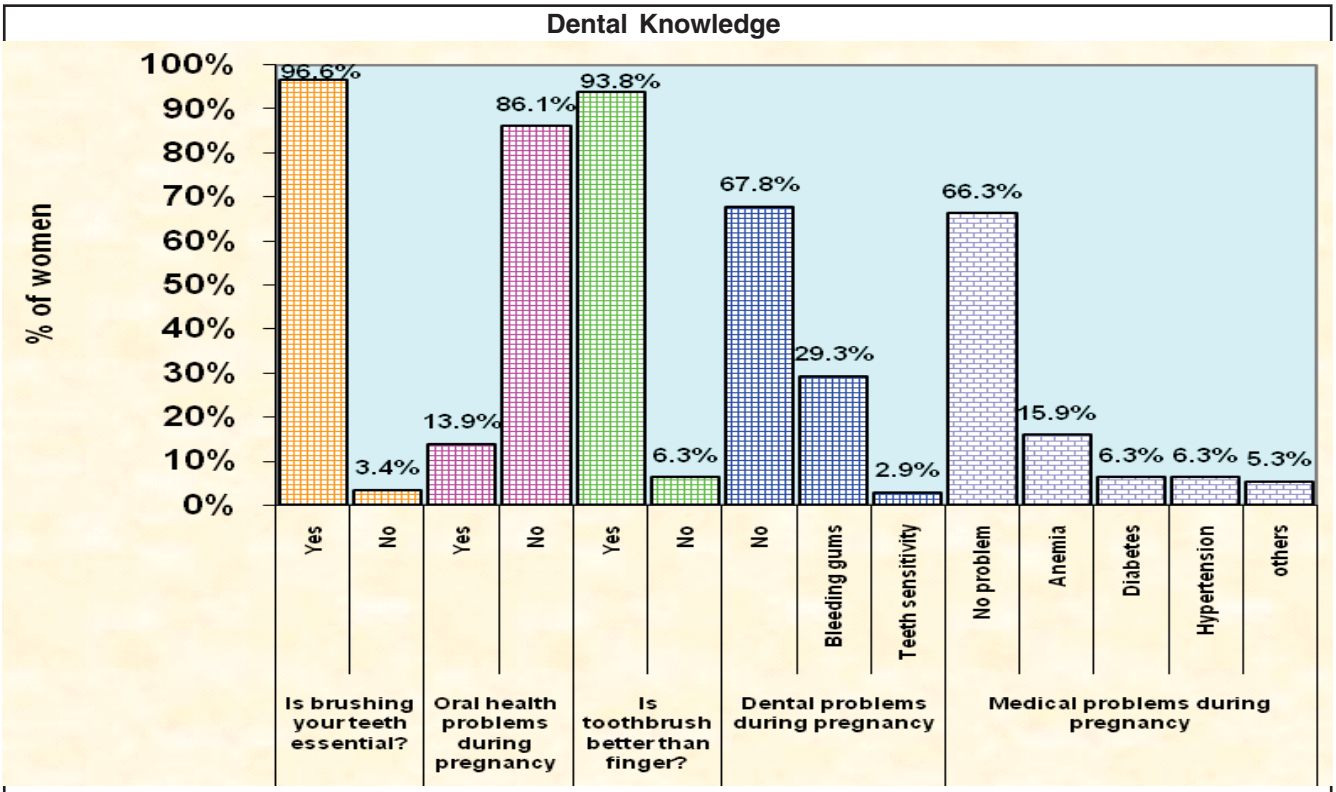

Figure 1: Assessment of dental knowledge, practices and health problems encountered during pregnancy

Chi square test was used to find the statistical significance of the oral health knowledge and practices.

Results

Sample distribution

A total of 208 pregnant women were examined, of which a majority of them, 170(81.7%) were in the age group of 21 – 30 years. Those women below 20 years were 27(13%) and those above 30 years were 11(5.3%). The age of the expectant mothers were in the range of 17 – 38 years, with a mean of 24.53 and a standard deviation of 3.8. Majority of the women, 89(42.8%) were in their first pregnancy while surprisingly, 6(2.9%) were in their fourth pregnancy. 114(54.8%) of the women were in the third trimester, while those subjects in the first and second trimester were equal, 47(22.6%). 21(10.1%) of the women were illiterate, while 23(11.1%) had finished their graduation degree. (Distribution showed in Table 1)

ASSESSMENT OF DENTAL KNOWLEDGE, PRACTICES AND HEALTH PROBLEMS ENCOUNTERED DURING PREGNANCY

It was found that 201(96.6%) of the women felt that brushing their teeth was essential and 195(93.8%) of the women felt that it was better to clean the teeth with toothbrush rather than finger. However, only 29(13.9%) of the subjects were aware of oral health problems during pregnancy. Majority, 141(67.8%) of the women had no dental problems. Bleeding gums was seen in 61(29.3%) of the mothers and tooth sensitivity in 6(2.9%) of the subjects. Anemia was the most common problem with a prevalence of 33(15.9%) of the subjects. Diabetes and hypertension was seen each in 13(16.3%) of the subjects. Hypotension was seen in 4(1.9%) of the expectant mothers. (Figure 1)

128(61.5%) of the subjects never visited a dentist. Only 7(3.4%) of the subjects had a dental checkup during pregnancy. The attitude towards tobacco chewing and cancer was good with a prevalence of 140(67.3%) of the women, being aware of the ill effects of tobacco. 94(47%) of the subjects changed their toothbrush once in three months. 91(43.8%) of the subjects have the habit of mouth rinsing after every meal. 190(91.3%) of the subjects were not aware of the availability of fluoridated toothpaste and 11(5.3%) did not use fluoridated toothpaste in spite of being aware of it. (Figure 2)

Majority, 133(63.9%) of the subjects clean their teeth only once daily and 4(1.9%) subjects clean their teeth after every meal. Toothbrush was the cleansing aid used by 194(93.3%) subjects, followed by finger in 10(4.8%) subjects and neemstick by 4(1.9%). Eating snacks between meals was rare in majority, 82(39.4%) of the women. Pan, tobacco, betelnut, etc. was never used by 201(96.6%) of the women. Tongue cleaning was done regularly by 89(42.8%)

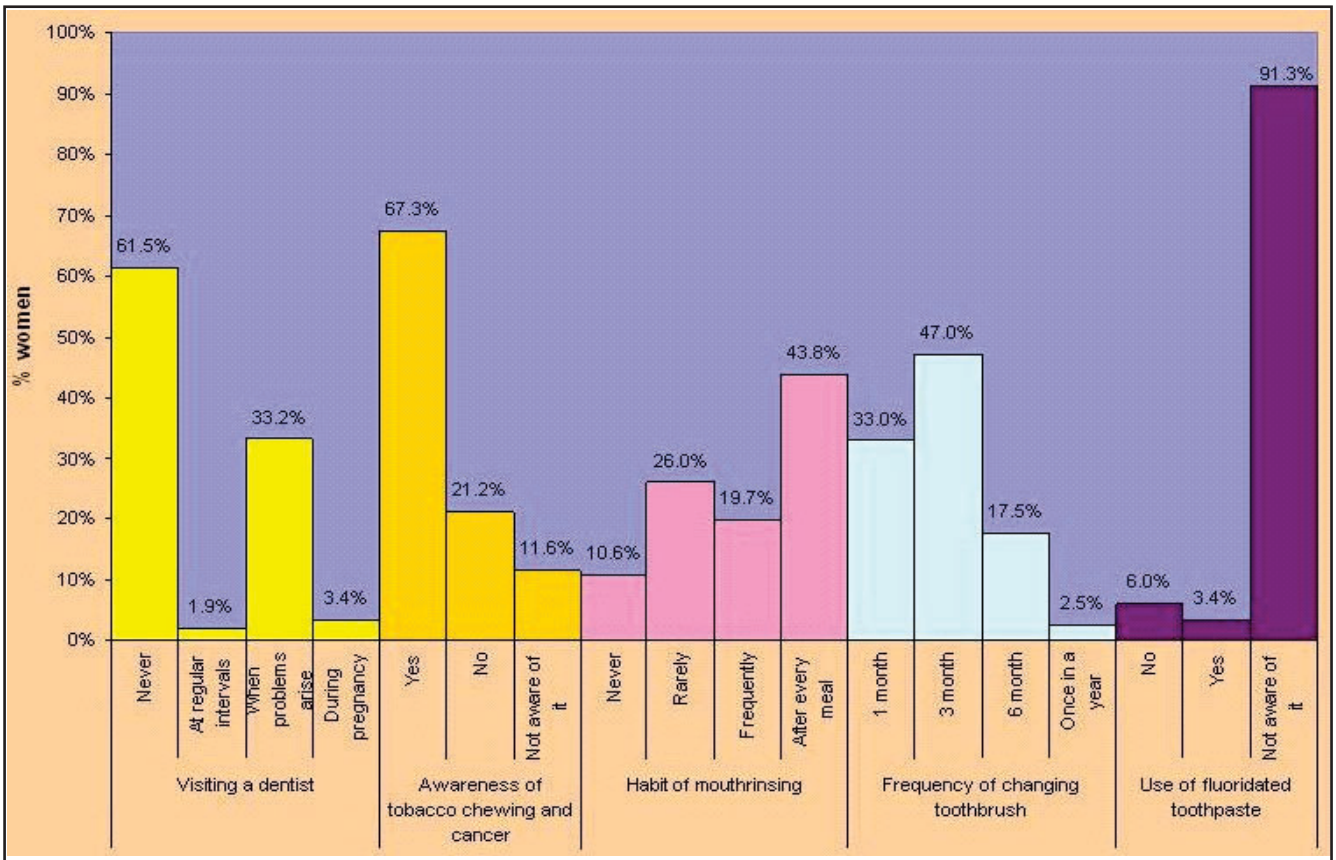

Figure 2: Assessment of dental knowledge, practices and health problems encountered during pregnancy

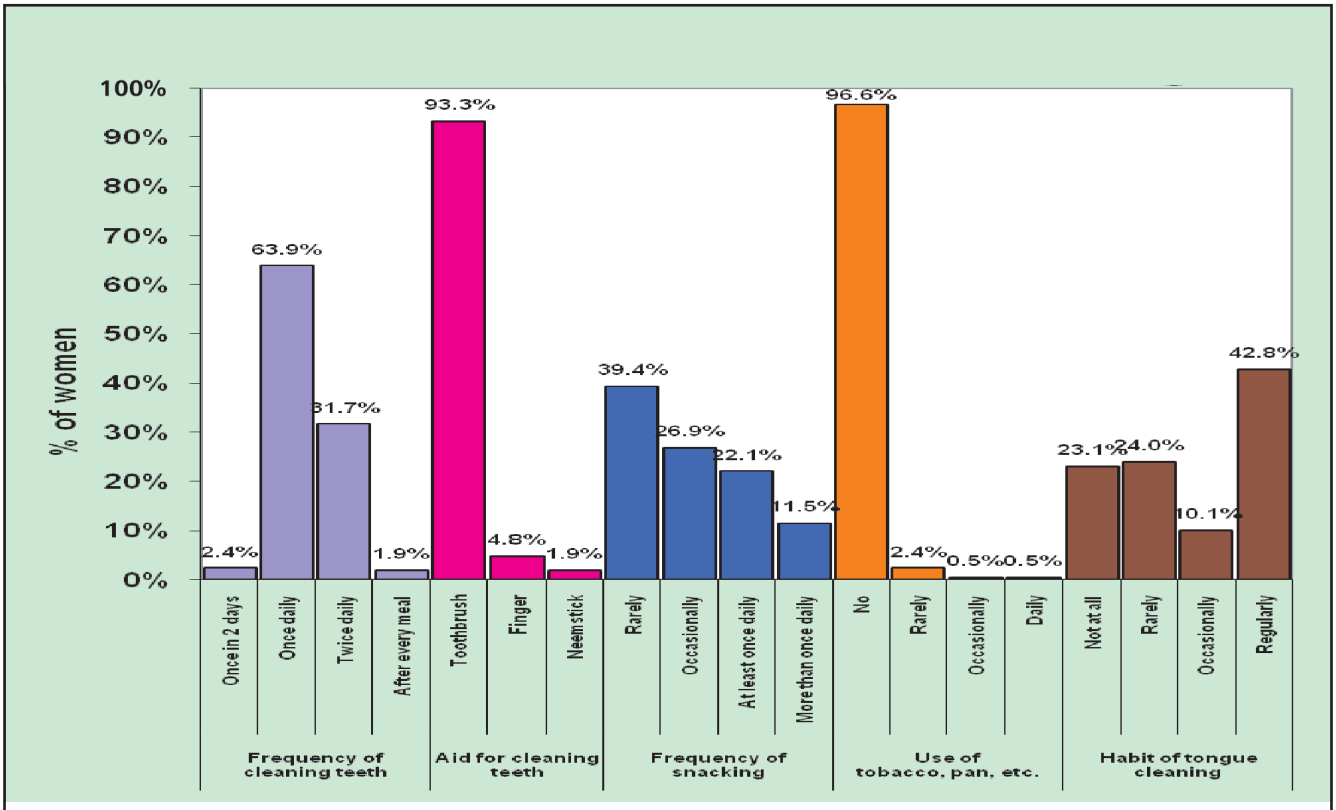

Figure 3: Assessment of dental knowledge, practices and health problems encountered during pregnancy

of the subjects, while 48(23.1%) of the women never had the habit of tongue cleaning. Tooth powder was used by only 27(13%) of the subjects. (Figure 3)

ASSESSMENT OF ORAL HYGIENE

Majority of the subjects, 139(66.8%) had a fair level of oral hygiene, followed by poor oral hygiene in 54(26%) and good oral hygiene in only 15(7.2%) of the subjects (Figure 4).

ASSESSMENT OF GINGIVAL HEALTH

On assessing gingival health, it was found that 103(49.5%) of the subjects had mild gingivitis, followed by moderate and severe gingivitis in 97(46.6%) and 8(3.8%) of the women respectively. (Figure 4)

CORRELATION BETWEEN ORAL HYGIENE AND GINGIVAL HEALTH:

There exists a statistically significant moderate positive correlation between OHI score and GI scores (Karl Pearson's Correlation Coefficient, r=0.57 & p=0.001). This implies that as the oral hygiene score increases, the gingival score also increases. (Table 2)

ASSOCIATION BETWEEN OHI-S SCORE AND DENTAL KNOWLEDGE & PRACTICES

It was found that 29(13.9%) of the women were aware of oral health problems during pregnancy. In spite of being aware, 13(44.8%) of these subjects had poor oral hygiene and only 2(6.9%) of these subjects

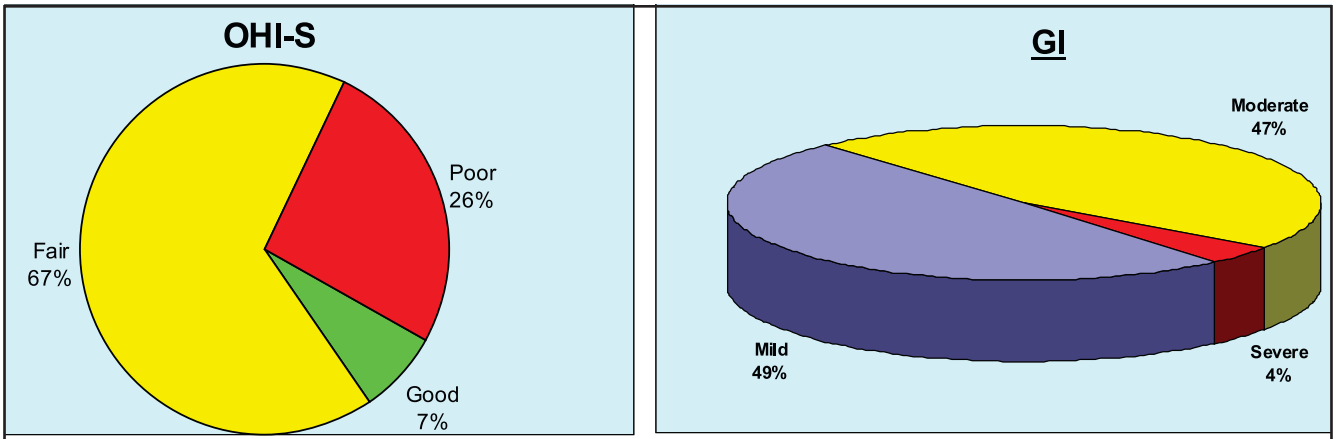

Figure 4: Distribution of oral hygiene and gingivitis among the women

Table 2: Association Between Oral Hygiene Scores And Gingival Scores

		GINGIVAL SCORE			Total
		Mild	Moderate	Severe	
ORAL HYGIENE SCORE	Good	13	2	0	15
	Fair	84	54	1	139
	Poor	6	41	7	54
Total		**103**	**97**	**8**	**208**

McNemars Chi square test p=0.001

had good oral hygiene. These results were found to be statistically significant.

195(93.8%) of the subjects used toothbrush for cleaning the teeth, out of which 134(68.7%) subjects had fair oral hygiene, followed by 46(23.6%) and 15(7.7%) subjects having poor and good oral hygiene respectively. This association was also statistically significant.

Statistically significant association was found among the women who have never visited a dentist who had prevalence of good 7(5.5%), fair 88(68.8%) and poor 33(25.8%) oral hygiene respectively, when compared with the other categories of patients. (Table 3)

ASSOCIATION BETWEEN GI SCORE AND DENTAL KNOWLEDGE & PRACTICES

Among the 201(96.6%) who felt that brushing their teeth was essential, 103(51.2%) had mild gingivitis, and this was found to be statistically significant when compared with those having moderate and severe gingivitis. (Table 4).

Among the 195(93.8%) subjects who felt that toothbrush was better than finger, 99(50.8%) had mild gingivitis and was statistically significant when compared with those having moderate, 92(47.2%) and severe, 4(2.1%) gingivitis. Among the women who had bleeding gums during pregnancy, 40(65.6%) had moderate gingivitis and this was statistically significant when compared with the other groups. Among the subjects, 91(43.8%) who had the habit of mouthrinsing after every meal, 50(54.9%) of them had moderate gingivitis and was statistically significant when compared with the other groups. Similarly, questions related to the frequency of changing toothbrush, aid used for cleaning teeth, use of pan, tobacco and the habit of tongue cleaning also yielded statistically significant results when compared with the gingival scores. (Table 4)

DISCUSSION

Very few studies have investigated the extent of dental awareness among pregnant women.

Alwaeli HA and Al Jundi SH (2005) (4) did a study on pregnant women in Jordan where they reported that 56% of the subjects were not aware of the necessity to increase the frequency of toothbrushing during pregnancy. In my study, it is found that 86.1% of the women were not aware of oral health problems during pregnancy. So we can see that a majority of pregnant women were not aware of oral health problems during pregnancy.

Christensen LB, Jeppe Jensen D, Peterson PE (2003) (5) did a study on the oral health of Danish women during pregnancy and reported that 96% brushed their teeth atleast twice a day. Similarly, a study was done by Hullah E, Turok Y, Nauta M, et al (2008) (6) on the oral hygiene habits in pregnant women of North London, in which it was reported that 73.7% of the subjects brushed their teeth twice daily. A study done by Mansour KA and Khalid M (1993) (7) on the Saudi pregnant women showed that 77% of the women brushed their teeth twice daily. However, in our study we see that 66% of the subjects brushed their teeth twice daily. The same value was obtained in a study done by Honkala S and Al Ansari J (2005) (8) on the oral hygiene habits and dental attendance of Kuwait Pregnant women where 66% of the subjects brushed their teeth twice daily.

Table 3: Association between Oral Hygiene Score and Dental Knowledge and Practices

		OHI-S Score						
		Good		Fair		Poor		
Questions	Response	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Significance
Oral health problems during pregnancy	Yes	2	6.9%	14	48.3%	13	44.8%	$\chi2$=6.36p=0.04
	No	13	7.3%	125	69.8%	41	22.9%	significant
Is toothbrush better thanfinger?	Yes	15	7.7%	134	68.7%	46	23.6%	$\chi2$=9.43p=0.01
	No			5	38.5%	8	61.5%	significant
Frequency of visiting dentist	Never	7	5.5%	88	68.8%	33	25.8%	$\chi2$=14.99p=0.02
	Regular intervals	2	50.0%			2	50.0%	
	Problemarises	5	7.2%	47	68.1%	17	24.6%	
	Pregnancy	1	14.3%	4	57.1%	2	28.6%	

Table 4: Association Between Gi Score and Dental Knowledge/Practices

		GI Score						
		Mild		Moderate		Severe		
Questions	Response	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Significance
ToothBrushing essential	Yes	103	51.2%	92	45.8%	6	3.0%	χ2=16.1p=0.01
	No			5	71.4%	2	28.6%	significant
Istoothbrush betterthanfinger?	Yes	99	50.8%	92	47.2%	4	2.1%	χ2=27.3p=0.001
	No	4	30.8%	5	38.5%	4	30.8%	significant
Dental problems duringpregnancy	No	83	58.9%	53	37.6%	5	3.5%	χ2=15.8p=0.003
	Bleeding gums	18	29.5%	40	65.6%	3	4.9%	significant
	Teeth sensitivity	2	33.3%	4	66.7%			
Habit of mouthrinsing	Never	10	45.5%	8	36.4%	4	18.2%	χ2=15.8p=0.003
	Rarely	27	50.0%	26	48.1%	1	1.9%	significant
	Frequently	27	65.9%	13	31.7%	1	2.4%	
	After every meal	39	42.9%	50	54.9%	2	2.2%	
Frequency of changing toothbrush	1 month	34	51.5%	30	45.5%	2	3.0%	χ2=25.3p=0.001
	3 months	48	51.1%	45	47.9%	1	1.1%	significant
	6 months	16	45.7%	18	51.4%	1	2.9%	
	One year	1	20.0%	2	40.0%	2	40.0%	
Aid used for cleaning teeth	Toothbrush	95	49.0%	93	47.9%	6	3.1%	χ2=11.5p=0.02
	Finger	4	40.0%	4	40.0%	2	20.0%	significant
	Neemstick	4	100.0%					
Use of pan, tobacco, betelnut.	No	101	50.2%	94	46.8%	6	3.0%	χ2=30.09
	Rarely	2	40.0%	2	40.0%	1	20.0%	p=0.001
	Occasionally					1	100.0%	significant
	Daily			1	100.0%			
Habit of tongue cleaning	Not at all	20	41.7%	23	47.9%	5	10.4%	χ2=10.5p=0.10
	Rarely	23	46.0%	26	52.0%	1	2.0%	significant
	Occasionally	9	42.9%	11	52.4%	1	4.8%	
	Regularly	51	57.3%	37	41.6%	1	1.1%	

It has also been reported that 90% of the Danish women (5) regularly visited the dentist in comparison to 36% of the women who had regular visits to the dentist in North London (6). Both of these values are highly contrasting with the results of our study in which only 4% of the women were regular attendees to the dentist. Similarly, 33% of the English women (6) visited the dentist during pregnancy when compared with one tenth (3.4%) of the women in our study. Only 50% of the Kuwait pregnant women (8) had visited a dentist during pregnancy. We can say that the dental knowledge and oral health practices are much better in foreign countries when compared with that in India.

Another fact to be noted is that the mean age of English pregnant women (6) was 28.19 ± 6.07 years, but that of Chennai women was 24.3 ± 3.81 years.

Natalie JT, Phillipe FM, Caroline AC (2008) (9) did a study on the oral health practices of pregnant Australian women and reported that 99% of the subjects felt that brushing their teeth was essential. 88% of the Saudi pregnant women (7) felt that brushing their teeth is essential. Almost similar results were obtained in our study in which 96.6% of the women felt that brushing their teeth was essential. 67% of the subjects visited the dentist only when they trouble and 8% had never visited a dentist. The results in our study are reversed with the former being 33.2% and the latter, 61.5%.

Naumah I and Annan BD (1998) (10) did a study on the periodontal status and oral hygiene practices of pregnant and non pregnant women where they reported the prevalence of gingival bleeding was 89% among pregnant women, in contrast with only 29.3% in my study. In a study done by the same authors, Naumah I and Annan BD (2005) (11) in Ghana, there was only 1% prevalence of gingival bleeding. Thus the wide variations in gingival bleeding among pregnant women may be due to the fact that apart from hormonal changes, the presence and duration of plaque levels and other local irritants are important in determining the severity of gingival bleeding.

Mona T L-R, Paula K, Philippe, et al (2004) (12) did a study on the pregnant women of Washington in which the prevalence of dental problems during pregnancy was

reported to be 47%, while in my study, it was only 32.2%. The reported incidence of dental problems among Australian women (9) was 65%. It is surprising that the prevalence is less when compared to the findings of a study in Washington and Australia.

CONCLUSION

From this study, we can conclude that majority of the pregnant women had a fair level of oral hygiene with mild gingivitis. Even though they were aware of oral hygiene practices, they did not apply it. Only 50% of them had regular visits to the dentist. More than 90% of the subjects were not aware of the availability of fluoridated toothpaste. So dental health education programmes can be carried out at regular intervals so as to impart knowledge on dental health and oral hygiene practices.

The dentist should be approached as early as possible in the first stages of pregnancy for a thorough examination so that all necessary treatment can be carried out well in advance.

A special dental program should be designed to meet the needs of the would-be mothers. A program that can establish a personal sense of responsibility on the women's part to attain and maintain optimum dental health of herself and her child needs to be presented.

Recommendations for Dental Management during Pregnancy

It's best to postpone non-emergency procedures during the first trimester to avoid anything that could affect the developing baby. The last trimester is often avoided because it can be uncomfortable for the patient to sit for extended-periods.

- Daily brushing with a low-abrasive, fluoridated toothpaste using a soft-bristled brush and flossing
- Advice should be given on a suitable diet to be adopted both to protect the parent and the developing child. Intake of sugars, starches and other food items, which promote dental decay, should be limited.
- In case of morning sickness, brushing teeth should be avoided for atleast 30 minutes after vomiting.
- To prevent gagging, a small-headed toothbrush should be used. Alteration of the brushing timings (rinsing in the morning with water and brushing at lunch time) may also help prevent gagging. Toothpaste can also be avoided until gagging lasts.
- Preventive topical fluoride application procedures may also have to be carried out in cases where predilection towards dental decay is found.

It's a myth that calcium is lost from the mother's teeth and "one tooth is lost with every pregnancy."

With proper guidance and motivation from the medical and dental professionals, every pregnant woman can have a trouble free pregnancy and be gifted with a healthy baby.

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