Socio Demographic Factors affecting the Oral Health Status and Behaviour of Pregnant Women: A South Indian Context

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Abstract:

Aim: To assess Social and demographic factors affecting the oral health status and behaviour of pregnant women in Kerala.

Methodology: The present cross-sectional study was conducted in a group of expecting mothers at 2 private hospitals in Trichur district, Kerala, India. A questionnaire was used to assess the social and demographic factors affecting the oral health status and behaviour of pregnant women. **Results:** Study subjects having a professional education status did not having any periodontal pocket (CPI score 3 and 4). 85.7 % of the Study subjects having professional education status brushed twice daily whereas only 7.7 % of the study subjects having intermediate education or diploma brushed twice daily. There was a statistically significant difference between BPL status and frequency of brushing, as well as financial independence and number of teeth missing. CPI & LOA score was associated with sociodemographic factors. **Conclusion:** Social factors like SES etc act as a strong hindrance which lead to less use of dental health care services. Dental health education has to be given to overcome this.

Keywords: Sociodemographic factors, oral health status, behaviour, pregnancy

Introduction:

Social determinants of health include both specific characteristics of and pathways by which societal (including cultural) conditions impact health. Examples include income, education, social capital, occupation, community structure, social support, availability of health services etc[1]. Persons can be categorized into subcategories by the method of social stratification. They are classified on the basis of variables which are regarded as significant by the society like income, gender, education etc. Individuals with better parameters are categorized in the higher social status[1].

Health disparities denote a less proportionate burden or risk of death, disease etc. Studies have reported that females visit a dentist more often than males. But very less females get oral care during gestational period which is a crucial period in their life[1].

Gestation is a natural process during which changes in hormonal status occurs. These variations enhance the risk of dental infections like gingivitis during gestation[2]. Periodontal diseases are related to health problems like heart disease, diabetes, preterm birth etc. Some cultural beliefs negatively affect proper nutrition and the ability of females during gestational period to attain better

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dental health[2]. Additionally some research indicates that being pregnant increases the risk of dental caries[3].

During different stages of life social and demographic characteristics affect heath status and even lead to subcategories of riskier groups, during which prenatal care is important. Females during the period of gestation is a target group for giving educational strategies which identifies gestational period as a better stage for establishing healthier practices. Expecting mothers are psychologically more accepting of new information which helps them to advocate good life style habits which can also help the remaining members in the family[4].

Adoption of better life style practices by females during the gestational period depends on socioeconomic variables like literacy, number of kids & age[4]. Dental health behaviour during the gestational period like visit to a dental surgeon, dental hygiene, eating sweets, have a vital impact on their dental health and on their kid's future dental health. Females during their gestational period are advised to brush regularly and floss, and to avoid having high levels of sugar intake.

Females during the gestational period do not know about the impacts of dental health on the foetus and its effects on pregnancy. Researches indicate that females during the gestational period had poor attitude towards dental health care during gestation[5]. Hence, the present study was undertaken to assess Social and demographic factors affecting the oral health status and behaviour of pregnant women in Kerala.

Methodology:

The present cross sectional study was conducted in a group of expecting mothers in two private hospitals in Trichur district of Kerala. The Protocol for study was presented before the ethical committee and Ethical approval was obtained from the University Ethics committee for Human Trials of MS Ramaiah University of applied Sciences. Those who consented to participate in the study were included and those who were 35 years of age and above were excluded from the study. 128 participants were included in the study. The study was carried out from November 2021 – March 2022. Before that a review of literature[8-21] was conducted to derive the social factors affecting the dental health status and behaviours of expecting mothers. Questions were made based on these derived social factors. A questionnaire was designed to collect demographic details and information on social factors affecting the oral health status and behaviour of the study subjects. The independent variables were questions related to social and demographic factors.

Questions related to social factors were used to gather information on job status, work stress, getting adequate leisure time in a day, financial independence, hours of work, whether a BPL card holder, enrolment in government programs, preference of availing dental health care services during pregnancy, free /paid treatment, adequate access to transportation , family encouragement in obtaining Oral Health Care regularly etc. Questions related to behaviour like frequency of brushing, use of tooth paste and also assessment of oral health status by assessing dental caries, periodontal status and also oral mucosal lesions were considered as dependent variables.

The content of the questionnaire was validated by a total of 6 experts including 2 gynaecologists and 4 public health dentists. All the questions got a CVR value of 0.66 or above, hence all questions were retained. The questionnaire was translated and back translated by a Malayalam expert. After which, suitable modifications were made.

Oral health status was assessed using DMFT index and CPI Index, Oral mucosal lesions scoring and coding adopted from WHO oral health assessment proforma 1997.Statistical analysis was done using SPSS version 21 .Chi square test and fischer's exact test was performed to test association between categorical variables. Fischer's exact test was done in case where value is less than 5 for more than 20 percent of the expected frequencies.

Results:

The Mean age of the study subjects is 25.79.The mean CPI score is 2.72. The mean LOA score is 0.141. Mean DMFT is 4.586.Mean number of decayed teeth is 1.953.

		Educational status				Total
		High school	Intermediate or diploma	Graduate	Profession or Honours	
CPI(high score)	2.00	7	8	32	7	54
		13.5%	25.8%	84.2%	100.0%	42.2%
	3.00	33	17	5	0	55
		63.5%	54.8%	13.2%	0.0%	43.0%
	4.00	12	6	1	0	19
		23.1%	19.4%	2.6%	0.0%	14.8%
Total		52	31	38	7	128
		100.0%	100.0%	100.0%	100.0%	100.0%

Table 1: Distribution of study subjects according to Education and CPI score.

Study subjects who reported having a professional education did not have CPI score 3 and 4, which codes for shallow and deep periodontal pocket. The percentage of study subjects having shallow and deep pockets ie, CPI score of 3 and 4 increased with decrease in level of education with a highly significant difference among various educational levels. This difference was statistically significant. 85.7 % of the Study subjects having professional education status brushes twice daily, while only 7.7 % of the study subjects having intermediate education or diploma brushed twice daily .Percentageof study subjects who brushes twice daily decreased with decreasing educational level which was statistically significant (p value =0.000).

Variable	N(%)
Permanent Job Status	
Yes	10(7.8)
No	19(14.8)
Not applicable	99(77.3)
Adequate leisure time	
Yes	22(17.2)
No	106(82.8)
Job or Work Stressful(including Household Work)	
Yes	67(52.3)
No	61(47.7)
Financial Independence	
Yes	27(21.1)
No	101(78.9)

Religion	
Hindu	44(34.4)
Muslim	62(48.4)
Christian	22(17.2)
Hours of work	
4-6 hrs	2(1.6)
6-8 hrs	68(53.1)
>8 hrs	58(45.3)
BPL Card Holder	
Yes	63(49.2)
No	65(50.8)
May be	0(0)
Don't know	0(0)

Table 2: Distribution of study subjects according to Socio-demographic factors.

10(7.8 percent) of the study subjects reported that they have a permanent job status. 22(17.2 percent) of the study subjects said that they were having adequate leisure time. 67(52.3 Percent) of the study subjects said that their job which includeshousehold work also is stressful. 27(21.1%) of the study subjects reported having financial independence. 44(34.4 %) of the study subjects wereHindus, 62(48.4) were Muslims, 22(17.4%) were Christians. 2 (1.6%) of the study subjects reported that they worked for 4-6 hours, 68 (53.1%) of the study subjects reported that they worked for 6-8 hours, 22 (17.2%) of the study subjects reported that

they worked for >8 hours. 63 (49.2%) of the study subjects were BPL card holders.6 (4.7%) of the study subjects reported that a dental clinic was situated less than1 km away from their residence. 12 (9.4%) of the study subjects reported that the nearest dental clinic from the residence was 1-2 km away, while 56 (43.8%) and 54 (42.2%) of the study subjects reported that the nearest dental clinic from the residence was 2-3 km away and greater than 3 km away respectively. 35 (27.3%) of the study subjects reported that they avail services like regular check-up, diet counselling etc. provided at the primary health centre for pregnant women . 53 (41.4 %) of the study subjects reported that their health insurance/ESI does not cover dental treatmentcosts. 61 (47.7%) of the study subjects said that theyhad enrolled in government based health programs. 40 (31.3%) preferred to avail dental health care from private dental clinics and 46 (35.9%) preferred to avail dental health care from private dental college. 88 (53.1%) of the study subjects reported that they preferred free health services to paid services while,60 (46.9%) of the study subjects said that they preferred paid health services.107 (83.6 %) of the study subjects replied that they had adequate access to public/private transportation, whereas, 21 (16.4%) of the study subjects replied thatthey had no adequate access to public/privatetransportation. 42 (32.8%) of the study subjects reported that their family encouraged them in obtaining oral health care services regularly and 86 (67.2%) of the study subjects reported that family didnot encourage them in obtaining oral health careservices regularly.

CPI-High Score				
Whether you are a Bpl card holder	Calculus	Pocket of 4-5 mm	Pocket of 6 mm or more	Total
Yes	4(6.3%)	41(65.1%)	18(28.6%)	63(100.0%)
No	50(76.9%)	14(21.5%)	1(1.5%)	65(100%)
Total	54(42.2%)	55(43%)	19(14.8%)	128(100%)

Table 3: CPI score of study subjects based on BPL status.

Chi square value-67.636, p value<.001-highly significant

		LOA -high score		Total
		No loss of attachment	Loss of attachment of 4-5 mm	
Educational status	High school	41	11	52
		78.8%	21.2%	100.0%
	Intermediate or diploma	25	6	31
		80.6%	19.4%	100.0%
	graduate	37	1	38
		97.4%	2.6%	100.0%
	Professional	7	0	7
		100.0%	0.0%	100.0%
Total		110	18	128
		85.9%	14.1%	100.0%

Chi square -8.136, p value=.045-significant

Table 4: LOA based on educational status.

There was a significant difference between financial independence and total missing teeth where, 74.1 % of study subjects who reported having financial independence did not have any missing teeth compared to 20.8% of the study subjects who had no financial independence. (p value<0.001).

There was a significant difference between whether there were BPL card holder and frequency of tooth brushing, only 7.9 % of the study subjects who were BPL card holders had a habit of brushing twice daily compared to 66.2% of study subjects having no BPL Card. (p value=0.000).

Sociodemographic factors affecting the frequency of Tooth brushing were miscarriage, job, income, education, SES,job status, work stress, financial independence, hours of work, BPL status, enrolment

in government programs, preference of availing dental health care services during pregnancy, choice of free /paid treatment.

Sociodemographic factors affecting the use of branded tooth paste were job ,income, education, SES, job status ,financial independence , BPL status enrolment in government programs, preference of availing Oral health care services during pregnancy, choice of free/ paid treatment, access to transportation and family encouragement in obtaining regular oral health care.

Use of oral hygiene aids were associated with sociodemographic factors like miscarriage, job ,income, education, SES, job status , getting adequate leisure time in a day ,work stress, financial independence, BPL status , enrolment in government programs, preference of availing oral health care services during pregnancy, choice of free / paid treatment, access to transportation , family encouragement in obtaining regular oral health care.

Perception of oral health status was associated with sociodemographic factors such as miscarriage, job ,income, education, SES, job status , getting adequate leisure time in a day , financial independence, BPL status, enrolment in government programs , preference of availing oral health care services during pregnancy, choice of free/ paid treatment, access to transportation , family encouragement in obtaining regular oral health care.

Perception of oral health behaviour was associated with sociodemographic factors such as job ,income, education, SES, job status ,financial independence, BPL status, distance of dental clinic from residence, preference regarding availing oral health care services during pregnancy, family encouragement in obtaining regular oral health care.

CPI & LOA was associated with sociodemographic factors like, miscarriage, number of pregnancies, job ,income, education, SES,job status, financial independence, religion, working hours, BPL status, distance of dental clinic from residence, availing services like regular check up, Diet Counselling etc. provided at the Primary Health Centre for pregnant women, enrolment in government programs, preference on availing oral health care services during pregnancy, choice of free/ paid treatment,

access to transportation , family encouragement in obtaining regular oral health care.

Oral mucosal lesions were associated with sociodemographic factors like getting adequate leisure time in a day , work stress, distance to dental clinic from residence, & on whether their Health Insurance/ESI cover Dental Treatment Costs.

Discussion:

In the present study, Study subjects having a professional education status did not having any periodontal pocket, (CPI score 3 and 4).The percentage of study subjects having shallow and deep pockets (CPI score of 3 and 4) increased with decrease in level of education with a very highly significant difference among various educational levels. In the study done by Payal S et al[21], level of education showed a direct impact, which means uneducated category of study subjects had significantly higher level of CPI score (2.26) compared to the educated category(2.03). Many of the pregnant women in the 2nd trimester (48.2%) & 3rd trimester (48.8 %) were having CPI score of 3 compared to pregnant women in the first trimester, where, only 25.8 percent were having a CPI score of 3 in the present study. In the study by Payal S et al[21], Females in their first trimester had average CPI score of 1.91 which increased to 2.25 during the second trimester and 2.28 in the third trimester with high statistical significance.

In the present study ,subjects having a professional education had a DMFT score less than 4 which was comparable to Deghatipour M et al [17] where ,having more than 12 years of education was associated with less dental caries,

In the current study, only 1.6 percent of study subjects worked less than 6 hrs , 53.1 percent worked6-8 hrs and 45.3 percent worked greater than 8 hrs a day where as , in the study done by Barbieri W et al4in pregnant women attending the primary health care unit in Sao Paulo Brazil, 76.3 % reported that they worked 4-8 hrs daily and 24.7 % reported that they worked for 9-14 hrs daily .

In the present study, 61.7 percent reported that they had no miscarriage which is comparable to the study done by Barbieri W et al[4] on pregnant women attending the primary health care unit in Sao Paulo

Brazil, 77.9 percent reported that they had no miscarriages.

In the present study, 22.4% of study subjects having miscarriage had a CPI score of 4 compared to 10 % of study subjects having no miscarriage. This is in comparison to the study done by Barbieri W et al[4] which reported that miscarriage and abortion are factors impacting the oral health of pregnant women.

In the present study socioeconomic condition/status and educational status negatively influence the CPI & LOA score and DMFT status . This is similar to the study done by Nota A et al[20] where the level of education is a vital component of socioeconomic condition and educational level of mothers was an important factor on the kid's general and oral health.

In the current study lack of adequate access to transportation, the greater the distance from dental clinic to house/residence was negatively associated with CPI, LOA score and DMFT status. Also, many of them were not sure whether their health insurance covered dental treatment needs. This was similar to the study done by Patrick DL et al[6] , where in Patients with limited socioeconomic resources assess the amount of time & money taken to visiting dental clinic once, in visiting the dentist . The eligibility for Medicaid insurance does not necessarily result in patients' enrollment, and enrollment does not ensure the availability, accessibility, and obtainment of needed dental care.

In the present study, none of the pregnant women visited the dentist during pregnancy. This is in comparison to the study done by Saddki N et al[22] where poor socio-economic conditions denoted by low education level, lack of a job and small household income, were significant factors correlated with decreased probability of not going for a dental visit during the gestational period. In the present study, only 7 percent of the study subjects were caries free. This is in comparison to the study done by El-Mahdi Ibrahim HM et al[2] in Sudan where in only 24.5 % of the study subjects were free from dental caries.

This is in comparison to the study done by El-Mahdi Ibrahim HM et al[2] where,10.7 percent were illiterate, 36.9 percent had educational level of primary school, 30.2 percent upto high school, 22.2

percent had upto higher educational level regarding education.

In the study done by El-Mahdi Ibrahim HM et al[2], 22.6 percent reported that their present dentalhealth was poor. El-Mahdi Ibrahim HM et al[2], reported only 9.5 percent used other dental hygiene methods like dental floss.

In the present study, 41.4 percent of the study subjects reported that they had no health insurance covering dental needs, whereas, 35.9 percent of the study subjects reported that there might be dental insurance, but they were not sure. 22.7 percent of thesubjects reported that they did not know whether they had health insurance covering dental needs. In the studies done by Al Habashneh R, Guthmiller JM et al[23] ,Vergnes JN, Pastor-Harper D et al[24] , Amin M, ElSalhy M et al[25] health insurance coverage was positively correlated with visits to dental surgeon during gestation.

Only 9.4 percent of the study subjects in the present study reported that they frequently visited a dentist. There was no significant association between income and visits to the dentist. This is in contrast tothe study done by Sun et al[26] 2014, where low incomewomen who were pregnant had a regular oral care. This is also in contrast to the studies done by BoggessKA et al[27] and Amin and Elsalhy et al[25] where income was associated with seeking oral health care during pregnancy .The finding of this study is similar to studies done by Al Habashneh R et al[23], Saddki etal[22] which showed no association between income and dental care use during gestation period.

Recommendations:

Further researches have to be carried out in a longitudinal fashion to assess the effect of socio demographic factors identified from this study in detail.

Conclusion:

Sociodemographic factors like SES, job status, financial independence, BPL status, enrolment in government programs, preference regarding availing oral health care services during pregnancy, choice of free / paid treatment, access to transportation, family encouragement in obtaining regular oral health care

etc. acts as a strong barrier resulting in less use of dental health care services, which has to be effectively overcome by proper dental health education.

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