



RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICES OF PERINATAL ORAL HEALTHCARE AMONG  
GYNAECOLOGIST - A CROSS-SECTIONAL SURVEY

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ABSTRACT

**Background:** Mothers with increased cariogenic oral bacteria have a higher tendency of infecting their children at an early age. Thus Gynecologists, the Primary Health Care providers, for expecting mothers bear the unique responsibility to detect and diagnose oral health problems for timely preventive interventions. Thus the aim of the study was to assess the knowledge, attitude and practices of Perinatal Oral Health Care (POHC) among Gynecologists of urban Bengaluru.

**Materials and Methods:** A self-validated questionnaire survey was conducted amongst 100 Gynecologists practicing in urban Bengaluru. The questionnaire consisted of 28 questions which included demographic details, and questions regarding knowledge, attitude and practices of Perinatal Oral Healthcare. The responses were tabulated and subjected to statistical analysis.

**Statistical Analysis:** Chi square test and independent t tests for measuring level of significance.

**Results:** Chi square test analysis revealed that the professionals with higher qualifications, increased professional experience and greater number of consultations had higher knowledge about POHC, which was statistically significant. Only 36% gynaecologists were aware of anticipatory guidance and 15% about dental home. Professionals with higher qualification had a more positive attitude, which was statistically significant.

**Conclusion:** The results of the study concluded that there adequate knowledge and attitude of POHC among Gynecologists, but their lack of practice has to be bridged by conducting educational programs, as they can play a strategic role in the prevention of various oral diseases in the future generations.

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INTRODUCTION

Perinatal oral health plays a crucial role in overall health and well-being of pregnant women and their new-born child (Gaffield, 2001 and Keirse, 2010). The perinatal period is defined as the period around the time of birth, beginning with the completion of the 20-28th week of gestation and ending 1-4 weeks after birth (Dasanayake, 2008). Many women do not seek dental care during their pregnancy (Keirse, 2010 and Dasanayake, 2008). It has been found that periodontal disease may be associated with adverse pregnancy outcomes in humans such as preterm deliveries, low birth weight babies,

and preeclampsia (Dasanayake, 2008; Offenbacher, 1996; Dasanayake, 1998 and Offenbacher, 1998). Mothers with increased cariogenic oral bacteria have an increased tendency of infecting their children at early age (Ramos-Gomez, 2002 and Patil, 2013). The primary goal of perinatal oral health care (POHC), with regard to caries transmission, is to lower the numbers of cariogenic bacteria in an expectant mother's mouth so that Mutans Streptococci (MS) colonization of the infant can be delayed as long as possible (Hale, 2003).

Timely delivery of educational information and preventive therapies to these parents can reduce the incidence of early childhood caries (ECC), prevent the need for dental rehabilitation, and improve the oral health of their children (Lucey, 2009 and Plutzer, 2008). Many expectant mothers are unaware of the implications of poor oral health on their pregnancy, and their unborn child hence it is necessary for the

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Gynaecologist who are more likely to see expectant or new mothers and their infants to be more aware so that the various adverse effects of poor oral health can be prevented. Hence, this study was conducted to assess the knowledge, attitude and practice of Gynaecologists on POHC in Bengaluru City.

## MATERIALS AND METHODS

The study protocol was assessed and approved by the institutional review board of A.E.C.S. Maaruti College of Dental Sciences and Research Centre, Bengaluru, Karnataka, India and ethical clearance was taken from institutional ethics committee. An analytical cross sectional survey was conducted to assess the knowledge, attitude and practice behaviour amongst Gynaecologists of Bengaluru City, Karnataka on POHC. The list of all the registered Gynaecologists practicing in Bengaluru City was obtained from www.practo.com, and 100 Gynaecologists practicing in urban Bengaluru City, registered under Medical Council of India were included in the study.

## RESULTS

Table 1 shows the difference in knowledge about POHC of the respondents. With regards to their educational qualification 81.03% of the respondents having a MD degree showed a mean score of 7.04, as compared to the 38.1% with DGO degree with a mean score of 5.88. The difference was a statistically significant [ $p < 0.001$ ]. There was no statistically significant difference in the knowledge score with regard to the type of practice of the respondents. Eighty percent of the respondents with greater than ten years of practice had good score (mean score 6.89), as compared to 42.86% of respondents with five to ten years of experience (mean score 6.14), and 33.33% of respondents having less than five years of practice (mean score 6.00). This was statistically significant [ $p < 0.001$ ]. There was statistically significant difference [ $p = 0.02$ ] in score with regards to patients seen per day. 73.33% of the respondents having greater than 25 appointments in a day had good knowledge with a mean score of 6.72, compared to 25% respondents having less than ten appointments in a day mean score of 5.75).

**Table 1. Distribution of study respondents according to Knowledge score**

Demographic criteria	N	Poor Score n (%)	Good Score n (%)	Mean	Standard Deviation	Significance level
Educational qualification						
MD	58	11 (18.97)	47 (81.03)	7.04	0.88	$p < 0.001$
DGO	42	26 (61.9)	16 (38.1)	5.88	0.94	
Type of practice						
Institutional & practice	31	13 (41.94)	18 (58.06)	6.42	1.12	$P = 0.182$
Institutional non practice	25	12 (48)	13 (52)	6.28	1.17	
Private Practice	44	12 (27.27)	32 (72.73)	6.80	0.93	
Duration of practice						
< 5 years	3	2 (66.67)	1 (33.33)	6.00	1.00	$P < 0.001$
5-10 years	42	24 (57.14)	18 (42.86)	6.14	1.10	
> 10 Years	55	11 (20)	44 (80)	6.89	0.94	
Patients seen per day						
< 10	4	3 (75)	1 (25)	5.75	0.96	$P = 0.020$
10-25	36	18 (50)	18 (50)	6.36	1.10	
> 25	60	16 (26.67)	44 (73.33)	6.72	1.03	

**Table 2. Distribution of study respondents according to Attitude score**

Demographic criteria	N	Negative score n(%)	Positive score n(%)	Mean	Standard Deviation	Significance level
Educational qualification						
MD	58	9 (15.52)	49 (84.48)	3.52	0.76	$p < 0.001$
DGO	42	22 (52.38)	20 (47.62)	2.38	0.85	
Type of practice						
Institutional & practice	31	12 (38.71)	19 (61.29)	2.97	0.88	$P = 0.446$
Institutional non practice	25	8 (32)	17 (68)	2.92	1.04	
Private Practice	44	11 (25)	33 (75)	3.16	1.01	
Duration of practice						
< 5 years	3	1 (33.33)	2 (66.67)	2.67	0.58	$P = 0.901$
5-10 years	42	14 (33.33)	28 (66.67)	2.86	0.95	
> 10 Years	55	16 (29.09)	39 (70.91)	3.20	0.99	
Patients seen per day						
< 10	4	1 (25)	3 (75)	2.75	0.50	$P = 0.959$
10-25	36	11 (30.56)	25 (69.44)	3.00	0.86	
> 25	60	19 (31.67)	41 (68.33)	3.08	1.06	

A self-validated questionnaire, consisting of 28 questions, which included demographic details and questions pertaining to knowledge, attitude and practices about perinatal oral health care, was collected in-person from the practitioner. The responses provided were scored. In the knowledge section the max score is nine, where score of seven or greater is considered as good. The maximum attitude score is four, and a score of greater than two is considered as good. Practice score is considered as good if it is greater than five out of maximum of score eight. These results were tabulated and subjected to statistical analysis. The knowledge, attitude and practice scores were compared to each of the demographic parameter, using chi-square test to find whether there were any significant differences between the groups in each demographic parameter. The mean scores were also compared to each demographic parameter using independent t-test.  $p < 0.05$  was considered significant in all the cases.

Table 2 depicts the difference in attitude of the respondents regarding POHC. The values suggest that gynaecologists in private practice only, have a more positive attitude than other types of practices, however, the difference was not statistically significant. The 84.48% of the practitioners having a MD degree had a positive score with a mean attitude score of 3.52, as compared to 47.62% with DGO degree with a mean attitude score of 2.38. This was statistically significant [ $p < 0.001$ ]. There was no statistically significant difference in the attitude scores of the respondents with respect to type of practice, duration of practice and patients seen per day. Table 3 portrays the difference in practices of the respondents regarding POHC. 56.9% of respondents having MD degree had good practice scores as compared to 38.1% with DGO degree with regards to POHC, and was statistically significant [ $p < 0.001$ ]. 56.67% Respondents having more than 25 appointments per day have better practice score (mean score

5.95), as compared to 25% of respondents having less than ten appointments per day (mean score 5.00), which too was statistically significant [ $p=0.0036$ ]. Type and duration of practice of the respondents with regards to practice scores, were not statistically significant.

increased years of experience, which is in comparison to the studies done by Deshpande and colleagues (Deshpande, 2015), and Eleni and colleagues (Eleni, 2009). However the knowledge score percentage in their study was lesser (69%), than the present study (82%), which can be attributed to the

**Table 3. Distribution of study respondents according to Practice score**

Demographic criteria		N	Poor score n(%)	Good score n(%)	Mean	Standard Deviation	Significance level
Educational qualification	MD	58	25 (43.1)	33 (56.9)	6.04	1.31	p=0.001
	DGO	42	26 (61.9)	16 (38.1)	5.21	1.05	
Type of practice	Institutional & practice	31	18 (58.06)	13 (41.94)	5.58	1.34	P=0.099
	Institutional non practice	25	16 (64)	9 (36)	5.32	1.15	
	Private Practice	44	17 (38.64)	27 (61.36)	5.98	1.25	
Duration of practice	< 5 years	3	2 (66.67)	1 (33.33)	5.00	1.00	P=0.072
	5-10 years	42	24 (57.14)	18 (42.86)	5.41	1.06	
	> 10 Years	55	25 (45.45)	30 (54.55)	5.95	1.38	
Patients seen per day	< 10	4	3 (75)	1 (25)	5.00	0.82	P=0.036
	10-25	36	22 (61.11)	14 (38.89)	5.33	1.17	
	> 25	60	26 (43.33)	34 (56.67)	5.95	1.29	

**Table 4. The percentage responses given for each questions in the questionnaire**

Questions	Correct Response	Wrong Response	Total
KNOWLEDGE			
Does active periodontitis affect foetus growth/pregnancy outcomes?	79	21	100
Does prevalence and severity of dental caries in pregnant women affect caries prevalence in the child?	35	65	100
Does hormonal changes during pregnancy hinder the body's ability for repair of gingival tissue?	82	18	100
Can dental treatment be provided during pregnancy?	75	25	100
What is the antibiotic of choice for treatment of dental infection in pregnant women?	100	00	100
What is the analgesic of choice for treatment of dental pain in pregnant women?	100	00	100
Is usage of local anaesthesia during pregnancy to carry out dental treatment safe?	77	23	100
Is usage of inhalation anaesthesia during pregnancy to carry out dental treatment safe?	62	38	100
Can diagnostic dental X-ray be taken during pregnancy?	45	55	100
ATTITUDE			
Should Perinatal Oral Health Care be included as a part of prenatal care?	94	06	100
Should Perinatal Oral Health counselling be provided to pregnant women?	89	11	100
Is lack of demand justifiable for not providing service of Perinatal Oral Health Care?	68	32	100
Is lack of time is justifiable for not providing service of Perinatal Oral Health Care?	53	47	100
PRACTICE			
Is it necessary to perform oral examination of the pregnant women?	92	8	100
The preferable time period to get the treatment done in patients requiring dental treatment is?	98	2	100
Do you refer the patients requiring dental treatment to the Dental Specialist?	96	4	100
Do you refer your patients to a Pedodontist for Anticipatory Guidance?	36	64	100
Do you refer your patients to a Pedodontist, for them to get an idea about the establishment of Dental HOME of the child yet to be born?	15	85	100
How many times do you recommend teeth brushing in a day?	100	0	100
Do you recommend them to floss their teeth regularly?	46	54	100
Do you recommend them to use mouth rinse?	86	14	100

## DISCUSSION

Gynaecologists are important health care professionals involved in the appraisal and treatment of women throughout their lifespan. With increasing links between oral and general health problems it is essential for them to acknowledge the impact of dental caries and periodontal diseases and its associated risk factors on women's overall health, as well as her child's oral health when born. This will facilitate appropriate decisions regarding timely and effective intervention for oral health. Hence, primary and primordial preventive approaches towards oral health, for both mother and child are important during pregnancy. This can be done by organized efforts of both dental practitioners and gynaecologists. Very few studies are reported among gynaecologists in this geographic domain, on POHC. Hence, this study gives an insight into the knowledge, attitude and practices of gynaecologists regarding POHC in Bengaluru, Karnataka. The present study shows that most gynaecologists had adequate knowledge on POHC. In addition their knowledge score improved with higher qualification and

larger sample size, in the present study (Table 1). Gynaecologists in our study showed a positive attitude of POHC which is in conjunction to the study done by Baseer and colleagues (Baseer, 2014). Moreover the gynaecologists opted for POHC to be added in the curriculum and have periodic educational programs to update themselves. In addition, visits to the dentist were recommended to be an integral part of antenatal check-ups. This positive attitude among the gynaecologists will definitely improve the quality of primordial prevention of the oral diseases in children (Table 2). Above 85% (Table 4) of gynaecologists in Bengaluru were having good practice scores with regards to oral check-up, favourable treatment time, timely referral and daily oral hygiene practices excluding flossing. Due to their busy schedule and lack of time, 96% (Table 4) preferred referral rather than practicing themselves. Sometimes, due to problems that can be faced in accessing dental care, pregnant patients may turn to gynaecologist in primary health care centre for their oral health needs, resulting in gynaecologists encountering patients presenting with oral and dental problems.<sup>16</sup> But access to state of the art quality dental care is easily available in Bengaluru as

opposed to other remote towns, thus referral is a feasible option. Our study also portrayed that 65% (Table 4) of the practicing gynaecologists were unaware of the vertical as well as horizontal transmission of streptococcus mutans. Multiple studies have documented maternal-to-child transfer of caries-causing oral bacteria (Li and Caufield, 1995; Klein and colleagues, 2004). Hence, sustained reductions in maternal oral bacterial levels are essential for preventing caries in both mother and child. In 1996, Offenbacher and colleagues (Offenbacher, 1996), first reported a potential association between maternal periodontal disease and delivery of a preterm/low birth weight infant. In a subsequent case-control study, Dasanayake and colleagues studied 55 pairs of women, and concluded; mothers with 'healthy gingiva' were at lower risk for low birth weight infants (Dasanayake, 1998). Early studies led to the hypothesis that periodontopathic bacteria, primarily Gram-negative anaerobes, may serve as a source for endotoxin and lipopolysaccharides, which then increases local inflammatory mediators including PGE<sub>2</sub>, and cytokines, and this increase system inflammatory media to then lead to preterm birth.<sup>7</sup> Saraiva and colleagues, suggested that preterm birth was associated with increased dental caries in primary dentition.<sup>19, 20</sup> In our study, 79% (Table 4) of gynaecologists had knowledge on the effect of active periodontitis on foetus growth and pregnancy outcomes. The present study showed that only 46% (Table 4) of respondents recommended flossing as a regular practice.

The response was in conjunction to the study done by Reddy and colleagues, among the clinicians attending the gynaecology ward and, only 35% (Table 4) of the clinicians advised their patients to maintain good oral hygiene and to have routine dental check-up during pregnancy (Reddy, 2013). According to a previous study by Al-Habashneh and colleagues, and Wilder and colleagues, 68% gynaecologist did not advise women to include a periodontal evaluation as part of their prenatal care, and about 32% general doctors felt that periodontal disease can be treated safely during pregnancy (Al-Habashneh, 2008 and Wilder, 2007). As stated by the California Dental Association Foundation Oral Health Care during Pregnancy and Early Childhood: Evidence-based Guidelines for Health Professional (California Dental Association Foundation, 2010), dental x-rays can be taken, with adequate shielding and protection. However in the present study only 45% (Table 4) of gynaecologists were aware of it. A cent percent (Table 4) consensus was achieved in regard to the usage of non-teratogenic antimicrobials and analgesics during pregnancy as approved by FDA.<sup>25, 26</sup> Only 36% (Table 4) gynaecologists knew about pedodontists' role in anticipatory guidance<sup>27</sup>, and furthermore only 15% (Table 4) gynaecologists knew about the dental home<sup>28</sup> concept. Even though, there have been few similar studies earlier, the practices of dental home and anticipatory guidance had not been assessed. Hence the gynaecologists have to be made aware of the dental home concept, which aims at dental intervention being provided as early as even before attaining the age of one year, so as to possibly eliminate the aetiology of preventable dental diseases and intercept the progression of acquired dental anomalies.

In interpreting the findings of the present survey, it's important to delineate the potential limitations. Due to the self-reported aspect of the information, it is difficult to determine whether reported practices reflected actual practices, then on that point, there may be an ingredient of social desirability biases, which

may permit respondents to over-or under report attitude and exercise.<sup>15</sup> Thus in order to overcome such shortcomings of any questionnaire survey as a matter of fact, we have to base further studies on an educational model rather than an assessment of the current status. In doing so we will come to know the baseline knowledge, attitude and practices as well as educate them on the more recent protocols, not taking heed about the bias as the recent concepts are already being provided in the educational program followed by a post-program assessment.

## Conclusion

Dental awareness and attitudes among Gynaecologists/Obstetricians in Bengaluru city was found to be satisfactory. However, they expressed their need for further information regarding the prevention of oral diseases. With the help of continuing medical and dental education programs, interdisciplinary group discussions and symposiums, we can refresh and enrich their wisdom. As far the future is concerned including POHC as a part of the medical curriculum can serve as a foundation for saving smiles.

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