Original Article

Perception of Periodontal Diseases among Antenatal Care Providers

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ABSTRACT

Objective: To assess the awareness, knowledge and attitude of antenatal care providers (ANC) regarding the periodontal disease and its association with adverse pregnancy outcomes in tertiary care hospitals of Pakistan.

Study Design: A cross sectional study

Place and Duration of Study: This study was conducted at the Four Tertiary Care Hospitals of Islamabad and Rawalpindi among Antenatal Health Care (ANC) providers from December 2019 to March 2020.

Materials and Methods: Approval was sort from the ethical review committee of Armed Forces Institute of Dentistry Rawalpindi. A predesigned questionnaire, containing the demographic information to judge the knowledge, attitude, and awareness among 114 ANC providers over the period of four months regarding the association of periodontal disease and adverse pregnancy outcomes.

Results: Overall response rate was 93%. Most of participants (92%) had the knowledge that bleeding from gums was the first sign of inflammatory process, but 59% did not know about the adverse effects of periodontal disease on pregnancy. About 62% of experienced practitioners knew that 2nd trimester is safe for dental treatment but 75% of them never inquired about oral health of expecting women.

Conclusion: The study concludes that knowledge of Health care providers about periodontal disease in pregnant females is lacking and their clinical behavior regarding oral and periodontal health was also not adequate. Therefore, inter-professional education programs should be implemented as a part of continuing medical education to bridge the knowledge gap between periodontist and ANC providers.

Key Words: Periodontal disease, antenatal, pregnancy, health care providers

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INTRODUCTION

Maternal periodontal diseases have been documented as early as 1800 century[1] yet periodontal health in pregnant women has become a field of research only since the 1960s.[2] This is the first ever study conducted among obstetricians and gynecologists who practiced in tertiary care hospitals of Islamabad and Rawalpindi.

Epidemiological studies have shown that more than 40% of women experience some form of periodontal disease during pregnancy[3] that affect their quality of life and pose a possible risk of perinatal problems such as pre-term low birth weight babies (PTLBW). It is clinically evident that periodontal disease contributes nearly to 18% PTLBW cases.[4]

Pregnancy brings complex physiologic changes occurring throughout the gestation period which are responsible for fluctuations in hormonal level mainly progesterone and estrogen, which are responsible for increase in gingival vascularization and also increase in microbial count of some species of microorganisms.[5] These microorganisms will worsen the gingival inflammation and increase the tendency of the gums to bleed even with reasonably low plaque levels.[6] Periodontal changes observed during gestation that effect women are pregnancy gingivitis, gingival overgrowth/enlargement, and pregnancy epulis/ pyogenic granuloma.[1]

All changes that occur are mostly reversible and do not cause permanent changes in periodontal tissues. In 2015, premature birth was recorded as the main cause of neonatal deaths in Pakistan.[7] Globally, ten countries harbor 67% of the burden of neonatal deaths, with Pakistan accounting for 7% of the neonatal deaths worldwide.[8] In Pakistan, 860,000 babies are born premature (< 37 weeks) and due to preterm complications, 75,000 children under the age of five, die every year.[9]

It is evident from the research that with the severity of periodontal disease during gestation both neonatal mortality and incidence of still births increased in Pakistan.[10] A quality antenatal care system in place can timely identify and detect women at risk of developing complications during gestation, it ensures referral to relevant specialist.[11,12]

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Improving physician`s knowledge and attitudes towards oral health diseases by development of clinical practice guidelines will lead to optimized patient's oral care as well as improved pregnancy outcome.[13]

The purpose of this study was to assess the knowledge, attitude and awareness of association of periodontal disease and pregnancy outcomes among antenatal care providers in tertiary care hospitals of Islamabad and Rawalpindi.

MATERIALS AND METHODS

This study was conducted in four tertiary care hospitals of Islamabad and Rawalpindi among Antenatal health care (ANC) providers. Approval was sort from the ethical review committee of Armed Forces Institute of Dentistry Rawalpindi. The study design was cross sectional and the sampling technique was convenient sampling. It was carried out from December 2019 to March 2020. All participants who were obstetricians & gynecologists, post-graduate trainees and resident medical officers posted in Gynecology and Obstetrics department entered the study voluntarily following an explanation of its objectives. Because of cultural sensitivity only female antenatal care providers were included as research [14] shows that in Pakistan 95% women prefer female gynecologists and midwives. A structured questionnaire was distributed among the participants.

A Questionnaire consisting of three sections was designed based on previously published questionnaires [15] and was pre-tested to validate and apply required modifications. For validation the questionnaire was first sent to a group of ten obstetricians & gynecologists. Reliability coefficient was calculated and the value of Cronbach's alpha was found to be 0.72. The section-one was about socio-demographic features including age, gender, professional experience and type of practice of the ANC providers, section-two was regarding knowledge which consisted of 12 items and section-three was about behavior and attitude which comprised of 7 items. The Data collected from the questionnaire was entered in SPSS version 23. The data of all three sections including socio-demographic, knowledge, behavior and attitude were analyzed as frequencies and percentages. Further, association of three above mentioned sections were assessed with periodontal diseases using chi-square statistical test, p-value ≤ 0.05 was considered as statistically significant.

RESULTS

A total of 114 responses were selected out of 122 to be included in the study. The rest were discarded because they were not completely filled. The response rate was 93%. Out of 114 ANC providers 89%were less than 45 years of age and almost 72% had experience of less than 10 years and more then 94% do hospital-based practice.

Table No.1: Correlation of Professional Experience with Knowledge of Antenatal Health Care Providers

Items	**Responses n (%) -** Professional experience <10yrs n=82, >10yrs n= 32					**P value**
Are you aware that dental diseases during pregnancy can cause harm to mother?		Absolutely no idea	Preliminary	Fair	Good	
	<10 yrs	15 (18.3)	42 (51.2)	16 (19.5)	9 (11)	0.051
	>10 yrs	12 (37.5)	16 (50.0)	4 (12.5)	0	
What do you mean by term Gingivitis?		Inflammation	Degenerative process	Autoimmunity	-	
	<10 yrs	76 (92.7)	5 (6.1)	1 (1.2)		0.291
	>10 yrs	32 (100)	0	0		
What are clinical signs associated with gingivitis?		Gingival bleeding	Tooth mobility	Alveolar bone destruction	-	0.002*
	< 10 yrs	77 (93.9)	5 (6.1)	0		
	>10 yrs	28 (87.5)	0	4 (12.5)		
Are you aware of relationship between gum diseases & adverse pregnancy outcomes?		Yes	No	Unsure	-	0.021*
	< 10 yrs	14 (17.1)	25 (30.5)	43 (52.4)		
	>10 yrs	0	8 (25)	24 (75)		
In which trimester severity of gum problem is increased?		1st Trimester	2nd Trimester	3rd Trimester	-	
	< 10 yrs	11 (13.4)	36 (43.9)	35 (42.7)		0.119
	>10 yrs	8 (25)	8 (25)	16 (50)		
Are you familiar with term pregnancy tumour/epulis		Yes	No	-	-	0.193
	< 10 yrs	32 (39)	50 (61)			
	>10 yrs	8 (25)	24 (75)			

Table 2: Correlation of Professional Experience with Attitude and Behaviour of Antenatal Health Care Providers

Items	**Responses n (%)** Professional experience <10yrs n=82, >10yrs n= 32				**P value**
What is the attitude of general population towards dental treatment during pregnancy?		**Receptive**	**Reluctant**	**Unwilling**	0.257
	< 10 years	25 (30.5)	38 (46.3)	19 (23.2)	
	>10 years	8 (25)	20 (62.5)	4 (12.5)	
Do you recommend dental treatment during pregnancy?		**Not recommended until delivery**	**Yes, elective procedures only**	**Safe in 2nd trimester**	0.001*
	< 10 years	13 (15.9)	45 (54.9)	24 (29.3)	
	>10 years	0	12 (37.5)	20 (62.5)	
Do you ask question related to women's oral health during prenatal consultations?		**Yes**	**No**	-	0.009*
	< 10 years	42 (51.2)	40 (48.8)		
	>10 years	8 (25)	24 (75)		
Do you visually carry out an oral examination if the patient complaint of gum problem?		**Yes**	**No**	-	0.828
	< 10 years	54 (65.9)	28 (34.1)		
	>10 years	20 (62.5)	12 (37.5)		
Do you provide oral health related information during prenatal consultations?		**Yes**	**No**	-	0.090
	< 10 years	35 (42.7)	47 (57.3)		
	>10 years	8 (25)	24 (75)		

Table 3: Correlation of Professional experience with multiple response items

Items	**Responses n (%)** Professional experience <10yrs n=82, >10yrs n= 32					
What is the influence of gum disease on pregnancy?		Preterm labor	Low birth weight	Spontaneous abortion	Preeclampsia	No Influence
	<10 years	12 (14.6)	6 (7.3)	3 (3.7)	2 (2.4)	63 (76.8)
	>10 years	4 (12.5)	0	0	0	25 (78.1)
	P value	0.515	0.131	0.368	0.516	0.548
What are the oral symptoms described by pregnant women?	<10 years	Caries	Gingival bleeding	Gingival over growth	Hypersensitivity	-
		9 (11.0)	57 (69.5)	25 (30.5)	10 (12.2)	
	>10 years	0	20 (62.5)	8 (25.0)	4 (12.5)	
	P value	0.045*	0.307	0.368	0.549	
Aggravation of gum disease in pregnancy is attributed to		increase in Estrogen & Progesterone	Poor Oral Hygiene	Depression of maternal T-lymphocytes	Changes in microbial flora	-
	<10 years	56 (68.3)	5 (6.1)	23 (28.0)	7 (8.5)	
	>10 years	20 (62.5)	4 (12.5)	8 (25.0)	0	
	P value	0.353	0.220	0.469	0.092	
When do you think patient experiences reduction in severity of gum disease?		Soon after delivery	One-month post-partum	Two-month post-partum	-	-
	<10 years	23 (28.0)	45 (54.9)	16 (19.5)		
	>10 years	4 (12.5)	20 (62.5)	8 (25)		
	P value	0.062	0.300	0.342		
What is your source of knowledge related to this influence?		CPD	Scientific Publications	Part of specia-list training	Dental Professionals	-
	<10 years	32 (39.0)	5 (6.1)	33 (40.2)	15 (18.3)	
	>10 years	4 (14.3)	0	16 (57.1)	4 (14.3)	
	P value	0.012*	0.233	0.091	0.435	

*P value ≤0.05 significant

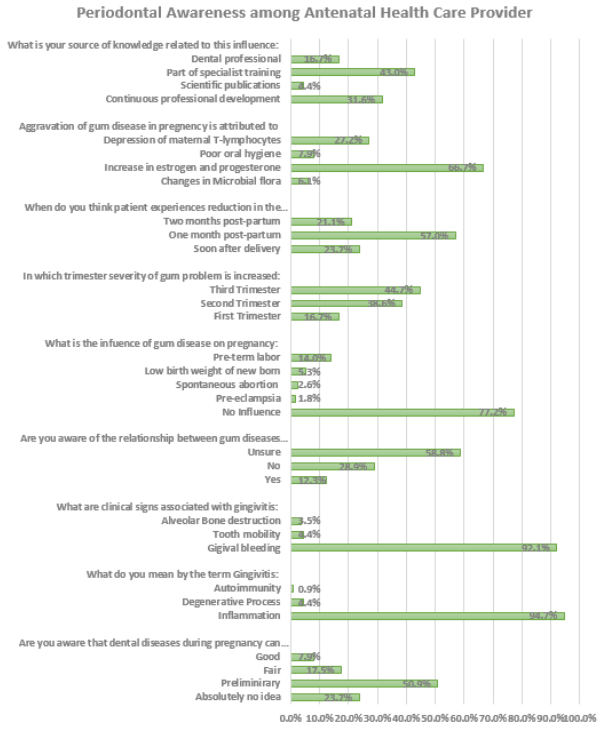

Figure No.1: Periodontal awareness among Antenatal Health Care Providers

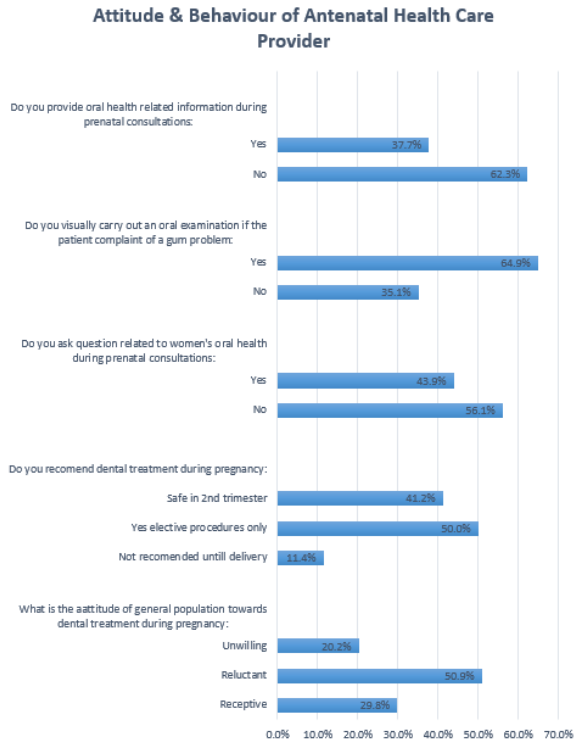

Figure No.2 Attitude and Behaviour of Antenatal Health Care Providers

Fig 1 and 2 shows the periodontal awareness, attitude and behavior of ANC providers.

Table 1 shows Correlation of Professional Experience with Knowledge of Antenatal Health Care Providers. Most of the participants (> 50%) were not aware that gum disease during pregnancy can cause harm the mother however, 93% have sufficient knowledge about gingivitis as inflammatory disease. Surprisingly only 17% of participants knew the relationship between gum diseases and adverse pregnancy outcomes. However, 50% of practitioners with > 10 years' experience knew that severity of gum disease is increased in 3rd trimester.

Also 62.5% of experienced practitioners knew that 2nd trimester is safe for dental treatment. However, 75% of experienced practitioners did not ask a question regarding oral health of women which is significant with p-value of 0.009 as shown in Table 2.

There is apparently consensus over reduction of symptoms of gum disease one-month post-partum. Data showed that there is less co-relation between dentist and ANC providers about exchange of knowledge as a part of continuous professional development. Most of the ANC providers with below and above 10 years' experience thought that there is no relationship between gum disease and pregnancy in terms of side effects 77% and 78% respectively as shown in Table 3. Only 27% of ANC providers refer the pregnant women to the dentists for dental check-up.

DISCUSSION

In this study all participants were females as 95% women prefer female gynecologists and midwives,[15] this might be attributed to the social obligation that's why there are more female ANC providers as compared to males in Pakistan.

In this survey, about 92% of the participants can identify the chief clinical sign of periodontal diseases as gingival bleeding, comparable to study conducted by Cohen et a[12] and Rebecca Wilder et al.[16] Aggravation of gum disease in pregnancy is attributed to 67% increase in estrogen and progesterone levels and is comparable with a study conducted in India.[17]

About 44% of ANC providers were agreed that 2nd trimester is safe for delivering effective dental care while 11% agreed to avoid any treatment until delivery.[18]

A high percentage of about 93% of ANC providers with <10 years' experience was aware of the fact that pregnancy increases the likelihood of gingival inflammation comparable with a study conducted in UAE.[18] However, 24% of ANC providers had inadequate knowledge of the effects of oral health on pregnancy outcomes. Results of 30% were obtained in a study conducted in Karachi which showed that there was limited knowledge about effects on oral health[5] comparable by a study conducted in Australia.[18]

In this study, about 5% ANC providers reported that periodontal disease is the main cause for LBW new born, in contrast to 68% in study conducted in India.[19] This may be due to the difference in the interpretation of the question. Only about 6% participants were aware of role of bacteria in periodontal disease progression, in contrast to 86% in study conducted by Cohen et al. The reason could be due to the fact that medical school's curriculum lack introduction to basic oral health knowledge.[20] Interestingly, symptoms of severe periodontal disease such as tooth mobility and alveolar bone loss were not rightly identified by practitioners of about 4% and 3 % respectively in contrast to 45% of the practitioners solely gave the accurate answer in another study.[12]

In this study, about 17% of participants considered relationship of periodontal disease with pregnancy in contrast a high proportion of obstetricians/ gynecologist's considering bidirectional relationship.[16] Less experienced obstetricians and gynecologists were more conscious of such a relationship than more experienced practitioners may be due to increased inclination towards the efficient use of internet and better inter professional communication on educational forums and on social media.

Analyzing the attitude and behavior of ANC providers only about 28% of their patients to dental surgeon for check-up. This discrepancy between a periodontal knowledge and clinical practice is also observed in others countries.[16]

About 51% of participants inquire the pregnant females about their dental problems at the time of prenatal examination, in contrast 73% in other study.[21] Only 27% of ANC providers were in the opinion to refer the patients to dentist for dental check-up at regular intervals which is very less might be due to their busy routine or due to realization that it is very expensive.

Main limitation of this study was the small sample size so the results cannot be generalized to the total population of Pakistan. Even though the survey was self-administered and anonymous, the responses collected may be biased to what the participants understood was ideal.

CONCLUSION

Our study suggested that periodontal knowledge of ANC providers is reliable; however, the awareness of the correlation between pregnancy and periodontal disease and clinical behavior regarding oral and periodontal health was not in adequacy with such knowledge. In low income countries like Pakistan, the incidence of adverse pregnancy outcomes can be reduced by integrating oral health program in medical school's curriculum and developing ANC practice guidelines with emphasis on a dental consultation during early phase of pregnancy.

Author's Contribution:

Concept & Design of Study:	Resham Hafeez
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Revisiting Critically:	Resham Hafeez, Muhammad Kaleem
Final Approval of version:	Resham Hafeez

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REFERENCES

1. Carranza FA, Newman MG, H.Takei H, Klokkevold PR. Newman and Carranza's Clinical Periodontol 13th ed;2019.
2. Wu M, Chen SW, Jiang SY. Relationship between Gingival Inflammation and Pregnancy. Mediators Inflamm 2015;2015:1-11.
3. Oral Health Care During Pregnancy and Through the Lifespan | ACOG. Accessed July 5, 2020. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2013/08/oral-health-care-during-pregnancy-and-through-the-lifespan.
4. Govindasamy R, Narayanan M, Balaji V, Dhanasekaran M, Balakrishnan K, Christopher A. Knowledge, awareness, and practice among gynecologists, medical practitioners and dentists in Madurai regarding association between periodontitis and pregnancy outcomes. J Ind Soc Periodontol 2018;22(5):447.
5. Ayaz A, Mureed S, Abbasi ZA, Ayaz N, Farooq NS. Perceptions of antenatal care providers about oral health of pregnant women at the hospitals of karachi. Pakistan J Public Heal 2019;9(2):64-68.
6. Reddy BVR, Tanneeru S, Chava VK. The effect of phase-I periodontal therapy on pregnancy outcome in chronic periodontitis patients. J Obstet Gynaecol (Lahore) 2014;34(1):29-32.
7. Maternal and Newborn Health Disparities country profiles - UNICEF DATA. Accessed July 6, 2020. https://data.unicef.org/resources/maternal-newborn-health-disparities-country-profiles/.
8. AF Shadoul FAKMB. Maternal, Neonatal and Child Health in Pakistan: Towards the MDGs by Moving From Desire to Reality - PubMed. Accessed July 6, 2020. https://pubmed.ncbi.nlm.nih.gov/21495587/.
9. Profile of preterm and low birth weight prevention and care Pakistan. Project Concern, USAID 2015. https://reliefweb.int/report/pakistan/pakistan-profile-preterm-and-low-birth-weight-prevention-and-care. doi:10.1016/S2214- 109X(18)30451-0.
10. Mobeen N, Jehan I, Banday N, et al. Periodontal

disease and adverse birth outcomes: a study from Pakistan. Am J Obstet Gynecol 2008;198(5):514. e1-514.e8.
11. Tunçalp, Pena-Rosas JP, Lawrie T, et al. WHO recommendations on antenatal care for a positive pregnancy experience—going beyond survival. BJOG An Int J Obstet Gynaecol 2017;124(6): 860-862.
12. Cohen L, Schaeffer M, Davideau JL, Tenenbaum H, Huck O. Obstetric Knowledge, Attitude, and Behavior Concerning Periodontal Diseases and Treatment Needs in Pregnancy: Influencing Factors in France. J Periodontol 2015;86(3):398-405.
13. Hashim R, Akbar M. Gynecologists′ knowledge and attitudes regarding oral health and periodontal disease leading to adverse pregnancy outcomes. J Int Soc Prev Community Dent 2014;4(6):166.
14. Feng L, Sajid M, Lian Z, Shu-Qin L. Female gynecologist preference: A viewpoint based on two scenario survey from Pakistan. Int J Res Published online 2018.
15. Lieff S, Boggess KA, Murtha AP, Jared H, Madianos PN, Moss K, et al. J Periodontol [Internet] 2004 Jan [cited 2020 Jul 5];75(1):116–26. Available from: https://pubmed.ncbi.nlm.nih.gov/15025223/.
16. Wilder R, Robinson C, Jared HL, Lieff S. Obstetricians' Knowledge and Practice Behaviors Concerning Periodontal Health and Preterm Delivery and Low Birth Weight - PubMed. Accessed July 7, 2020. https://pubmed.ncbi.nlm.nih.gov/18173895/.
17. Paneer S, Muthusamy N, Manickavel R, Venkatakrishnan C, Rathnavelu P, Jayaram M. Evaluation of gynecologists' awareness about oral health condition during pregnancy in Chennai city. J Pharm Bioallied Sci 2019;11(6):S331-S334.
18. George A, Dahlen HG, Reath J, et al. What do antenatal care providers understand and do about oral health care during pregnancy: A cross-sectional survey in New South Wales, Australia. BMC Pregnancy Childbirth 2016;16(1):1-10.
19. Suri V, Rao NC, Aggarwal N. A study of obstetricians' knowledge, attitudes and practices in oral health and pregnancy. Educ Heal Chang Learn Pract 2014;27(1):51-54.
20. Park SE, Donoff RB, Saldana F. The Impact of Integrating Oral Health Education into a Medical Curriculum. Med Princ Pract 2017;26(1):61-65.
21. George A, Shamim S, Johnson M, et al. How Do Dental and Prenatal Care Practitioners Perceive Dental Care During Pregnancy? Current Evidence and Implications. Birth 2012;39(3):238-247.