

Research Article

Periodontal disease and pregnancy outcomes knowledge & compliance among health care providers

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Abstract: Periodontal disease is a pathological inflammatory condition of the gum and bone support surrounding the teeth. It is a risk factor for poor pregnancy outcomes including Preterm birth (delivery before 37 weeks of gestation) and low birth weight (birth weight lower than 2500 gr) which are both still considered to be the greatest problems in obstetrical medicine. Consequently it seems reasonably important to find out whether the healthcare providers who are most visited by pregnant women are aware of the periodontal disease and its relationship with poor pregnancy outcomes. To compare the awareness of oral health and periodontal disease among different groups of health care providers. Also to identify the lack of information about oral health among health care providers. A cross sectional study was done depends on a self administered, structured questionnaire randomly distributed after official approval taken from five hospitals in Riyadh. The questionnaire had been distributed among 150 of health care providers (gynaecologists, general practitioners and midwives), only 104 health professionals responded positively. The questionnaire contained 32 questions and the data were analyzed according to SPSS statistical software. The reached results of this study suggest that that General practitioners have more knowledge about periodontal disease and its relation to pregnancy outcomes, this may be because their knowledge is still fresh in this field since some of them are newly graduates. While midwives showed insufficient awareness about the effectiveness of oral health. Periodontal disease is a risk factor to pregnancy outcomes and serious problem that health care providers should been highlighted? This study suggested the level of awareness among (gynaecologists , midwives and general practitioners) towards periodontal disease and its association with pregnancy complications is deprived. Therefore, the health professionals needs to improve their dental background knowledge and to have more positive attitude toward oral health.

Keywords: knowledge, pregnancy, periodontal disease, Gynaecologists, attitude, awareness.

INRODUCTION

Periodontal diseases are inflammatory conditions affecting the tooth-supporting tissues. Gingivitis and periodontitis are the two most common manifestations. Periodontitis contributes extensively to the globalburden of oral diseases [1]. It is a risk factor for poor pregnancy outcomes, including Preterm birth (delivery before 37 weeks of gestation) and low birth weight (birth weight lower than 2500 gr) which are both still considered to be the greatest problems in obstetrical medicine [2]. During pregnancy there are two hormones (estrogen and progesterone increasing in their level which lead to hyper vascularization of the periodontium and changes in collagen production, increasing the vascular permeability and making the gingival tissue more susceptible to local irritants, gingivitis, granuloma and periodontitis[2].

The bacteria known as Fusobacterium nucleatum, has been linked with adverse pregnancy outcomes. Since F. nucleatum is associated with

periodontal infections rather than genital or uterine infections. It is supposed that the infection enters the mother's bloodstream making its way down from the oral cavity rather than genital tract [3]. C-reactive protein (CRP) is an acute-phase reactant synthesized by the liver in response to the inflammatory cytokines interleukin (IL)-6, IL-1, and tumor necrosis factor-alpha. Circulating CRP levels are a marker of systemic inflammation and are associated with periodontal disease, a chronic bacterial infection as- associated with elevation of proinflammatory cytokines and prostaglandin. Elevated immunoglobulin G induced by bacterial species associated with destructive periodontal diseases is associated with increase in CRP which has been associated with adverse pregnancy outcomes [3].

Objectives

Preterm labour and low birth weight are well thought-out to be one of the greatest problems in obstetrical medicine and are one of the most prevalent risk factors for death during the neonatal period. On the

other hand, periodontal diseases are considered as important factors affecting pregnant women and their new-born children. Consequently it seems reasonably important to find out whether the healthcare providers who are most visited by pregnant women are aware of the periodontal disease and its relationship with poor pregnancy outcomes.

The present study aims:

- To compare the awareness of oral health and periodontal disease among different groups of health care providers.
- To identify the lack of information about oral health among health care providers.

METHODOLOGY

The ethical review committee of the Riyadh Colleges of Dentistry and Pharmacy approved the study. A cross sectional study depends on a self administered, structured questionnaire randomly distributed after official approval taken from six hospitals in Riyadh:

- King fisal specialist hospital
- Al Yammamh Hospital

- Saudi British Hospital
- King Fahad Medical City
- Prince Salman Hospital

The questionnaire had been distributed among 150 of health care providers (gynaecologists, general practitioners and midwives), only 104 health professionals responded positively.

The questionnaire contained 32 questions designed to assess the following i) personal data, years of experience. ii) the knowledge of periodontal disease, iii) the knowledge of likely changes during pregnancy and possible risk factors of Preterm birth and Low birth weight, and iv) their compliance to examine their patients regarding the periodontal disease. Then the data were analyzed according to SPSS statistical software. At the beginning the results were analyzed separately for each study group and then the comparison between their answer was done to identify the gaps that needs improvements.

RESULTS

Table-1: Contains cross tabulation between Etiology items and Infor1 where count and percentage are displayed.

		Infor1					
		General practitioner		Midwife		Gynecologist	
		Count	Column N %	Count	Column N %	Count	Column N %
Etiology 1	Plaque	24	92.3%	19	76.0%	39	78.0%
	Heredity	0	0.0%	2	8.0%	4	8.0%
	Vitamin c deficiency	2	7.7%	4	16.0%	7	14.0%
Etiology 2	I don't know	0	0.0%	1	4.0%	1	2.0%
	staining	1	3.8%	8	32.0%	1	2.0%
	soft deposition on teeth	16	61.5%	8	32.0%	27	54.0%
	hard deposition on teeth	9	34.6%	8	32.0%	21	42.0%
Etiology 3	I don't know	0	0.0%	0	0.0%	6	12.0%
	inflammation	15	57.7%	7	28.0%	29	58.0%
	discoloration of teeth	11	42.3%	18	72.0%	15	30.0%
Etiology 4	Strongly Disagree	0	0.0%	3	12.0%	1	2.0%
	Disagree	6	23.1%	11	44.0%	6	12.0%
	Undecided	5	19.2%	3	12.0%	10	20.0%
	Agree	10	38.5%	6	24.0%	32	64.0%
	Strongly Disagree	5	19.2%	2	8.0%	1	2.0%

Infor1: what is your specialty?

Etiology1: periodontal disease is caused by?

Etiology2: what is plaque?

Etiology3: what can plaque cause?

Etiology4: genes play a role in periodontal disease?

Table-2: Contains cross tabulation between General knowledge items (1-4) and Infor1 where count and percentage are displayed.

		Infor1					
		General practitioner		Midwife		Gynecologist	
		Count	Column N %	Count	Column N %	Count	Column N %
G.knowledg e1	Disease of mucosa after removal of tooth	0	0.0%	0	0.0%	1	2.0%
	Gums growing into decayed tooth	0	0.0%	8	32.0%	5	10.0%
	Disease of supporting structures of tooth	13	50.0%	7	28.0%	34	68.0%
	Decay of teeth with pain	13	50.0%	10	40.0%	10	20.0%
G.knowledg e2	Inflammation of gums	7	26.9%	15	60.0%	22	44.0%
	Inflammation of gums involving alveolar bone	19	73.1%	8	32.0%	25	50.0%
	Overgrowth of gums into a decayed tooth	0	0.0%	0	0.0%	3	6.0%
	Decayed teeth	0	0.0%	2	8.0%	0	0.0%
G.knowledg e3	Maintaining good oral hygiene	26	100.0%	19	76.0%	43	86.0%
	Usage of antibiotics	0	0.0%	6	24.0%	6	12.0%
	It cannot be prevented	0	0.0%	0	0.0%	1	2.0%
G.knowledg e4	12 months	1	3.8%	3	12.0%	8	16.0%
	6 months	22	84.6%	12	48.0%	35	70.0%
	2 to 3 months	3	11.5%	10	40.0%	7	14.0%

Infor1: what is your specialty?

G.knowledge1: gingivitis means?

G.knowledge2: periodontitis means?

G.knowledge3: prevention of gum disease can be achieved by?

G.knowledge4: people should visit a dentist once in?



Graph-1: showing timing of dentist visits.

Table-3: Contains cross tabulation between General knowledge items (5-7) and Infor1 where count and percentage are displayed.

		Infor1					
		General practitioner		Midwives		Gynaecologists	
		Count	Column N %	Count	Column N %	Count	Column N %
G.knowledge5	Uncertain	1	3.8%	0	0.0%	6	12.0%
	Drugs	8	30.8%	4	16.0%	21	42.0%
	Bacterial deposits	17	65.4%	21	84.0%	23	46.0%
G.knowledge6	Chewing of fibrous foods	1	3.8%	2	8.0%	0	0.0%
	Oral health neglect	18	69.3%	21	84.0%	39	78.0%
	Systemic disease	7	26.9%	2	8.0%	11	22.0%
G.knowledge7	Strongly Disagree	0	0.0%	1	4.0%	1	2.0%
	Disagree	9	34.6%	4	16.0%	21	42.0%
	Undecided	9	34.6%	4	16.0%	9	18.0%
	Agree	7	26.9%	11	44.0%	18	36.0%
	Strongly Agree	1	3.8%	5	20.0%	1	2.0%

Infor1: what is your specialty?

G.knowledge5: do you think gingival enlargement is caused by?

G.knowledge6: bad breath is caused by?

G.knowledge7: my knowledge about periodontal disease is current?

Table-4: Contains cross tabulation between Pregnancy items (1-4) and Infor1 where count and percentage are displayed.

		Infor1					
		General practitioner		Midwife		Gynecologist	
		Count	Column N %	Count	Column N %	Count	Column N %
Response.and.attitude1	Rarely or never	0	0.0%	4	16.0%	12	24.0%
	If the patient mention a problem	16	61.5%	13	52.0%	25	50.0%
	Initial exam-periodically	10	38.5%	8	32.0%	13	26.0%
Response.and.attitude2	Strongly Disagree	3	11.5%	2	8.0%	2	4.0%
	Disagree	10	38.5%	7	28.0%	23	46.0%
	Undecided	4	15.4%	4	16.0%	6	12.0%
	Agree	9	34.6%	10	40.0%	15	30.0%
	Strongly Agree	0	0.0%	2	8.0%	4	8.0%
Response.and.attitude3	Strongly Disagree	1	3.8%	1	4.0%	0	0.0%
	Disagree	0	0.0%	3	12.0%	0	0.0%
	Undecided	7	26.9%	1	4.0%	4	8.0%
	Agree	16	61.5%	18	72.0%	39	78.0%
	Strongly Agree	2	7.7%	2	8.0%	7	14.0%
Response and attitude4	Strongly Disagree	0	0.0%	3	12.0%	1	2.0%
	Disagree	13	50.0%	9	36.0%	23	46.0%
	Undecided	2	7.7%	2	8.0%	6	12.0%
	Agree	6	23.1%	7	28.0%	18	36.0%
	Strongly Agree	5	19.2%	4	16.0%	2	4.0%
Response.and.attitude5	no	20	76.9%	19	76.0%	48	96.0%
	yes	6	23.1%	6	24.0%	2	4.0%

Infor1: what is your specialty?

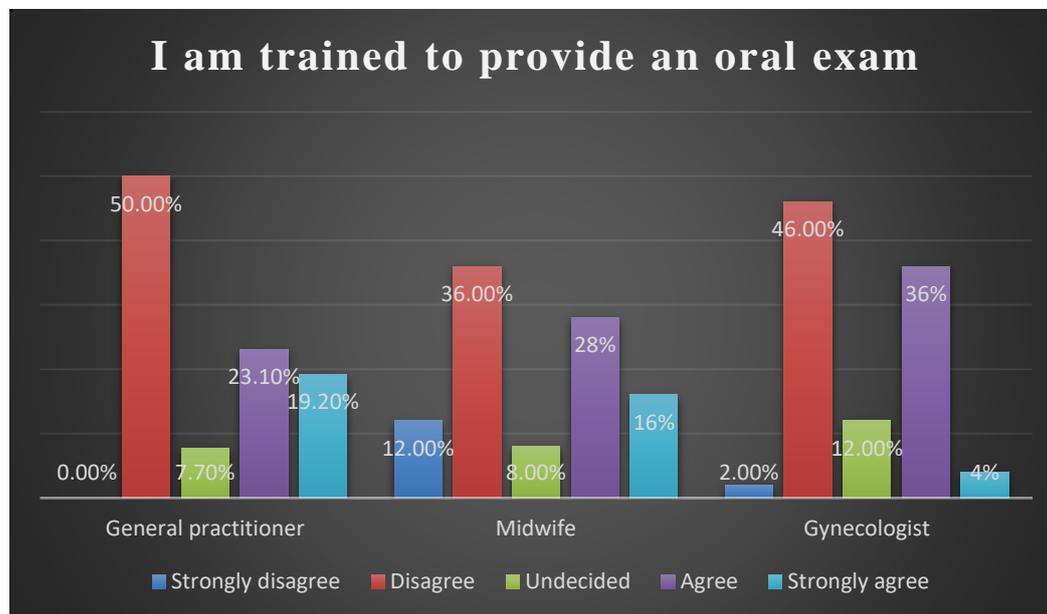
Response.and.attitude1: when do you examine your pregnant patient’s mouth?

Response.and.attitude2: visit to the dentist are always unpleasant.

Response.and.attitude3: can dental treatment be carried out during pregnancy?

Response.and.attitude4: I am trained to provide an oral exam.

Response.and.attitude5: did you attend any oral health course?



Graph-5: Training of health providers to do oral examination.

		Infor1					
		General practitioner		Midwife		Gynecologist	
		Count	Column N %	Count	Column N %	Count	Column N %
Response.and.attitude5 .if.yes	More than 3 years ago	2	7.7%	3	12.0%	1	2.0%
	3 years ago	0	0.0%	0	0.0%	0	0.0%
	2 years ago	0	0.0%	0	0.0%	0	0.0%
	Last year	2	7.7%	3	12.0%	0	0.0%
	This year	2	7.7%	0	0.0%	1	2.0%
Response.and.attitude6	Strongly Disagree	1	3.8%	2	8.0%	0	0.0%
	Disagree	0	0.0%	4	16.0%	18	36.0%
	Undecided	0	0.0%	3	12.0%	3	6.0%
	Agree	18	69.2%	14	56.0%	23	46.0%
	Strongly Agree	7	26.9%	2	8.0%	6	12.0%
Response.and.attitude7	Strongly Disagree	0	0.0%	2	8.0%	0	0.0%
	Disagree	0	0.0%	3	12.0%	2	4.0%
	Undecided	0	0.0%	3	12.0%	4	8.0%
	Agree	15	57.7%	14	56.0%	38	76.0%
	Strongly Agree	11	42.3%	3	12.0%	6	12.0%
Response.and.attitude8	Strongly Disagree	0	0.0%	3	12.0%	0	0.0%
	Disagree	0	0.0%	0	0.0%	3	6.0%
	Undecided	1	3.8%	2	8.0%	3	6.0%
	Agree	18	69.2%	14	56.0%	37	74.0%
	Strongly Agree	7	26.9%	6	24.0%	7	14.0%

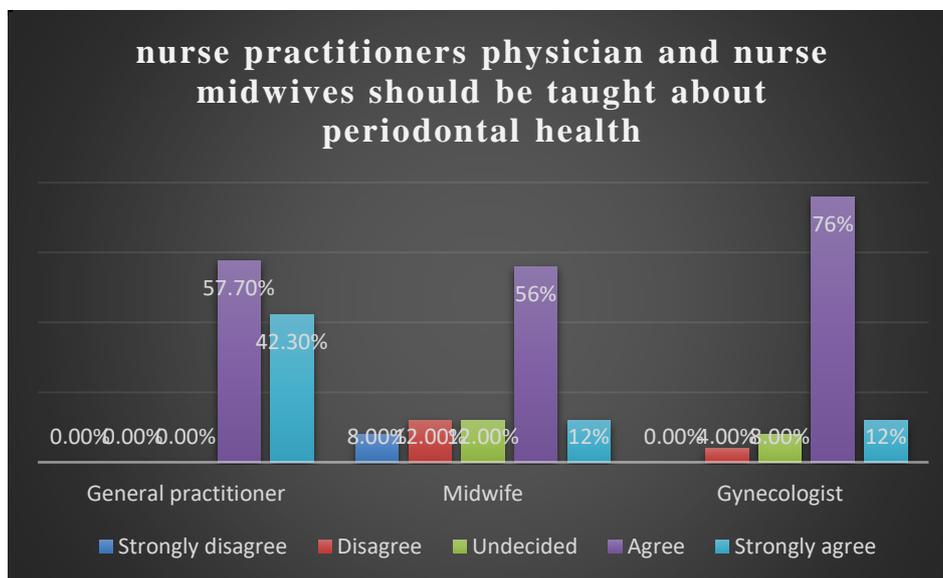
Infor1: what is your specialty?

Response.and.attitude5.if.yes: if you answer yes in previous question, when did you attend it?

Response.and.attitude6: I am comfortable looking in a patient’s mouth and determining if they have gum disease.

Response.and.attitude7: nurse practitioners physician and nurse midwives should be taught about periodontal health.

Response.and.attitude8: I am comfortable referring patient with dental problem



Graph-6: attitude of health practitioner to learn about periodontal health.

Table-8: Contains cross tabulation between Response and attitude items (9-11) and Infor1 where count and percentage are displayed.

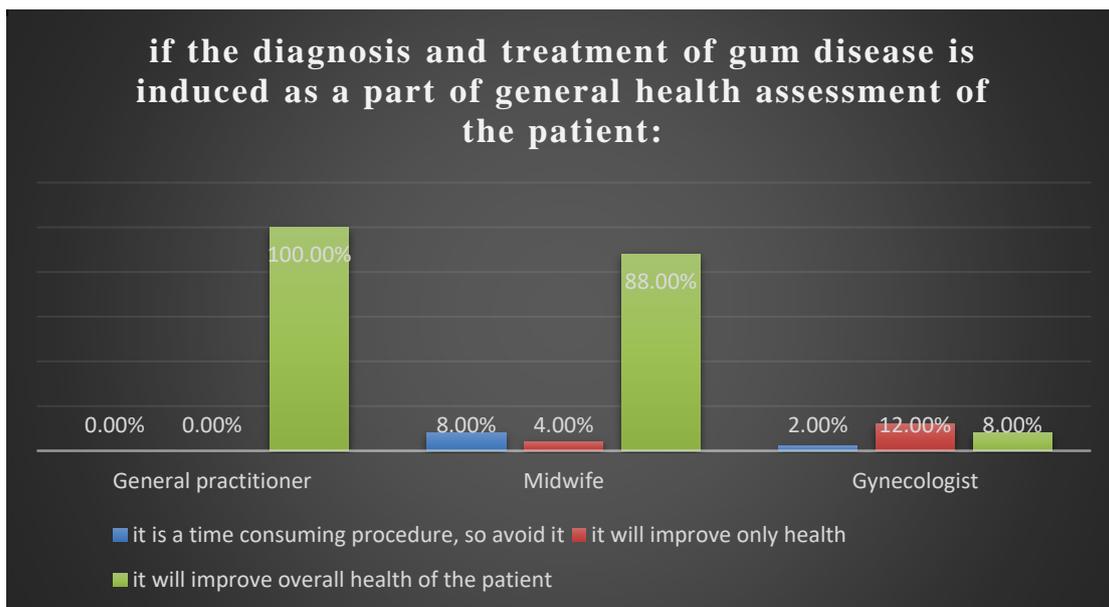
		Infor1					
		General practitioner		Midwife		Gynecologist	
		Count	Column N %	Count	Column N %	Count	Column N %
Response.and.attitude9	Strongly Disagree	0	0.0%	1	4.0%	1	2.0%
	Disagree	0	0.0%	1	4.0%	6	12.0%
	Undecided	0	0.0%	1	4.0%	7	14.0%
	Agree	18	69.2%	13	52.0%	30	60.0%
	Strongly Agree	8	30.8%	9	36.0%	6	12.0%
Response.and.attitude10	it is a time consuming procedure, so avoid it	0	0.0%	2	8.0%	1	2.0%
	it will improve only health	0	0.0%	1	4.0%	6	12.0%
	it will improve overall health of the patient	26	100.0%	22	88.0%	43	86.0%
Response.and.attitude11	Strongly Disagree	0	0.0%	2	8.0%	0	0.0%
	Disagree	0	0.0%	2	8.0%	6	12.0%
	Undecided	4	15.4%	1	4.0%	9	18.0%
	Agree	15	57.7%	16	64.0%	31	62.0%
	Strongly Agree	7	26.9%	4	16.0%	4	8.0%

Infor1: what is your specialty?

Response.and.attitude9: do pregnant women need additional health-care during their gestational period to prevent adverse pregnancy outcomes?

Response.and.attitude10: if the diagnosis and treatment of gum disease is induced as a part of general health assessment of the patient:

Response.and.attitude11: nurse practitioners and nurse midwives should be taught how to perform a cursory examination to determine health or disease



Graph-7: including oral health exam as a part from general health assessment.

RELIABILITY

Cronbach's alpha is the most commonly used to evaluate the internal consistency reliability associated

with scores derived from a scale. The questionnaire is approximately 76 % reliable. The acceptable level of Cronbach's alpha is 70 % and above.

Reliability Statistics	
Cronbach's Alpha	N of Items
0.757	32

DISCUSSION

plaque is the primary etiologic factor of periodontal disease , as seen in table(1) most of general practitioners have got the right answer 92% followed by 78 % of gynaecologists and 76 % of midwives. This agree with other study conducted in Mangalore, India which found that 80 of the healthcare professionals answered that plaque is the cause for periodontal disease in [4],But this conflict with Iranian study, which conclude that the knowledge of the obstetricians participating about the cause of periodontal disease was more accurate compared to the general practitioners and midwives[2].

Again in the etiological section 61.5 % of general practitioners have chosen the (soft deposition on teeth) Which they still have the higher percentage of getting the higher answer among midwives and gynaecologists. In our study we notice that GPs have more knowledge about periodontal disease and this may be because their knowledge is still fresh in this field since some of them are newly graduates.

Periodontal disease is not hereditary but there is a genetic implication. (64) % of gynaecologists agreed with this which is good answer, and 2 % of them have chosen (strongly agree) which is the higher answer. 19.2 % of general practitioners have chosen the

"strongly agree" answer. Midwives still have the least percentage of chosen the accurate answer (table 1).This was in a agree with Mangalore, India study [4].

In (table 4) change in hormones will increase the ability of gingiva to bleeding [5]. Accordingly, 32% of GPs agreed that the pregnant women more susceptible to bleeding of gum this lack of knowledge also appear Regarding to the midwives and gynaecologists, the same fact appear in other study[4]. Also In graph (2) , 6% of the gynaecologists believed that gum infection during pregnancy result in the preterm low birth weight deliveries. That disagrees with other study which was reported that 68% of clinicians were aware that chronic periodontal infection may cause preterm birth babies [6].

The response and attitude of the health providers toward doing initial intraoral examination, it can be seen that 38.5 %,32 %, and 5 % of the general practitioners, midwives, and gynaecologists respectively have chosen the answer (Initial exam-periodically). This was agree with Iranian study[2]. They reported Sixty two percent of the participants conduct oral and dental examinations for their patients in the initial visit or periodically.

For Response and attitude 2, 11.5 %, 8 %, 4 % of general practitioners, midwives, and gynaecologists respectively have chosen (strongly disagree). If percentages of (strongly disagree) and (disagree) are summed, we would noticed that gynaecologists and general practitioners have the same percentage of chosen the good answer which is higher than the percentage for midwives. Because GPs and gynaecologists are a doctors so they know the importance of oral health especially in pregnant women, so midwives they have insufficient knowledge about the effectiveness of oral health, they should need to attend a courses and lectures about the necessary of oral and periodontal health for pregnant women.

Table (6) showed a very negative attitude toward regular visits to dentist, 34.6%, 40.0%, 30.0% of general practitioners, midwives, and gynaecologists respectively.

Also, only 35% of gynaecologists advised their patients regarding the maintenance of good oral hygiene and routine dental checkup during pregnancy [6].

In addition, according to previous study , 68% did not advise their patients to include a periodontal assessment as a part of their pregnancy care [7-8].

Also 94% of the gynaecologists answered that they did not routinely refer all patients to a dentist [9]. When the health providers asked "Did you attend any oral health course?", the answer was (no) in 76.9 %, 76 %, 96 % of general practitioners, midwives, and gynaecologists respectively and that was a very huge percentage (table 6). In graph no. (5), fifty %, 36 %, 46 % of general practitioners, midwives, and gynaecologists respectively have chosen (disagree) where the item was "I am trained to do an oral exam". This was in agreement with Iranian study [2]. which showed a negative relationship between the working experience and the frequency of the recommendations for dental examination during pregnancy. In our study the midwives was the least percentage this is may be there less knowledge or less interest in oral health or even because they fear to touch the patients without Doctors' permission .

Conclusion and recommendation

Periodontal disease is a risk factor to pregnancy outcomes and serious problem that health care providers should been highlighted. This study suggests the level of awareness among (gynaecologists , midwives and general practitioners) towards periodontal disease and its association with pregnancy complications is deprived .

Therefore, the health professionals needs to improve their dental background knowledge and to have more positive attitude toward oral health. Also Oral health education and training as part of the medical

school curriculum is strongly recommended for all the medical field including the nursing and midwives . the specialists also need to refresh and update their knowledge about the relationship between periodontitis and systemic diseasesby attending courses on that regard.

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