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ORAL HEALTH DURING PREGNANCY - questionnaire-based assessment of dentists and obstetricians opinion

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Abstract

Introduction. *The knowledge of medical staff on oral health status during pregnancy is particularly important. Issues related to periodontal disease and oral cavity diseases may influence the pregnancy and birth.*

The objective *of the study was to assess the knowledge of qualified personnel (dentists, obstetricians / gynecologists) on the oral health during pregnancy.*

Material and method. *A cross sectional study was conducted on a number of 105 dentists and 105 obstetricians / gynecologists from Cluj Napoca, Romania, in the interval 1.01.2016 - 28.02.2016. With a questionnaire containing 19 questions with multiple answers were gathered information on: personal data (gender, age, specialty and years in practice), opinion regarding dental treatments and medication in pregnancy, knowledge on the link between periodontal disease and pregnancy, (complications and side effects on birth), sources of information about oral health during pregnancy. Data were statistically analyzed descriptive and comparative using SPSS program.*

Results. *Both dentists and obstetricians had demonstrated knowledge about the status of oral health during pregnancy. Even if most of the respondents were aware of the connection between oral health and pregnancy (95.2% dentists and 87.6% obstetricians) only a third of obstetricians and a quarter of dentists mentioned a possible association between oral health and pregnancy pathology: preterm birth (29.5% dentists and 35.2% obstetricians) and low birth weight (20% dentists and 33.3% obstetricians). There were statistically significant differences between the opinions of these two categories of specialists, concerning mainly the administration of pharmaceuticals during pregnancy with minimal risks.*

Conclusions. *The possible association between oral diseases and pregnancy pathology was understood by the majority of dentists and obstetricians; moreover, there was consensus in the most frequent dental treatments and protocols. However, the information regarding the possible correlation between periodontal health and pregnancy was not enough acknowledged by neither dentists nor obstetricians.*

Rezumat: Sănătatea orală în cursul sarcini – Evaluarea pe bază de chestionar a opiniei medicilor dentişti şi obstetricieni

Introducere*: Este deosebit de important ca personalul medical să aibă o bază de cunoştinţe actualizată privind statusul cavităţii orale în perioada de sarcină. Aspecte legate de boala parodontală şi afecţiunile cavităţii orale pot influenţa evoluţia sarcinii şi naşterea.*

Obiectivul *studiului a fost de a evalua cunoştinţele personalului specializat (medici dentişti, medici obstetricieni/ginecologi) asupra statusului sănătăţii orale în cursul sarcinii.*

Material şi metodă: *S-a realizat un studiu transversal pe un lot de 105 medici dentişti şi 105 medici obstetricieni / ginecologi din Cluj Napoca, în perioada 1.01.2016 - 28.02.2016. Printr-un chestionar conţinând 19 întrebări cu răspunsuri multiple s-au obţinut informaţii privind: datele personale (sex, vârstă, specialitate şi ani de profesie), opiniile medicilor legate de protocoalele stomatologice indicate pacientelor însărcinate şi produsele farmaceutice recomandate în cazul afecţiunilor orale în această perioadă, legătura dintre boala parodontală şi sarcină (complicaţiile şi efectele secundare ale naşterii), sursele de informare în legătură cu sănătatea orală: în cursul sarcinii. Datele obţinute au fost analizate statistic descriptiv şi comparativ cu ajutorul programului SPSS.*

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KEY WORDS: oral health, periodontal disease, pregnancy, dentist, obstetrician, questionnaire

Rezultate: *Atât medicii dentişti cât şi cei obstetricieni au demonstrat cunoştine privind corelaţia între statusul cavităţii orale şi sarcină. Chiar dacă cei mai multi specialişti au fost conştienţi de existenţa unei legături între sănătatea orală şi sarcină (95.2% dentişti şi 87.6% obstetricieni) doar o treime dintre obstetricieni şi un sfert dintre stomatologi recunosc existenţa unei posibile asocieri între sănătatea orală şi complicaţiile naşterii: naştere prematură (29.5% dentişti şi 35.2% obstetricieni) şi greutate scăzută la naştere (20% dentişti şi 33.3% obstetricieni). Au existat diferenţe semnificativ statistice între opiniile celor 2 categorii de medici, în special asupra posibilităţii de administrare a produselor farmaceutice în cursul sarcinii, cu riscuri minime.*

Concluzii. *Posibila asociere dintre bolile cavităţii orale şi patologia sarcinii este înţeleasă de majoritatea specialiştilor. Există un consens în ceea ce priveşte tratamentele dentare cele mai frecvente si protocoalele de lucru. Asocierea dintre sănătatea parodontală şi sarcină nu este cunoscută foarte bine de către nici una dintre categorii de medici.*

Cuvinte cheie: sănătate orală, boală parodontală, sarcină, dentist, obstetrician, chestionar

1. Introduction

Oral health has a major role in our general health status, and has long been a subject of interest for both clinicians and researchers. There is a close, bidirectional interconnection between the oral status and the rest of the organism, since oral pathology can generate malfunction on different parts of the body; in the same way, alteration in normal function at different levels in the organism is reflected in the oral status.

Pregnancy involves physical and hormonal changes in almost every organ and system of the body, including the oral cavity. During this period, the most common oral health problems are gingivitis, pregnancy granuloma and periodontitis [1, 2]. These conditions accompany the other illnesses of the dental and oral system (ex: dental decays, pulpitis, apical periodontitis), which are often, due to the characteristic symptoms, emergencies and need an inThere are studies which demonstrated that pregnant women have a higher incidence of gingival inflammation compared to non-pregnant women [3, 4]. Other studies concluded that during pregnancy, the balance between intraoral bacteria was modified by an increase of Prevotella species (which use pregnancy hormones for their own grown) [5, 6] followed by the exaggerated response of the gingiva to bacterial plaque [7, 8]. These result in the aggravation of periodontal diseases; as a consequence, there is an activation of the immune-inflammatory system of the pregnant woman, [2] which may influence the normal course of pregnancy. There are studies that demonstrate the relationship between periodontal pathology and: preterm birth (gestational age of less than 37 weeks) and low birth weight (less than 2500g) [9], important factors in infant mortality [6, 10, 11],

Not only genetics, smoking, drugs and alimentation are considered risk factors for complications and side effects of pregnancy. Clinical and cross sectional studies have completed the list of risk factors for preterm birth and low birth weight with periodontal inflammation [12-14].

The specialists' knowledge regarding the connection between oral health and pregnancy is reflected in the state of the patients' health, so, in order to deliver adequate, complete and complex prenatal care to any pregnant woman, dental and medical practitioners should consider oral health care as an integrated part of the overall prenatal care [15].

All over the world there are studies regarding the knowledge of healthcare providers, especially obstetricians, but these were performed with small samples, in limited regions [15, 16, 17]. The percentage of obstetricians who acknowledged connections between oral health and pregnancy ranges from 54% in Jordan [16], to 60% in Brasil

[19], 78-79% in India [17, 18] and 95% in United Arab Emirates [17].

In addition, there are few data regarding the information of the dentists and obstetricians, as health-care providers, on the interrelation between oral health and pregnancy [18]. To our knowledge, no study that assessed the healthcare providers' knowledge on this matter, conducted in Romania or in south-eastern Europe, has been published.

The purpose of this study was to assess the knowledge of qualified personnel (dentists, obstetricians / gynecologists) regarding the status of oral health during pregnancy.

2. Material and methods

A cross sectional study was conducted using a written self - administrated questionnaire among specialists from Cluj Napoca, Romania, in the interval 1.01.2016 - 28.02.2016. The protocol was approved by the Ethical Committee of the University of Medicine and Pharmacy (UMF) "Iuliu Hatieganu", Cluj Napoca, Romania.

The questionnaire was designed by the authors and validated, in order to evaluate the level of understanding of the questions; since it appeared to be easily understood, no changes of the original questions were made and the written questionnaire was distributed among respondents.

Participants were provided with written data on the aim of the research; an informed consent was signed by all subjects before enrolling in the study. A number of 105 dentists and 105 obstetricians were included, voluntarily, in the study. The questionnaire had no time limit, it was anonymous and the majority of the participants spent between 5 and 10 minutes to complete the entire written questionnaire.

The questionnaire consisted of 19 questions with multiple answers, concerning: personal data (gender, age, specialty and years in practice), opinion regarding particularities of dental treatments and medication in pregnancy, knowledge on the link between periodontal disease and pregnancy, (complications and side effects on birth), sources of information about oral health during pregnancy.

Data collected from the questionnaires were analyzed using SPSS (SPSS Inc., Chicago, USA); frequency distributions were used together with Chi-square tests. Answers were grouped according to frequency of occurrence of positive or negative responses. The alpha level was set at 0.05.

3. Results

Demographic Data

The majority of the respondents were females (62.9% dentists and 65.7% obstetricians), under 40 years (96% dentists and 81% obstetricians) and had less than 10 years in practice (80% dentists and 66% obstetricians) (Table 1).

Knowledge on the link between oral health and pregnancy

This study revealed that almost every respondent (99%) did believe that patients can follow dental treatment during pregnancy, but only half of them (48.6% dentists and 55.2% obstetricians) believed that dental radiographs are recommendable during this period. The majority thought that dental anesthesia is safe during pregnancy (85.7% dentists and 93.3% obstetricians), as well as the antibiotics intake (79% dentists and 100% obstetricians). (Table 2)

Even if most of the respondents were aware of the connection between oral health and pregnancy (95.2% dentists and 87.6% obstetricians), the majority considered that their patients don't know the importance of this connection (86.7% dentists and 72.4 obstetricians). When respondents were asked to evaluate the knowledge of medical staff regarding the importance of oral health on pregnancy, only half of dentists (53.3%) and two thirds of obstetricians (69.5%) considered that the specialists know the actual importance of this link. (Table 3)

Even if the majority of the respondents (93.3% dentists and 81% obstetricians) knew that during pregnancy there is an increased tendency for gingival inflammation, a third of them (33.3% dentists and 29.5% obstetricians) did not believed in the relationship between the pregnancy pathology and periodontal disease. Moreover, only a third of obstetricians and a quarter of dentists mentioned a

Table 1. Demographic data of the respondents

Age groups	Dentists (%)	Obstetricians (%)
<30	60.0	48.6
31-40	36.2	28.6
41-50	3.8	14.3
51-60	0.0	6.7
>60	0.0	1.9
Gender		
Male	37.1	34.3
Female	62.9	65.7
Years in practice		
<10	80.0	66.6
10-20	18.0	23.8
21-30	1.9	6.6
>31	0.0	2.8

Table 2. Respondents' opinions regarding the permission of patients to dental treatment, radiographs, anesthesia and antibiotics during pregnancy

	Dentist - Number	Dentist – Percentage (%)	Obstetrician - number	Obstetrician – percentage (%)	P value
Access to dental treatment					1
Yes	104	99.0	104	99.0	
No	1	1.0	1	1.0	
I don't know	0	0.0	0	0.0	
Dental radiograph					0.25
Yes	51	48.6	58	55.2	
No	51	48.6	42	40.0	
I don't know	3	2.9	5	4.8	
Dental anesthesia					0.048
Yes	90	85.7	98	93.3	
No	13	12.4	5	4.8	
I don't know	2	1.9	2	1.9	
Antibiotics					<0.001
Yes	83	79.0	105	100.0	
No	19	18.1	0	0.0	
I don't know	3	2.9	0	0.0	

possible association between oral health and pregnancy pathology: preterm birth (29.5% dentists and 35.2% obstetricians) and low birth weight (20% dentists and 33.3% obstetricians) (Table 3).

Dentists considered the second trimester as the safest for the dental treatment (82.9%), dental radiographs (62.9%), dental anesthesia (85.7%) or administration of antibiotics (68.6%). Obstetricians believed that dental treatment is safe in the second (57.1%) and third semester (55.2%); however, dental radiography, dental anesthesia and administration of antibiotics are regarded as safest in the third semester (60%, 64.8% and 76.2%)(Table 4).

Dental treatment during pregnancy

The following dental treatments were considered as permitted in pregnancy: professional cleaning (97.1% dentists and 99% obstetricians) fillings and crowns (92.4% dentists and 73.3% obstetricians), while the less recommended was insertion of implants (3.8% dentists and 14.3% obstetricians) (Table 5).

Medical information regarding oral health during pregnancy

Medical journals and scientific articles (86.7% dentists and 79% obstetricians) were the most

Table 3. Respondents' knowledge on the link between oral health and pregnancy

Do you consider that there is a connection between oral health and pregnancy?	**Dentist - Number (percentage - %)**	**Obstetrician -Number (Percentage - %)**	**P value**
Yes	100(95.2)	92(87.6)	0.034
No	1(1)	7(6.7)	
I don't know	4(3.8)	6(5.7)	
Do you consider that the romanian patients know the importance of this connection?			
Yes	9(8.6)	22(21)	0.009
No	91(86.7)	76(72.4)	
I don't know	5(4.8)	7(6.7)	
Do you consider that specialized personnel know the importance of this connection?			
Yes	56(53.3)	73(69.5)	0.018
No	31(29.5)	18(17.1)	
I don't know	18(17.1)	14(13.3)	
Do you consider that during pregnancy there is an increased tendency for gingival inflammation?	**Dentist - Number (percentage - %)**	**Obstetricians -Number (Percentage - %)**	**P value**
Yes	98(93.3)	85(81)	0.011
No	4(3.8)	14(13.3)	
I don't know	3(2.9)	6(5.7)	
Do you consider there is a connection between periodontal disease and pregnancy?			
Yes	58(55.2)	60(57.1)	0.61
No	35(33.3)	31(29.5)	
I don't know	12(11.4)	14(13.3)	
Do you consider that periodontal disease can generate preterm birth?			
Yes	31(29.5)	37(35.2)	0.28
No	54(51.4)	46(43.8)	
I don't know	20(19)	22(21)	
Do you consider that periodontal disease can generate low birth weight?			
Yes	21(20)	35(33.3)	0.16
Nu	45(42.9)	46(43.8)	
I don't know	39(37.1)	24(22.9)	

useful in learning about oral health and pregnancy, followed by books and magazines (64.8% dentists and 44.8% obstetricians).(Table 5)

Medication during pregnancy

Medication recommended mostly in pregnancy by dentists were rinsing solutions based on antiseptics (Corsodyl 67.6%, Listerine 79%), while obstetricians preferred antibiotics (Ampicillin 84.8%, Amoxicillin 81.9%) (Table 6).

Discussion

There is little data in the literature that assesses simultaneous the knowledge of dentists and obstetricians regarding the correlation between oral health and pregnancy. Until 2017 the research was concentrated only on the opinion of the obstetricians on this matter [18].

Table 4. Trimester recommended for dental treatment, dental radiographs, dental anesthesia and antibiotics during pregnancy

What trimester do you consider is safe for dental treatment?	Dentist - Number (percentage-%)	Obstetricians - Number (percentage - %)	P value
Trimester I	6(5.7)	18(17.1)	0.009
Trimester II	87(82.9)	60(57.1)	<0.001
Trimester III	23(21.9)	58(55.2)	<0.001
What trimester do you consider is safe for dental radiographs?			
Trimester I	9(8.6)	16(15.2)	0.14
Trimester II	66(62.9)	47(44.8)	0.009
Trimester III	44(41.9)	63(60)	0.009
What trimester do you consider is safe for dental anesthesia?			
Trimester I	6(5.7)	21(20)	0.002
Trimester II	90(85.7)	59(56.2)	<0.001
Trimester III	20(19)	68(64.8)	<0.001
What trimester do you consider is safe for administration of antibiotics?			
Trimester I	9(8.6)	20(19)	0.028
Trimester II	72(68.6)	52(49.5)	0.005
Trimester III	41(39)	80(76.2)	<0.001

Table 5. Dental treatments recommended by respondents during pregnancy and sources of information about the link between oral health and pregnancy

Tratment	Dentist - Number (percentage-%)	Obstetricians - Number (percentage - %)	P value
Professional Cleaning	102(97.1)	104(99)	0.31
Fillings / Crowns	97(92.4)	77(73.3)	<0.001
Extractions	34(32.4)	79(75.2)	<0.001
Implants	4(3.8)	15(14.3)	0.008
Endodontic treatments	65(61.9)	46(43.8)	<0.001
No treatment	0(0)	1(1)	1
Sources of information	Dentists – Number (percentage - %)	Obstetricians - Number (percentage - %)	P value
Television	20(19)	24(22.4)	0.5
Books / Magazines	68(64.8)	47(44.8)	0.004
Medical journals / Scientific articles	91(86.7)	83(79)	0.14
Clinical experience	44(41.9)	38(36.2)	0.39

Our results indicated awareness on the association between oral disease and pregnancy pathology, among dentists and obstetricians. These information are paramount important in the practical approach of pregnant patients with oral pathology.

The percentage of specialist who reported information on this topic (95.2%) is in the same range with other studies [15], but since only a quarter of dentists and a third of obstetricians were aware of the potential correlation between oral health problems and negative birth outcomes in our study, the results were lower than 53% indicated by Ganganna A et all in 2017 [18]. Between the two categories of specialists, the gynecologists were better informed in this domain than the dentists [18]."

There was an important consensus among the two categories of specialists upon the most frequent procedures periods of pregnancy when these could be recommended. The less invasive treatments were preferred, such as professional cleaning or

Table 6. Pharmaceutical products recommended by respondents in case of a dental problem during pregnancy

Product type	Pharmaceutical products	Dentists – Number (percentage - %)	Obstetricians - Number (percentage - %)	P value
Mouthwash	Corsodyl	71(67.7)	22(21)	<0.001
	Listerine	83(79)	68(64.8)	0.02
	Eludril	55(52.4)	17(16.2)	<0.001
Gingival gel	Elugel	55(52.4)	21(20)	<0.001
	PlantaGingival	66(62.9)	50(47.6)	0.026
	Gengigel	37(35.2)	29(27.6)	0.23
Analgesic - antiinflammatory	Nurofen	32(30.5)	21(20)	0.08
	Brufen	13(12.4)	3(2.9)	0.009
	Ibuprofen Cipla	13(12.4)	6(5.7)	0.09
	Paduden	17(16.2)	11(10.5)	0.22
	Ketonal Forte	4(3.8)	8(7.6)	0.23
	Ketonal Duo	8(7.6)	7(6.7)	0.79
	Tador	3(2.9)	1(1)	0.37
	Ketorolac	3(2.9)	13(12.4)	0.009
	Vimovo	2(1.9)	7(6.7)	0.17
	Aulin	9(8.6)	3(2.9)	0.07
Analgesic	Paracetamol	54(51.4)	85(81)	<0.001
	Panadol	20(19)	30(28.6)	0.1
	Algocalmin	23(21.9)	58(55.2)	<0.001
Antibiotic	Ampicillin	21(20)	89(84.8)	<0.001
	Amoxicillin	45(42.9)	86(81.9)	<0.001
	Ospamox	15(14.3)	48(45.7)	<0.001
	Augmentin	32(30.5)	83(79)	<0.001
	Amoksiklav	20(19)	58(55.2)	<0.001
	Zinnat	6(5.7)	66(62.9)	<0.001
	Tetracycline	0(0)	1(1)	1
	Oxacycline	2(1.9)	9(8.6)	0.03
Probiotic	Eubiotic	28(26.7)	46(43.8)	0.009
	Linex	23(21.9)	29(27.6)	0.34
	Enterol	7(6.7)	22(21)	0.003
	Enterolactis	7(6.7)	31(29.5)	<0.001
	Reflor	7(6.7)	10(9.5)	0.45
Antifungal	Nystatin	20(19)	9(8.6)	0.028
	Flucovim	9(8.6)	14(13.3)	0.27
	Diflucan	4(3.8)	2(1.9)	0.41

fillings, whilst procedures that involve surgery were considered non-desirable at this stage. The radiographs were also excluded by half of specialists (both dentists and obstetricians).

When considering medication, the dentists' answers demonstrated an increased preoccupation on the gingival status (indicating oral antiseptics as recommendable medication). Obstetricians seemed to take into account primarily severe infections of the oral complex, suggesting antibiotics. This difference in the attitude could be based on the clinical experience of the dentists, who are commonly addressed by pregnant patients with gingival inflammation. On the other hand, there is an increased preoccupation of obstetricians in treating any possible infection, which is believed to favor preterm birth.

There is agreement between both categories of specialists, who regarded the first trimester of the pregnancy as the least suitable for dental investigations or treatments; anesthesia and dental radiographs were regarded by the obstetrician as safer in the last trimester of the pregnancy, when fetus is mostly developed.

One of the most important observations of the study is that only half of the specialists (55.2% dentists and 57.1% obstetricians) consider that periodontal diseases can affect the pregnancy, which is less than other studies reported [19, 20]. Numerous respondents consider that there is no correlation between periodontal diseases and preterm birth (51.4% dentists and 43.8 obstetricians) or between periodontal pathology and low birth weight (42.9%

dentists and 43.8 obstetricians). Moreover, an important fraction of the responders answered "I don't know" at the respective questions: for the relation between periodontal diseases and preterm birth 19% dentists and 21% obstetricians, for the relation between periodontal diseases and low birth weight 37.1% dentists and 22.9% obstetricians.

These data suggest that the information regarding the periodontal health and pregnancy is not sufficiently acknowledged by both categories of specialists, possible due to the lack of clinical experience since the majority of the specialists included in this study had a practical experience less than 10 years.

The sample size used in the study was relatively small to make a final conclusion on the topic. Further information must be gained for a more representative conclusion. Another limitation of this study was the collection of the answers, by self-administrated questionnaires. Although pilot testing was carried out to validate the questionnaire, it is always possible that some of the participants misunderstood the questions.

The information may be used for future continuing education programs dedicated to specialists involved in this domain.

Conclusions

The possible association between oral diseases and pregnancy pathology was understood by the majority of dentists and obstetricians; moreover, there was consensus in the most frequent dental treatments and protocols. However, the information regarding the possible correlation between periodontal health and pregnancy was not enough acknowledged by neither dentists nor obstetricians.

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