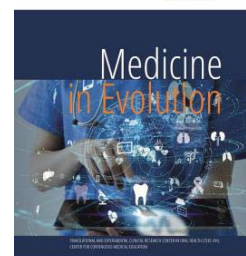


# Romanian pregnant women' attitude and behaviour related to periodontal health - a pilot study



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## Abstract

There is a well-studied bidirectional association between adverse pregnancy outcomes and periodontal inflammation and pregnant women should be aware of the oral health-related preventive behaviours. Aim: assessment of Romanian pregnant women' awareness, knowledge and behaviour regarding the periodontal health during pregnancy. Material and method: a cross-sectional pilot study was conducted in 2020-2021 on a sample of 80 pregnant women with a mean age of  $28.42 \pm 6.91$  years, using an on-line self-assessment questionnaire. Results: 62.75% reported frequent gingival bleeding; 25% brush their teeth only in the morning; 63.75% use interdental cleaning products; only 18.75% visited the dentist during the pregnancy. 45% never had a professional dental cleaning; only 23.75% declared being acknowledged about the effects of pregnancy on periodontal health and only 11.75% were informed about the impact of untreated periodontal inflammation on pregnancy evolution. Conclusion: Most of the pregnant women were unaware of the association between periodontal condition and adverse pregnancy outcomes, oral hygiene was unsatisfactory and dental visits were neglected.

**Keywords:** pregnancy, periodontal health, periodontal inflammation, gingivitis

## INTRODUCTION

Pregnancy is a physiological temporary state during which a woman's body goes through different changes and some of them involves the periodontium [1]. There is a well-documented bidirectional association between periodontal health and pregnancy evolution [1,2].

On one hand, due to the changes in level of progesterone and estrogen, structural changes are induced but also a susceptibility to inflammation [1-3]. Thus, previously periodontal healthy women might experience gingival bleeding due to vascular fragility [2,4]. In case of previously untreated gingivitis or periodontitis, there is an increased risk for rapid evolution of inflammation [3,4]. In some cases, pregnancy gingivitis occurs, which is a temporary generalized gingivitis during the pregnancy in which the level of gingival bleeding is not correlated to the level of dental plaque accumulation [5]. In other cases 'pregnancy tumor' is developed, which is a localized gingival proliferative lesion, usually developed from the papilla and sometimes with a such a gingival enlargement that impedes mastication because of the extension even on the occlusal surfaces [6].

Periodontal inflammation, untreated before pregnancy or poorly controlled during pregnancy can induce complication for both pregnant woman and fetus, complications known as adverse pregnancy outcomes [1-3]. There is a well-documented risk for low birth weight, premature birth or mother's pre-eclampsia [1,2]. These complications develop because of the characteristics common to all chronic inflammation which is a condition that describes also periodontitis [7]. Persistent subgingival biofilm, and subsequent microbial dysbiosis, induces inflammatory response, with an increased systemic level of cytokines like IL-1, IL-6, TNF-alpha, PGE2 that reach the fetal-placental unit in such a way that the risk for growth restrictions or premature birth is increased [1,7].

The most recent global epidemiology of inflammatory forms of periodontal conditions show that around 80% of adults have a form of periodontal inflammation, with a prevalence of gingivitis periodontitis of 50% and moreover with the severe form, periodontitis stage 3 or 4 affecting 11% of adults [8]. Pregnancy gingivitis has a prevalence varying between 38% and 93.75%, according to recent epidemiological data [9,10]. Taking into consideration the high frequency of this chronic inflammatory condition and its potential risks induced to pregnancy outcome, specific preventive actions, both personal and professional are of utmost importance to avoid complication.

In the recent years, based on evidence derived from research in this specific field, European Federation of Periodontology and the American Academy of Periodontology published a set of specific recommendation for not only women patients and dental professionals but also medical professionals to get involved into preventive actions in order to avoid adverse pregnancy outcome induced by periodontal inflammation [7]. Thus, women are encouraged to check their periodontal health and, in need, to get the proper periodontal treatments before pregnancy as well as to perform a proper oral hygiene before and during the pregnancy. Dental professionals are recommended to check periodontal health during the pregnancy more often and perform non-surgical treatment during the pregnancy, for pregnant woman who are diagnosed during the pregnancy with a form of gingivitis and periodontitis in order to reduce the inflammatory state [1-4]. Any surgical periodontal treatments are recommended to be postponed after the birth [2,3]. Medical professionals and specific Obstetrical-Gynecologist specialists should advice future pregnant woman to get a periodontal check-up and to support during the pregnancy to see a periodontist for professional cleaning and specific periodontal treatment in case of periodontal inflammation [2-4].

### *Aim and objectives*

The aim of the present study was the assessment of the attitude and behaviour toward the periodontal health among a group of Romanian pregnant women.

## MATERIAL AND METHODS

The present cross-sectional pilot study was conducted in November 2020 - April 2021 and initiated by the Department of Oral Health and Community Dentistry from the Faculty of Dental Medicine, "Carol Davila" Medicine and Pharmacy University (Bucharest, Romania). The sample included 80 Romanian pregnant women. The inclusion criteria was adults (age>18 years) and a pregnancy at the moment of participation at the study. The exclusion criteria were dental professionals or dental students. The participants in the study were assessed using a self-administered online questionnaire with 26 items related to socio-demographic data, information regarding the pregnancy, perceived oral health state and periodontal health-related attitude and behaviour. The estimated filling-in time was 5 minutes. Prior to completion of the questionnaire, the invited subjects were informed about the survey in respect to the Declaration of Helsinki and the current European privacy law, by including a section in the questionnaire describing the aim of the study and their rights as participants. All the invited participants agreed to participate to the study and after giving their consent, they proceeded to completion of the survey. It was an anonymous web-survey and no personal data were collected.

## RESULTS

Within our sample, the participating women had a mean age of  $28.42 \pm 6.91$  years (ranging between 18 and 43 years), 21.25% (17 subjects) living in Bucharest, the capital city of Romania, while the rest living either in rural area (42.50%, 34 subjects) or urban area (36.25%, 29 subjects) other than Bucharest.

When it comes to the pregnancy, only 6.25% (5 subjects) declared that the present pregnancy was obtained through in vitro fertilization while the rest were from natural conception. Regarding the phase of the pregnancy at the time of participation to the study, 10% (8 subjects) stated they were in the first trimester, 23.75% (19 subjects) in the second trimester and 66.25% (53) in the third trimester.

Results related to perceived symptoms of gingival inflammation during the pregnancy, showed that 82.5% of women reported gingival bleeding with a frequency varying from seldom to spontaneous with one fifth of women noticing this either every time they performed toothbrushing (17.50%) or spontaneously (2.50%) (Table I). Moreover, 32.50% noticed exacerbated gingival bleedings compared to the time before pregnancy. Among other gingival inflammation symptoms, painful gums were most frequently mentioned (17.50%) (Table I).

Table I. Self-reported symptoms of gingival inflammation during the pregnancy

Assessed parameter	Answers	% (N)
<i>Gingival bleeding</i>		
	Yes, spontaneous	2.50% (2)
	Yes, during every toothbrushing	17.50% (14)
	Yes, sometimes during toothbrushing	38.75% (31)

Assessed parameter	Answers	% (N)
	Yes, only during flossing	3.75% (3)
	Seldom	20% (16)
	Not at all	17.50% (14)
<i>Perceived increase in gingival bleeding compared to before pregnancy</i>		
	Yes	32.50% (26)
	No	67.50% (54)
<i>Other gingival symptoms during the pregnancy</i>		
	Painful gingiva	17.50% (14)
	Increased in volume of the gingiva	2.50% (2)
	Changes in colour of the gingiva	3.75% (3)
	Not at all	78.75% (63)
<i>History of gingival/periodontal inflammation</i>		
	Gingivitis	6.25% (5)
	Periodontitis	3.75% (3)
	No	46.25% (37)
	Don't know	43.75% (35)
<i>Perceived overall oral health status</i>		
	Excellent	7.50% (6)
	Very good	22.50% (18)
	Good	51.25% (41)
	Satisfactory	12.50% (10)
	Poor	5% (4)
	Very poor	1.25% (1)

Assessment of the oral hygiene-related behaviour, as part of the mandatory routine for the maintenance of a good periodontal health, revealed that 25% of the pregnant women declared they performed toothbrushing only in the morning. Manual toothbrush was preferred by 80% of the participants. Regarding the additional oral hygiene products, mouthwash was the most frequently mentioned (by 58.75% of subjects) while interdental cleaning products were used by only 63.75% of the participants and interdental brushes being the most frequently used (by 30% of subjects) (Table II).

Table II. Oral self-care habits of subjects

Assessed parameter	Answers	% (N)
<i>Frequency of toothbrushing</i>		
	> Twice daily	8.75% (7)

Assessed parameter	Answers	% (N)
	Twice a day	65% (52)
	Once a day, in the morning	25% (20)
	< Daily	1.25% (1)
<i>Type of used toothbrush</i>		
	Manual	80% (64)
	Powered	16.25% (13)
	Both manual and powered	3.75% (3)
<i>Additional oral hygiene products used</i>		
	Dental floss	22.50% (18)
	Interdental toothbrushes	30% (24)
	Oral irrigator	3.75% (3)
	Mouthwash	58.75% (47)
	Wooden toothpicks	16.25% (13)

Evaluation of the behaviour related to dental services utilization showed that, within the studied group, only 18.75% of the pregnant women went to the dental office for a check-up during the pregnancy and that only 31.25% received a professional dental cleaning in the last year while 45% declared they had never had this in-office preventive dental procedure (Table III).

Table III. Dental services utilization among subjects

Assessed parameter	Answers	% (N)
<i>Dental check-up during the pregnancy</i>		
	Yes	18.75% (15)
	No	81.25% (65)
<i>The last professional cleaning</i>		
	< 6 months	11.25% (9)
	6-12 months	20% (16)
	> 12 months	23.75% (19)
	Never	45% (36)
<i>Frequency of dental visits, in general</i>		
	< 6 months	30% (24)
	6-12 months	35% (28)
	Once every few years	10% (8)
	Seldom, only in need	16.25% (13)
	Never	8.75% (7)

Assessed parameter	Answers	% (N)
<i>Recommendation from the obstetrics-gynecology specialist to visit the dental office</i>		
	Yes	11.25% (9)
	No	88.75% (71)

When it comes to the information received by the pregnant woman about the association between periodontal health and pregnancy evolution, results showed that only 23.75% of subjects declared they were informed about the effects of pregnancy on periodontal status. Only 13.75% declared they had certain knowledge about the adverse pregnancy outcomes in the presence of untreated gingival or periodontal inflammation (Table IV). Regarding the source of this type of information, the dentist was the most frequently mentioned (Table IV).

Table IV. Declared knowledge regarding the association between periodontal health and pregnancy evolution

Assessed parameter	Answers	% (N)
<i>Informed about impact of pregnancy on periodontal health</i>		
	Yes	23.75% (19)
	No	76.25% (61)
<i>Source of information regarding the impact of the pregnancy on periodontal health</i>		
	Dentist	13.75% (11)
	Obstetrics-gynecology specialist	2.50% (2)
	Internet	8.75% (7)
<i>Informed about the impact of untreated gingival/periodontal inflammation on pregnancy evolution</i>		
	Yes	13.75% (11)
	No	86.25% (71)
<i>Source of information regarding the impact of untreated gingival/periodontal inflammation on pregnancy evolution</i>		
	Dentist	11.25% (9)
	Obstetrics-gynecology specialist	2.50% (2)
	Internet	1.25% (1)

## DISCUSSIONS

In the present study, most pregnant women showed, despite the perceived gingival bleeding frequently met during the pregnancy, the tendency to get involved more in the self-oral healthcare but less in the professional preventive procedures in order to avoid any adverse pregnancy outcome or periodontal complication.

Gingival bleeding were observed frequently by two thirds of the participants in our study, a higher frequency than that reported in a similar recent study on Saudi Arabia expecting women where only one third mentioned bleedings and another third swollen gums

[11], but in similar proportion observed in a study on Polish population that reported the development of gingivitis or periodontitis during the pregnancy in 70% of studied pregnant women [12]. The second most frequently mentioned symptom of gingival inflammation during the pregnancy was painful gums similar to the results reported by a recently published research on Dutch women population [13].

Three quarters of the subjects in our study declared a tooth brushing frequency of twice daily or more often, which is in line with other surveys in other countries [13-16].

According to the European Federation of Periodontology and American Academy of Periodontology, dental check-up before and during pregnancy play a major role in prevention, early diagnosis and specific and individualized therapeutic procedures during the pregnancy according to the periodontal condition and the gestational age [3,7]. In our study, dental service utilization was highly neglected not only during pregnancy but also before the conception, in general.

The main source of information was the dentist in the present study, in line with the result reported at Polish pregnant women population [12], which emphasizes the major role that the dentists play in the oral health promotion. However, the proportion of pregnant women population who declared having certain information regarding the association between periodontal condition and pregnancy evolution is far from satisfactory. On the other hand, the proportion of women who stated they had information about the changes in gingival health during the pregnancy was greater than that of women who acknowledged the negative effects of untreated periodontal inflammation on both women and fetus health state.

Therefore, oral health promotion programs targeting present or future pregnant women should emphasize these less known aspects but of utmost importance.

## CONCLUSIONS

In the current study, pregnant women were unaware of the association between potential periodontal inflammatory conditions and adverse pregnancy outcomes. Despite the perceived gingival bleedings reported by most of the participants in the study, the dental check-up and the preventive professional dental cleaning are largely neglected. Moreover, oral hygiene routine is unsatisfactory due to the sub-optimal toothbrushing frequency and the underuse of the additional oral hygiene products.

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