

# Smoking and Related Factors during Pregnancy

Ayşe Önal Aral<sup>1</sup>, Serdar Yalvaç<sup>2</sup>

<sup>1</sup>Clinic of Chest Diseases, Etlik Zübeyde Hanım Obstetrics and Gynecology Training and Research Hospital, Ankara, Turkey

<sup>2</sup>Clinic of Perinatology, Etlik Zübeyde Hanım Obstetrics and Gynecology Training and Research Hospital, Ankara, Turkey

## Abstract

**Objective:** In this study, we aimed to investigate smoking habits of women during pregnancy and determine the related factors.

**Methods:** In this cross-sectional study, a total of 1021 women were included in the first 24 h after they gave birth in the hospital between March and May 2014. The study was conducted at only one hospital. Participants were interviewed face-to-face by researchers using a questionnaire. Data were analyzed using IBM SPSS Statistics for Windows v.22.0. The relation between categorical variables was determined using chi-square test. Statistical significance was achieved when the p value was less than 0.05. Ethics committee approval from the hospital and written informed consent from the participants were obtained for the study.

**Results:** The frequency of smoking during pregnancy was 13.0%. The majority smoked until birth (10.1%). Household smoker was significantly associated with smoking during pregnancy ( $p < 0.001$ ), and advanced maternal age ( $> 35$  years) during pregnancy was associated with smoking until birth during pregnancy ( $p < 0.05$ ).

**Conclusion:** The prevalence of smoking was still high among pregnant women in spite of strict measures and all efforts against smoking in Turkey. Advanced maternal age and household smoker were associated with smoking during pregnancy. Special focus is needed on the issue of smoking during pregnancy not only by pregnant women but also by their household's members.

**Keywords:** Smoking, smoker, pregnancy

## INTRODUCTION

Smoking during pregnancy has long been considered as one of the important risk factors for perinatal adverse outcomes. Risk of ectopic pregnancy, spontaneous abortion, placenta previa, and placental abruption in mothers as well as preterm birth, low birth weight, and potentially carcinogenic genetic mutations in babies are among harmful effects that could be resulted from smoking during pregnancy (1-4). Smoking among pregnant women is prevalent in not only Turkey but also other countries all over the world, although its adverse effects have been known.

In the studies conducted in Turkey during the last 10 years, the prevalence of smoking among pregnant women was found to be between 9.7% and 22.7% (5-8). In another study conducted recently, which included 15 countries, it was found that the prevalence of smoking during pregnancy was 14.2% in France, 9.7% in Russia, 10.5% in Italy, 6.9% in England, 5.4% in Switzerland (9). In Turkey, areas in which tobacco products are used have been quite restricted by the legislation in 2008 for preventing and controlling the harmful effects of tobacco products. According to the Global Adult Tobacco Study 2012 in Turkey, tobacco use decreased by 13.4% between 2008 and 2012 and the prevalence of smoking was 13.1% for women (10).

Smoking during pregnancy needs to be given attention to elucidate the related factors and to acquire successful outcomes in terms of preventive and other strategies on the issue. Our aim in this study was to investigate not only smoking habits of pregnant women but also frequency of smoking during pregnancy. The results were compared with those of previous studies in Turkey to if there were



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### Corresponding Author

Ayşe Önal Aral  
E-mail: aonal2@yahoo.com

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any changes with time. In addition, we investigated factors related to smoking during pregnancy such as age, education, and smoking status of other household members in addition to the partner.

**METHODS**

The study was designed as a cross-sectional study. A total of 1021 women were included in the study in the first 24 h after they gave birth in the hospital where the study was conducted between March and May 2014. The study was conducted at only one hospital. Participants were interviewed face-to-face by researchers after obtaining written informed consent and approval from the hospital's ethics committee for the study before the study started. The questionnaire including questions explained below and was used for collecting the information from participants.

All participants were questioned on age, education, partner smoking status, and other household members' smoking status in addition to their smoking status. Women smoking during pregnancy were questioned on their daily cigarette consumption and if they had received any advice or support from health care centers for quitting smoking during that period. Those who stopped smoking at the onset of pregnancy or during the pregnancy term were questioned on the reasons for which they stopped smoking and if they intended to restart smoking after delivery. Women who did not smoke during pregnancy were questioned if they were exposed to cigarettes smoke at home or at workplace.

The participants were grouped into two categories according to their smoking history.

**Group 1. Did not smoke during pregnancy (i.e., non-smokers during pregnancy):** Women who did not smoke throughout the pregnancy. This group was subdivided into two categories

**Group 1a. Non-smoker:** These women were non-smokers before pregnancy and did not smoke during pregnancy. Women who used to smoke before but were non-smokers at the onset of pregnancy were also included.

**Group 1b. Stopped smoking:** These women were smokers before pregnancy but stopped at the onset of pregnancy.

**Group 2. Smoked during pregnancy (i.e., smokers during pregnancy):** This group was subdivided into two categories

**Group 2a. Smoked for some time during pregnancy (at least for 1 month)**

**Group 2b. Smoked until birth**

Household smoker was subdivided into two groups as "partner", who was married the participant and living in the same home, and "an-

other person", who was a family member such as mother-in-law and living in the same home.

**Statistical Analysis**

Data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows v.22.0. The relation between categorical variables was determined using Chi-square test. Statistical significance was achieved when the p value was less than 0.05.

**RESULTS**

A total of 1021 women participated in the study. Although 89.7% (916) of the participants were between 18 and 35 years of age, 10.3% (105) were older than 35. The proportion of non-smoker was 82.8% (846), those who stopped smoking was 4.1% (42), those who smoked for some time was 2.8% (29), and those who smoked until birth was 10.1% (104). The frequency of smoking during pregnancy was 13.0%. Table 1 shows smoking habits of participants during pregnancy according to age, education, and household smoker. The proportion of those who smoked until birth was higher in the group of women who were older than 35 years, in the group of illiterate women, and among those who had household smokers. The proportion of smoker partner was high both in the group of non-smokers and smokers during pregnancy, with a higher rate in the latter group (50.7% and 68.4%, respectively). In the study group, 5.5% of all participants had a smoker partner and another smoker person at home. Most of the smokers during pregnancy smoked between 1 and 5 cigarettes per day (81.2%). The proportion of pregnant women receiving advice from health care workers such as doctors and nurses for smoking cessation was 49.6% among the smokers during pregnancy. The proportion of those who stopped smoking at the onset or within the pregnancy period because of thought that smoking would be harmful to their baby was 80.6%, whereas 1.4% quit smoking because of nausea and 18.1% quit because of both of the above reasons. The proportion of those who intended to resume smoking after delivery was 38.3% among those who stopped smoking at the onset or within the pregnancy period. The highest rate of tobacco smoke exposure was at home, with the rate of 27.3%, whereas it was 0.6% at workplace and 0.1% at home plus workplace among non-smokers during pregnancy.

Smoking during pregnancy was found to be significantly associated with household smoker ( $p < 0.001$ ) (Table 2).

Among smokers during pregnancy, smoking until birth was found to be associated with household smoker ( $p < 0.05$ ) and advanced maternal age ( $p < 0.05$ ) (Table 3).

**Table 1.** Distribution of the smoking habits among pregnant according to age, education, and household smoker

		Non-smoker n (%)	Stopped smoking n (%)	Smoked for sometime n (%)	Smoked until birth n (%)	Total n (%)
Age	18–35	763 (83.3)	35 (3.8)	29 (3.2)	89 (9.7)	916 (100)
	>35	83 (79.0)	7 (6.7)	0 (0.0)	15 (14.3)	105 (100)
Education	Illiterate	20 (83.3)	0 (0.0)	0 (0.0)	4 (16.7)	24 (100)
	Primary and Secondary school	461 (82.8)	25 (4.5)	15 (2.7)	56 (10.1)	557 (100)
	High school	279 (83.0)	12 (3.6)	10 (3.0)	35 (10.4)	336 (100)
	University	86 (82.7)	5 (4.8)	4 (3.8)	9 (8.7)	104 (100)
Household smoker	Partner	421 (77.7)	30 (5.5)	19 (3.5)	72 (13.3)	542 (100)
	Partner + another person	42 (75.0)	0 (0.0)	0 (0.0)	14 (25.0)	56 (100)
	No one	383 (90.5)	12 (2.8)	10 (2.4)	18 (4.3)	423 (100)

**Table 2.** An univariate analysis of associated factors for smoking during pregnancy

		Did not smoke during pregnancy n (%)	Smoked during pregnancy n (%)	Total n (%)	p
Household smoker	Partner	451 (83.2)	91 (16.8)	542 (100)	0.000***
	Partner + another person	42 (75.0)	14 (25.0)	56 (100)	
	No one	395 (93.4)	28 (6.6)	423 (100)	
Age	18–35	798 (87.1)	118 (12.9)	916 (100)	0.648
	>35	90 (85.7)	15 (14.3)	105 (100)	
Education	Illiterate	20 (83.3)	4 (16.7)	24 (100)	0.943
	Primary and Secondary school	486 (87.3)	71 (12.7)	557 (100)	
	High school	291 (86.6)	45 (13.4)	336 (100)	
	University	91 (87.5)	13 (12.5)	104 (100)	
Total		888 (87.0)	133 (13.0)	1021 (100)	

\*p&lt;0.05; \*\*p&lt;0.01; \*\*\*p&lt;0.001

**Table 3.** An univariate analysis of associated factors for the group of smoked for some time during pregnancy and the group of smoked until birth

		Smoked for some time during pregnancy n (%)	Smoked until birth n (%)	Total n (%)	p
Household smoker	Partner	19 (20.9)	72 (79.1)	91 (100)	0.028*
	Partner + another person	0 (0.0)	14 (100)	14 (100)	
	No one	10 (35.7)	18 (64.3)	28 (100)	
Age	18–35	29 (24.6)	89 (75.4)	118 (100)	0.041*
	>35	0 (0.0)	15 (100)	15 (100)	
Education	Illiterate, Primary and Secondary school	15 (20.0)	60 (80.0)	75 (100)	0.684
	High school	10 (22.2)	35 (77.8)	45 (100)	
	University	4 (30.8)	9 (69.2)	13 (100)	
Total		29 (21.8)	104 (78.2)	133 (100)	

\*p&lt;0.05; \*\*p&lt;0.01; \*\*\*p&lt;0.001

In addition, we found that smoking until birth was associated with household smoker in the univariate analysis of associated factors for those including the group of non-smokers ( $p<0.001$ ) and the group of those who stopped smoking ( $p<0.05$ ).

We did not find any significant relation between education status of women and smoking during pregnancy in univariate analysis in this study group ( $p>0.05$ ).

## DISCUSSION

In our study, frequency of smoking during pregnancy was 13.0%. Recently, in Turkey, this rate was reported to be 11.4% (8). Smoking frequency among pregnant women was still high, although it has been declared that tobacco use decreased in Turkey after legislation related to tobacco use was introduced in 2008 (10). In addition, the rate reported in this study was found to be higher than that reported in many other countries (9).

The proportion of smokers during pregnancy was higher in the group older than 35 years compared to the group aged between 18 and 35 years (Table 1). This finding was contrary to those reported in

other studies (7, 11). Moreover, in univariate analysis, we found that smoking until birth was associated with advanced maternal age (Table 3). Pregnant women aged older than 35 years are considered to be at a higher risk for adverse perinatal outcomes (12, 13). Smoking during pregnancy for this age group could add burden and worsen adverse perinatal outcomes (11).

The frequency of smoking was higher among the illiterate group compared to the educated group (Table 1). This finding was consistent with one study and was contrary to another study in Turkey (7, 8). This result may be attributed to poor socioeconomic conditions that pregnant women in this group face (7).

In univariate analysis, we found that smoking during pregnancy was significantly associated with household smoker (Table 2). This finding was consistent with other studies (7, 8). Studies have shown that smoker partner can facilitate women starting smoking and may also make it difficult for smoker women to quit smoking (14, 15). In this study if there was another smoker person in the same home in addi-

tion to a smoker partner, the proportion of women who smoked until birth was significantly higher among smokers during pregnancy (Table 3). In other words, if there were more than one smoker at home, smoker pregnant women in this study group most likely smoked until birth instead of stopping smoking during her pregnancy. The risk of low birthweight baby does not occur among pregnant women if they quit smoking in the early period of pregnancy (16).

Only 49.6% of smokers during pregnancy had received verbal advice from health care workers for quitting smoking in our study. None of them had received professional support. In other words, half of pregnant women were not questioned for smoking, and therefore, had not received advice or support from health care facilities for stopping smoking. This result was consistent with another study in Turkey (10).

Smoking cessation interventions during pregnancy reduce the proportion of women who continue to smoke, thereby reducing low birthweight and preterm birth (17).

The proportion of women who stopped smoking at the onset or during pregnancy and stated that they intended to resume smoking after delivery was 38.3%. This finding was in accordance with another study declaring this rate to be 43% (18). This finding suggested that some of the non-smokers during pregnancy would be smoker in near future if any effective intervention for quitting smoking was not implemented on them.

Most of those who stopped smoking at the onset or within pregnancy period stated that they knew that smoking would be harmful to their baby so they decided quitting smoking. This suggested that addressing to this sensibility might help to get successful outcomes in interventions for quitting smoking during pregnancy period.

The proportion of non-smokers during pregnancy who were exposed cigarettes smoke at home during pregnancy was 27.3%. The risk of low birthweight baby and baby with congenital abnormality is high among women exposed to environmental cigarettes smoke during pregnancy, even if they are non-smokers (19).

The limitation of our study was that data were obtained based on participants' reports and their partner's smoking habits. Therefore, women may have underreported their own smoking status in particular.

## CONCLUSION

Consequently, frequency of smoking among pregnant women is still high and essential regulations taking smoking status of household members into account are needed on the issue of smoking during pregnancy in Turkey.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Etlik Zübeyde Hanım Obstetrics and Gynecology Training and Research Hospital, Ankara.

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

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