Socio-Demographic Characteristics and Lifestyle Habits of Pregnant Women Smokers

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A B S T R A C T

The aim of this study was to describe anthropometric, clinical, socio-demographic characteristics and lifestyle habits of pregnant smokers in comparison to pregnant nonsmokers. During years 1999–2003, 1,435 pregnant smokers and 4,772 pregnant nonsmokers were interviewed after delivery with a questionnaire. They were recorded clinical, anthropometric and socio-demographic data, smoking status, labor outcome, maternal and fetal hemoglobin concentrations for each patient. The two groups were comparable in anthropometric and clinical characteristics, duration of pregnancy and mode of delivery, except for birth weights, which were significantly lower in newborns of smokers. Maternal hemoglobin concentrations were significantly lower in smokers, but fetal hemoglobin concentrations were significantly higher in babies of smokers. The proportion of pregnant women who smoked during pregnancy was higher among urban women, among women with lower educational level and among unemployed subjects in comparison with nonsmokers. The pregnant women who smoked during pregnancy were more often caffeine and alcohol consumers. To further reduce smoking during pregnancy it is important to continue to promote smoking cessation among teenagers.

Key words: lifestyle habits, pregnant women, smokers, antropometry, socio-demographic characteristics

Introduction

In the industrialized countries smoking tobacco is the single most important preventable risk factor for disease and death. Excess morbidity and excess mortality as a result of smoking have been documented for about forty different diseases[1]. The effects of cigarette smoking on pregnancy are well documented. When a pregnant woman smokes she exposes her fetus to a form of passive smoking. The effect of smoking on birthweight was reported first by Simpson in 1957[2]. Children of smokers weigh 250–350 grams less than children of non smokers[3–6]. Smoking also increases the risk of bleeding during pregnancy, spontaneous abortion, preterm birth, fetal growth retardation, perinatal death and sudden infant death[3–10]. Furthermore, smoking during pregnancy has been associated with intellectual and developmental impairment in childhood[6–9].

The goal of this study was to determine association socio-demographic characteristics and lifestyle habits with smoking in pregnancy.

Subjects and Methods

This prospective study was conducted at Department of Obstetrics and Gynecology, Clinical Hospital in Split, Croatia, between March 1999 and October 2003. The hospital ethics committee approved the protocol, and informed consent was obtained from all women. We tested women after delivery and they were selected randomly. Excluded were multiple pregnancies, preeclampsia, maternal diabetes or other chronic disease, newborns with malformations, Rh isoimmunization, women with incorrect gestational age and labours longer than 24 hours. All mothers were routinely recommended to take iron tablets as prophylaxis. The study subjects made up two subgroups after delivery; in the first were smokers, and in the second were nonsmokers. All of the smoking mothers who had stopped smoking before pregnancy were analyzed together with nonsmoking mothers. The women were classified as smokers if they smoked one or more cigarettes daily during pregnancy.

The pregnant women who stopped smoking during pregnancy were not elaborated. All women were interviewed with questionnaire, and blood samples were taken for determination fetal and maternal hemoglobin concentrations. This questionnaire provided information on the woman's age, height, woman's weight recorded late in pregnancy, obstetric history, alcohol and caffeine intake during pregnancy, smoking habits, marital status, education and employment status. Gestational age was calculated from the last menstrual period and confirmed by ultrasonographic assessment before 12 weeks gestation. Civil status was classified into two groups: women who reported to be married to or cohabitant with the father, and women who were single. The questionnaire was completed by 6,207 (98%) of the 6,346 women invited to participate in this investigation. There were 1,435 smokers and 4,772 nonsmokers. Blood for hemoglobin was collected as capillary samples from mothers and neonates after delivery, and measured by cyanmethemoglobin method.

Mean values were expressed as arithmetic mean (X) and scatter as standard deviation (SD). For comparisons of metric or categorical variables between two subgroups Student t test or χ^2 test was used. In single variable comparisons the p values less than 0.05 were considered statistically significant.

Results

Table 1 shows the characteristics of the study population. The smokers were anthropometricaly matched to the nonsmokers, and the differences in the number of parity between both subgroups were not observed. Duration of pregnancy between smokers and nonsmokers was similar. Maternal hemoglobin concentrations were significantly lower in smokers (118±19 g/L) in comparison to nonsmokers (129±21 g/L, p<0.05). On the other hand, fetal hemoglobin concentrations were significantly higher in newborns of smokers (147±26 g/L) com-

pared to neonates of nonsmokers (136 ± 26 g/L, p<0.05). Birth weights were significantly lower in newborns of women who smoked (3209±445 g) compared to babies of nonsmokers (3474±765 g, p<0.05). Smoking was found to give a mean reduction of 265 g in estimated birthweight among babies to women smoking. There were not observed the differences in duration of pregnancy and mode of delivery between smokers and nonsmokers.

In Table 2 are given socio-demographic and lifestyle characteristics for smoking and non-smoking mothers. The proportion of pregnant women who smoked during pregnancy was higher among urban people (p<0.01), among women with low educational level (p<0.01) and among unemployed subjects (p<0.01) compared with nonsmokers. The nonsmokers were more often rural female inhabitants (p<0.01), more often with high level education (p<0.01) and more often they were employed (p<0.01) than smokers. Table 2 shows that smokers were more often alcohol and caffeine consumers (p<0.01) compared with nonsmokers.

Discussion

Smoking during pregnancy has a well documented negative effect on fetal growth and has been related to other adverse pregnancy outcomes. However, possible interactions between smoking and other risk factors have not been well studied. Since the 1970s the proportion of smoking mothers has fallen in most Scandinavian countries[11]. In 1989 The Norwegian Cancer Society launched a national campaign against smoking during pregnancy[12]. Eriksson et al. found an overall reduction in the proportion of pregnant smokers in Norway from 34% in 1987 to 22% in 1994[13]. In 1993, however, 20% of mothers in Sweden were still smoking at the start of their pregnancy[11]. In Croatia, we have seen no such campaigns[14,15]. Most authors found that smoking is associated with lower birthweight[2–6], and our findings are consistent. There is a clear dose-response association

TABLE 1
CLINICAL AND ANTHROPOMETRIC CHARACTERISTICS OF PREGNANT SMOKERS AND PREGNANT NONSMOKERS

	Smokers N=435	Nonsmokers N=4772	p
Age (years, X±SD)	26.7±7.2	27.3±8.4	ns**
Height (cm, X±SD)	166±6.7	165±6.9	ns**
Weight (kg, X±SD)	73.8±11.2	75.1±10.6	ns**
Parity (X±SD)	2.2±0.9	2.3±0.9	ns*
Duration of pregnancy (days, X±SD)	261±27	266±25	ns*
Maternal hemoglobin (g/L, X±SD)	118±19	129±21	<0.05*
Fetal hemoglobin (g/L, X±SD)	147±26	136±26	<0.05*
Birthweight (g, X±SD)	3209±445	3474±765	<0.05*
Mode of delivery			
Vaginal (%)	82	86	ns*
Abdominal (%)	18	14	ns*

* χ^2-test, ** t-test

TABLE 2
SOCIODEMOGRAPHIC CHARACTERISTICS AND LIFESTYLE HABITS AMONG PREGNANT SMOKERS AND PREGNANT NONSMOKERS

	Smokers (N=1435)	Nonsmokers (N=4772)	p[*]
Urban (%)	82	64	<0.01
Rural (%)	18	36	<0.01
Educational level (%)			
Low	27	19	<0.01
Medium	52	46 ns	
High	21	35	<0.01
Marital status (%)			
married-cohabiting	97	98	ns
single	3	2	ns
Employment status (%)			
Working	44	57	<0.01
Unemployed	48	34	<0.01
Student	8	9	ns
Alcohol intake (%)			
Yes	22	9	<0.01
No	78	91	<0.05
Caffeine intake (%)			
Yes	99	76	<0.01
No	1	24	<0.001

[*]χ^2-test

between smoking and birthweight. It is uncertain whether smoking interacts with hematologic parameters in pregnancy. We observed the significantly lower concentration of maternal hemoglobin in smokers compared with nonsmokers, but the significantly higher hemoglobin concentrations in newborns of smokers compared with neonates of women who not smoke. Our findings are similar to data of a few investigators[9,16]. However, others have found no interaction between maternal or fetal hemoglobin levels and smoking[17]. Also, we found that smoking among pregnant women was associated with residence, education, employment status, alcohol and caffeine intake. This is in accordance with findings from other studies on the determinants of smoking in pregnancy[2–6,10–13]. Especially, in a meta-analysis of 26 published studies, Patrick and coworkers found a same results[18]. The association between smoking and caffeine intake has often been explained from a social point of view as coffee drinking and smoking provide an opportunity to relax.

The results from the present study might be an extra argument to advise pregnant women not to smoke or to quit smoking during pregnancy. Pregnancy has been regarded, with good reason, as a golden opportunity for giving up smoking. A large proportion of women stop smoking or cut down their cigarette consumption at the start of pregnancy, but the majority continue to smoke despite a high motivation to give up. In preventive health care, high priority has been attached to getting women to stop smoking during pregnancy. Norwegian study of smoking women showed that a large proportion of women wished for more information and greater personal involvement from doctors and midwives on the subject[12]. The importance of involving the woman's partner in advice on smoking has also been stressed[11].

In conclusion, this data may be relevant for public health services to reduce smoking among pregnant women. Simultaneously, health personnel such as general practitioners, midwives and obstetricians have made great efforts to inform pregnant women about the negative effects of smoking on maternal and fetal health and about the benefits of quitting smoking. To further reduce smoking during pregnancy it is important to continue to promote smoking cessation among teenagers.

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SOCIODEMOGRAFSKE KARAKTERISTIKE I ŽIVOTNE NAVIKE TRUDNICA PUŠAČICA

S A Ž E T A K

Cilj rada bio je utvrditi antropometrijske, kliničke, sociodemografske karakteristike i životne navike trudnica pušačica i usporediti ih s trudnicama nepušačicama. Između 1999–2003 godine upitnikom je intervjuirano 1,435 trudnica pušačica i 4,772 trudnica nepušačica. Zabilježeni su klinički, antropometrijski i sociodemografski podaci, podaci o pušenju, ishodu poroda i određivana je koncentracija hemoglobina majkama i novorođenčadi. Obje skupine bile su slične u antropometrijskim i kliničkim značajkama, trajanju trudnoće i načinu poroda. Porodna težina novorođenčadi pušačica bila je značajno manja, niža i koncentracija hemoglobina u majki pušačica, ali koncentracija fetalnog hemoglobina bila je značajno viša u novorođenčadi pušačica. Broj pušačica trudnica bio je značajno viši među gradskim ženama, onima s nižom razinom obrazovanja i među nezaposlenima. Također, trudnice pušačice značajno češće su uživale kavu i alkohol. Za daljnje smanjenje pušenja u trudnoći važno je nastaviti promovirati prestanak pušenja među maloljetnicama.