

Short Communication

Relation between Smoking Status and Depressive Symptoms in Early Pregnancy

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Abstract

Objective: Several studies have linked smoking to negative affect in different populations. The aim of this study was to evaluate if smoking is associated with the presence of depressive symptoms in pregnancy.

Methods: The sample comprised 738 early pregnant women from a specific health area in Spain. A questionnaire that included sociodemographic variables and questions about pregnancy and consumption of tobacco was used. To assess depressive symptoms two scales were used: The Beck Depression Inventory-II (BDI-II) and the Edinburg Postnatal Depression Scale (EPDS).

Results: Of the 738 women, 15.9% said they continued smoking, either occasionally or daily, after they knew they were pregnant. By comparing the data of smokers and non smokers, we found that the mean scores on the BDI-II (9.21 vs. 6.67) and the EPDS (7.0 vs. 4.92) are higher in pregnant smokers, and in both cases the differences were statistically significant ($p < .001$). We also found that the percentage of pregnant women with possible depression is higher among smokers, according to the BDI-II (11.1% vs. 3.5%) and the EPDS (30.8% vs. 14.0 %).

Conclusions: These results indicate an association between depression and smoking among pregnant women in this sample. Furthermore, high scores on the EPDS predict tobacco consumption in early pregnancy.

INTRODUCTION

The consequences of tobacco consumption on health are well known today [1]. In females these consequences can also cause gynaecological and reproductive problems. Particularly, smoking has been linked to fertility reduction and to an increase in complications during pregnancy. Thus, smoking during pregnancy is associated with an increasing incidence of placental pathology, low birth weight, ectopic pregnancy, premature delivery, spontaneous abortions and perinatal death [1,2]. However, despite knowing these health risks of smoking during pregnancy, there are a high percentage of women who continue to smoke in this period of their lives.

Several studies have indicated that there is a relationship between tobacco consumption and different mental disorders, most notably depression [3-6]. Also, women are a special risk group and the prevalence of affective disorders is twice in them compared to men. In addition, pregnancy has been associated with depressive symptoms, due to the physiological changes caused and has been recognized as a stressful life event [7]; and

as happens with the tobacco consumption, antenatal depression has been linked also to a worse general health status and to negative consequences on offspring outcomes [8].

The aim of this study was to evaluate if, in this sample of pregnant women, smoking tobacco is associated with the presence of depressive symptoms. We propose the hypothesis that those pregnant women who continue to smoke exhibit greater suspicion of depression and higher scores on depressive symptoms.

MATERIAL AND METHODS

Participants

The sample consists of 738 early pregnant women (< 20 weeks of gestation) from a specific health area of Spain. The age range of the sample comprises 18 to 46 years, with mean age 32.83 years (S.D. = 4.32). Most of them (83.3%) were married or living with a partner. The 55.4% were primiparous, for the 32.7% it was their second pregnancy and the remaining 11.9% included women for whom this was their third or subsequent pregnancy.

Instruments

An *ad hoc* Questionnaire that included sociodemographic variables and questions about pregnancy and tobacco consumption was used. Moreover, two scales were used to assess depressive symptoms:

The *Beck Depression Inventory-II* (BDI-II; Beck, Steer and Brown, 1996) assesses the presence and severity of depressive symptoms shown in the last two weeks. It is a screening questionnaire consisting of 21 items, with four alternative answers in severity ascending order, except items 16 (changes in sleep pattern) and 18 (changes in appetite) that contain seven response options. It is a self-administered inventory and subjects must select the answer that best reflects their situation in the two prior weeks. Each item is scored from 0 to 3 points depending on the alternative chosen, so that the range of the scale goes from 0 to 63 and the cut off is 19. The validation of the Spanish version of the BDI-II was made by Sanz et al. [9].

The *Edinburg Postnatal Depression Scale* [10] is a self-administered scale designed to detect postpartum depressive states. It assesses cognitive and emotional symptoms, excluding somatic symptoms of depression, with one exception, one of its items asks about sleep difficulties. It is a scale composed of 10 items with 4 response options, whose scores are between 0 and 3 in increasing order of severity of symptoms. The scale range is between 0 and 30, higher scores indicating greater severity. This scale is the most used internationally for the detection of depressive symptoms in the postpartum, although it is also used to assess depression during pregnancy [11]. The cut off of the scale is different depending on the country and this varies between 9 and 13.

Procedure

The evaluation of this sample was performed in the first trimester of pregnancy, when pregnant women attended the midwife's consulting room in their Health Center for first or second prenatal consultations. Before administering the questionnaires, we informed the women of the aims of the study and asked for their consent. Once the informed consent was signed, relevant instructions were provided to complete the questionnaires, being present at all times an investigator in order to resolve any doubts that may appear. Self-report of smoking abstinence was verified by performing a biochemical test. Specifically, urinary cotinine was assessed by Cotinine Test Medi-marketing (cut off 200 ng / ml).

RESULTS

Of the 738 pregnant women evaluated, 15.9% said they continued smoking, either occasionally or daily, after they found out they were pregnant.

Comparing the data of smokers and non smokers, we found that the mean scores on the BDI-II (9.21 vs. 6.67) and the EPDS (7.0 vs. 4.92) are higher in pregnant smokers, and in both cases the differences were statistically significant ($p < .001$).

We also found that the percentage of pregnant women with suspected depression (Figure 1) was higher among smokers, with the BDI-II (11.1% vs. 3.5%) and with the EPDS (30.8% vs. 14.0% and 21.4% vs. 8.7%).

There are significant differences in the percentages of suspected depression among smokers and non smokers in both the BDI-II ($p < .001$) and the EPDS ($p < .001$), using two cut offs (≥ 10 y ≥ 12), with a higher percentage of suspected depression among smokers (Table 1).

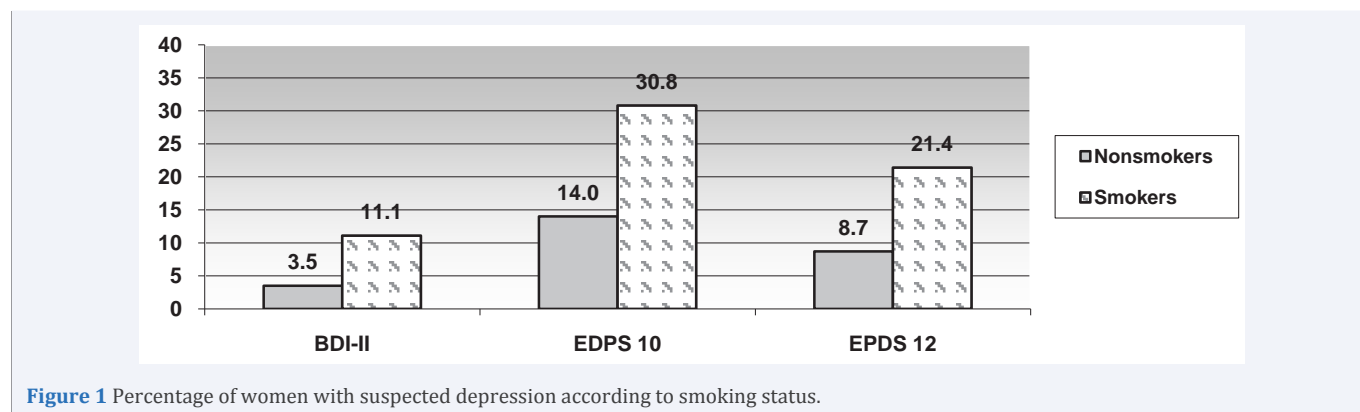


Figure 1 Percentage of women with suspected depression according to smoking status.

Table 1: Suspicion of depression (BDI-II and EPDS) according to smoking status.

		Non smokers	Smokers	χ^2	p	Cramer's V
BDI-II	n	22	13	11.483	< .001	0.130
	%	3.5	11.1%			
EPDS ≥ 10	n	87	36	19.910	< .001	0.164
	%	14.0%	30.8%			
EPDS ≥ 12	n	54	25	16.539	< .001	0.150
	%	8.7%	21.4%			

BDI-II: Beck Depression Inventory-II; EPDS: Edinburg Postnatal Depression Scale

Finally, a binary logistic regression was used to see what variables predict the tobacco consumption. The dependent variable was the smoking status (smoker / non smoker) and as independent variables has been introduced: age, marital status (partner / no partner), parity (primiparous / no primiparous), the score on the BDI and the score on the EPDS. We found that the predictor of tobacco consumption during early pregnancy was the EPDS score ($p < .001$).

CONCLUSIONS

In this sample, pregnant smokers have a greater depressive symptomatology and a greater suspected of depression compared to those non smokers. Furthermore, high scores on the EPDS predict tobacco consumption in early pregnancy.

Several mechanisms may explain this strong relatedness. The present findings may support the theory that suggests that smokers use cigarettes to regulate negative affect, and these symptoms of negative affect are precisely what keeps tobacco consumption during pregnancy [12,13]. Specifically, the belief that smoking is an effective method of coping with negative affect (self medication hypothesis) is commonly reported and provides a motivation for continuing to smoke among those women who experience emotional difficulties. Also, another hypothesis is that women who are depressed and continue to smoke during pregnancy is because they may have addictive personalities making it more difficult for them to stop smoking, like what happens with other drug abusers' groups [14].

A limitation of this study is the cross-sectional design, which keeps from answering the question of causality. Future research should explore more deeply the possibility of causal connections. It is important to analyze this association to determine whether we can speak about a simple relationship, a relationship modulated by other variables, or a causal relationship. It would be necessary to replicate it and carry out a long-term follow-up in order to draw some firmer conclusions. In any case, the study also has strengths. It was carried out on a large sample of pregnant women and the assessment of the relationship between depression and smoking was done with two measurement instruments pointing in the same direction.

In sum, the results of the current study provide a contribution to the literature on the associations between smoking, depression and pregnancy. However, more research is necessary to understand the possible multi-faceted association between smoking and depression in pregnancy. Anyway, these results should be taken into account when designing a psychological intervention for smoking cessation aimed to pregnant women, since it is clear that to be aware of health risks of smoking during pregnancy is not sufficient to prompt women to quit smoking.

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