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Description of tobacco addiction in pregnant women

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Abstract

Objective: To compare the characteristics of a group of pregnant women who smoked until delivery with women who gave up smoking during pregnancy.
Study design: Questionnaire-based, descriptive study of 979 pregnant women in four regions of France. The variables analysed included the characteristics of the mother and neonate at delivery, the smoking habits of the mother before and during pregnancy, the perception of risk linked to smoking, and the reasons for giving up smoking.
Results: Eighteen percent of women smoked until delivery. Fifty-five percent of women gave up smoking during pregnancy, usually in the first trimester. Women who failed to give up smoking were more disadvantaged psychosocially and were more likely to live alone. There was a higher level of dependency among women who failed to give up smoking and a lower perception of risk to the foetus. Among the women who had tried to reduce their tobacco consumption without success, 6% stated that they had been motivated by medical information compared to 28% of women who succeeded in stopping smoking.
Conclusions: Despite the risks associated with smoking the number of pregnant women who smoke until delivery remains high. Knowledge of the psychosocial profile and degree of dependency of these patients is an important step to managing this problem.

Keywords: Pregnancy; Tobacco withdrawal; Dependency; Psychosocial profile; Motivation; Fetal risk

1. Introduction

Smoking is a national public health scourge, which affects young women. In France in 1998, 40% of women starting pregnancy smoked at least one cigarette per day [1]. Recent years have seen an increase in tobacco use by women while the opposite trend is true in men [1].

Most women choose to give up smoking at the start of pregnancy, but many only manage to reduce their daily cigarette consumption [2]. Smoking during pregnancy is associated with prematurity, slow development in utero and in the unweaned infant, the risk of sudden death, and respiratory pathology. In the USA, the harmful effects of smoking represent 11% of the total medical costs attributed to pregnancies with complications at birth [3]. It has been demonstrated, however, that the effects of smoking on slow fetal development can be reduced even if women stop smoking in the third trimester of pregnancy [4]. It therefore appears that is never too late to try and give up smoking.

The aim of this study was to compare the characteristics of a population of women who smoked until delivery with those of women who gave up smoking during pregnancy.

2. Materials and methods

This questionnaire-based, descriptive survey was carried out on pregnant women in four regions of France: Nord-Pas de Calais, Languedoc-Roussillon, Haute-Normandie and

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l'Ile de France. According to the Baromètre Santé 2000 (French national health survey in 2000) the percentage of regular smokers between 15 and 75 years of age in these different departments was 25.5%, 30.0%, 33.8% and 29.8%, respectively, compared with a mean of 28.3% in metropolitan France [5]. The study was conducted between May and June 2002.

The two investigators who collected the study data by visiting the maternity hospitals were clinicians who specialised in tobacco-related addiction. The questionnaire and methods for setting up the study were explained to the investigators. All questionnaires were filled in the presence of the mothers who were asked about their smoking habits before they became pregnant. Only women who had given birth the same day or two days before the investigator's visit were included in the study. To be considered as a smoker, women must have smoked at least one cigarette per day, as usually defined. The study included only women who gave birth to live babies, born in public or private maternity units, or born outside these units but transferred there later.

All maternity units which carried out more than 1500 deliveries annually were included in the study. Taking the number of births during 1999 as the baseline, 887 theoretical inclusions were expected from these large maternity units. For smaller units carrying out fewer deliveries, a subset of forty such units was chosen from all possible units in order to reduce travel time. This selection was made using a lottery method. For all possible small maternity units (i.e. <1500 deliveries/year), 861 theoretical births were expected. For the forty units selected, 221 theoretical inclusions were expected. Taking all units together, 1108 births were thus expected annually.

The exclusion criteria were as follows: refusal of the mother to answer the questions, or inability to contact her, women who left the maternity unit before the investigator arrived, linguistic difficulties, serious pathologies of the mother or baby, medical termination of pregnancy, and perinatal fetal mortality. To ensure confidentiality, the investigators were not allowed access to any patient's medical file and did not know the exact number of deliveries during the inclusion period.

The expected level of smokers was approximately 40% [6], and therefore with a sample size of 1000 patients it was estimated that 400 women smokers could be recruited. One hundred establishments were chosen. Hakansson et al. demonstrated that this sample size allows satisfactory evaluation of factors associated with smoking and tobacco withdrawal during pregnancy [7].

The variables analysed in the questionnaire included the characteristics of the mother and of the neonate at delivery, the smoking habits of the mother before and during pregnancy, the perception of risk linked to smoking, the degree of difficulty in giving up smoking and the reasons for giving up smoking.

The Chi square test was used to analyse qualitative variables and the Student's *t*-test for quantitative variables. $p < 0.05$ was taken to indicate significant difference.

3. Results

Eleven establishments failed to take part in the study: nine small maternity units because the hospital was closed (representing 25 theoretical eligible pregnancies), one because the administrators did not authorise the investigators to visit, and one because of an inclusion error due to two establishments having the same name (these two establishments, which were large maternity units, represented 29 theoretical eligible cases).

A total of 770 questionnaires were collected from the large maternity units and 209 from the smaller units. The principal characteristics of the study population compared with the figures obtained from perinatal studies in 1995 and 1998 are shown in Table 1. Distribution of the total population between non-smokers and smokers with their respective repartition is given in Fig. 1.

At the start of pregnancy 39% of women in the small maternity units smoked compared with 29% in the large maternity units. Women who gave birth in the large maternity units were asked about their smoking habits during pregnancy significantly more frequently (80% versus 65%, $p < 0.05$). There was no difference in the number of women who gave up smoking during pregnancy between these two groups, nor of their perception of smoking or stopping smoking.

Comparison of women who had never smoked with women who smoked until delivery revealed significant differences (Table 2). Although more women who smoked underwent emergency caesareans (17.5% versus 14.8%), this difference was not statistically significant.

Among the 303 women who smoked at the start of pregnancy, 126 (41.6%) succeeded in giving up smoking during pregnancy, 106 (84.1%) of these during the first trimester. Of the women who smoked until delivery, 96.6% attempted to reduce or stop smoking completely during pregnancy (171/177). The complete results are shown in

Table 1
Characteristics of the study population

	1995 [6] (%)	1998 [6] (%)	Current study (%)
Parity 1	41.5	42.8	44.0
Professional occupation	60.2	64.3	64.8
Women 30–39 years of age	38.1	42.2	46.6
Living alone	7.0	7.0	10.5
Smoker until the third trimester	25.1	25	18.1*
Delivery <37 weeks of pregnancy	5.4	6.8	4.5
Forceps or ventouse extraction	14.1	12.5	13.3
Birth weight >3500 g	33.0	32.3	35.3
Hospitalisation of the neonate	8.7	8.2	4.5

* Smokers until delivery.