

Smoking and Chronic Respiratory Symptoms: Prevalence in Male and Female Smokers

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Abstract: The relationship between respiratory symptoms and smoking habits, according to sex, was studied in 899 adults (average age 39, 55 per cent male) in a Paris industrial medical center. The relative risk of having chronic bronchitis among smokers, compared to nonsmokers, was higher in females (3.3) than in males (1.6). The prevalence of chronic respiratory symptoms, dyspnoea and wheezing was more closely associated with the number of cigarettes smoked per day in females than in males. No confounding factor was found to be responsible for these results. (*Am J Public Health* 70:271-273, 1980.)

The importance of smoking in the etiology of respiratory diseases has been stressed by many authors.¹⁻³ The object of our survey was to study the relationship between respiratory symptoms and smoking habits, according to sex.

Material and Methods

The survey was conducted in a Paris industrial medical center, from January to December 1976.* Eight hundred ninety-nine adults filled in a simple self-administered questionnaire,** a French version of Standard Medical Research

*People come to these centers to undergo the annual medical examination which is compulsory for wage-earners in France.

**Respiratory symptoms, history of broncho-pulmonary diseases, socio-professional category, occupational exposure to smoke or dust, housing conditions and smoking habits.

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Council questionnaire.^{4, 5} Vital capacity and Forced Expiratory Volume in one second (FEV₁) were measured by means of a dry spirometer (Vitalograph).

The variables studied were defined as follows:

- *Smokers*: subjects who gave an affirmative answer to the question "Do you smoke cigarettes?" (Present smokers);
- *Ex-smokers*: former subjects who had stopped smoking for at least one year (excluded from most analyses);
- *Quantity of cigarettes*: the average number of cigarettes smoked per day during the last 10 years;
- *Chronic respiratory symptoms*: cough and/or phlegm, on most days, for 3 months on end every year, for at least 2 years; and
- *Dyspnoea*: an affirmative answer to the question "do you get short of breath walking with other people of your own age on level ground?".

To analyze the spirometric data we used the variable "FEV₁/Height³" described by Fletcher and others.⁶

Ninety one per cent of the 899 adults included in the study were French; the average age was 39; 55 per cent were males. The distribution by occupational classes is shown in Table 1. The proportion of cigarettes smokers was higher among males (57.0 per cent) than among females (41.4 per cent). There were 94 ex-smokers (70 males and 24 females). Figure 1 gives the age distribution of the male and female non-smokers and present cigarette smokers. The average age for male smokers was 36.9 years, for female smokers 34.6 years (no significant difference). Males had started smoking earlier than females (18.6 years old compared to 20.8). The proportion of heavy smokers was higher among males (41 per cent versus 25.8 per cent, more than a pack a day).

Results

The frequency of subjects with chronic respiratory symptoms was higher in smokers (25.8 per cent) than in non-

TABLE 1—Distribution of the Survey Population by Occupational Classes and Sex

Occupational Class	Males		Females	
	Numbers	Per Cent	Numbers	Per Cent
Professional and managerial people	46	9.2	14	3.5
Trained personnel	133	26.7	73	18.2
Bank clerks and office workers	56	11.3	182	45.4
Actors and show business people	148	29.7	51	12.7
Manual workers and domestic staff	104	20.9	78	19.5
Unknown profession	11	2.2	3	0.7
TOTAL	498	100.0	401	100.0

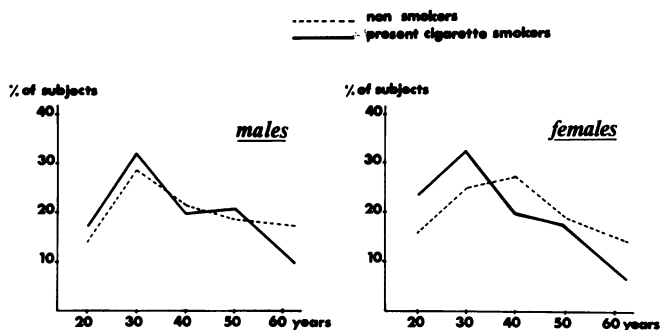


FIGURE 1—Age Distribution of Males and Females by Smoking Status

smokers (11.3 per cent) ($P < 0.001$), the relative risk being 2.3. But this relative risk was higher in females (3.3) than in males (1.6), as shown in Figure 2. Moreover the prevalence of respiratory symptoms was more closely associated with the number of cigarettes smoked per day in females than in males (Figure 3).

The prevalence of dyspnoea was significantly higher in smoking females (19.3 per cent) than in non-smoking females (11.1 per cent) $P = 0.05$, whereas that difference was not significant in males. In males dyspnoea was not associated

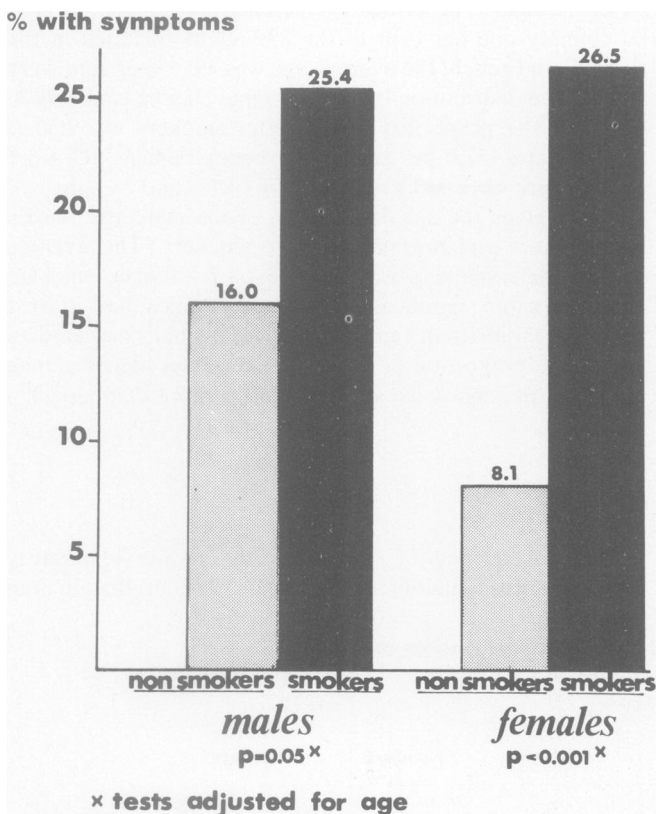


FIGURE 2—Frequency of Subjects with Chronic Respiratory Symptoms According to Smoking Status and Sex*

*Tests for both males and females were first made by χ^2 with one degree of freedom, then confirmed by adjustment tests, both by the Boyd and Doll and the Cochran methods, to take into account the age which was considered as a qualitative variable.

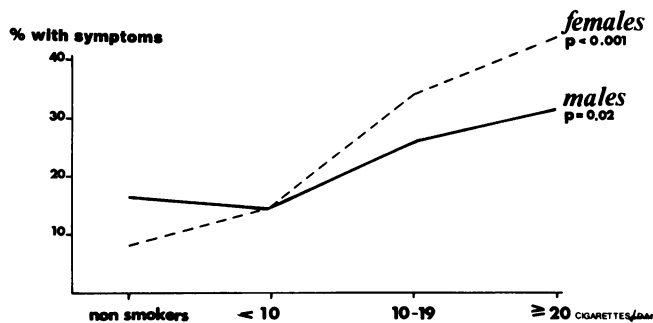


FIGURE 3—Frequency of Subjects with Chronic Respiratory Symptoms According to Smoking Categories and Sex (P values: χ^2 with 3 degrees of freedom)

with the quantity of cigarettes smoked per day, while in females such an association was found (Figure 4). The prevalence of wheezing was associated with the number of cigarettes smoked per day in the two sexes, but more closely in females (Figure 4).

A relationship between FEV_1/H^3 and cigarettes consumption existed in females (Table 2), whereas no significant association was found in males.

As for ex-smokers, no significant difference appeared between the prevalence of respiratory symptoms in males (11.4 per cent) and females (12.5 per cent).

Discussion

The results of this survey confirmed the relationship between respiratory symptoms and smoking habits. Females appeared to be more vulnerable than males: in fact, when they smoked, the relative risk of having respiratory symptoms was 3.3 times higher than when they did not smoke, whereas in males that risk was 1.6 times higher. This risk was also associated with the number of cigarettes smoked per day. After making adjustment tests for all confounding factors (age, social class, occupational exposure, history of broncho-pulmonary diseases, housing conditions and civil status), we concluded that none of the factors studied was responsible for the associations found.

From 1967 to 1969, Freour and Coudray^{7, 8} made a survey on a representative sample of the population of Bordeaux, France. In males, the prevalence of morning coughing lasting at least three years was almost three times higher

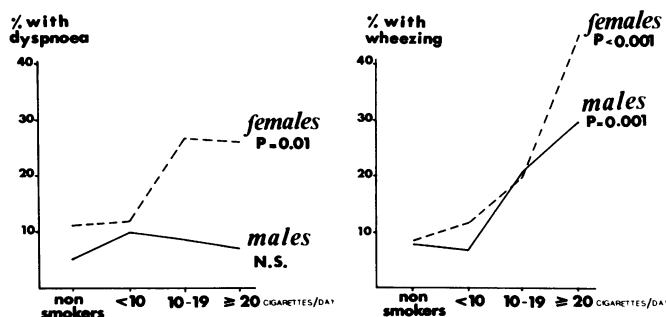


FIGURE 4—Prevalence of Dyspnoea and Wheezing According to Smoking Categories and Sex (P values: χ^2 with 3 degrees of freedom)

TABLE 2—Age-Adjusted FEV/H³ Means by Smoking

Sex	Non-Smokers	<10 Cig./Day	10 to 19 Cig./Day	≥20 Cig./Day	Age-Adjusted Tests*
Males	72.2	72.3	71.4	68.2	NS
Females	64.4	67.5	64.1	58.7	P = 0.01

*P value by analysis of covariance (smoking categories being a qualitative variable and FEV/H³ and age being quantitative variables).

in smokers than in nonsmokers, whereas in smoking females that prevalence was nearly eight times higher than in non-smoking females. In a survey made in Boston, Massachusetts in 1976, Tager and Speizer⁹ found a higher prevalence of respiratory symptoms in males than in females, but the risk attributable to smoking was higher in females. Eighty two per cent of the observed prevalence of chronic bronchitis in smokers could be attributed to cigarette smoking, but this rate was 76 per cent in males and 90 per cent in females. In a survey made in Cheshire, England, Rimington¹⁰ found that in each category of smokers, males had a higher prevalence of chronic bronchitis than females, but that difference decreased as the number of cigarettes smoked per day increased.

In the other papers reporting findings similar to ours, the crude prevalence of respiratory problems has always been found to be higher in males than in females, whether non-smokers or smokers. In our study male nonsmokers had a higher prevalence than female nonsmokers, and this could not be explained with the available data; but the prevalence of respiratory problems in female smokers equalled that in male smokers.

This survey has numerous shortcomings, especially in its choice of subjects studied: the sample was not representative. However, an etiological survey is especially biased when the choice of the population is influenced by the risk factor *and* the disease; and in our case, all subjects were involved because of a compulsory annual medical examination.

We conclude that this problem should be studied in various populations, preferably on a greater number of individuals. If our results are replicated, females must be told of the

special risk to them with smoking; women often are not concerned with these problems, believing only males are involved.

It is also important to establish as precisely as possible what risk factors *other than smoking* are responsible for the high prevalence of respiratory symptoms found in men.

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JACEP Renamed 'Annals of Emergency Medicine'

The official journal of the American College of Emergency Physicians and the University Association for Emergency Medicine has been given a new title. Beginning January 1, 1980, the journal, formerly known as *JACEP*, was renamed *Annals of Emergency Medicine*.

The name change was made in order to more accurately reflect the journal's representation of all aspects of the medical specialty—emergency medicine. The journal will continue its heavy emphasis on the clinical aspects of emergency medicine while expanding its coverage of the broad scope of medical and management problems facing emergency physicians.

The American College of Emergency Physicians, chartered 1968, is a national organization of nearly 10,000 licensed physicians who have a significant involvement in emergency medicine. The University Association for Emergency Medicine promotes implementation and improvement of educational and research programs related to emergency medicine, and provides a forum for exchange of ideas and information by medical schools.