

Smoking Among Adolescents: Population Study on Parental and School Influences

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OBJECTIVE: Smoking represents a public health problem, one which begins during adolescence. The main objective of this study was to analyze the association between smoking and parental and school factors.

SUBJECTS AND METHOD: The study sample consisted of the students from the 20 secondary schools in the region of Osona, Barcelona, Spain. A self-report questionnaire was used to obtain information on the following variables: smoking habit, age of initiation, frequency, type of school (state school or private-subsidized), sex, age, persons living in the home, town, whether the student had lunch at school, whether the student often had lunch or dinner alone at home.

RESULTS: A total of 2280 students participated in the study (91%). Mean age was 15.5 years. Of the participants, 20% said they were smokers; 5%, ex-smokers; 34% had tried smoking at least once, and 41% had never smoked. Factors significantly associated with smoking in the multivariate analysis were age, rural town, state school, single parent family, eating alone, and not lunching at school.

CONCLUSIONS: Smoking prevalence is high among adolescents in our society and there is no gender difference. Our results show that family structure and dynamics can influence smoking in adolescents. Smoking is less prevalent among adolescents who have lunch at school.

Key words: *Adolescents. Smoking. Prevalence. Risk factors. Schools.*

Consumo de tabaco en adolescentes.
Estudio poblacional sobre las influencias parentales y escolares

OBJETIVO: El consumo de tabaco es un problema de salud pública cuya iniciación ocurre en la adolescencia. El objetivo principal de este estudio fue analizar la asociación entre consumo de tabaco y factores parentales y escolares.

SUJETOS Y MÉTODO: La muestra del estudio fueron los 20 centros que imparten educación secundaria obligatoria en la comarca de Osona (Barcelona). Se utilizó un cuestionario autoadministrado que contenía las siguientes variables: consumo de tabaco, edad de inicio, frecuencia de consumo, tipo de centro (público o concertado), sexo, edad, convivencia, población, utilización del comedor escolar y si habitualmente comían o cenaban solos en su domicilio.

RESULTADOS: Un total de 2.280 alumnos participaron en el estudio (91% de participación). La edad media fue de 15,5 años. Un 20% de los adolescentes se declararon fumadores, un 5% ex fumadores, un 34% lo había probado alguna vez y un 41% no había fumado nunca. Los factores asociados significativamente al consumo de tabaco en el análisis multivariado fueron: edad, población rural, asistir a un centro público, estructura familiar monoparental, comer en solitario y no utilizar el comedor escolar.

CONCLUSIONES: El consumo de tabaco entre los adolescentes de nuestro medio es elevado y no existen diferencias por sexo. Nuestros resultados indican que la estructura y dinámica familiares podrían influir en el consumo de tabaco en la adolescencia. La utilización del comedor escolar se asocia a un menor consumo de tabaco.

Palabras clave: *Adolescentes. Tabaquismo. Prevalencia. Factores de riesgo. Escuelas.*

Introduction

Smoking is a major risk factor for preventable chronic diseases and mortality in Spain.^{1,2} Smoking and exposure to smoke affect the onset and development of asthma in adolescents.³⁻⁵

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Smoking initiation currently occurs at around 13 years of age,⁶ with a tendency towards increasingly younger ages.⁷ Adolescents who smoke at an early age are more likely to smoke as adults.⁸ The prevalence of adolescent smokers in Spain is 29%.⁶ Some studies have observed a higher prevalence of smoking among girls than boys,^{6,9} while other studies have found no differences between the sexes.¹⁰⁻¹²

Many factors have been found to influence smoking initiation including genetic susceptibility and social conditioning.⁷ According to several studies, family structure and relationships could affect smoking habits.^{13,14}

TABLE 1
Sample Characteristics (n = 2208)

Sociodemographic Variables	Number of Subjects (%)
Sex	
Boys	1087 (49.2)
Girls	1121 (50.8)
Age, years	
14	580 (26.3)
15	1007 (45.6)
16	571 (25.9)
17	50 (2.2)
School type	
Private-subsidized	1068 (48.4)
Public	1140 (51.6)
Residence	
Urban	1043 (47.2)
Rural	1165 (52.8)
Family structure	
Two parent	1967 (89.1)
Single parent	241 (10.9)
Has lunch at school	
No	1596 (72.3)
Yes	612 (27.7)
Has lunch or dinner alone at home	
No	1476 (66.8)
Yes	732 (33.2)

The objective of this study was to determine smoking prevalence and to study the association between smoking and parental and school factors among students in the third and fourth year of secondary school.

Subjects and Method

Study Population

The study was carried out in the region of Osona (130 000 inhabitants), 70 kilometers (40 miles) northeast of Barcelona, Spain. There are 51 municipalities in the region, 3 of which are urban (population of more than 10 000) and 48, rural. The region's 20 secondary schools, 10 public and 10 private-subsidized, agreed to participate in the study. Parents of the participating adolescents were sent a letter describing the study and asking for consent. The research committee of the Hospital General de Vic approved the study. Data was collected during the month of May 2003.

Data Collection

A voluntary, self-administered questionnaire was completed by the students in the classroom, unsupervised by teachers. The information collected included sociodemographic variables, family structure (whether students lived with 1 or 2 parents), whether students ate alone at home or had lunch at school, smoking habit (never smoked, occasionally smokes, ex-smoker, current smoker), age of initiation to smoking, frequency in the previous 30 days (never, less than once a week, occasionally during the week, daily, and number of cigarettes a day).

Statistical Analysis

The results of the questionnaires were digitized and interpreted using a program which recognized written

characters (Teleform, version 8.0); correction of the reading was done manually. The results were entered in a data base (Access 97) and data was cleaned as appropriate.

A descriptive analysis was made of the variables. Bivariate analysis to study the association between smoking and each of the qualitative variables was carried out with the χ^2 . Simple logistic regression was used for the multivariate analysis. SPSS version 12.0 was used for the statistical analysis. A *P* value less than .05 was regarded as significant.

Results

Of the 2496 third and fourth year secondary students enrolled in the Osona region, 2280 (91%) participated in the study. Reasons for not participating were absence from school on the day of the questionnaire (79%) and refusal to participate (21%). Of the 2280 students who answered the questionnaire, 2208 presented valid data and were included in the study sample.

Sample characteristics are presented in Table 1. Mean (SD) age was 15.5 (0.7) years and 50.8% of the students were girls and 49.2% boys.

Of the students, 19.9% said they were current smokers; 4.7%, ex-smokers; 34.0% had tried smoking, and 41.4% had never smoked (Table 2). Most of the self-declared smokers smoked daily, mean number of cigarettes smoked per day was 5.8 (5.2), and mean age of initiation was 12.9 (1.7). No significant differences were found between the sexes with regard to smoking.

In the bivariate analysis, variables significantly associated with smoking were older age, rural residence, public schooling, single parent family, and having meals alone (Table 3).

In the multivariate analysis we found similar associations: type of school (odds ratio [OR] for public schools, 1.4; 95% confidence intervals [CI], 1.1-1.7), residence (OR for urban, 1.5; 95% CI, 1.1-1.9), single parent family (OR, 1.7; 95% CI, 1.2-2.3), lunch at school (OR, 0.7; 95% CI, 0.5-0.9), and having meals alone (OR, 2.2; 95% CI, 1.8-2.7) were independently and significantly associated with smoking (Table 3).

Discussion

According to our results, 20% of adolescents between the ages of 14 and 17 considered themselves smokers. Family structure and dynamics can influence smoking initiation in adolescents.

Smoking prevalence is high in our study, although not as high as that found in studies published between 2000 and 2004. In a study performed in Granada, 39% of 12-to-16-year-olds were smokers¹⁵; in Malaga, 32% of 14-to-16-year-olds¹²; in Catalonia, 28% of 12-to-19-year-olds,¹¹ and in Salamanca, 20% of 12-to-14-year-olds.¹⁰ The differences in prevalence could be partly accounted for by the study region and the sample age range, although it could also indicate a recent overall decrease in smoking. Our study sample targeted all students registered in the region and the high level of participation (91%) leads us to believe that the results

TABLE 2
Smoking Habit and Age of Initiation*

	Boys (n = 1087)	Girls (n = 1121)	Total (n = 2208)
Smoking prevalence			
Never smoked	461 (42.5)	454 (40.6)	915 (41.4)
Has tried smoking	345 (31.7)	404 (36.0)	749 (34.0)
Ex-smoker	59 (5.4)	46 (4.1)	105 (4.7)
Current smoker	222 (20.4)	217 (19.3)	439 (19.9)
Age at which smoked first cigarette†	12.6 (1.9)	13.1 (1.5)	12.9 (1.7)
Smoking frequency (last 30 days)			
None	725 (66.7)	723 (64.5)	1.448 (65.6)
Less than 1/wk	72 (6.6)	114 (10.2)	186 (8.4)
Occasionally during the week	102 (9.4)	112 (10.0)	214 (9.7)
Daily	188 (17.3)	172 (15.3)	360 (16.3)
Cigarettes/d			
1-4	43 (22.9)	38 (22.1)	81 (22.5)
5-9	64 (34.0)	63 (36.6)	127 (35.3)
10-14	42 (22.4)	31 (18.0)	73 (20.3)
15-19	14 (7.4)	21 (12.2)	35 (9.7)
20-24	10 (5.4)	10 (5.9)	20 (5.5)
25-30	1 (0.5)	3 (1.7)	4 (1.2)
No answer	14 (7.4)	6 (3.5)	20 (5.5)

*Results expressed as number (%).

†Results expressed as means (SD).

TABLE 3
Smoking and Sociodemographic Factors: Crude and Adjusted Odds Ratios*

Characteristics	Number of Smokers (%)	Crude OR (95% CI)	Adjusted OR (95% CI)
Sex			
Boys	222 (20.4)		
Girls	217 (19.4)	0.9 (0.8-1.1)	0.9 (0.8-1.2)
Age, years			
14	80 (13.8)		
15	197 (19.6)	1.5 (1.1-2.0)	1.5 (1.1-2.0)
16	138 (24.2)	2.0 (1.5-2.7)	1.8 (1.3-2.5)
17	24 (48.0)	5.8 (3.2-10.5)	4.2 (2.2-7.9)
Residence			
Urban	182 (17.4)		
Rural	257 (22.1)	1.3 (1.1-1.6)	1.5 (1.1-1.9)
School type			
Private-subsidized	173 (16.2)		
Public	266 (23.3)	1.6 (1.3-1.9)	1.4 (1.1-1.7)
Family structure			
Two parent	367 (18.7)		
Single parent	72 (29.9)	1.9 (1.4-2.5)	1.7 (1.2-2.3)
Has lunch at school			
No	329 (20.6)		
Yes	110 (18.0)	0.8 (0.7-1.1)	0.7 (0.5-0.9)
Has lunch or dinner alone at home			
No	220 (14.9)		
Yes	219 (29.9)	2.4 (2.0-3.0)	2.2 (1.8-2.7)

*OR indicates odds ratio; CI, confidence interval.

are highly representative of the 14-to-16-year-old school population.

Smoking initiation in our study occurred at around 13 years of age, consistent with the findings of other studies of students of similar ages.^{6,9,12} No significant differences were found between the sexes with regard to smoking distribution. This finding is also consistent with reports from other studies suggesting that the prevalence of smoking among girls may equal or even surpass the prevalence in boys.^{10,12,16,17}

Like Álvarez et al,⁹ we found a higher prevalence of smokers in rural municipalities, although other studies have not found differences regarding the municipality of residence.¹⁶⁻¹⁸ Possible explanations for varying results include the reduced sample size of some studies^{16,17} and the classification of urban or rural being made according to the location of the school,¹⁶⁻¹⁸ whereas in our study it was made according to the student's residence, irrespective of the location of the school he or she attended.

Unlike other authors,^{10,13,18,19} we found significant differences between students at public schools and private-subsidized schools, prevalence of smoking being higher in the public ones. We think this result might be due to differences in the restrictions on smoking at the various schools or in the socioeconomic characteristics of the students.

One of the most interesting results of our study was that having lunch at school was a prevention factor against smoking. This association could be a consequence of the rules against smoking at schools.

Family structure and dynamics could influence the initiation of smoking. Smoking prevalence among adolescents who live with a single parent is higher than those who live with both. This association agrees with earlier European and north American studies.^{13,14}

Finally, our results showed that adolescents who habitually had meals alone at home smoked more than those who had meals with the family. This result could be related to results of several studies which found an association between lack of communication, support, care, and attention after school on the part of parents towards their children and higher smoking prevalence.^{14,20-23}

Our results show that there is currently high prevalence of smokers among adolescents. Effective prevention programs should be run, directed particularly at adolescents who are at greater risk of initiating smoking, in order to reduce the prevalence of adult smokers.

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