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ORIGINALES

Factors associated with cigarette experimentation among adolescents

Fatores associados à experimentação do cigarro entre adolescentes

Factores asociados a la experimentación del cigarrillo entre adolescentes

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ABSTRACT:

Objective: The present study aims to identify the prevalence and factors associated with cigarette experimentation among adolescents.

Method: Cross-sectional, descriptive and analytical epidemiological study carried out with a simple random sample of students aged 14-19 years enrolled in public high schools in the urban area of the city of Jequié, in the state of Bahia. After the A self-administered questionnaire of voluntary completion was used after the participants (or their parents/guardians in the case of participants under 18) signed the free informed consent form. Data was entered with Epi DATA software and SPSS software was used to calculate the prevalence ratio and perform Poisson regression**.**

Results: The study sample consisted of 765 adolescents, as follows: 59.9% were female individuals, 80.4% were non-white, 71.4% did not have a paid job, 74% lived in low-income families, and 37.9% used alcohol. The mean age was 16.55 years (sd ± 1.33) years. The prevalence of smoking experimentation was 22.4%. The variables: parental smoking (PR = 1.57, 95% CI: 1.15-2.12), smoking friends (RP = 2.15, 95% CI: 1.56-2.95), alcohol drinking (OR = 2.05, 95% CI: 1.46-2.88), and age group (RP = 1.36, 95% CI: 1.01-1.84) were the best predictors of the risk for experimentation with cigarettes among high school students.

Conclusions: The prevalence of experimentation was 22.4%, and the variables that best predicted the likelihood of experimenting with tobacco among high school students were smoking parents, smoking friends, alcohol use and aged 17-19 years.

Key words: tobacco; epidemiology; adolescent health; risk factors

RESUMO:

Objetivo: O presente estudo visa identificar a prevalência e fatores associados à experimentação de tabaco em adolescentes.
Método: Estudo epidemiológico, transversal, descritivo e analítico realizado com uma amostra aleatória simples, de escolares com idade de 14 a 19 anos, matriculada em escolas públicas de ensino médio da rede estadual da área urbana do município de Jequié-BA. Utilizou-se um questionário auto-aplicável de preenchimento voluntário, após assinatura do termo de consentimento livre e esclarecido pelo responsável quando menor de 18 anos. Empregou-se o programa Epi DATA para a digitação dos dados e programa SPSS para calcular a razão de prevalência e realizar a regressão de Poisson.
Resultados: Participaram do estudo 765 adolescentes, sendo 59,9% do sexo feminino, 80,4% de etnia não branca, 71,4% sem ocupação remunerada, 74% menos favorecidos economicamente e 37,9% fazem uso de bebida alcoólica. A média de idade foi de 16,55 anos (dp±1,33) anos. A prevalência da experimentação de tabaco foi de 22,4%. As variáveis: pais fumam (RP=1,57; IC95%:1,15-2,12), amigos fumam (RP=2,15; IC95%:1,56-2,95), uso de bebidas alcoólicas (RP=2,05; IC95%:1,46-2,88) e grupo etário (RP= 1,36; IC95%:1,01-1,84) foram as que melhor permitiram prever o risco de um escolar vir a experimentar tabaco.
Conclusões: A prevalência de experimentação foi 22,4%, e as variáveis que melhor permitiram prever a predisposição de um escolar vir a experimentar o tabaco foram possuir pais fumantes, ter amigos que fumam, fazer uso de bebidas alcoólicas e serem do grupo etário de 17 a 19 anos.

Palavras-chave: tabaco; epidemiologia; saúde do adolescente; fatores de risco.

RESUMEN:

Objetivo: El presente estudio pretende identificar la prevalencia y factores asociados a la experimentación de tabaco en adolescentes.
Método: El estudio epidemiológico, transversal, descriptivo y analítico realizado con una muestra aleatoria simple de escolares con edad de 14 a 19 años, matriculados en escuelas públicas de enseñanza media de la red estadual del área urbana del municipio de Jequié-BA. Se utilizó un cuestionario auto-aplicable de llenado voluntario, tras la firma del término de consentimiento libre y aclarado por el responsable cuando menor de 18 años. Se empleó el programa Epi DATA para la digitación de los datos y programa SPSS para calcular la razón de prevalencia y realizar la regresión de Poisson.
Resultados: En el estudio de 765 adolescentes, siendo 59,9% del sexo femenino, 80,4% de etnia no blanca, 71,4% sin ocupación remunerada, 74% menos favorecidos económicamente y 37,9% consumen bebida alcohólica. El promedio de edad fue de 16,55 años (dp ± 1,33) años. La prevalencia de la experimentación de tabaco fue del 22,4%. Las variables: padres fuman (RP = 1,57, IC95%: 1,15-2,12), amigos fuman (RP = 2,15, IC95%: 1,56-2,95), uso de bebidas alcohólicas PR = 2,05; IC del 95%: 1.46 a 2.88) y la edad (OR = 1,36; IC del 95%: 1,01-1,84) fueron los que permitieron predecir mejor el riesgo de que un escolar experimente con el tabaco.
Conclusiones: La prevalencia de experimentación fue 22,4%, y las variables que mejor permitieron predecir la predisposición de un escolar a experimentar el tabaco fueron tener padres fumadores, tener amigos que fuman, hacer uso de bebidas alcohólicas y ser del grupo de edad de 17 a 19 años.
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Palabras clave: tabaco; epidemiología; salud del adolescente; factores de riesgo.

INTRODUCTION

It is estimated that tobacco use causes nearly six million deaths per year worldwide, and about 600,000 people die every year from exposure to secondhand smoke worldwide. The prevalence of tobacco use in the world is estimated at about 22%, being higher in men (37%) than in women (7%). Smoking increases the risk of cardiovascular diseases, cancer, respiratory diseases, diabetes mellitus and premature deaths [(1)].

A survey conducted with Brazilian adolescents in 26 capitals and the Federal District found prevalence rates of 22.7% for cigarette experimentation, 6.1% smoker regular and 7.1% tried other tobacco products, with half of these smokers regular[2]. Another study shows a prevalence of 29.3% for tobacco experimentation, and states that 14.5% started smoking before the age of twelve [3]. Other studies [4, 5] also showed early cigarette experimentation by children and adolescents, beginning around 11 years of age.

In view of the aforementioned, the tobacco industry has targeted its marketing to teens and young adults, as they are likely to experiment with tobacco when they have smoking parents and friends. Therefore, controlling the exposure of smoking characters in the cinematic media should be considered to prevent tobacco experimentation [5]. In Brazil, a high prevalence of tobacco experimentation has been detected in adolescents enrolled in public high schools [6-8]. However, tobacco experimentation has also been found among students enrolled in private schools [9, 10]. In the capitals of Brazilian states the prevalence of cigarette experimentation is higher among male students, except for the states of Paraná and Rio Grande do Sul [11].

Data from studies conducted in Brazil and worldwide revealed that adolescents are the group with the highest risk for smoking initiation [11]. Thus, in the 1990s, Brazil has banned tobacco sales to minors under 18 years to reduce this prevalence. However, due to lack of enforcement, such legislation failed to prevent adolescents from buying cigarettes [5], So, more effective control of the retail sale of cigarettes and other tobacco products is required. [12].

Adolescents are influenced by environments such as family, group of friends, community, advertising and school setting. These environments play a key role in the initiation of adolescents in tobacco use. Moreover, since adolescence is a stage of transition to adulthood, a period marked by doubts and needs for peer acceptance, tobacco experimentation is an education issue, rather than merely a public health one[13].

Given that tobacco experimentation is a key factor for youngsters to initiate smoking[1], the present study aimed to identify the prevalence and factors associated with tobacco experimentation in adolescents living in the city.

METHOD

Cross-sectional, descriptive and analytical epidemiological study with adolescents aged 14-19 years enrolled in public high schools in the urban area of the city of Jequié, Bahia.

Eligibility criteria were participants aged of 14-19 years, enrolled in public high schools, in the morning, afternoon and evening shifts; present in the classroom at the time of data collection and submission of the free informed consent form signed by their parents/guardians in the case of participants under 18.

The sample was calculated using a prevalence of 10% for tobacco consumption, 95% confidence level and 2% accuracy, resulting in an initial sample of 714 students. To compensate for possible losses and refusals, 30% was added to the final sample, which was composed of 928 students. Simple random sampling without replacement

was used. In order to identify the sample interval (n = 4), the school population was divided by the value obtained in the sample calculation. Then, the first sampling element was drawn and the sampling interval was added successively.

Data was collected through a self-administered instrument validated and used in the Vigescola study[11], and a questionnaire was proposed by the Brazilian Marketing Research Association (ABEP) to evaluate the economic classification [14].The instrument contained socio-demographic variables (gender, age, economic status, ethnicity, paternal and maternal education, religious belief, paid work, persons living with the respondent and breadwinner) related to smoking (cigarette experimentation, smoking parents and friends) and alcohol drinking.

As a dependent variable, in this study tobacco experimenters were considered high school students who at some point in their life tried or experimented cigarettes, even if only one or two puffs. The variables age group, parental schooling, and economic status were classified, respectively, in 14 to 16 and 17 to 19 years old, low educational level (<8 years of schooling) and high educational level (> 8 years), higher economic status (A2, B1 and B2) and low economic status (C1, C2, D and E).

Data was collected in the period of July-September 2012 by a standardized team, in the classrooms or in the school auditorium. No teachers or school coordinators were present at the collection site during data collection. Any misunderstandings or doubts during the completion of the questionnaire were clarified by the research staff. To ensure data confidentiality, each respondent placed the completed questionnaire, without identification, inside a box.

Descriptive analysis of the variables was performed, calculating the absolute and relative frequencies, as well as the mean and standard deviation for the continuous variables. Association between tobacco experimentation (dependent variable) and sociodemographic, economic data, alcoholic beverages and the influence of family environment and friends (independent variables) was tested using Poisson regression. Robust models were calculated to estimate the prevalence ratios (PR), with their respective 95% confidence intervals (95% CI). In all analyzes, the statistical significance was 20% (p <0.20). The data were tabulated and analyzed using SPSS for Windows, version 15.0

The study was approved by the Research Ethics Committee of Universidade Estadual do Sudoeste da Bahia (CEP/UESB), under protocol no. 212/2011.

RESULTS

The sample consisted of 765 school adolescents with an average age of 16.5 years (SD ± 1.33). The causes of losses and refusals were partially completed questionnaires, lack of parental authorization, and the fact that some students did not feel comfortable participating in the study

Table 1 contains data related to the characterization of the sample of high school students

Table 1. Socioeconomic-demographic characteristics, tobacco experimentation, smoking friends and family members, and alcohol drinking among high school students **(**N=765). Jequié-BA, Brazil, 2012.

Variable	n	%
Gender		
Male	307	40.1
Female	458	59.9
Ethnicity		
White	149	19.6
Not white	610	80.4
Age group		
14 – 16 years	390	51.8
17 – 19 years	363	48.2
Religious beliefs		
Yes	659	85.1
No	115	14.9
Paid job		
Yes	214	28.3
No	542	71.7
Lives with		
Father and mother	420	54.4
Father	20	2.6
Mother	169	21.9
Parents and grandparents	32	4.1
Grandparents	45	5.8
Others	86	11.2
Breadwinner		
Father/mother	640	82.5
Others	127	15.5
Economic status		
Low income family	202	26.0
High income family	574	74.0
Paternal education		
Low educational level	397	54.7
High educational level	329	45.3
Maternal education		
Low educational level	355	42.3
High educational level	396	52.7
Cigarette experimentation		
Yes	171	22.4
No	494	76.3
Age of initiation of tobacco use		
I never smoked	596	79.3
07 – 11 years	34	4.5
12 – 15 years	79	10.6
16 – 18 or over	42	5.6
Parental smoking		
They don’t smoke	596	79.1
Both smoke	23	3.1
Only my father smokes	81	10.8
Only my mother smokes	29	3.9

I do not have parents	05	0.7
I don't know	14	1.9
Smoking friends		
None	471	63.3
Some	236	31.8
Most	37	4.9
Alcohol drinking		
Yes	260	37.9
No	426	62.1

Source: Research data

As it can be seen in table 1, most individuals were female subjects (59.9%), non-white (80.4%), 14-16 year old (51.8%), with religious beliefs (85, 1%), who had no paid job (71.1%), who live with father and mother (54.4%), of low income families (74.0%), whose parents are the breadwinners (82.5%), whose parents have low educational level (54.7%), whose mothers have a high level of education (52.7%), whose parents (79.1%) and friends (63.3%) don't smoke and don't drink alcohol regularly (62.1%).

The prevalence of tobacco experimentation was 22.4%, and of these, 10.6% were aged 12 -15 years old.

Table 2 contains data from the bivariate analysis of tobacco experimentation and associated factors among adolescent high school students.

Table 2. Tobacco experimentation and associated factors among high school students

Variable/ Category	Tobacco experimentation				Gross PR	(IC95%)	P value
	Yes		No				
	n	%	n	%			
Gender							
Male	86	28.1	220	71.9	0.65	0.50 to 0.85	0.002
Female	83	18.5	365	81,5			
Ethnicity							
White	29	19.5	120	80.5	1.18	0.82 to 1.69	0.35
Not white	138	23.1	460	61.5			
Paid job							
Yes	63	30.0	147	70.0	1.57	1.19 to 2,05	0.001
No	102	19,1	432	80,9			
Age group							
14-16 years	71	18,3	316	81,7	0.67	0.51 to 0.88	0.005
17-19 years	96	27.0	259	73.0			
Religious belief							
Yes	32	27.8	83	72,2	1.30	0.94to 1.81	0.11
No	138	21.3	510	78.7			
Lives with							
Parents/Father or Mother	125	20.8	476	79.2	1.36	1.01 to 1.82	0.39
Others	45	28.3	114	71.7			
Breadwinner							
Father/Mother	131	20.8	499	79.2	1.42	1.04 to 1.94	0.26
Others	37	29.6	88	70.4			

Economic status							
Low income family	52	25.9	149	74.1	0.81	0.61 to 1.07	0.14
High income family	118	21.0	445	79.0			
Paternal education							
High	70	21.3	259	78.7	1,04	0.79 to 1.38	0.74
Low	90	22.7	307	77.3			
Maternal education							
High	79	19.9	317	80.1	1.10	0.84 to 1.44	0.45
Low	88	24.8	267	75.2			
Parental smoking							
Yes	45	34.1	87	65.9	1.72	1.29 to 2.30	<0.001
No	116	19.7	472	80.3			
Smoking friends							
Yes	101	34.3	169	65.7	2.59	1.97 to 3.39	<0.001
No	67	14.4	397	85.6			
Alcohol drinking							
Yes	96	37.4	161	62.6	3.08	2.28 to 4.17	<0.001
No	51	12.1	370	87.9			

Source: Research data

Based on Table 2, there is a statistically significant difference between tobacco experi tation and the variables: gender (p = 0.002, PR = 0.65, 95% CI = 0.50-0.85), paid work (P = 0.001, PR = 1.57, 95% CI = 1.19-2.05), age group (p = 0.005, PR = 0.67, 95% CI = 0.51-0.88), smoking parents (p = 0.001, PR = 1.72, 95% CI = 1.29-2.30), smoking friends (p = 0.001, PR = 2.59, 95% CI = 1.97-3.39), and alcohol drinking (p = 0.001, PR = 3.08, 95% CI = 2.28-4.17), Students who have smoking friends (crude PR = 2.59) and who drink alcohol regularly (gross PR = 3.08) are at the highest risk of experiencing tobacco

Table 3. Poisson regression model used to identify variables associated with tobacco experimentation by adolescents Jequié, Bahia, Brazil, 2012**.**

Variable	Adjusted PR	IC 95%	P value
Parental smoking	1.57	(1.15 to 2.12)	0.004
Smoking friends	2.15	(1.56 to 2.95)	<0.001
Alcohol drinking	2.05	(1.46 to 2.88)	<0.001
Paid job	1.24	(0.92 to 1.67)	0.14
Male gender	0.75	(0.57 to 1.05)	0.05
Age group	1.36	(1.01 to 1.84)	0.04

Source: Research data

The variables: gender, age group, paid work, religious belief, economic class, parents who use tobacco, friends who smoke and use alcohol regularly were inserted in the multiple analysis. As shown in Table 3, the predictive model generated allowed the identification of the set of variables that best predict the predisposition of a student to experience tobacco, as follows: parental smoking (p = 0.004, PR = 1.57, 95% CI = 1.15-2.12), smoking friends (p <0.001, PR = 2.15, 95% CI = 1.56-2, 95% CI = 1.46-2.88), 17-19 age group (p = 0.04, PR = 1.36, 95% CI = 1.01-1.84).

The variables gender (p gross analysis =0.002, p = adjusted analysis = 0.05), and paid work (p gross analysis = 0.001; p adjusted analysis = 0.14) lost statistical significance in multiple analysis (Table 3) compared to gross analyzes (Table 2).

DISCUSSION

The present study allowed the identification of the risk factors associated with tobacco experimentation in adolescents living in a city in the inland of Bahia.

The prevalence of tobacco experimentation in the studied population was 22.4%, corroborating with data from a study with 61,037 adolescents living in Brazilian capitals (22.7%) [2], and a study conducted in Uruguaiana, Rio Grande do Sul (29 .3%) [3].

Another important aspect to be considered regarding tobacco experimentation is the age of initiation. In the present study, the mean age was 16.55 years, higher than that the one found in other studies on the subject, and 10.6% of the respondents aged 12 - 15 years reported tobacco experimentation. A study with children with a mean age of 11.5 years found that 13.3% of them had previously experimented cigarettes [5]. Another study showed a similar mean for the age of first cigarette trial 11.1 years (5-14 years). In Uruguaiana, 14.5% of adolescents started smoking before 12 years of age [3], and in Santarém-PA, the mean age of students during cigarette experimentation was 12.37 years (SD ± 1.84 years) [6].

There is a growing concern with the identification of health risk behaviors in adolescents, such as smoking, since this time of life is characterized by exploration of unknown and "forbidden" territories. Habits acquired in adolescence can persist and lead to dependence, jeopardizing the health of the individuals throughout life. Tobacco experimentation may be an important indicator of predictive risk for illicit drug use [7] and for the consolidation of smoking [13, 15].

The earlier the initiation and dependence on tobacco use, the greater the risks for sickening and premature death in mature age, and the difference of years in the beginning of cigarette smoking may increase almost twice the risk of health problems [16]. Therefore, it is important to implement and expand effective public policies to prevent tobacco consumption, especially for adolescents, aiming to reduce experimentation and transition from tobacco to continuous use of cigarettes, and to the development of non-chronic diseases. communicable diseases [1, 6, 9].

In the present study, the variables that best predict adolescents who may experience tobacco are age group, smoking parents, smoking friends, and adolescents who drink alcohol.

Regarding age, it was found that the individuals aged 17-19 years were more likely to experiment tobacco. A study with adolescents living in Brazilian capitals where the probability of experimentation and regular use of smoking increases with age corroborates our findings [2]. Similar results were also found in brown-colored older boys from high-income families [10, with students from Cuiabá-MT [8 and with students of Varzea Grande-MT regarding narghile use, which was associated with the final period of adolescence [9].

The present study found that the risk of experiencing tobacco is higher in adolescents who have smoking parents and friends. The presence of a smoker at home and having smoking friends are significant risk factors for the onset of smoking. A study with adolescents aged 12-19 years in Uruguaiana, Rio Grande do Sul, reported an association between the habit of smoking and having a smoking friend (OR: 5.67, 95%

CI 2,06-7,09)[3]. Another study based on data from the National Survey of School Health - 2012 found that adolescents who have smoking friends and parents and spend more time with smoking persons are more likely to experience tobacco, (OR = 4.27, IC 95% 3.82-4.77) [2].

For students of public schools in the State of Pará, tobacco consumption by parents and friends was also associated with experimentation [6].These results show the importance of social relationships for the formation and decision making of adolescents, given that in this stage, the individuals search for a sense of self and personal identity.

A study with adolescent students from Jequié, Bahia, found that students who regularly drink alcohol were at a higher risk of tobacco experimentation (OR = 2.05). Alcohol has become a factor associated with cigarette experimentation and the habit of smoking, either in children (p <0.001) [5] or in adolescents who have experimented smoking[6]. Thus, more public investments are needed to reduce tobacco experimentation and alcohol drinking, since both are extremely harmful for individuals of all ages.

The present study had some limitations, as follows: 1) its cross-sectional design that makes it difficult to derive causal relationships; 2) the fact that data collection covers only adolescents enrolled in public high schools in the urban area of the municipality; and 3) information bias, since, despite the guarantee of anonymity, some students may have omitted the experimentation of tobacco or alcohol use due to self-censorship, shame or memory bias.

On the other hand, the possibility of information bias in the study is reduced because the sample is composed of high school students from public schools located in the study site. In addition; epidemiological investigations with a cross-sectional design are relevant for the development of public policies. We suggest new prospective studies to assess the causal relationship between the factors that influence the risk for tobacco experimentation in adolescents and, consequently, dependence and health damage in adulthood.

CONCLUSION

There was a high prevalence of tobacco experimentation among high school students aged 14-19 years of public schools in the urban area of the city of Jequié, Bahia.

The set of variables that best identifies the risk factors that may lead adolescent students to experience tobacco in the study population were smoking parents, smoking friends, regular alcohol drinking, and age group 17-19 years.

The results obtained indicate the need to implement more effective local public policies aimed to prevent tobacco experimentation and ensure proper treatment for smokers, since adolescents with smoking parents and friends are more likely to experiment cigarettes.

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