

ORIGINAL RESEARCH

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Association between anger management and cigarette consumption in adolescents

Asociación entre control de la ira y consumo de cigarrillos en adolescentes

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| Abstract |

Introduction: Cigarette smoking in adolescents is associated with a set of variables such as sex, age, anxiety disorders, depression and secondhand smoke (parents, siblings and friends). However, the association between anger management and smoking among adolescent students has been poorly studied in Colombia.

Objective: To quantify the association between anger management in high school students in Cartagena, Colombia.

Materials and methods: A cross-sectional survey designed for adolescent students of sixth and seventh grade in high school. Anger management was quantified through a seven-item version of the Spielberger's Inventory for State-Trait Anger Expression (Cronbach's alpha: 0.73) and through the input of the participants who have smoked at least once.

Results: A total of 1 090 students between ages 10 to 18 ($\mu=12.3$, $\sigma=1.1$), attending sixth and seventh grades, took part in the study; 565 (52.1%) were female. A group of 269 students (24.7%) reported low anger control, and 127 (11.7%) stated they had smoked at least once. After age and sex adjustment, the association between anger and smoking was not statistically significant (OR=1.35; 95%CI: 0.89-2.04).

Conclusions: Anger management is a variable independent from cigarette smoking among teenager students.

Keywords: Anger; Smoking; Adolescent; Students; Cross-Sectional Studies (MeSH).

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| Resumen |

Introducción. En adolescentes, el consumo de cigarrillos se asocia a un conjunto de variables como género, edad, trastornos de ansiedad, depresión y padres, hermanos y amigos fumadores. No obstante, en

Colombia se ha explorado poco la asociación entre el control de la ira y el tabaquismo en adolescentes escolarizados.

Objetivo. Cuantificar la asociación entre el control de la ira y el consumo de cigarrillos en estudiantes de bachillerato de Cartagena, Colombia.

Materiales y métodos. Investigación transversal en la que participaron estudiantes de sexto y séptimo grado. Se cuantificó el control de la ira con siete ítems del Inventario Ira Estado-Rasgo de Spielberger (alfa de Cronbach 0.73) y con el informe de consumo de cigarrillos alguna vez en la vida.

Resultados. Participaron 1 090 estudiantes de sexto y séptimo grado entre 10 y 18 años ($\mu=12.3$, $\sigma=1.1$), de los cuales 565 (52.1%) fueron mujeres. 269 (24.7%) adolescentes reportaron bajo control de la ira y 127 (11.7%) consumo de cigarrillos alguna vez en la vida. Después de ajustar por edad y sexo, la asociación entre control de la ira y consumo de cigarrillos no fue estadísticamente significativa (OR=1.35; IC95%: 0.89-2.04).

Conclusiones: El control de la ira es independiente al consumo de cigarrillos en estudiantes adolescentes.

Palabras clave: Ira; Hábito de fumar; Adolescente; Estudiantes; Estudios transversales (DeCS).

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Introduction

Regular consumption of cigarettes is the most important cause of preventable diseases; however, preventive interventions of long-term illnesses caused by smoking, which may appear in adulthood, in childhood and adolescence, have not been implemented satisfactorily (1). Similarly, some public health measures implemented are inefficient, as children and adolescents continue with regular consumption of cigarettes even after being intervened (2,3).

In adolescents, cigarette smoking is associated with a set of variables or proximal, intermediate and distal determinants (4-7). In Colombia, for example, the first group of determinants shows that consumption is more frequent in men than in women, increases progressively with age and is associated with depressive symptoms (8-10).

In other contexts, among the proximal determinants, some research on adolescent populations have studied the relation between anger management and cigarette smoking; however, the available findings are not consistent. On the one hand, Nichols *et al.* (11) showed a statistically significant relationship between anger management and cigarette consumption, while Griffins *et al.* (12) found no relation at all. These associations have not been explored in Colombian adolescent students, but knowing them may support the implementation of strategies for the prevention of smoking from a comprehensive perspective of all the determinants related to the initiation, transition to regular consumption and consolidation of the dependence on nicotine, while positively influencing the general welfare of adolescents (13).

The objective of this research was to estimate the relation between anger management and at least one-time consumption of cigarettes in a sample of adolescent students of public schools in Cartagena, Colombia.

Method

Design and ethical considerations

An observational, analytical and cross-sectional study was designed; the study was reviewed and approved by the Research Ethics Institutional Committee of Universidad de Cartagena. Parents or legal guardians signed a written informed consent for authorizing the participation of the adolescents. Students also consented their participation in this study.

Participation in this study represented minimal risk to students, since, according to Resolution 8430 of 1993 (14), no physical nor psychosocial intervention was conducted.

Population and sample

The participation of sixth and seventh grade students from public educational institutions of Cartagena was requested. A cluster sampling was used and each cluster was represented by students of the same classroom, who were selected through a simple random sampling. A sample of 800 students was planned for an expected frequency of low anger control of 25%, with a margin of error of 3% in the estimated prevalence, and confidence level of 95% (15).

To the initial estimate of students, 20% more were included, which meant the addition of 160 students in order to remedy the eventual loss of participants due to the school absence during the days in which information was gathered, and possible incomplete forms that are usually found in this type of research (16).

The calculation of the sample considered the possible association between low anger management and history of cigarette consumption. The Odds Ratio (OR) for the association was estimated at 2.0, which is considered a moderate ratio between two variables; for this estimate, an alpha error value of 5% and beta error of 20% were taken, which gave the study a power of 80% to reject the null hypothesis (15). Also, the sample size allowed the estimation of a sufficiently accurate confidence interval (17).

Measurements

Students from 20 schools completed an anonymous questionnaire in the classroom under the supervision of a research assistant.

The questionnaire included questions about age, sex, education level and at least one time consumption of cigarettes. Anger management was also quantified using the Spielberger's State-Trait Anger Expression Inventory, in a version of seven scales. Each scale offered three response options that were rated from 0 to 2: much, little or nothing. Total scores ranged from zero to fourteen (18). Since data showed a non-symmetrical distribution, a cutoff of seven, representing the third quartile, was taken to indicate anger under control.

The instrument used has shown high internal consistency in Spanish students (19) and this sample shows acceptable evidence of internal consistency (Cronbach's alpha 0.73), an estimator of reliability and validity (20).

Statistical Analysis

Frequencies and percentages for the variables studied were estimated. In addition quartiles, minimum value, maximum value, mean (μ) and standard deviation (σ) were identified for scores on anger control. To estimate the correlation between anger and cigarette consumption at least once, OR was calculated with confidence intervals of 95% (CI95%). Computations were performed using SPSS package version 16.0 (21).

Results

A total of 1 090 students between ages 10 to 18 ($\mu=12.3$, $\sigma=1.1$) participated in this study, of which 676 (62.0%) were 10 to 12 years old, 565 (51.8%) were women and 525 (48.2%) men. The distribution by completed grade showed that 629 (57.7%) were in sixth grade and 461 (42.3%) in seventh grade. Regarding the main variables of interest, 127 (11.7%) of the respondents reported cigarette consumption at least once in their life and 963 (88.3%) denied such consumption.

Scores for anger control were found between 0 and 14, with a mean of 4.6 ($\sigma=2.9$), median 4.0, mode 3.0, 25th percentile of 2.0 and 75th quartile of 6.0. The distribution of values was skewed and the test was performed according to Shapiro-Francia. A total of 269 (24.7%) students had scores of seven or more and were categorized as students with low anger control.

A raw association between low anger control and at least one-time consumption of cigarettes did not reach a statistically significant value. The association continued to be not significant even after adjusting age and sex (OR=1.35, 95%CI: 0.89-2.04). Table 1 shows details of the participants based on those who reported at least one-time consumption of cigarettes.

Table 1. Comparison of participants based on those who reported at least one-time consumption of cigarettes.

Variable	Smokers (%)	Non-Smokers (%)	OR (CI 95%)
Age 13 to 18	60.6	35.0	2.86 (1.96-4.18)
Male	66.9	45.7	2.40 (1.63-3.56)
Seventh grade	49.6	41.3	1.40 (0.96-2.02)
Low family income *	74.0	77.4	1.20 (0.78-1.83)
Low anger control	30.7	23.9	1.41 (0.94-2.12)

* Equal or less than three minimum wages.

Source: Own elaboration based on the data obtained in the study.

Discussion

Since no significant association was found, this study is evidence that anger is a variable unrelated to cigarette consumption in adolescent students from Cartagena. Some previous studies reporting on this relation are mentioned below.

Griffins *et al.* (12), with a sample of 5 442 sixth graders in New York City, found no statistically significant relation between the variables. Similarly, Asetline *et al.* (22) observed in a group of 939 high school students from Boston that anger and hostility in response to negative life events is not associated with marijuana use. However, Nichols *et al.* (11), also with a group of sixth graders in New York, found that low anger control and lifetime consumption of cigarettes kept a significant statistical correlation.

It is possible that the observed differences are related to the complexity of the concept “anger” (23); also the question asked only referred to lifetime consumption of cigarettes and frequency may often become a determining factor; Rubinstein *et al.* (24) showed that anger in adolescents only increased cigarette consumption in those who had a daily pattern of consumption and who reported occasional use.

Some research show that negative emotional states —stress, general dissatisfaction, sadness, angst, hostility and irritability— are related to cigarette smoking (8,25-31). Similarly, suppression, control or expression of anger are complex variables that influence a broad and diverse set of individual, family, cultural and social factors that may influence smoking practices (32-34).

Preventive interventions should strengthen those individual characteristics or conditions that reduce the onset of smoking and discourage experimentation. Furthermore, preventive measures for the initiation of cigarette smoking should consider as many determinants as possible —proximal, intermediate and distal— and, given the high complexity of the phenomenon, actions must be taken at both inter-sectoral and cross-sectoral levels (4-13,25-31,35,36).

Since few studies have explored this association, this research is a contribution to the knowledge of the relationship between anger control and smoking in adolescents. However, limitations included the participation of students from public educational institutions, including only sixth and seventh grade students, and a cohort composed only by young adolescents.

In conclusion, anger control is independent from cigarette smoking in sixth and seventh grade adolescents from public educational institutions in Cartagena. Studies on other individual variables related to cigarette smoking should be conducted in order to obtain more input for possible preventive actions. Also, the student sample should include participant with a higher average age, from both public and private schools.

Conflict of interests

None stated by the authors.

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