Atención Primaria

SCIENTIFIC ARTICLE

Tobacco consumption in adolescents and school performance

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Abstract

Objectives: To determine the percentage of adolescent smokers, identify the sociodemographic variables, predictors of school performance of adolescents and analyse the relationship between tobacco use and school performance.

Design: Quantitative, analytical, cross-sectional, descriptive, correlational, explanatory and retrospective study.

Setting: 2nd and 3rd Cycle Basic School in the Viseu Municipality, Portugal, 2011-2012.

Participants: Non-probability convenience sampling, with 380 students from the 7th, 8th and 9th grades, aged between 11 and 17 years.

Measurements: Data collected by questionnaire with socio-demographic information, smoking behaviour, and school performance scale (adapted from Fermin, 2005).

Results: The prevalence of adolescents who smoke was 12.4%. Daily smokers are more boys than girls (55%) and over the age of 15 years (47.81%). Academic achievement is higher in girls (p < 0.001), the younger students (p < 0.001), and in those with a parent with secondary or higher education (p = 0.019) and students who do not smoke (p = 0.001).

Conclusions: Tobacco use is associated with decreased school performance. It is important to identify risk groups and develop prevention policies, starting in the school, in the field of addictive behaviour, due to impacts at the individual, family, school and social level.

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Introduction

Among the health determinants related to lifestyle, the use of tobacco stands out. According to data from the World Health Organization,[1] about 4.9 million people a year around the world, die due to tobacco consumption. If this consumption is not reduced, the WHO estimates that, in 2020/2030, this figure will reach 10 million people a year, as reported by the Health Ministry in 2005. Tobacco use is the leading single cause of disease (12.2%) and is the leading cause of morbidity and mortality. Many teenagers start smoking as a social integration feature —"it is stylish", "to look like an adult", to enhance "self-esteem and self-image" - as well as for group integration.[2,3]

Adolescent girls who smoke appear more rebellious and self-assured, while boys use smoking as a mechanism to compensate for their social insecurity.[4] The belief that smoking helps control weight is overly exploited in cigarettes advertisements where smoking appears strongly associated with an ideal feminine image, marked by elegance, charm, sensuality, independence and social desirability.[4]

In the report on the Study on Alcohol, Tobacco and Drugs Consumptions and Other Addictive Behaviours - 2015 (ESPAD-EN ECATD CAD - 2015), in Portugal, promoted by the Intervention Service in Addictions and Dependencies Behaviours/Ministry of Health (SICAD/MS) in conjunction with the General Directorate of Education/Ministry of Education (DGE/ME), with a sample of 18,000 students from public education (basic and secondary school) aged 13-18 years, 40% of students have tried tobacco consuming (M-40%; F-41%), 30% were recent consumptions (previous 12 months) —(M-29%; F-31%) with significant gender differences and 20% refer the current consumption (previous 30 days) —(M-19% F-20%), considering the widespread consumption of cigarettes (rolling tobacco and electronic cigarettes). The same report showed that the experimental levels ranged from 12% for 13 year-old students and 59% in 18 year-old students.[5]

Data from the 4th National Health Survey (INS) allow the characterization of the consumption in the population aged ≥ 15 years and, according to the data obtained in 2006, 20.8% of the resident population in mainland Portugal was smoking. Among smokers, about 10.6% smoked only occasionally and 89.4% did so daily. The proportion of current smokers was higher in males: 30.5% vs. 11.8%. In both sexes, the highest was in the group from 35 to 44 years: 44.6% and 21.2%, respectively, in men and women.[6]

The dangers of tobacco bring a negative impact on the physical, mental and social domain not only for the smokers but also for non-smokers exposed to environmental tobacco pollution. Tobacco experimentation usually occurs in a group setting in which to be social accepted, the young man takes a cigarette to look like an adult. The greatest evil comes from the consequences to the body of continued tobacco use, as the reduction in physical function, headaches, feeling unable to breathe, asthenia, nausea, among other things. However, young people continue to smoke because they supposedly consider it to be the milestone that makes the jump to the new development stage in the life cycle.[7-10] A study with a sample of 5050 young people showed that 31.6% of 8th graders and 30.8% of 6th grade, with an average age of 14, most (94.4%) of Portuguese nationality, about 13% of students reported having a chronic illness (especially the asthma and allergies) and 1.5% reported a sensory or motor deficiency that affects the attendance and participation in school activities.[11] The Centre for Disease Control and Prevention (CDC) in conjunction with the data presented the Behaviour Survey National Youth Risk (YRBS) 2009 show a negative association between tobacco use and academic performance and students with higher grades are significantly less likely to engage in smoking behaviours than their peers with lower grades.

Experimentation and tobacco regular consumption arise in connection with a set of personal vulnerability factors often associated with other emerging interpersonal factors include family, peer group and school. The consequences associated with tobacco consumption, particularly in terms of school performance in adolescents indicate that we are facing a real problem of individual and public health, on which it is essential to act using various strategies and involving various actors.

Participants and methods

The study we have developed is a way to learn the lifestyles of teenagers, taking as reference points behaviours undertaken in society, in their daily school life, their integration in the family context, smoking habits, school performance and success and study habits. Thus, we conducted a quantitative study, essentially descriptive, with analysis and inference of some results.

Data were collected through a questionnaire with sociodemographic variables, contextual to school and academic, lifestyles and the Fermin scale adapted to the Portuguese population, to assess school performance.[12] The scale consists of closed questions allowing easier answers and to quickly sort the respondent in an objective category of results. For smoking, questioned whether the teenager smokes or not, and if so requested the frequency, number of cigarettes per day and week, and additionally if they contact routinely with people who have the habit of smoking.

Thus, outlined objectives are, to determine of the percentage of adolescent smokers, identify the sociodemographic variables, predictors of school performance of adolescents and analyse the relationship between tobacco use and school performance, as shown in the conceptual diagram (Fig. 1).

A non-probabilistic convenience sampling consisting of 380 adolescents attending the 7th, 8th and 9th grades in school year 2011/2012, 2nd and 3rd Cycle Basic School in the Viseu Municipality, Portugal. The proximity of the schools, the availability of participants for the study and collaboration of teachers in the application and collection of questionnaires, was a facilitator aspect of access to data. The study sample was composed of 380 adolescents who have a minimum age of 11 years and a maximum of 17 being the average age of 13.56 ± 1.23 years. The most prevalent age is 13 years.

Results

The results expressed no statistically significant differences by gender or age, although an analysis given by the testing
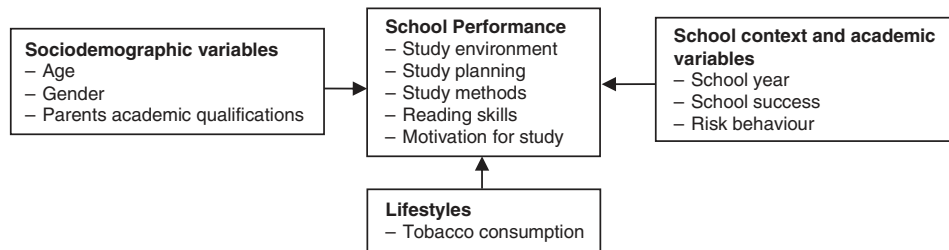
Figure 1   Conceptual diagram.

of adjusted residuals, may reveal that the differences reside in the aspects set out below:

The vast majority of adolescents (87.6%), nine out of ten, claims not smoking (being 90.7% female and 84.5% male).

Of the 12.4% of students who reported having smoking habits, the current rate of consumption as well as the number of cigarettes smoked per day and per week was determined, verifying that most of these adolescents (53.2%) smoke daily (M-55.2%; F-50%; $P = .852$). When the evaluation was for a week, 12.8% of students relays smoking once a week (M-13.8%) and 34% reported smoking occasionally, less than once per week (F-38.9%; F-31%).

Regarding the number of cigarettes smoked per day, on average girls smoke 3.61 ± 3.66 cigarettes and the boys 3.59 ± 3.45. The differences between groups are statistically significant, as verified by results of a t-test for the mean difference ($t = 2.409$; $P = .017$). Most teens smoke daily up to 4 cigarettes a day (63.8%), and in this group the boys smoke more (69% vs. 55.6%). However, for the same consumption or greater than five cigarettes per day, there is a smaller percentage (36.2%) is, however, noteworthy that girls are the major consumers (44.4% vs. 31.0%).

Per week, the average of smoked cigarettes is 19.13, and the older teens are the largest consumers —at 15 years, 47.8% consumes 3-20 cigarettes per day and the 14 year-olds 50% consume 2 or more cigarettes.

School performance and smoking habits

The UMW test, revealed that students who do not smoke present, in different dimensions, better school performance compared to smoking students, with statistical differences (Table 1), thus inferring that smoking habits have negative consequences for the academic performance of adolescents. Tobacco use is a predictor of school performance in all dimensions and in the overall in an inverse relationship.

With regard to socio-demographic variables, gender and age influence school performance in all subscales and the overall school performance, while parental education is a predictor for the study methods, the motivation to study and overall school performance. As for school and academic context variables the school year influences school performance in relation to the study planning, and school performance, distance from home to school and travel time are predictors of academic performance in its different dimensions. Tobacco use is a predictor of school performance in all dimensions.

Discussion

Among the researchers who conducted studies on the influence of the practice of healthy lifestyles and academic performance and in relation to tobacco use some authors[3,13] report results that showed relationship between smoking and academic success for both men and women. The use of tobacco products was associated with lower academic performance. The last Portuguese National Health Survey, 2005-2006, revealed a smoking prevalence of 20.6% for both sexes, in which there were more male smokers.

In the current study, no significant differences were found between gender and experimentation. However, male adolescents have higher smoking rate (15.5%) compared to females (9.3%). Within the vast majority of teens, nine out of ten states never having experienced smoking.

The study coordinated by Margarida Matos[11] held by the team "A Social Adventure and Health" in HBCs 2010, corroborates this result, as teenagers mostly state never having tried smoking, and no significant difference was found for tobacco experimentation, when comparing genders.

Of the 12.4% of adolescents who smoke, the majority (53.2%) smoke daily, with similar percentages in both sexes. These results are corroborated by other studies[12] where

Table 1   School performance and tobacco consumption in adolescents

Smoker	Average Sorting			
School performance	No (never consumed)	Yes (has smoked)	UMW	*P*
Study environment	195.91	152.18	6024.500	.010
Study planning	195.46	155.33	6172.500	.019
Study methods	198.89	131.04	5031.000	.000
Reading skills	197.46	141.16	5506.500	.001
Motivation for study	197.64	139.93	5448.500	.001
Overall school performance	197.81	138.69	5390.500	.001

most respondent teens do not smoke, revealing females as the biggest smoker. A team led by José Precioso[9] states that in the last decade, the consumption of tobacco in 15 year-olds stabilized; but an appreciable increase has to be considered in the adult and educated female population. ESPAD[5] also revealed consumption values of 40% (M-40%; F-41%) and experimentation of 12% in 13-year-old students, with girls having a higher consumption percentage. It appears that among students who smoke once a week (12.8%), the boys have higher percentage, but more girls (38.9%) smoke occasionally (less than once a week). In the ESPAD[5] there is 30% of recent consumption (M-29%; F-31%) in which 8% represent 13-year-old students, with gender differences, girls being the biggest consumers.[5]

In our study, about half of the 13-year-old students, consumes up to 20 cigarettes a week, a higher percentage than the 14 year-olds and lower in the 15 or more years old. Older students smoke more, regardless of frequency. These data are corroborated by another study[12] on the relationship between smoking habits and years of schooling, noting that older teens are heavier smokers. The data is also corroborated by studies of other authors,[3,11] with older teens smoking more, regardless of frequency. Also in 2015 ESPAD[5] the percentage of students who reported tobacco consumption, increases with age (4% in 13-year-old students and 32% for students under 18). Most teens smoke daily up to 4 cigarettes a day, and in this group the boys smoke more than girls. For all adolescents average daily cigarettes smoked cigarettes is 3.60. The coefficients of variation are mixed between both sexes, and frankly suggestive of high dispersions in young males. To some extent, this result is corroborated by other studies[12] as the largest tobacco consumption is between the older young people and, among those who smoke 80.4% of students over 19 years smoke daily. In the study for all the smoking adolescents, the mean weekly cigarettes smoked cigarettes is 19.13. About 40% of the students' smoke between 3-20 cigarettes per week, with boys than girls smoking that amount. Consuming amounts greater than one pack of cigarettes per week there is a considerable percentage of young people (31.9%).

We found that smoking habits have influence on academic performance, when students who do not smoke reveal, in the different dimensions, better school performance compared to those who smoke, with statistical significance, thus inferring that smoking habits have negative consequences for school performance. But among smokers, school performance did not differ with the frequency of consumption, and our study showed that routine smokers have a lower academic achievement compared to those who occasionally smoke. To counter these results, another study[12] showed that tobacco consumption is not constituted as school performance predictor in any of its subscales. In support of our study, the Centre for Disease Control and Prevention (CDC) in conjunction with the data presented the Behaviour Survey National Youth Risk (YRBS) 2009 show a negative association between tobacco use and academic performance after adjustment for gender, race/ethnicity, and national YRBS monitors risk behaviours to health that contribute to the leading causes of death, disability and social problems among youth and adults in the United States. The survey is conducted every two years, in public and private schools across the country and the studies carried out in the Centre

for Disease Control and Prevention (CDC), alluding to smoking "Tobacco Use and Academic Achievement"[14] students with higher grades are significantly less likely to engage in smoking behaviours.

The control of the epidemic requires the adoption of a wide range of measures for the prevention and treatment of smoking.[15]

Conclusions

This research revealed that most students do not smoke. However, students who smoke reveal lower school performance. The performance was associated with gender and age, revealing no statistically significant difference although an analysis given by the adjusted residuals test can reveal where the differences are.

Several international organizations (UN, UNESCO) recognize in the school, the key role in health education particularly in the smoking area, a social problem recognized as serious, originating in evaluative, cultural, socio-economic and idiosyncratic dynamics. The investment must go through training at the knowledge levels and cognitive, social and behavioural skills, which should be complemented with questions and/or doubts posed by people involved on this subject in the school context, in a parallel work with health prospects. Based on the idea that smoking prevention also prevents other consumptions of psychoactive substances, it is easy to recognize that the first experience with tobacco should be delayed as much as possible. It is thus reasonable to aim for education and training of young people from an early age, and the components of prevention programs should include emphasis on the acquisition of social skills, resistance to social pressure, increased staff

What we know about this theme

— The current prevalence of tobacco consumption is 4% in 13-year-old students increasing to 32% in 18-year-old students (ESPAD / Portugal 2015).
— There is a causal relationship between smoking habits and school performance which decreases with its consumption (ESPAD / Portugal 2015).

What we get out the study

— This study shows that the prevalence of tobacco use in a sample of 380 adolescents is 12.4% (15.5% male, 9.3% female), the prevalence of smoking up to 13 years old is 3.7%, with 14 years old is 2.6%, and with 15 or older is of 6.1%.
— It confirms the prevalence of tobacco consumption in adolescents obtained in other studies.
— Students who do not smoke present in different dimensions, better school performance
— It alerts us to the need for intervention in a school context to sensitize vulnerable groups, involve the family, promote cessation of tobacco consumption with a view to educational success.

efficiency and the transfer of knowledge regarding the negative consequences of smoking. The school should promote health in a safe environment; liaise with parents/guardians, local government, health services and other community services; integrate the health dimension (smoking prevention) in the educational project, the annual project activities in class curricula and other current activities of the school and address smoking issues and the physical, mental and social well-being involving all teaching and non-teaching staff in order to increase the level of skills/empowerment.

Acknowledgment

Conflicts of interest

The authors declare that there are no conflicts of interest.

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