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Tobacco use among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region, Portugal: a cross-sectional study

Consumo de tabaco entre adolescentes do 7º ano em escola da região de Lisboa e Vale do Tejo, Portugal: estudo transversal

Consumo de tabaco entre adolescentes de séptimo grado en una escuela de la región de Lisboa y Valle del Tajo, Portugal: estudio transversal

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Abstract

Objective: To characterize tobacco use, as well as the knowledge, beliefs, and attitudes related to its use among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region, Portugal. **Methods:** Descriptive, cross-sectional, exploratory study. The sample included 82 students enrolled in the 7th grade during the 2022/2023 academic year. The variables assessed were socioeconomic characteristics; prevalence of tobacco use; intention to experiment and to quit; exposure to environmental tobacco smoke; knowledge of the harms of tobacco; refusal skills; beliefs; and attitudes. Data were analyzed using the Statistical Package for the Social Sciences software. **Results:** The mean age was 12.8 years; 56.1% of participants were male. Of the total, 11% reported having tried smoking, and 3.6% were smokers. When confronted with an offer of tobacco, 75.6% stated they would refuse. Most participants recognized that tobacco is harmful to the lungs (89%), to overall health (74.4%), and to physical capacity (53.7%). **Conclusion:** The findings highlight the need for preventive programs targeting adolescents, with a focus on health promotion and increased literacy, with schools serving as a privileged setting for community-based educational and preventive actions.

Descriptors: Smoking Prevention; School Health Services; Adolescent Behavior; Health Promotion.

Whats is already known on this?
Tobacco use generally begins during adolescence, influenced by peers, smoking family members, and insufficient knowledge about its harms.

What this study adds?
It empirically investigates beliefs, knowledge, and attitudes regarding tobacco among Portuguese 7th-grade adolescents, a scarcely explored group, providing local evidence to support educational, community-based, and intersectoral actions in school health.

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Resumo

Objetivo: *Caracterizar o consumo de tabaco, os conhecimentos, as crenças e as atitudes relacionados ao seu uso entre adolescentes do 7º ano em escola da região de Lisboa e Vale do Tejo, Portugal.* ***Métodos:*** *Estudo descritivo, transversal, de natureza exploratória. A amostra incluiu 82 alunos matriculados no 7º ano do ano letivo de 2022/2023. As variáveis avaliadas foram: características socioeconômicas, prevalência do consumo de tabaco, intenção de experimentação e de cessação, exposição ao fumo ambiental, conhecimentos sobre os malefícios do tabaco, capacidade de recusa, crenças e atitudes. Os dados foram analisados com o software Statistical Package for the Social Sciences.* ***Resultados:*** *A média de idade foi de 12,8 anos; 56,1% dos participantes eram do sexo masculino. Do total, 11% relataram já ter experimentado fumar e 3,6% eram fumadores. Quando confrontados com a oferta de tabaco, 75,6% afirmaram que recusariam. A maioria reconheceu que o tabaco é prejudicial aos pulmões (89%), à saúde geral (74,4%) e à capacidade física (53,7%).* ***Conclusão:*** *Evidencia-se a necessidade de programas preventivos voltados a adolescentes, com foco na promoção da saúde e aumento da literacia, tendo a escola como espaço privilegiado para ações comunitárias educativas e preventivas.*

Descritores: *Prevenção do Hábito de Fumar; Serviços de Saúde Escolar; Comportamento do Adolescente; Promoção da Saúde.*

Resumén

Objetivo: *Caracterizar el consumo de tabaco, así como los conocimientos, creencias y actitudes relacionados con su uso entre adolescentes de séptimo curso en una escuela de la región de Lisboa y Valle del Tajo, Portugal.* ***Métodos:*** *Estudio descriptivo, transversal y de naturaleza exploratoria. La muestra incluyó a 82 alumnos matriculados en el séptimo curso durante el año académico 2022/2023. Las variables evaluadas fueron: características socioeconómicas; prevalencia del consumo de tabaco; intención de experimentación y de cesación; exposición al humo ambiental; conocimientos sobre los perjuicios del tabaco; capacidad de rechazo; creencias y actitudes. Los datos fueron analizados con el software Statistical Package for the Social Sciences.* ***Resultados:*** *La edad media fue de 12,8 años; el 56,1% de los participantes eran varones. Del total, el 11% refirió haber probado fumar y el 3,6% eran fumadores. Ante la oferta de tabaco, el 75,6% afirmó que lo rechazaría. La mayoría reconoció que el tabaco es perjudicial para los pulmones (89%), para la salud general (74,4%) y para la capacidad física (53,7%).* ***Conclusión:*** *Se evidencia la necesidad de desarrollar programas preventivos dirigidos a adolescentes, con énfasis en la promoción de la salud y el aumento de la alfabetización en salud, considerando a la escuela como un espacio privilegiado para acciones comunitarias educativas y preventivas.*

Descriptores*: Prevención del Hábito de Fumar; Servicios de Salud Escolar; Conducta del Adolescente; Promoción de la salud.*

INTRODUCTION

Tobacco use remains a serious global public health problem[1], characterized by nicotine dependence and recognized as one of the main risk factors for increased morbidity and mortality. Its association with the development of chronic diseases, such as lung cancer and cardiovascular and respiratory conditions, is widely documented[2]. Despite scientific evidence, the tobacco industry, supported by persuasive commercial strategies, has historically contributed to public misinformation regarding the risks of its consumption[3].

According to the World Health Organization, tobacco kills more than eight million people annually and generates significant environmental and socioeconomic impacts, from cultivation to post-consumption waste[4]. Even with the gradual reduction in consumption rates in some countries, mortality is expected to remain high due to the persistence of associated chronic diseases[5]. In Portugal, the 2019 National Health Survey indicated that 17% of the population aged 15 years or older were smokers, representing a reduction of three percentage points compared to 2014[6].

Longitudinal data from countries such as Bangladesh show that, despite the overall reduction in tobacco use among adolescents, the prevalence remains concerning, particularly among boys, and is strongly associated with exposure to secondhand smoke, the accessibility of tobacco products, and the presence of pro-tobacco messages in the media[7]. However, the same study demonstrated that restrictive public policies, such as banning tobacco sales to minors and implementing school-based educational campaigns, contributed to a decrease in use, especially among girls, reinforcing the role of legislation and education as complementary strategies.

Initiation of tobacco use occurs predominantly during adolescence, a period of heightened vulnerability and experimentation, underscoring the importance of the school environment as a space for early intervention and health promotion[8]. According to the 2019 Study on the Use of Alcohol, Tobacco, Drugs, and Other Addictive and Dependence-Related Behaviours *(Estudo sobre o Consumo de Álcool, Tabaco, Drogas e outros Comportamentos Aditivos e Dependências* - ECATD-CAD), tobacco is the second most consumed psychoactive substance among students aged 13 to 18 years, with higher prevalence among boys and a marked increase between the ages of 13 and 16 (from 7.9% to 34.3%)[9]. Although a declining trend in the use of traditional cigarettes has been observed, they remain the main form of tobacco consumed by Portuguese youth. This downward trend was also noted in data collected between 2016 and 2022 among adolescents from the 7th to the 9th grade, which revealed a decrease in tobacco and alcohol use in this age

group, although the consumption of other substances, such as solvents, is on the rise, raising concerns about potential substance substitution[10].

During this stage of the life cycle, marked by identity formation and peer influence, young people are more prone to initiating risk behaviors, such as tobacco use[11]. Health promotion thus emerges as an essential pillar for achieving sustainable health gains and reducing future costs. To this end, it is necessary to develop specific, targeted, and consistent interventions focused on preventing experimentation, with schools serving as strategic allies[8].

Recent literature shows that exposure to secondhand smoke, particularly at home and in public places, significantly increases adolescents' susceptibility to active tobacco use, with differentiated impacts according to sex and type of school attended[12]. Male students and those enrolled in vocational education demonstrated greater vulnerability, especially when exposure occurs simultaneously across multiple environments.

Peer influence can take on both negative and positive roles. Young people with friends who smoke are more likely to initiate use, whereas older peers who adopt healthy behaviors may act as health-promoting agents[11]. The same applies to the family environment: children of smoking parents face a higher risk not only due to behavioral modeling but also because of exposure to environmental tobacco smoke, which justifies the active inclusion of parents in prevention programs[11]. Furthermore, studies based on the analysis of school social networks show that socially isolated students or those with lower popularity are more likely to smoke, while peer-influence mechanisms vary according to the legislative context and the socioeconomic level of schools[13].

Several strategies have been proposed, including mentoring, coaching, motivational interviewing, digital literacy, specific curricular units, parental training, and modification of the school environment[14]. Consistent school policies with clear bans on tobacco use have also proven effective, particularly when the entire school community is involved[15].

However, their effectiveness depends on factors such as consistency in implementation, adult behavior, and young people's perceptions of the legitimacy of the rules. School-based interventions developed in Southeast Asia show that multicomponent approaches, such as programs based on the Health-Promoting Schools model and peer-led strategies, yield positive results both in reducing prevalence and in changing attitudes and knowledge about tobacco[16].

Finally, broader interventions, such as increasing tobacco prices, restricting advertising, regulating access for minors, and implementing educational campaigns, follow the WHO's MPOWER recommendations and have demonstrated effectiveness in reducing consumption and promoting smoking cessation[17,18].

Recognizing health as a fundamental resource for development and quality of life, it is essential to promote preventive actions within the school population. Although Portuguese studies exist on tobacco use among adolescents in general, there is a scarcity of research specifically focused on 7th-grade students in basic education, an age group marking the critical transition between childhood and adolescence, a period of heightened vulnerability to the initiation of risk behaviors. Thus, this study aims to characterize tobacco use, as well as the knowledge, beliefs, and attitudes related to its use among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region, Portugal.

METHODS

Type and study design

This is a descriptive, cross-sectional, exploratory study integrated into a community intervention. The investigation follows a health planning methodology, with a focus on preventing tobacco use among 7th-grade students enrolled in an integrated school within the Public Health Unit (*Unidade de Saúde Pública* - USP) of the Lisbon and Tagus Valley Region, Portugal. The study was developed in accordance with the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline.

Context and study setting

The study was conducted in a public school located in the urban area covered by a USP in the Lisbon and Tagus Valley Region, during the 2022/2023 academic year. The initiative was integrated with a broader community project aimed at health promotion and the prevention of tobacco use in the school context, involving 115 students.

Population and sampling

The target population consisted of all students enrolled in the 7th-grade of the selected school, totaling 115 students. The inclusion criteria were: being enrolled in the 7th-grade, regardless of sex; having authorization from parents or legal guardians through informed consent; and agreeing to participate voluntarily and anonymously. Exclusion criteria included: students absent on the day the questionnaire was administered; those who did not present authorization from their legal guardians; and those who, despite being authorized, exhibited significant cognitive or comprehension difficulties. These difficulties were identified based on school records, direct observation during the explanation of the questionnaire, and information provided by teachers, including students who were unable to understand basic instructions or answer simple questions even with support.

After applying these criteria, and considering the absence of 29 students on the day of data collection, the sample consisted of 86 students. Of these, four questionnaires were excluded due to incomplete responses, resulting in a total of 82 valid questionnaires for analysis.

Data collection procedures

Data collection was carried out through the administration of the validated questionnaire "SmokeOut - Prevenção do tabagismo em crianças e adolescentes em idade escolar: construção e avaliação longitudinal de um programa de prevenção baseado nas diferenças de género"[19], developed by researchers Sousa MIP, Precioso JAG, and Samorinha ACC. This instrument was designed within the context of a school health-promotion program focused on preventing tobacco use among students in basic education.

The questionnaire consists of 23 closed-ended items distributed across multiple categories, using Likert scales, multiple-choice options, and dichotomous responses. Its content allows for the assessment of sociodemographic characteristics; prevalence and patterns of tobacco use; intention to experiment with or cease tobacco use; exposure to environmental tobacco smoke; knowledge about the harms of tobacco; refusal skills when offered cigarettes; and beliefs and attitudes related to tobacco consumption.

The questionnaire was administered in a reserved classroom under the supervision of the research team and in coordination with the school administration, ensuring confidentiality and anonymity. The estimated completion time was approximately 20 to 30 minutes. The questionnaire used in this investigation had been previously validated in similar educational contexts, which reinforces its suitability for the study's target population.

Study variables

The variables analyzed included: socioeconomic characteristics; prevalence of tobacco use; intention to experiment with or cease use; exposure to environmental tobacco smoke; knowledge about the harms of tobacco; refusal skills; and beliefs and attitudes toward consumption. The administration of the questionnaire aimed to characterize students' habits and perceptions related to tobacco use.

Data analysis

Data were analyzed using descriptive statistics (absolute and relative frequencies, means, and standard deviations) and inferential statistics, with the support of the Statistical Package for the Social Sciences (SPSS), version 28. The analysis aimed to understand patterns of behavior and opinion among adolescents regarding tobacco use.

Ethical aspects

The study was authorized by the Pedagogical Council of the participating school and approved by the Ethics Committee of the Regional Health Administration of Lisbon and Tagus Valley, under reference 5182/CES/2022. Participation was voluntary, with guarantees of anonymity and data confidentiality. All participating students provided a consent form signed by their respective legal guardians. It was ensured that participants could withdraw at any time without any disadvantage.

The study was conducted in accordance with the ethical principles established in the Declaration of Helsinki, ensuring respect for participants' dignity, rights, and well-being. All stages of the research complied with European data protection standards, in accordance with Regulation 2016/679 of the European Parliament and of the Council, known as the General Data Protection Regulation, ensuring confidentiality, anonymity, and the exclusive use of information for scientific purposes.

RESULTS

The data refer to a total of 82 student responses (Table 1). The mean age was 12.8 years, ranging from a minimum of 11 to a maximum of 15 years. Most participants were male (56.1%) and lived with their parents (52.4%). The predominant educational level among mothers and fathers was completion of the 12th grade (24.4% and 20.7%, respectively).

Table 1. Sociodemographic characteristics of 7th-grade adolescents from a school in the Lisbon and Tagus Valley region (n=82). Setúbal, Portugal, 2023.

	n	%
Age (M; SD)	12.8	0.98
Sex		
Female	36	43.9
Male	46	56.1
Mother's education		
Up to 4th-grade (1st cycle)	3	3.7
Up to 6th-grade (2nd cycle)	9	11.0
Up to 9th-grade (3rd cycle)	14	17.1
Up to 12th-grade (upper secondary education)	20	24.4
Completed higher education (university)	15	18.3
Father's education		
No schooling	2	2.4
Up to 4th-grade (1st cycle)	4	4.9
Up to 6th-grade (2nd cycle)	5	6.1
Up to 9th-grade (3rd cycle)	15	18.3
Up to 12th-grade (upper secondary education)	17	20.7
Completed higher education (university)	11	13.4
People living in your home		
Father and Mother	43	52.4
Father	4	4.9
Mother	26	31.7
Brother(s)	31	37.8
Sister(s)	23	28.0
Grandparents	16	19.5
Stepfather	14	17.1
Stepmother	3	3.7
Others	4	4.9
Weight (M; SD)	52.2	10.6
Height (M; SD)	9.9	22.0

Legend: M - mean; SD - standard deviation.
Source: research data (2023).

The percentage of students who reported having already tried smoking tobacco was 11% (Table 2). The mean age of those who had experimented was 12 years, ranging from 11 to 13 years. Among them, the majority had tried smoking once or twice (7.3%). Approximately 16.7% of the girls had already experimented with smoking, while among boys this percentage was 6.5%.

Table 2. Tobacco experimentation among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region (n=82). Setúbal, Portugal, 2023.

	n	%
No	73	89.0
Yes	9	11.0
Total	82	100

Source: research data (2023).

Of those who had never tried smoking tobacco but indicated that they intend to experiment, 7.1% reported that they would do so before the age of 18. However, a very high percentage indicated that they would probably not, or certainly would not, do so before the age of 18 (78.6%), as shown in Table 3.

Table 3. Future intention to experiment with tobacco among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region (n=82). Setúbal, Portugal, 2023.

	Definitely yes	Probably yes	Probably not	Definitely not
In the next month?	0.0%	0.0%	9.1%	90.9%
In the next year?	0.0%	0.0%	7.7%	92.3%
Before the age of 18?	1.4%	5.7%	14.3%	78.6%
After the age of 18?	0.0%	7.1%	27.1%	65.7%

Source: research data (2023).

The proportion of smokers (current use) was 3.6%, as shown in Table 4.

Table 4. Current tobacco use among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region (n=82). Setúbal, Portugal, 2023.

	n	%
I have smoked, but I quit	1	1.2
I do not smoke	78	95.1
At least one cigarette per week, but not every day	1	1.2
Every day	2	2.4
Total	82	100

Source: research data (2023).

The proportion of fathers and mothers who smoked was 25.6%. The association between having ever experimented with smoking and having reference persons who smoke was not statistically significant ($p > .05$). Approximately 13.4% of mothers and 11% of fathers smoked at home, either occasionally or every day.

Regarding the question, "*Do you think the following people would like you to smoke?*", most students believed that the significant people in their lives would not want them to smoke, specifically: mother, 89%; father, 85.4%; siblings, 80.5%; best friend, 76.8%; and boyfriend/girlfriend, 53.7%. The people who most frequently warned students about the harms of tobacco were mothers (82.9%), followed by fathers (75.6%) and teachers (69.5%).

When asked how they would react if a friend offered them a cigarette, the most frequently mentioned responses were refusing the cigarette (75.6%) and probably refusing (12.2%). Conversely, 1.2% stated that they would probably accept, and 11% said they would not know how to react.

In the majority opinion of the surveyed students, tobacco is harmful mainly to the lungs (89%), to overall health (74.4%), and to the ability to practice sports (53.7%), as shown in Table 5.

Table 5. Perception of the harms of tobacco among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region (n=82). Setúbal, Portugal, 2023.

		Not harmful	Slightly harmful	Harmful	Very harmful
Lungs	n	0	1	8	73
	%	0.0%	1.2%	9.8%	89.0%
Heart	n	0	8	34	40
	%	0.0%	9.8%	41.5%	48.8%
Skin	n	6	21	33	22
	%	7.3%	25.6%	40.2%	26.8%
Teeth	n	3	8	28	43
	%	3.7%	9.8%	34.1%	52.4%
Sexuality	n	33	16	15	18
	%	40.2%	19.5%	18.3%	22.0%
Ability to practice sports	n	4	9	25	44
	%	4.9%	11.0%	30.5%	53.7%
Overall health	n	0	2	19	61
	%	0.0%	2.4%	23.2%	74.4%

Source: research data (2023).

When asked about their free time, students reported spending most of it at home (84.1%) and in outdoor spaces (41.5%). Most students (53.7%) stated that they like or like very much their school, while 8.6% reported not liking it or even hating it. However, the relationship between feelings toward school and experimenting with tobacco was not statistically significant ($\chi^2(4) = 2.343$; $p = .673$).

Most students (65.8%) indicated having no interest in learning more about tobacco, with 51.2% reporting no interest in the topic and 14.6% stating that they already know everything about it. On the other hand, 18.3% expressed interest in deepening their knowledge, and 15.9% acknowledged knowing little about the subject.

Regarding students' opinions on the topic, the statements most frequently considered true were: "Smoking during pregnancy harms the baby" (79.3%) and "Tobacco is a very addictive drug" (78.1%). Conversely, the statements most frequently classified as false were: "Smoking makes people more attractive/interesting" (76.8%) and "Smoking is good for losing weight" (63.5%). Nonetheless, a significant proportion of "I don't know" responses was observed across several statements, ranging approximately from 20% to 59.8%.

The high percentage of "I don't know" responses suggests that adolescents are at a stage of indecision or have significant knowledge gaps regarding beliefs and psychosocial consequences of smoking. This finding reinforces the conclusion that preventive interventions should not focus solely on physical harms but also on developing critical skills to deconstruct social myths related to tobacco use.

Table 6. Evaluation of statements about tobacco among 7th-grade adolescents in a school in the Lisbon and Tagus Valley region (n=82). Setúbal, Portugal, 2023.

		1	2	3	4	5
Smoking is good for losing weight	n	39	13	23	3	4
	%	47.6%	15.9%	28.0%	3.7%	4.9%
Tobacco helps to calm people down	n	23	5	25	16	13
	%	28.0%	6.1%	30.5%	19.5%	15.9%
People who smoke have aged skin	n	10	9	35	14	14
	%	12.2%	11.0%	42.7%	17.1%	17.1%
It is not harmful to be in a room with smokers	n	39	5	19	8	11
	%	47.6%	6.1%	23.2%	9.8%	13.4%
Most adults smoke	n	9	10	32	23	8
	%	11.0%	12.2%	39.0%	28.0%	9.8%
Smokers have more friends	n	18	16	35	8	5
	%	22.0%	19.5%	42.7%	9.8%	6.1%
Doctors exaggerate when they talk about the harms of tobacco	n	34	11	24	8	5
	%	41.5%	13.4%	29.3%	9.8%	6.1%
Girls are more sensitive to tobacco smoke	n	6	11	49	7	9
	%	7.3%	13.4%	59.8%	8.5%	11.0%
Tobacco is a highly addictive drug	n	4	4	10	14	50
	%	4.9%	4.9%	12.2%	17.1%	61.0%
Most young people smoke	n	3	16	34	19	10
	%	3.7%	19.5%	41.5%	23.2%	12.2%
Smoking only has negative health consequences if done for many years	n	19	4	14	18	27
	%	23.2%	4.9%	17.1%	22.0%	32.9%
It is harmful to be next to someone smoking outdoors	n	6	10	26	20	20
	%	7.3%	12.2%	31.7%	24.4%	24.4%
Smoking during pregnancy harms the baby	n	3	2	12	15	50
	%	3.7%	2.4%	14.6%	18.3%	61.0%
Smoking is expensive and harms the family economy	n	2	4	29	20	27
	%	2.4%	4.9%	35.4%	24.4%	32.9%
Smoking is a good way for young people to show independence	n	40	9	26	3	4
	%	48.8%	11.0%	31.7%	3.7%	4.9%
Smoking relieves sadness	n	15	7	38	14	8
	%	18.3%	8.5%	46.3%	17.1%	9.8%
Smoking makes people more attractive/interesting	n	52	11	17	1	1
	%	63.4%	13.4%	20.7%	1.2%	1.2%
Smoking causes unimportant diseases	n	38	11	17	4	12
	%	46.3%	13.4%	20.7%	4.9%	14.6%
Smoking increases the likelihood of developing cancer	n	5	4	13	12	48
	%	6.1%	4.9%	15.9%	14.6%	58.5%

Legend: 1 - I am certain it is false; 2 - I think it is false; 3 - I don't know; 4 - I think it is true; 5 - I am certain it is true.
Source: Research data (2023).

Finally, the students indicated the main sources through which they most frequently hear about topics related to tobacco: radio (64.6%); places where they socialise with friends (46.3%); health centre (24.4%); school (19.5%); television (17.1%); and the internet (13.4%).

DISCUSSION

The results demonstrate the magnitude of the issue, insofar as 11% of respondents, with a mean age of 12 years, reported having experimented with smoking tobacco, considering that, in 2019, at the level of public education, 38.4% of young people aged 13 to 18 years had already reported having experimented with smoking or vaping[1].

In the present study, 7.3% of participants reported having experimented once or twice, of whom 16.7% were female and 6.5% were male. These findings align with a comparative analysis of data from five National Health Surveys (from 1987 to 2014), in which tobacco use in Portugal showed a decreasing prevalence among men (from 35.2% to 26.7%) and an increasing prevalence among women (from 6% to 14.6%)[20]. Conversely, other studies show that prevalence is higher among males than among females[21,22]. Moreover, according to the National Health Survey (2019), the ratio of regular tobacco use rose to two men for every woman[6].

This pattern of early initiation is not exclusive to Portugal. Studies conducted in Vietnam observed that adolescents began using tobacco around the age of 12, with a prevalence of 2.8% of smokers in 2019 and significant use of electronic cigarettes, reinforcing the trend of experimentation in younger age groups and the diversification of tobacco products[23]. In addition, in Poland, 17.1% of adolescents aged 13 to 15 years reported current consumption of tobacco-derived products, with particular emphasis on the increase in electronic cigarette use among girls (23.4%)[24].

However, a 2021 Spanish study did not find significant sex differences in consumption prevalence[17]. According to ECATD-CAD 2019, in 2015 the prevalence of tobacco use was similar between genders (32%), but in 2019 the habit was more common among males (31%) than females (27.6%)[9]. In the present study, 3.6% of respondents reported being smokers (mean age of the sample: 12.8 years), a result consistent with ECATD-CAD 2019 data, which showed that the prevalence of tobacco use in the past 12 months among 13-year-olds was 4.0%[9].

Corroborating this reality, another study conducted in Spain with adolescents aged 12 to 17 years reported a smoking prevalence of 11.8%, with a mean initiation age of 12.7 years. Tobacco use was significantly associated with alcohol consumption, poor academic performance (grade repetition), and parental smoking[25]. This demonstrates that the family and social context plays a decisive role in smoking behaviour.

With regard to the prevalence of smokers within the household, it was found that 13.4% of mothers and 11% of fathers smoke inside the home, indicating a considerable proportion of students exposed to environmental tobacco smoke. In the study by Sousa et al. (2020), the results diverged, showing a higher prevalence of smoking among fathers than mothers[26]. The scientific literature further reinforces the importance of the family environment in the adoption of risk behaviours among young people, highlighting that their smoking habits are directly related to similar behaviours observed in parents and peers[27].

Data from the Global Youth Tobacco Survey conducted in African countries and in Central and Eastern Europe reinforce this influence: exposure to secondhand smoke at home, the behaviour of peers and family members, as well as the absence of school-based prevention programmes, are consistently associated with greater susceptibility to tobacco use[28,29]. On the other hand, in the present study, no statistically significant relationship was found between parental smoking and students' experimentation with tobacco, which may be related to the small sample size.

With regard to the participants' knowledge and beliefs, a considerable proportion demonstrated a reasonable understanding of the main harms of tobacco use, which may be associated with warnings from reference figures, as well as exposure to the topic through the media, school, and health professionals. However, a significant proportion of participants also exhibited inadequate beliefs or even a lack of knowledge regarding the harmful effects of tobacco.

The importance of effective educational strategies is reiterated by studies such as that of Pinto et al. (2022), who analysed the impact of the educational game "No Fume" on the health literacy of Portuguese adolescents, reporting positive results in modifying attitudes and negative expectations regarding

tobacco[30]. These gamified interventions demonstrate high potential for raising awareness, particularly among younger individuals.

In Portugal, several tobacco prevention programmes targeting young people have been developed over the years. The evaluation of the "SmokeOut-I" programme showed that the school-based interventions had as their main objectives the acquisition of knowledge about the health consequences of tobacco use, as well as the development of skills and refusal capacity when offered tobacco products. This type of intervention proved effective both in improving knowledge and beliefs about smoking and in reducing the intention to experiment with or initiate tobacco use, contributing significantly to tobacco prevention among young people[19].

In addition, the study by Cerqueira et al. (2022) reinforces that adolescents with greater family support, positive relationships with teachers and peers, and optimistic expectations for the future are less likely to engage in risk behaviours such as tobacco use[31]. These variables should be considered when structuring preventive programmes.

In contrast to these protective factors, adolescents' vulnerability is heightened by social norms that facilitate the access to and acceptance of tobacco. A recent qualitative study with adolescent girls in Ghana[32] reinforces this idea, demonstrating that "social opportunities," such as the availability and normalisation of shisha (hookah) use in urban settings, are powerful influences that can outweigh knowledge of health risks. This analysis of social norms helps contextualise how beliefs and susceptibility to smoking are shaped by the environment, a relevant point for the present study, which identified a high percentage of "I don't know" responses regarding psychosocial beliefs about smoking.

In addition to interpersonal influences and peer norms, exposure to digital marketing emerges as a critical risk factor in smoking initiation. Research on exposure to marketing of tobacco products, including smokeless products, indicates that such exposure is a significant predictor of initiation among youth and adolescents[33].

The complexity of this scenario, which balances protective factors (such as family support) with risk factors (such as social norms and digital marketing), underscores the challenges of prevention. When primary prevention fails and nicotine use becomes established, it becomes necessary to explore cessation interventions. In such cases, as reviewed by Shirazi et al. (2024)[34], approaches such as contingency management show potential for treating dependence in adolescents, although gaps remain in their implementation and in the approval of specific pharmacological treatments for this age group.

Finally, it is essential that public policies follow evidence-based guidelines, as highlighted in the editorial by Fontes & Caldeira (2025), which emphasizes that both Brazil and Portugal adopt health promotion paradigms anchored in the Canadian model. This model values healthy environments, structural actions, and robust normative programs to curb the advancement of tobacco use, particularly among adolescents[35].

This study presents some limitations. As it is a cross-sectional design, it is not possible to establish causal relationships between the variables analyzed. The small sample size and the fact that the research was conducted in a single school limit the generalizability of the results. The absence of some students on the day of data collection and the requirement for parental consent may have introduced selection bias. Furthermore, because it is based on a self-reported questionnaire, the data are subject to social desirability bias. Although validated, the instrument did not explore broader psychosocial dimensions, and the analyses were essentially descriptive, without adjustment for potential confounding factors. Such limitations, however, do not compromise the relevance of the findings, which provide important insights into the understanding of tobacco use behavior among Portuguese adolescents.

Despite the aforementioned limitations, the study offers relevant contributions to research and public health practice. By focusing on 7th-grade adolescents, a scarcely explored age group in Portugal, it provides original evidence on knowledge, beliefs, and attitudes related to tobacco. The use of a validated instrument enhances the reliability of the findings and enables comparisons with other educational contexts. The results reinforce the importance of the school as a key environment for the development of health promotion and tobacco prevention programs, supporting intersectoral public policies aimed at health literacy and the fostering of healthy behaviors among young people.

CONCLUSION

This study aimed to characterize tobacco use, as well as the knowledge, beliefs, and attitudes related to its use among 7th-grade adolescents attending a school in the Lisbon and Tagus Valley region of

Portugal. The characterization reveals that, although current tobacco use is low, early experimentation is already a reality within this group. The study identifies a relevant contrast: while adolescents demonstrate adequate knowledge about the main physical harms of tobacco and express a strong intention to refuse its use, they also present vulnerabilities. This vulnerability is manifested through significant exposure to environmental tobacco smoke and, in particular, through notable indecision and gaps in knowledge regarding the psychosocial beliefs associated with smoking.

These findings reinforce the need to implement tobacco prevention programs targeted at adolescents, with a focus on promoting health literacy and developing personal and social skills. The school emerges as a privileged setting for such interventions, given the amount of time young people spend there and the potential for family engagement.

Thus, the importance of integrated and sustained actions involving schools, families, and public health entities is highlighted, with the aim of promoting healthier school environments and preventing the early initiation of tobacco use among young people.

CONTRIBUITIONS

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