Prevalence and predictors of smoking behavior in Azorean adolescents

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ABSTRACT

INTRODUCTION According to the World Health Organization, tobacco use is a global pandemic and the leading preventable cause of illness and death. Most smokers start to smoke during adolescence. Therefore, it is crucial to develop and implement evidence-based measures to improve the effectiveness of smoking prevention. The Azores have the highest prevalence of smokers among the Portuguese regions and studies on Azorean adolescents are scarce. This study's objectives were to determine the prevalence of smoking behavior in Azorean adolescents and to explore associations among smoking behavior and demographic and psychosocial variables.

METHODS Participants in this study were 209 young Azoreans (mean age=15.4 ± 1.9; 68% females) who answered a questionnaire available online between November 2020 and February 2021. Access to the questionnaire was provided through a link disseminated at school by teachers. Variables such as age, sex, smoking attitude, social influence, self-efficacy, intention to smoke and smoking behavior, were included in the questionnaire. The statistical analyses performed include descriptive statistics, comparisons tests between never smokers and already smokers, correlations, and a logistic regression to determine effects on smoking behavior.

RESULTS Most participants (68.9%) reported never having smoked, not even a puff, and 5.7% answered that they smoked regularly. Beliefs about the advantages of smoking, reduced self-efficacy to refuse smoking in social situations, and having a best friend who smokes, are the variables associated with smoking behavior. The model explains 44% of the variance.

CONCLUSIONS Smoking prevention interventions with Azorean adolescents should address and correct beliefs about the pros of smoking, reinforce self-efficacy to refuse cigarettes in social situations, and provide strategies to deal with pressure to smoke from friends who smoke.

INTRODUCTION

The World Health Organization (WHO) considers tobacco smoking a pandemic that causes about 10 million deaths per year[1], and one in 10 deaths in adulthood[2]. In Portugal, it causes one death every 50 minutes, and in 2019 more than 13500 Portuguese died from tobacco attributable diseases[3,4].

Portugal is among the European countries with the lowest prevalence of smokers[5]. Nonetheless, there are substantial discrepancies in the smoking prevalence among the various Portuguese regions' populations, and the Azores have the highest prevalence of smokers[4].

In Western countries, including Portugal, the first peak of tobacco initiation occurs in the beginning of adolescence (age: 11–15 years)[6-8]. This early initiation worsens the health impact of smoking and raises the risk of tobacco dependence and its severity[9-13].

Several models are used to explain smoking behavior, including the ASE model (Attitude, Social influence, and Self-Efficacy), used in this study. The ASE model is based on the Theory of Reasoned Action[14,15], and on Bandura's self-efficacy[16]. This model considers that behavior is influenced by intention and that intention mediates the effects of psychosocial or motivational variables (attitude, social influence, and self-efficacy)[17-19].

This study aimed to assess the prevalence of smoking behavior in Azorean adolescents and to explore the association between smoking behavior and sociodemographic and ASE variables.

METHODS

Sample and procedure

Sixteen Azorean schools accepted to participate in this cross-sectional study. An online questionnaire was disseminated to students from 3rd cycle and secondary school levels by the teacher responsible for the class, through an internet link. The questionnaire was available online between November 2020 and February 2021. A total of 209 students responded, most of them lived on the islands of Terceira (51.7%) and São Miguel (40.2%).

The study and the questionnaire were approved by the Ethic Committee of the University of Beira Interior and by the Regional Direction of Education (DRE) – Azores Regional Government. Participation in the study was voluntary, and the anonymity of participants and confidentiality of data collected were guaranteed.

Questionnaire

The questionnaire was based on a review of the literature and earlier work about adolescent smoking behavior[16,18,20-22]. A pilot of the questionnaire with Portuguese adolescents contributed to the selection of items and item formulation in Portuguese[18,23]. Questions assess sociodemographic variables, beliefs about smoking (attitudes), social influence, self-efficacy, intention to smoke, and smoking behavior.

Sociodemographic variables were age, gender, year of schooling, participants' household, the island of residence, weekly money available, and mother's and father's education level.

Fourteen questions measured the attitudes on smoking, answered using a Likert scale. Eight questions were about the advantages of smoking [pros of smoking, e.g. 'If I smoke (or if I smoked), I find it pleasant'], with answers ranging: 0 = 'I totally disagree' to 5 = 'I totally agree'. Six questions addressed the disadvantages of smoking [cons of smoking, e.g. 'If I smoke (or if I smoked), I think it is bad for health'], with the possibility of answers ranging: 0 = 'I totally agree' to 5 = 'I totally disagree'. Finally, the remaining two questions addressed the social advantages associated with smoking [s-pros of smoking, e.g. 'If I smoke (or if I smoked), I think it would be easier to be part of a crowd'], with responses ranging: 0 = 'I totally disagree' to 5 = 'I totally agree'. A factor analysis confirmed these three factors: pros of smoking (Cronbach α =0.85), cons of smoking (Cronbach α=0.88), and s-pros of smoking (Cronbach α=0.89). These three factors were handled in some analyses as scales (using their means).

Social influence was assessed through several questions. Some sought to assess how participants perceive relevant others' norms on their behavior (subjective norms). Relevant others are mother, father, brother(s), sister(s), best friend, important people, people of the same age, and teachers (e.g. 'My mother (or the woman responsible for me) thinks that I:') was evaluated with answers ranging: 0 = 'I smoke' to 3 = 'Does not apply to my case'. Others questioned whether parents or close people smoked – descriptive norms (e.g. 'Does your father (or the man responsible for you) smoke?'), with answers ranging: 0 = 'No' and 3 = 'I do not have or do not live in my home'. The remaining questions evaluated the pressure to smoke exerted by the same people mentioned above [e.g. 'Have you ever felt pressured to smoke by your brother(s)?'], with answers ranging: 0 = 'Often' to 5 = 'I do not have or do not live in my house'. A factor analysis revealed three factors, corresponding to the subjective norms (Cronbach α=0.98), the smoking influence by family members and teachers' behavior (Cronbach α=0.92), and the smoking influence by the peer group behavior (Cronbach α=0.91). In some analyses were used as scales (considering their means).

Self-efficacy to refuse to smoke was measured using 12 questions. Some were designed to understand the individual's ability not to smoke in certain social circumstances (e.g. 'When you are with friends who smoke, are you able not to smoke?'), others when performing routines (e.g. 'When you are watching TV, are you able not to smoke?'), and in situations of emotional instability (e.g. 'When you feel down, are you able not to smoke?'). All answers to these questions were given on a Likert scale, ranging: 0 = 'I am absolutely sure that I smoke' to 6 = 'I am absolutely sure that I do not smoke'. Factor analysis forced into three factors according to previous studies carried out with this questionnaire[16], including in Portugal[18], revealed the social self-efficacy factor (Cronbach α=0.97), routines self-efficacy factor (Cronbach α=0.99), and emotional self-efficacy factor (Cronbach α=0.98). These factors were used as scales in some analyses (considering their means).

Intention to smoke was evaluated by the question: 'Do you intend to smoke in the next year?', with answers on a Likert scale ranging: 0 = 'Definitely yes' to 6 = 'Definitely not'.

Finally, smoking behavior was assessed using five combined questions[18,21,22]. In this study participants were divided into two or three groups. Two groups were never smokers (those who had never smoked not even a puff) and already smokers (those who smoke or had smoked occasionally and regularly). Three groups were the previous never smokers, occasional smokers (who smoke less than a cigarette a week or had smoked occasionally and regularly) and regular smokers (those who smoke one or more cigarettes per week).

Statistical analysis

Statistical analysis was carried out at two levels, based on the items (smoking behavior, attitudes, social influences, self-efficacy, and intention to smoke) or based on the factors of the ASE variables (pros of smoking, cons of smoking, social attitude, social influence of peers, social self-efficacy, self-

efficacy emotions, and self-efficacy opportunities).

Descriptive statistics of sociodemographic variables and relevant variables were performed. Differences between never smokers and already smokers were analyzed using chi-squared test and t-test.

After, a bivariate correlation was made to explore the relationship between smoking behavior (with three groups: never smokers, occasional smokers and regular smokers) and the other variables. Finally, a logistic regression was performed using smoking behavior with two groups (never and already smokers) as dependent variable and all the other variables as independent variables. All analysis were performed using SPSS v. 26 (IBM Corp., USA).

RESULTS

The participants' mean age was 15.4 ± 1.9 years, 68% were female, 88% were Catholic, and 50.7% had between €5 and €15 to spend weekly (Table 1). Most of the mothers (70.3%) and fathers (57.9%) did not smoke. Parents' education level was low (66% of mothers and 73.7% of fathers were below secondary/high school level), and 97.4% had Portuguese nationality.

Smoking behavior and intention to smoke

According to the data presented in Table 2, regarding the smoking behavior of the participants, 68.9% reported never had smoked, not even a puff (never smokers); all others were classified as already smokers: 16.2% had smoked

occasionally, but currently do not smoke; 3.3% very rarely smoked a few puffs; 3.8% smoked a few cigarettes a year; 1.9% smoked at least once a month; and 5.7% smoked regularly (at least one cigarette a week).

Most participants did not show an intention to smoke in the next year (82.8%) or in the future (78.0%) (Table 2).

The participants' perception on the percentage of smokers in Portugal was illusory and inflated: 48.8% answered that 61–80% of the Portuguese are smokers (Table 2).

Comparison between never smokers and already smokers

Comparing never smokers with already smokers in the sociodemographic variables (Table 1), these two groups differed only in age: already smokers were older than never smokers (16.6 ± 1.4 vs 14.9 ± 2.0 years, p<0.05).

In the attitudes (Table 3), significant differences between never smokers and already smokers appeared in the items of beliefs that smoking is positive (0.4 ± 0.7 and 0.8 ± 1.0; p<0.05), pleasant (0.6 ± 0.9 and 1.6 ± 1.2; p<0.05), helps to be slim (2.8 ± 1.4 and 2.5 ± 1.2; p<0.05), is stupid (1.3 ± 1.6 and 1.5 ± 1.3; p<0.05), calms the nerves (0.8 ± 1.0 and 2.0 ± 1.3; p<0.05), makes one feel secure 0.7 ± 0.9 and 1.2 ± 1.2; p<0.05), makes one receive more attention (0.7 ± 1.0 and 1.1 ± 1.3; p<0.05), makes one more sociable (0.7 ± 1.0 and 1.4 ± 1.3; p<0.05), and integrate more easily (0.7 ± 1.1 and 1.5 ± 1.3; p<0.05).

In terms of social influence (Table 3), the values of both

Table 1. Sample sociodemographic characteristics and comparison between never smokers and already smokers (N=209)

Characteristics		Total Mean ± SD	Never smokers (N=144) Mean ± SD	Already smokers (N=65) Mean ± SD	Satistical test (p)
Age (12–19 years) mean ± SD		15.4 ± 1.9	14.9 ± 2.0	16.6 ± 1.4	t(173.46)= -6.9 **(p<0.05)**
		n (%)	n (%)	n (%)	
Sex	Female	140 (67.0)	95 (67.9)	45 (32.1)	χ^2(1)=0.4 (p>0.05)
	Male	69 (33.0)	49 (71.0)	20 (29.0)	
Weekly money available to spend (€)	<5	69 (33.0)	46 (31.9)	23 (35.4)	χ^2(2)=0.4 (p>0.05)
	5–15	106 (50.7)	75 (52.1)	31 (47.7)	
	>15	34 (16.3)	23 (16.0)	11 (16.9)	
Mother's education level	Cycles 1–3	138 (66.0)	97 (67.4)	41 (63.1)	χ^2(2)=1.2 (p>0.05)
	High school	39 (18.7)	24 (16.7)	15 (23.1)	
	University	32 (15.3)	23 (16.0)	9 (13.8)	
Father's education level	Cycles 1–3	154 (73.7)	101 (70.1)	53 (81.5)	χ^2(2)=4.7 (p>0.1)
	High school	33 (15.8)	28 (19.4)	5 (7.7)	
	University	22 (10.5)	15 (10.4)	7 (10.8)	

Participants are young from schools of The Azores (Portugal). Data were collected in 2020–2021.

Table 2. Smoking behavior, intention to smoke and perception of smokers' percentage in the Portuguese population (N=209)

Characteristics	n	%
Smoking behavior		
Never smoked, not even puff	144	68.9
Smoked occasionally but does not currently smoke	34	16.2
Smoke very rarely a few puffs from a cigarette	7	3.3
Smoke a few cigarettes a year	8	3.8
Smoke at least once a month	4	1.9
Smoke regularly	12	5.7
Percentage of individuals who intend to smoke next year		
Yes	8	3.9
Maybe yes	7	3.3
I do not know	17	8.1
Maybe not	4	1.9
No	120	82.8

Continued

Table 2. Continued

Characteristics	n	%
Percentage of individuals who intend to smoke in the future		
Yes	8	3.8
Maybe yes	9	4.3
I do not know	20	9.6
Maybe not	9	4.3
No	163	78
Perception of smokers' percentage in the Portuguese population		
0–20	4	1.9
21–40	23	11.0
41–60	54	25.8
61–80	102	48.8
81–100	26	12.4

Participants are young from schools of The Azores (Portugal). Data were collected in 2020–2021.

Table 3. Comparison between never smokers and smokers in attitudes, social influence, self-efficacy and intention to smoke (only items with significant differences are presented) (N=209)

	Never smokers (n=144) Mean ± SD	Already smokers (n=65) Mean ± SD	Statistical test p*
Beliefs about smoking			
Is positive[a]	0.4 ± 0.7	0.8 ± 1.0	t(97.2)= -3.3*
Pleasant[a]	0.6 ± 0.9	1.6 ± 1.2	t(96.2)= -5.7*
Helps to be slim[a]	2.8 ± 1.4	2.5 ± 1.2	t(146.8)=1.4*
Is stupid[b]	1.3 ± 1.6	1.5 ± 1.3	t(151.2)= -1.0*
Calms the nerves[a]	0.8 ± 1.0	2.0 ± 1.3	t(99.4)= -6.4*
Makes one feel secure[a]	0.7 ± 0.9	1.2 ± 1.2	t(95.2)= -3.3*
Makes one receive more attention[c]	0.7 ± 1.0	1.1 ± 1.3	t(103.9)= -2.4*
Makes one more sociable[c]	0.7 ± 1.0	1.4 ± 1.3	t(100.1)= -3.9*
Integrate more easily[c]	0.7 ± 1.1	1.5 ± 1.3	t(101.4)= -4.1*
Self-efficacy			
When with others who smoke[d]	5.7 ± 0.9	4.9 ± 1.4	t(85.73)=4.1*
When with friends who smoke[d]	5.7 ± 0.9	4.5 ± 1.6	t(84.21)=5.8*
When offered a cigarette[d]	5.7 ± 0.9	4.7 ± 1.4	t(87.66)=5.5*
When friends offer a cigarette[d]	5.7 ± 0.9	4.5 ± 1.6	t(82.17)=5.8*
When feel upset[e]	5.7 ± 0.9	4.8 ± 1.6	t(80.81)=4.3*
When feel depressed[e]	5.7 ± 0.9	4.8 ± 1.7	t(79.61)=4.2*
When feel nervous[e]	5.7 ± 0.9	4.7 ± 1.6	t(84.28)=4.5*
When feel worried[e]	5.7 ± 0.9	4.8 ± 1.6	t(80.51)=4.4*

Continued

Table 3. Continued

	Never smokers (n=144) Mean ± SD	Already smokers (n=65) Mean ± SD	Statistical test p*
When out with friends[d]	5.7 ± 0.9	4.1 ± 1.8	t(77.01)=6.6*
When watching TV[f]	5.8 ± 0.8	5.3 ± 1.5	t(80.35)=2.7*
When doing homework[f]	5.8 ± 0.8	5.3 ± 1.5	t(85.59)=2.6*
When on way home from school[f]	5.8 ± 0.8	5.3 ± 1.4	t(82.62)=2.7*
Social influences	**n (%)**	**n (%)**	
Best friend smokes[c]			
No	123 (85.4)	40 (61.5)	$\chi^2(3)=23.1$*
Yes	6 (4.2)	16 (24.6)	

Participants are young from schools of Azores (Portugal). Data were collected in 2020–2021. **a** Pros of smoking factor. **b** Cons of smoking factor. **c** Social influence of the peers. **d** Social self-efficacy factor. **e** Emotions self-efficacy factor. **f** Opportunities self-efficacy factor. *p<0.05 for all.

Table 4. Correlation between smoking behavior and other relevant variables[a] and logistic regression results (dependent variable: smoking behavior, never smokers/already smokers[a])

Variables[b]	r[c]	OR (95%CI)
Age (12–19 years)	0.24	2.14 (1.59–2.86)
Beliefs for smoking (0: I totally disagree, to 5: I totally agree)	0.46	4.34 (2.18–8.62)
Beliefs against smoking (0: I totally agree, to 5: I totally disagree)	0.13	
Social self-efficacy (0: I am sure I will smoke, to 6: I am sure I won't smoke)	-0.57	0.30 (0.15–0.60)
Routines self-efficacy (0: I am sure I will smoke, to 6: I am sure I won't smoke)	-0.40	
Emotional self-efficacy (0: I am sure I will smoke, to 6: I am sure I won't smoke)	-0.49	
		Cox-Snell R^2=0.44

Participants are 209 adolescents from schools of The Azores (Portugal). Data were collected in 2020–2011. **a** Only significant results are presented. **b** Independent variables: age, sex, money available to spend, prefer to be together with non-smoking people, beliefs for smoking, beliefs against smoking, beliefs s-pros, social influence of behavior (subjective norms), social influence of family and teachers, social influence of peer group, social self-efficacy, routines self-efficacy, emotional self-efficacy, and intention to smoke. **c** Correlation with smoking behavior (with three groups: never smokers, occasional smokers, and regular smokers). R significant if p<0.05.

groups do not differ significantly, except in the case of a best friend who smokes, with never smokers reporting a higher percentage of best friends who never smoked. However, although differences were not significant, relevant others [e.g. mother, father, brother(s), sister(s), and best friend] for the already smokers had consistently a higher percentage of smoking behavior.

Regarding self-efficacy to refuse smoking (Table 3), the two study groups showed significant differences in all items. However, the differences were bigger in some items: 'when you go out with friends' (5.7 ± 0.9 and 4.1 ± 1.8; p<0.05), 'when friends offer a cigarette' (5.7 ± 0.9 and 4.5 ± 1.6; p<0.05), and 'when with friends who smoke' (5.7 ± 0.9 and 4.7 ± 1.4; p<0.05).

The results did not reveal significant differences between the two groups in the intention to smoke.

Correlations with smoking behavior
Regarding attitude scales (Table 4), the results indicated a significant correlation between smoking behavior and the pros of smoking (r=0.46). All self-efficacy to refuse smoking scales had a significant correlation with smoking behavior, especially social self-efficacy (r= -0.57) and emotional self-efficacy (r= -0.49). However, the correlations between behavior, social influence variables and intention to smoke next year were not statistically significant.

Logistic regression
A logistic regression was performed (Table 4). Regarding sociodemographic variables, only age (OR=2.14; 95% CI: 1.59–2.86) was significantly associated with behavior. Among the ASE variables, beliefs regarding the advantages of smoking (OR=4.34; 95% CI: 2.18–8.62), and self-efficacy to refuse smoking in social situations (OR=0.30; 95% CI: 0.15–0.60) were significantly associated with behavior. This model explained 44% of the variance in smoking behavior. Social influence variables and intention to smoke did not show a significant effect on behavior.

DISCUSSION

Most participants in this sample of young Azoreans (Portugal) were never smokers (68.9%). This prevalence of never smokers was slightly higher than that reported in other studies with Portuguese adolescents of these ages[4]. This result is not aligned with other studies on smoking in Portugal, where Azores usually has the higher percentage of smokers among all the Portuguese regions[3-5]. A possible explanation for this high prevalence of never smokers could be a bias related with the participation through the internet, which may be more attractive for never smokers than for already smokers.

Despite the fact that most participants were never smokers, the considerable percentage of occasional and regular smokers indicated the need of preventing smoking behavior in this population. To improve the effectiveness of smoking prevention in young Azoreans, it is essential to have valid and evidence-based information on smoking behavior in this specific population.

The model used in this study explained 44% of the total smoking behavior variance, a result that partially validates the suitability and usefulness of this model to understand smoking behavior and to guide smoking prevention activities targeted for young Azoreans. In this study, most of this variance was explained by ASE variables, manly pros of smoking and self-efficacy to refuse smoking. Other variables that usually are important in models to explain smoking behavior, like social influence and intention to smoke, were not significant in this study[10,24].

The pros of smoking relevance is an interesting result. Usually, this variable is not addressed in preventive interventions, which are often focused on the cons of smoking instead of addressing the pro-smoking beliefs that young people develop in the beginning of adolescence[25]. Topics like smoking is positive, pleasant, calms nerves, makes one to feel secure, makes one receive more attention, makes one more sociable and to integrate more easily, must be addressed and contradicted in smoking prevention programs.

The effect of self-efficacy to refuse smoking on smoking behavior was also highlighted in this study as in others with Portuguese adolescents[10,24]. All self-efficacy factors had a significant effect on smoking behavior, with emphasis on self-efficacy to refuse smoking in social situations. Emotional self-efficacy had an ambiguous result: a significant correlation with smoking behavior and a not significant effect in the regression. A possible explanation for this inconsistency may be a high relation amongst items of emotional self-efficacy and social self-efficacy.

In this study, cons of smoking had a small effect, and social influence and intention to smoke did not significantly affect smoking behavior – except having a best friend who smokes, who appeared associated with smoking behavior. These were unexpected results that need be confirmed in future studies, in particular the absence of social influence effect,

considering that this variable appeared in other studies with Portuguese adolescents as very important to explaining smoking behavior[10,24].

Comparing the two groups (never smokers and already smokers), the values of intention to smoke were very low and similar in both groups, suggesting that adolescents do not intend to smoke. Thus, the effect of intention on smoking behavior predicted by the ASE model and by other sociocognitive models was not confirmed in this study. Doubts about the effect of intention to smoke in smoking behavior appeared already in some studies published in recent years[18,24]. These low values of intention to smoke and its null effect on smoking behavior could be related with the impact of the recent smoking control policies like the tobacco control law and media campaigns.

Regarding the difference in smoking behavior by gender, published studies have shown a consistent tendency for an increase of smoking in girls, with prevalence values very similar or even higher than the boys' values[25-28]. In this study, the percentage of girls who were already smokers is slightly higher than the percentage of boys, suggesting the need for gender-specific studies on smoking behavior and gender-specific interventions to prevent smoking.

The participants' perception about the percentage of Portuguese who smoke was highly inflated, a result in line with other studies carried out in Portugal[18]. Almost half of participants in our study considered that more than 60% of the Portuguese are smokers, although the official prevalence of smokers in Portugal is lower than 20%[4]. Tobacco prevention activities should address and correct this illusory perception that tends to normalize smoking and increase the risk of smoking behavior.

Strengths and limitations

This study has several limitations. First, this is a cross-sectional study, which restricts the possibility of inferring the direction of the effects. Second, data resulted from a self-report questionnaire, and the responses were not biologically validated. Third, the questionnaire was applied online to adolescents who responded on their own initiative, which may have been more appealing to never smoking people. Finally, the sample is small, with participants from only one region, limiting the results' robustness and generalizability.

This study also has some strengths. It was carried out with a sample of Azorean adolescents. This population is often excluded from studies carried out at the national level and even more at the international level. Online data collection can have advantages, namely, enhancing the perception of responses' confidentiality and participants' anonymity.

Future directions

Finally, it is essential to mention the need to carry out more studies on smoking behavior in Azorean adolescents, namely, with higher sample sizes. Future studies will confirm or not the effects on smoking behavior of the pros of smoking and

of social self-efficacy to refuse smoking and the absence of effects of cons of smoking, social influence and intention to smoke. Future studies could also compare subgroups (e.g. different ages, gender and socio-economic level) to improve the knowledge of smoking behavior and increase the effectiveness of smoking prevention activities in this population.

CONCLUSIONS

Our study confirmed the need of smoking prevention measures targeted to young Azoreans. Results highlighted the effect on smoking behavior of the pros of smoking and of self-efficacy to refuse smoking in social situations. Having a best friend who smokes and the illusory perception of a higher percentage of smokers in the Portuguese population are also relevant to explain smoking behavior in this sample. To improve the effectiveness of smoking prevention in this population, these variables should be included in prevention activities. For example, these results suggest that smoking prevention should focus on the pros of smoking instead of on the cons of smoking, and recommend the promotion of social competencies to improve youth self-efficacy to refuse smoking in social situations and to deal with the pressure of a friend who smokes.

REFERENCES

1. World Health Organization. Tobacco. WHO; 2022. Accessed December 29, 2022. https://www.who.int/en/news-room/fact-sheets/detail/tobacco
2. World Health Organization. Tobacco fact sheet. WHO; 2020. Accessed December 29, 2022. https://www.who.int/docs/default-source/campaigns-and-initiatives/world-no-tobacco-day-2020/wntd-tobacco-fact-sheet.pdf
3. Direção-Geral da Saúde. Programa nacional para a prevenção e controlo do tabagismo. DGS; 2017. Accessed December 29, 2022. https://comum.rcaap.pt/bitstream/10400.26/22711/1/Programa%20Nacional%20para%20a%20%20Prevenção%20e%20Controlo%20do%20Tabagismo%202017.pdf
4. Direção-Geral da Saúde. Programa nacional para a prevenção e controlo do tabagismo. DGS; 2020. Accessed December 29, 2022. https://www.dgs.pt/portal-da-estatistica-da-saude/diretorio-de-informacao/diretorio-de-informacao/por-serie-1219790-pdf.aspx?v=%3d%3dDwAAAB%2bLCAAAAAABAArySzItzVUy81MsTU1MDAFAHzFEfkPAAAA
5. European Commission, Flash Eurobarometer 253. Survey on tobacco: Analytical report. EU, FEB 253; 2022. Accessed December 29, 2022. https://ec.europa.eu/health/ph_determinants/life_style/Tobacco/Documents/eb_253_en.pdf
6. Fraga S, Ramos E, Barros H. Uso de tabaco por estudantes adolescentes portugueses e fatores associados. Revista Saúde Pública. 2006;40(4):620-626. doi.org/10.1590/S0034-89102006000500010
7. Santos AC, Barros H. Smoking patterns in a community sample of Portuguese adults, 1999–2000. Prev Med. 2004;38(1):114–119. doi.org/10.1016/j.ypmed.2003.09.040
8. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report. Preventing tobacco use among young people: a report of the Surgeon General. CDC, MMWR; 1994. Accessed December 29, 2022. https://www.cdc.gov/mmwr/pdf/rr/rr4304.pdf
9. Colby SM, Tiffany ST, Shiffman S, Niaura RS. Are adolescent smokers dependent on nicotine? A review of the evidence. Drug Alcohol Depend. 2000;59(1):83-95. doi.org/10.1016/S0376-8716(99)00166-0
10. DiFranza JR, Savageau JA, Rigotti NA, et al. Development of symptoms of tobacco dependence in youths: 30 month follow up data from the DANDY study. Tob Control. 2022;11(3):228-235. doi:10.1136/tc.11.3.228
11. Breslau N, Peterson EL. Smoking cessation in young adults: age at initiation of cigarette smoking and other suspected influences. Ame J Public Health. 1996;86(2):214–220. doi:10.2105/ajph.86.2.214
12. World Health Organization. Report on the Global Tobacco Epidemic, 2008: the MPOWER package. WHO; 2008. Accessed December 29, 2022. https://apps.who.int/iris/handle/10665/43818
13. Dierker L, He J, Kalaydjian A, et al. The importance of timing of transitions for risk of regular smoking and nicotine dependence. Ann Behav Med. 2008;36(1):87–92. doi.org/10.1007/s12160-008-9051-x
14. Ajzen I, Fishbein M. Understanding attitudes and predicting social behavior. Prentice-Hall; 1980.
15. Fishbein M, Ajzen J. Belief, attitude, intention and behavior: An introduction to theory and research. Reading, Mass: Addison-Wesley Pub. Co; 1975.
16. De Vries H, Dijkstra M, Kuhlman P. Self-efficacy: the third factor besides attitude and subjective norm as a predictor of behavioral intentions. Health Education Research. 1988;3(3):273-282. doi.org/10.1093/her/3.3.273
17. Amaral VG. A adolescência e o tabaco. Master's thesis, Universidade da Beira Interior, Faculdade de Ciências da Saúde Departamento de Ciências Médicas, FCS - DCM; 2010. Accessed December 29, 2022. https://ubibliorum.ubi.pt/bitstream/10400.6/739/1/Mestrado%20Vanessa%20Goulart%20Amaral.pdf
18. Vitória PD. O impacto da influência social na intenção de fumar e no comportamento tabágico dos adolescentes portugueses. Dissertation, Instituto Universitario de Lisboa, Departamento de Psicologia Social e das Organizações; 2009. Accessed December 29, 2022. https://repositorio.iscte-iul.pt/bitstream/10071/4413/1/VitoriaInfluênciaSocialIntençãoComportamentoTabágico.pdf
19. De Vries H, Mudde A, Leijs I, et al. The European smoking prevention framework approach (ESFA): An example of integral prevention. Health Educ Res. 2003;18(5):611-626. doi.org/10.1093/her/cyg031
20. De Vries H, Kok GJ. From determinants of smoking behavior to the implications for a prevention programme. Health Education Research. 1986;1(2):85-94.

doi.org/10.1093/her/1.2.85

21. Kremers SP, Mudde AN, de Vries H. 'Kicking the initiation': do adolescent ex-smokers differ from other groups within the initiation continuum?. Prev Med. 2001;33(5):392-401. doi:10.1006/pmed.2001.0904

22. Kremers SP, Mudde AN, de Vries H. Subtypes within the precontemplation stage of adolescent smoking acquisition. Addict Behav. 2001;26(2):237-251. doi:10.1016/s0306-4603(00)00104-0

23. Vitoria PD, Kremers SP, Mudde AN, Pais-Clemente M, de Vries H. Psychosocial factors related with smoking behaviour in Portuguese adolescents. Eur J Cancer Prev. 2006;15(6):531-540. doi:10.1097/01.cej.0000220638.23599.ec

24. Vitória PD, Salgueiro MF, Silva SA, De Vries H. Social influence, intention to smoke, and adolescent smoking behavior longitudinal relations. Br J Health Psychol. 2011;16(4):779–798. https://doi.org/10.1111/j.2044-8287.2010.02014.x

25. Lins R, Vitória P. Impacto das crenças sobre fumar no comportamento tabágico de adolescentes portugueses. Accessed December 29, 2022. https://ubibliorum.ubi.pt/bitstream/10400.6/12112/1/8636_18523.pdf

26. Matos MG, Gaspar T, Vitória P, Pais-Clemente M. Comportamentos e atitudes sobre o tabaco em adolescentes portugueses fumadores. Psicologia, Saúde & Doenças. 2003;4(2):205-219. Accessed December 29, 2022. https://repositorio.ispa.pt/bitstream/10400.12/1119/1/PSD%202003%204%282%29%20205-219.pdf

27. Machado A, Nicolau R, Dias CM. Consumo de tabaco na população portuguesa retratado pelo Inquérito Nacional de Saúde (2005/2006). Revista Portuguesa de Pneumologia. 2009;15(6):1005–1027. doi.org/10.1016/S0873-2159(15)30191-4

28. Santos SML. O impacto da Lei nº 37/2007 (Lei do Tabaco) no consumo de tabaco em ambiente profissional na ilha Terceira e a sua influência na produtividade e absentismo laboral. Master's thesis, Universidade dos Acores; 2012. Accessed December 29, 2022. https://repositorio.uac.pt/bitstream/10400.3/2844/1/DissertMestradoSoniaMarisaLourencoSantos2013.pdf