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LONGITUDINAL ASSESSMENT OF THE EFFECTIVENESS OF A TOBACCO PREVENTION PROGRAMME AMONG SCHOOL-AGED ADOLESCENTS

EVALUACIÓN LONGITUDINAL DE LA EFICACIA DE UN PROGRAMA DE PREVENCIÓN DE FUMAR ENTRE ADOLESCENTES EN EDAD ESCOLAR

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Abstract

Implementing effective prevention programmes is critical to prevent tobacco use. Objectives. This study aims to assess the long-term effectiveness of the "SmokeOut-I" programme in the smoking prevention of school-aged adolescents, by gender. *Methodology.* A quasi-experimental study was conducted including a pre-test and a post-test, as well as an experimental group (N = 163) and a control group (N = 148) of adolescents attending the 6th grade at Braga schools in 2014/2015. A follow-up was conducted three years later. A self-report questionnaire was administered to both groups before and after the programme implementation, and at the follow-up. The programme was only administered to the experimental group. *Results.* The programme has shown long-term effectiveness in preventing smoking experimentation, and in enhancing smoking refusal skills. There was a lower prevalence of tobacco use and intention to smoke in the experimental group than in the control group, although not statistically significant. It was found that the experimental group maintained adequate knowledge about smoking over time. *Conclusions.* The positive effects on health and on the environment justify the broad implementation of this programme, which implies the involvement and commitment of governmental institutions.

Keywords: Smoking, prevention, adolescents, pntervention programme, school.

Resumen

La aplicación de programas de eficacia demostrada es fundamental para la prevención del consumo de tabaco. *Objetivos.* El objetivo de este estudio es evaluar la eficacia del programa "SmokeOut-I" en la prevención del tabaquismo en los jóvenes escolarizados, por sexo. *Metodología.* Se realizó un estudio cuasi-experimental, tipo pre/post-test, con alumnos de 6º año, con un grupo experimental (N=163) y un grupo control (N=148), en 2014/2015, en las escuelas de Braga. Un seguimiento se realizó tres años después. Se administró un cuestionario a ambos grupos antes y después de la implementación del programa y en el seguimiento. El programa solo se administró al grupo experimental. *Resultados.* El programa ha demostrado su eficacia a lo largo del tiempo en la experimentación con el tabaco y en la capacidad de rechazar las ofertas de cigarrillos. En cuanto a los conocimientos, se constató que, a largo plazo, los alumnos del grupo experimental mantuvieron los conocimientos adecuados en relación con el tabaquismo. *Conclusiones.* Los efectos positivos para la salud y el medio ambiente justifican una aplicación más amplia del programa, lo que implica la participación y el compromiso de las entidades responsables.

Palabras clave: Tabaquismo, prevención, adolescentes, programa de intervención, escuela.

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More than 7 million people die each year due to tobacco dependence, and 80% of these deaths occur in low to middle-income countries (WHO, 2017). In Portugal, smoking causes one death every 50 minutes (Ministério da Saúde, 2018).

Preventing smoking among young people is one way to reduce smoking and its negative consequences on health. Tobacco use often starts at school, which justifies a didactic and multidisciplinary intervention in this context (Mercken et al., 2012). School is the ideal place to intervene with children and adolescents, to promote health education, and to prevent smoking experimentation and initiation (Precioso, Samorinha & Macedo, 2016). Multicomponent interventions and school-based programmes are effective in reducing the prevalence of adolescents' tobacco use (Sousa, 2018; Thomas, McLellan, & Perera, 2013), particularly longitudinal programmes that include skills training and social context factors (Andersen, Krølner, Bast, Thygesen, & Due, 2015; Năděşan, Chirvăsuţă, Ábrám, & Mihăicuţă, 2015; Kanicka, Poniatowski, Szpak, & Owoc, 2013a).

Tobacco prevention programmes have been implemented in Portugal: "Não fumar é o que está a dar" for students attending the 7th grade of education (Precioso, 1999), "Querer é Poder I" (Vitoria, Raposo, Peixoto, & Clemente, 2000) and "Querer é Poder II" (Vitória, Raposo, Peixoto, Carvalho, & Clemente, 2001) for young people aged 12 to 14 years old. Although these programmes have demonstrated effectiveness (Precioso, 2001; Vitória, Silva, & De Vries, 2011), they were developed without a thorough understanding of smoking determinants by gender. Thus, it is relevant to improve and modernize existing programmes in Portugal, taking into account gender differences, the role of school, family and community, and to assess their short and long-term impact on the prevention of tobacco use (Sousa et al., 2017).

The "SmokeOut-I" programme is a multicomponent, gender-sensitive, school-based programme focused on tobacco prevention, that aims to improve knowledge and modify beliefs about smoking, to prevent tobacco experimentation and initiation, to reduce the intention to smoke among students attending 6th grade, and to enhance smoking refusal skills (Precioso et al., 2014). This programme was designed to be administered in the classroom by teachers and it includes social skills training, as well as strategies to reduce smoking risk factors and to promote protective factors (Sousa, 2018). This tobacco prevention programme is based on the Theory of Reasoned Action. According to this theory, intention is measured by attitudes and subjective norms about a specific action (Fishbein & Ajzen, 1975). The attitude is influenced by the knowledge and beliefs about the consequences of the action and the person's perception of these consequences. Children and adolescents may present different perspectives regarding smoking according to their perception of the behavior's consequences on themselves, their families, and social contexts. The Theory of Reasoned Action has influenced the design of health interventions (namely tobacco prevention programmes), based on the assumption that the promotion of favorable attitudes towards non-smoking and the development of a unfavorable subjective norm towards tobacco use can have a high preventive effect (Precioso, 2001). Tobacco prevention programmes are one of the most promising ways of preventing tobacco use among young people.

The "SmokeOut-I" programme provides students with information about the the short and long-term consequences of smoking on health, and enables them to acquire smoking refusal skills and strategies to help colleagues to stop smoking. The programme also addresses the problems associated with exposure to secondhand smoke, and aims to raise awareness about the financial costs associated with tobacco use.

Previous studies have demonstrated the short-term effectiveness of "SmokeOut-I" programme in preventing smoking among young people (Sousa, Samorinha, Machado & Precioso, 2018). However, its long-term effectiveness has not been assessed. The aim of this study was to evaluate long-term effectiveness of the tobacco prevention programme "SmokeOut-I" three years after its application, and to assess its impact on smoking behavior (experimentation, intention to smoke, tobacco use), smoking refusal skills, and on the knowledge and beliefs about smoking of school-aged adolescents attending the 6th grade in Braga (Portugal), by gender.

METHOD

Design and Participants

A quasi-experimental study was conducted including a pre and pos-test, as well as an experimental group (n = 163; 84 male students; mean age of 11.3 years old) and a control group (n = 148; 64 male students; mean age of 11.1 years old), held in the school year of 2014/2015. Participants of both groups were students attending the 6th grade at Braga schools, in Portugal. The "SmokeOut-I" prevention programme was administered to the experimental group. Three years later (in the school year of 2017/2018), a follow-up was conducted with the experimental group (n = 122; 68 male students; mean age of 14.3 years old) and with the control group (n = 113; 44 male students; mean age of 14.1 years old) to assess the programme long-term effectiveness. The loss of baseline students at follow-up was essentially due to participants' change of school and/or residence. The schools that integrated the experimental group and the control group were selected by convenience: each group included two groups of schools. The schools' Directors authorized the participation in the study.

Instruments

Participants were asked to complete a self-report questionnaire validated for this research, based on questions already used in other studies about behavior towards smoking (Currie, Hurrelmann, Settertobulte, Smith, & Todd, 2004; Currie et al., 2008; Currie et al., 2012; Inchley et al., 2016; Precioso, 2001; Precioso & Samorinha, 2014). The questionnaire consisted of 4 open-ended questions and 19 multiple-choice questions with a total of 76 itens, which assessed the following variables: sociodemographic variables – 7 questions (eg., age, gender, residence, parents' education), smoking behaviors – 9 questions (experimentation, intention to smoke, tobacco use), smoking refusal skills, knowledge and beliefs about smoking – 7 questions. The items which assessed knowledge and beliefs about smoking had a Likert scale of 5 points that ranged from 1 ("Extremely false") to 5 ("Extremely true").

Procedure

This is a quasi-experimental study held in 2014/2015 which included a pre-test and a post-test, as well as an experimental group and a control group. The self-report questionnaire was administered in the pre-test to both groups. The "Smoke-Out I" programme was implemented in the experimental group in the classroom by trained teachers, and included nine sessions: 1) effects of tobacco use on health; 2) effects of tobacco use on appearance; 3) consequences of secondhand smoke exposure; 4) social consequences of tobacco use; 5) calculation of the financial costs of tobacco use; 6) smoking and exercise; 7) communication styles associated with tobacco use; 8) factors associated with tobacco use; 9) "Smoke-Free contract" (participants were asked to sign a smoke-free contract). The same self-report questionnaire was administered in the post-test and at the follow-up (three years after the intervention) to both groups. Authorization from the Ministry of Education and from the parents were obtained to administer the programme and the questionnaire to the students.

This programme was designed to be implemented by teachers in the classroom. Teachers received specific training about the objectives of the programme, its structure, methodology, and materials. The training was accredited by the Conselho Científico Pedagógico de Formação Contínua da Universidade do Minho, through a 25-hour b-learning course, and administered by certified professionals. The accredited training course included initial training on theory and practice about Health Education and about the "Smokeout-I" prevention programme, and it also provided continuous monitoring during the intervention period.

Data analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS), 24.0 version for Windows. For statistical analysis, chi-square tests were performed in order to compare results regarding knowledge and beliefs about the consequences of smoking between pre-test/post-test and post-test/ follow-up. Generalized Estimating Equations (GEE) were also performed to analyse smoking behavior (smoking experimentation, intention to smoke, tobacco use) and smoking refusal skills over time (pre-test/post-test/follow-up).

RESULTS

Regarding smoking behavior (smoking experimentation, intention to smoke, tobacco use) and smoking refusal skills, Figure 1 (see annex) shows that there were no significant differences in the experimental group (boys and girls) between the pre-test and the post-test. However, it was found a decrease in tobacco use, smoking experimentation, and intention to smoke among boys of the experimental group, as well as an increase of smoking refusal skills, which was not found among the control group. These results were similar among girls, except for tobacco use, that increased in the experimental group.

The programme showed long-term effectiveness, as the experimental group showed lower prevalence of smoking experimentation, intention to smoke, and tobacco use than the control group. At the follow-up, male students of the experimental group showed significantly higher smoking refusal skills than the male students of the control group (p = .003).

Table 1 (see annex) shows that the majority of students of both groups (experimental group and control group) are well informed about the negative consequences of smoking on lungs, heart, and health in general. However, there was a significant decrease in the belief about smoking negative consequences on the heart in the control group at the follow-up (p = .026), which was not observed in the experimental group. Thus, there was a long-term protective effect of the programme in the experimental group regarding their knowledge and beliefs about smoking. The experimental group also revealed more knowledge about the harmful consequences of tobacco on the skin and on sexuality at the follow-up (mentioned by more than 85% of the students in the experimental group) than the control group (smoking negative consequences on the skin were mentioned by 75% of boys, and on sexuality were mentioned by 52.3 % of boys and 50% of girls in the control group).

Table 2 (see annex) shows that both groups (experimental group and control group) agreed that tobacco is an addictive substance, that smoking during pregnancy is harmful to the baby, and that smoking increases the probability of having cancer (agreement rate above 75% in the three moments of data collection). On the other hand, the results indicated that there are beliefs about smoking that should be more discussed during the programme, namely that "It is harmful for one's health to stand beside someone who is smoking outdoors" (63.2% of the boys and 70.4% of girls in the experimental group agreed with this statement at the follow-up) and the belief that girls are more sensitive to tobacco smoke (only 25% of boys and 20.8% of girls in the experimental group agreed with this statement at follow-up).

Table 3 (see annex) shows that there was a greater disagreement on the beliefs "Smoking helps to calm down" (p = .003) and "Smoking relieves sadness" (p = 0.049) among girls in the experimental group. Overall, the percentage of students with adequate beliefs was higher in the experimental group than in the control group. The programme has shown long-term effectiveness in maintaining adequate knowledge about the consequences of smoking.

DISCUSSION

The "SmokeOut-I" prevention programme has shown long-term effectiveness in preventing smoking experimentation and in enhancing smoking refusal skills, which are important factors to prevent tobacco use. There was a lower prevalence of tobacco use and intention to smoke in the experimental group than in the control group, although it did not reach statistical significance. It was also found that the "SmokeOut-I" programme revealed long-term effectiveness in maintaining adequate knowledge about smoking among adolescents.

Interventions that aimed to enhance the level of information about the negative consequences of a behavior, usually showed a positive effect on preventing this behavior among adolescents (Kanicka, Poniatowski, Szpak, & Owoc, 2013b; Müller-Riemenschneider et al., 2008; Sá, Rocha, Machado, & Precioso, 2018; Sousa, 2018; Vitória et al., 2011). Nădăşan et al. (2015) and Kanicka et al. (2013a) concluded that promoting students' knowledge about smoking is useful to prevent tobacco use in the future.

The "SmokeOut-I" programme also had a long-term protective effect on tobacco use and on smoking refusal

skills. The programme application at school, including family and community, could also have had long-term positive effects on the exposure to secondhand smoke at home. Thus, this prevention programme is an important tool to approach smoking dependence at schools, which includes different materials adapted to the school curriculum, as well as information and communication technologies (ICT) as facilitator resources (Ferreira & Castiglione, 2018). It is also a multicomponent and multidisciplinary programme that includes school, family, community and society, which showed short and long-term effectiveness in preventing smoking among young people. As smoking among adolescents is a serious problem, schools, primary care physicians, and pediatricians should play an important role on smoking control, due to their contact with families and the community in general. The institutions associated with health and education can also reach a greater number of citizens and thus have a more positive effect on preventing smoking, especially among young people. The success of tobacco prevention and control measures depends mainly on how they are implemented and monitored (Silva, Martins, Faria, & Cotta, 2014).

The "SmokeOut-I" prevention programme was created to understand and identify the risk and protective factors associated with tobacco use, by gender. This programme was adapted to the age range of the students, considered gender differences, and showed long-term effectiveness in preventing smoking experimentation, intention to smoke, and tobacco use, as well as in enhancing smoking refusal skills. However, this study has some limitations that should be acknowledged. The small sample size and the fact that data derives only from one region in Portugal, implies caution regarding data generalizability. A higher sample size would allow other statistical analysis, with a higher statistical power. It would be important to implement this programme in different regions of the country and in schools inserted in different socioeconomic neighbourhoods.

In conclusion, it should be noted that the "SmokeOut-I" programme demonstrated short and long-term effectiveness in preventing smoking behaviors (tobacco use, intention to smoke, and smoking experimentation), in enhancing smoking refusal skills, and in improving knowledge and beliefs associated with smoking. Thus, this intervention underlines the importance of Health Education as a tool to promote health behaviors and to change risk behaviors associated with tobacco use. The results obtained support the programme's application among adolescents attending 6th grade, but its administration at elementary schools would also be useful due to the positive effects on health of a tobacco-free environment on health. The widespread of this programme depends on the commitment of governmental institutions.

Interest conflict

The authors have no conflicts of interest to declare.

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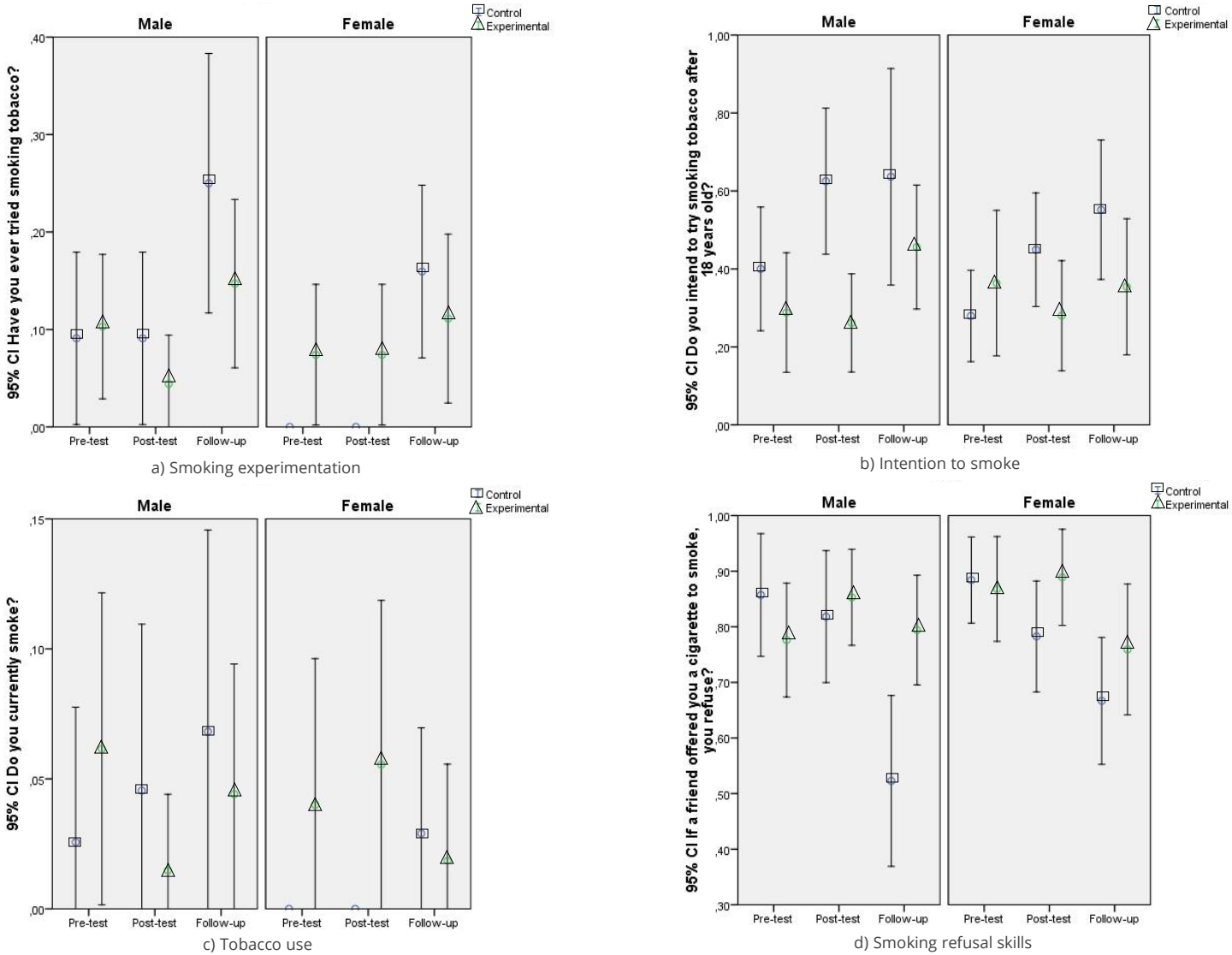
ANNEX



a) Smoking experimentation

b) Intention to smoke

c) Tobacco use

d) Smoking refusal skills

Figure 1 - Effects of the "SmokeOut-I" programme on the adolescents' smoking behavior (smoking experimentation, intention to smoke, tobacco use) and smoking refusal skills over time, by sex

ANNEX

Table 1. Effects of the SmokeOut-I programme on the adolescents' knowledge about the smoking consequences in the human body over time, by sex. (N = 235)

Tobacco use is harmful for the:	Sex	Group	Pre-test	Post-test	Follow-up	Post-test/Follow-up	
			n (%)	n (%)	n (%)	x^2	p
Lungs	Male	Control	43(97.7)	44(100.0)	43(97.7)	1.01*	1.000
		Experimental	66(98.5)	67(100.0)	68(100.0)	- -	- -
	Female	Control	69(100.0)	68(98.6)	68(98.6)	0.00*	1.000
		Experimental	53(100.0)	54(100.0)	54(100.0)	- -	- -
Heart	Male	Control	41(93.2)	44(100.0)	38(86.4)	4.47*	0.026
		Experimental	55(87.3)	67(100.0)	68(100.0)	- -	- -
	Female	Control	64(97.0)	65(94.2)	67(97.1)	0.17	0.681
		Experimental	52(98.1)	54(100.0)	54(100.0)	- -	- -
Skin	Male	Control	34(79.1)	34(77.3)	33(75.0)	0.00	1.000
		Experimental	41(68.3)	65(97.0)	68(100.0)	0.52	0.244
	Female	Control	51(77.3)	59(85.5)	64(94.1)	1.91	0.167
		Experimental	35(66.0)	49(90.7)	54(100.0)	3.36*	0.057
Teeth	Male	Control	37(86.0)	37(84.1)	39(88.6)	0.10	0.756
		Experimental	48(77.4)	66(98.5)	66(97.1)	0.00	1.000
	Female	Control	61(89.7)	59(86.8)	66(95.7)	2.36	0.124
		Experimental	42(80.8)	51(94.4)	52(96.3)	0.00	1.000
Sexuality	Male	Control	26(63.4)	23(56.1)	23(52.3)	0.02	0.892
		Experimental	29(49.2)	61(91.0)	60(88.2)	0.06	0.800
	Female	Control	38(64.4)	31(47.0)	33(50.0)	0.03	0.862
		Experimental	23(48.9)	49(90.7)	49(90.7)	0.00	1.000
Ability to exercise	Male	Control	37(86.0)	34(77.3)	38(86.4)	0.69	0.407
		Experimental	49(81.7)	66(98.5)	68(100.0)	0.00*	0.496
	Female	Control	54(81.8)	56(81.2)	65(95.6)	5.58	0.018
		Experimental	37(72.5)	52(96.3)	54(100.0)	0.51	0.495
Health in general	Male	Control	42(95.5)	44(100.0)	42(95.5)	0.51*	0.494
		Experimental	62(96.9)	66(98.5)	68(100.0)	0.00*	0.496
	Female	Control	67(98.5)	66(97.1)	68(100.0)	0.51*	0.496
		Experimental	49(94.2)	54(100.0)	54(100.0)	- -	- -

Note: %= percentage of participants who agree that tobacco use is "harmful" or "very harmful" for the human body (aggregated categories). The response to one of these categories was considered as adequate knowledge; *Fisher Exact Test.

Table 2. Effects of the SmokeOut-I programme on the adolescents' beliefs about smoking over time, by sex, where positive change corresponds to agreement (N = 235)

Beliefs	Sex	Group	Pre-test	Post-test	Follow-up	Post-test/Follow-up	
			n (%)	n (%)	n (%)	x^2	p
Smokers have a aged skin	Male	Control	22(50.0)	39(88.6)	35(79.5)	0.76	0.382
		Experimental	38(56.7))	61(89.7)	59(86.8)	0.07	0.790
	Female	Control	45(65.2))	46(66.7)	54(78.3)	1.78	0.182
		Experimental	30(55.6)	48(88.9)	49(90.7)	0.00	1.000
Girls are more sensitive to tobacco smoke	Male	Control	11(25.0)	10(23.3)	3(6.8)	3.42	0.064
		Experimental	30(44.1)	33(48.5)	17(25.0)	7.12	0.008
	Female	Control	19(27.9)	23(33.3)	15(21.7)	1.78	0.182
		Experimental	19(35.8)	20(37.0)	11(20.8)	2.70	0.100
Tobacco is a very addictive substance	Male	Control	36(81.8)	37(84.1)	40(90.9)	0.42	0.519
		Experimental	58(85.3)	59(86.8)	53(77.9)	1.26	0.261
	Female	Control	56(81.2)	65(94.2)	67(97.1)	0.17*	0.681
		Experimental	45(83.3)	41(75.9)	47(88.7)	2.17	0.141
It is harmful for one's health to stand beside someone who is smoking outdoors	Male	Control	29(67.4)	29(65.9)	26(59.1)	0.19	0.660
		Experimental	44(64.7)	49(72.1)	43(63.2)	0.84	0.359
	Female	Control	37(53.6)	39(56.5)	49(71.0)	2.54	0.111
		Experimental	26(48.1)	35(66.0)	38(70.4)	0.07	0.784
Smoking during pregnancy harms the baby	Male	Control	35(83.3)	39(88.6)	42(97.7)	1.54*	0.202
		Experimental	61(89.7)	61(89.7)	61(91.0)	0.00	1.000
	Female	Control	59(85.5)	67(97.1)	68(98.6)	0.00*	1.000
		Experimental	46(85.2)	53(98.1)	52(96.3)	0.00*	1.000
Smoking is expensive	Male	Control	34(77.3)	34(77.3)	37(86.0)	0.61	0.436
		Experimental	54(80.6)	60(88.2)	63(92.6)	0.34	0.560
	Female	Control	54(78.3)	57(82.6)	59(85.5)	0.05	0.816
		Experimental	29(54.7)	51(96.2)	50(92.6)	0.16*	0.678
Smoking increases the likelihood of having cancer	Male	Control	37(84.1)	36(81.8)	37(84.1)	0.00	1.000
		Experimental	53(77.9)	64(94.1)	65(95.6)	0.00*	1.000
	Female	Control	57(82.6)	62(89.9)	67(97.1)	1.90*	0.165
		Experimental	42(77.8)	53(98.1)	52(96.3)	0.00*	1.000

Note: % = percentage of students who agree with the belief; positive change corresponds to agreement; *Fisher Exact Test.

Table 3. Effects of the SmokeOut-I programme on the adolescents' beliefs about smoking over time, by sex, where positive change corresponds to agreement (N = 235)

Beliefs	Sex	Group	Pre-test	Post-test	Follow-up	Post-test/Follow-up	
			n (%)	n (%)	n (%)	x^2	p
Smoking helps to lose weight	Male	Control	27(61.4)	25(56.8)	27(61.4)	0.05	0.828
		Experimental	41(60.3)	58(85.3)	58(85.3)	0.00	1.000
	Female	Control	49(71.0)	44(63.8)	45(65.2)	0.00	1.000
		Experimental	33(61.1)	49(90.7)	48(88.9)	0.00	1.000
Smoking helps to calm down	Male	Control	17(38.6)	12(27.3)	8(18.2)	0.58	0.445
		Experimental	38(55.9)	49(72.1)	48(70.6)	0.00	1.000
	Female	Control	31(44.9)	22(32.4)	19(27.9)	0.14	0.709
		Experimental	34(63.0)	42(77.8)	26(48.1)	8.93	0.003
It is not harmful to health to be in the same room with people who are smoking	Male	Control	34(79.1)	32(72.7)	36(81.1)	0.58	0.445
		Experimental	42(63.6)	57(83.8)	53(77.9)	0.43	0.513
	Female	Control	49(72.1)	52(75.4)	53(76.8)	0.00	1.000
		Experimental	34(63.0)	48(90.6)	50(92.6)	0.00*	0.742
The majority of adults are smokers	Male	Control	7(15.9)	11(25.0)	13(29.5)	0.06	0.811
		Experimental	12(17.6)	19(27.9)	20(29.9)	0.00	0.956
	Female	Control	9(13.2)	15(21.7)	21(30.4)	0.94	0.332
		Experimental	5(9.3)	8(14.8)	17(31.5)	3.33	0.068
Smokers have more friends	Male	Control	17(38.6)	21(47.7)	24(54.5)	0.18	0.670
		Experimental	24(35.3)	46(68.7)	37(54.4)	2.32	0.128
	Female	Control	36(52.2)	46(66.7)	52(75.4)	0.88	0.348
		Experimental	32(59.3)	41(75.9)	44(81.5)	0.22	0.638
Doctors exaggerate when they warn about the negative consequences of smoking	Male	Control	32(72.7)	31(70.5)	32(72.7)	0.00	1.000
		Experimental	42(63.6)	48(71.6)	50(74.6)	0.04	0.845
	Female	Control	43(62.3)	52(75.4)	61(88.4)	3.13	0.077
		Experimental	42(77.8)	42(77.8)	44(81.5)	0.06	0.811
The majority of young people are smokers	Male	Control	10(22.7)	7(15.9)	5(11.6)	0.07	0.789
		Experimental	9(13.4)	20(29.4)	17(25.0)	0.15	0.700
	Female	Control	5(7.4)	6(8.7)	8(11.8)	0.10	0.756
		Experimental	6(11.1)	10(18.5)	11(20.4)	0.00	1.000
Smoking is only harmful to health if someone smokes for many years	Male	Control	10(22.7)	15(34.1)	16(37.2)	0.01	0.936
		Experimental	13(19.7)	31(45.6)	29(42.6)	0.03	0.863
	Female	Control	15(22.1)	26(37.7)	37(53.6)	2.92	0.087
		Experimental	17(31.5)	24(44.4)	32(59.3)	1.82	0.178
Smoking is a way for young people to show independence	Male	Control	23(53.5)	23(53.5)	32(72.7)	2.68	0.101
		Experimental	35(51.5)	41(60.3)	43(63.2)	0.03	0.860
	Female	Control	38(55.9)	49(72.1)	53(76.8)	0.20	0.659
		Experimental	29(54.7)	43(79.6)	45(83.3)	0.06	0.804
	Male	Control	10(23.3)	15(34.1)	11(25.0)	0.49	0.483

Smoking relieves sadness	Female	Experimental	38(57.6)	40(59.7)	32(47.1)	1.69	0.194
		Control	33(48.5)	32(47.1)	29(42.0)	0.18	0.674
	Male	Experimental	33(61.1)	38(70.4)	27(50.0)	3.86	0.049
		Control	35(81.4)	40(90.9)	36(81.8)	0.87	0.351
Smoking makes people more beautiful/interesting	Female	Experimental	57(83.8)	62(92.5)	61(89.7)	0.08	0.783
		Control	59(86.8)	63(91.3)	68(98.6)	2.41*	0.115
	Male	Experimental	48(90.6)	53(98.1)	49(90.7)	1.59	0.205
		Control	34(77.3)	33(75.0)	39(88.6)	1.91	0.167
Smoking causes unrelevant diseases	Female	Experimental	53(77.9)	56(82.4)	59(86.8)	0.23	0.635
		Control	58(84.1)	60(87.0)	67(97.1)	3.56	0.059
	Male	Experimental	40(74.1)	47(87.0)	49(90.7)	0.09	0.759

Note: % = percentage of students who disagree with the belief; positive change corresponds to disagreement; *Fisher Exact Test.