

# Smoking prevalence, compliance and attitudes towards smoking bans among School Teachers in Attica, Greece 2014

Stephanie Teloniatis, RN, MPH<sup>1</sup>

Anna Tzortzi, MD, FCCP<sup>1,2</sup>

Athanasia Liozidou, M. Psych.<sup>3,4</sup>

Marina Demi, MPH<sup>1,2</sup>

Vaso Evangelopoulou, MD, PhD<sup>1</sup>

Panagiotis Behrakis, MD, PhD, FCCP<sup>1,2,5</sup>

<sup>1</sup>George D. Behrakis RESEARCH LAB -Hellenic Cancer Society in Athens, Greece

<sup>2</sup>Institute of Public Health -The American College of Greece in Athens, Greece

<sup>3</sup>National School of Public Health in Athens, Greece

<sup>4</sup>Faculty of Human Sciences, Athens Metropolitan College in Athens, Greece

<sup>5</sup>Biomedical Research Foundation of Athens Academy in Athens, Greece

**Key words:**

- Smoking
- Prevalence
- Attitudes
- Teachers
- Smoke-free legislation
- School-based programs

**Correspondence:**

Stephanie Teloniatis, RN, MPH

8 Dorilaiou Street, 11521 Athens, Greece

Tel.: +33 210 647 0056, Fax: +33 210 647 0074

E-mail: steloniatis@researchlab.gr

**SUMMARY**

**BACKGROUND:** Non-compliance with smoking bans in Greece leave children exposed to secondhand smoke. The current study summarized teachers' smoking prevalence, compliance and attitudes towards smoking bans. **METHODS:** A multi-stage sampling design collected data from teachers in Attica, Greece. A secondary source of national data to represent a matching sample of the general population (GP) was used for comparison. Teacher responses were compared by smoking status using logistic regression. To compare teachers and the GP, a binomial proportion test was used and a  $\chi^2$  and Fishers test between modalities, with p set to <0.05 for all results. **RESULTS:** 647 educators and 1,678 respondents for the GP ages 25-67 years old residing in Attica, were included. Smoking prevalence among teachers was 26.4%, which was significantly lower than the GP prevalence at 39.7% ( $p<0.001$ ). Daily smoking prevalence was significantly lower among teachers ( $p<0.001$ ) compared to the GP. 25.8% of teachers reported complete compliance with smoke-free policies at their school. Teachers who smoked were less likely to report recently teaching their class about smoking ( $p=0.006$ ) than nonsmokers. A majority of teachers agreed and would volunteer with educational programs aimed at reducing smoking among their students. **CONCLUSION:** Prevalence of smoking among teachers in Attica was significantly lower than in the general population and their attitudes were proactive towards implementation of smoking bans in public places in Greece. Compliance with the smoking ban on school grounds could be improved by training teachers on the school policy and protocol regarding smoking on school grounds. *Pneumon 2017, 30(4):227-235.*

## INTRODUCTION

Robust scientific evidence supports legislative implementation of smoking bans to improve health outcomes for the population through reduction of second hand smoke (SHS) exposure, namely, the reduction of hospital admissions and mortality from smoking-related diseases<sup>1,2</sup>. In Greece, since ratification of the Framework Convention for Tobacco Control (FCTC) in 2009<sup>3</sup>, smoking prevalence has decreased<sup>4,5</sup>. Despite the majority of the public supporting the indoor smoking bans<sup>5</sup>, there has yet to be a major change in the context of compliance with smoking bans in public places in Greece<sup>6</sup> where 83% of the public are exposed to SHS when frequenting bars and restaurants<sup>7</sup>.

Even more concerning is that smoking bans are poorly enforced in schools, kindergartens, nurseries and playgrounds, leaving 37.2% of students exposed to SHS at school<sup>8</sup>. School-aged children are more often exposed to smoke at school than at home and public places; with teachers and peers smoking on school grounds being significantly associated with their daily exposure<sup>8</sup>. Knowing that teachers are role models to students and that onset of smoking typically begins at adolescence<sup>9</sup>, smoke-free schools play an important role in shaping a smoke-free generation. Properly enforced smoke-free policies in schools have been associated with reduced adolescent smoking uptake<sup>10</sup>, decreased smoking prevalence<sup>11</sup> and increased support for the bans by students<sup>12</sup>.

In Greece, several school-based educational programs carried out by various non-governmental organizations and scientific societies, supervised by the Hellenic Ministries of Health and Education, have been implemented since 2009, with the aim to reduce smoking initiation through focusing on healthy lifestyles free from smoking among school-aged students<sup>13</sup>.

Therefore, the aim of the current study was to summarize teachers' smoking prevalence and compliance as well as attitudes towards tobacco control policies on school premises in 2014; five years after implementation of these educational programs and the smoking ban law. The second aim was to compare their prevalence rates with the general population of Attica in order to further understand the smoking prevalence among teachers.

## METHODS

Smoking prevalence, compliance and attitudes towards smoking bans among teachers in Attica, Greece

were examined using a cross-sectional, descriptive study design. An epidemiological study on tobacco use and attitudes of Greek educators in Attica and Thessaloniki (Teacher Survey) within the frame of the National Strategic Reference Framework (NSRF) project, "I learn the Truth; I say no to cigarettes" in 2014, was used as the primary data source. Prevalence of smoking was summarized by total smokers including daily and occasional smokers. A further sub-analysis of attitudes towards smoking policies was completed by teachers' smoking status. Smoking prevalence of teachers in Attica was also compared to the general population (GP) in Attica using the 2014 Hellenic Statistical Authority (ELSTAT) Health Interview Survey (HIS) data on smoking.

## Teacher Survey

### *Sampling Design*

A stratified geographically clustered sampling design was employed as the methodology for the Teachers' survey. The three levels of stratification were city, regional directorate of secondary education and school. A complete list of all public and private middle or high schools by grade in Attica and Thessaloniki were included, while schools of special education, such as music and vocational schools were excluded. Schools were selected with probability based on their size. A random selection of 852 teachers during the 2014 school year completed the survey.

### *Survey Questionnaire*

The Teacher surveys were collected using an online administered questionnaire covering tobacco use, compliance and attitudes towards smoking bans. Created by the Biomedical Research Foundation Academy of Athens and approved by the Greek Ministry of Education (protocol approval No. 63377/G2/24-04-2014), the questionnaire took no longer than 15 minutes to complete and was collected from May to June 2014. Each respondent used a unique code, randomly distributed to ensure anonymity. Participants were informed of the study aims and anonymity of their participation prior to administration of the survey.

### *Variables*

Socio-demographic information collected included age, gender, smoking status, and teaching grade. Age was grouped into categories 25-34, 35-44, 45-54, and 55-67 years old. Smoking status included never-smokers, ex-smokers, daily smokers and occasional smokers. For

logistic regression analysis and comparison with ELSTAT available data, "never" and "ex-smokers" were grouped into "nonsmokers".

### ELSTAT Survey

The ELSTAT HIS is a nationally representative survey with a multi-stage stratified sampling design conducted every five years in compliance with regulation (EC) No. 1338/2008 of the European Parliament and of the Council<sup>14</sup>. The 2014 survey sampling design used surface area, household, followed by household member over 15 years of age as the sampling units. The questionnaire was administered by in-person interviews in Greek<sup>14,15</sup> and gathered information on demographics, health status, health practices and services<sup>15-17</sup>.

To match the geographical and age categories used in the Teacher survey, only respondents from Attica ages 25-67 years were used from the ELSTAT data. As of 2011 population census data, 3.8 million people resided in Attica, accounting for 35.4% of the Greek population<sup>18</sup>. Sample weighting was applied to the current analysis as provided by ELSTAT to represent the actual population. Variables used included age, gender, and smoking status and created into variables identical to the Teachers Survey for comparability.

### Statistical Analysis

Frequencies and relative frequencies were calculated for all responses. For the Teacher survey, a  $\chi^2$  test was used to assess differences between gender and a Fisher's

exact test for the differences between age groups. Simple logistic regression was used to compare differences between teachers' attitudes by smoking status. Difference in prevalence of smoking between the Teacher Survey and GP was performed using a two-sided binomial proportion test. Analyses were performed with the statistical package STATA 13.1, with a statistically significant threshold of  $p < 0.05$ .

### RESULTS

The current study of teachers included 647 educators with an even distribution of Gymnasium and Lyceum school grades, aged 25-67 years old, residing in Attica, Greece. A final un-weighted sample size of the GP included 1,678 respondents, representing approximately 2,313,149 people living in Attica. There were more female educators (60%) than males (40%), whereas gender in the GP was 52.8% and 47.2%, respectively. In regards to age of teachers, 17.7% were between ages 25-34, 46.3% between ages 35-44, 29.7% between ages 45-54 and 6.4% between 55-67 years of age with distribution of age groups among the GP being 18.1%, 24.2%, 29.0%, respectively.

### Prevalence of Smoking

Prevalence of smoking among teachers was 26.4%, with 15% being daily and 11.4% occasional smokers. Smoking prevalence among the GP was 39.7%. As seen in Table 1, total and daily smoking prevalence of teachers was significantly lower than the GP by gender and

**TABLE 1.** Comparison of smoking prevalence between the general population (GP) and Teachers in Attica by percentage of Total, Daily and Occasional smoking

	Non-smokers		Smokers								
	Total %		Daily %			Occasional %			Total %		
	Teach.	GP	Teach.	GP	P*	Teach.	GP	P*	Teach.	GP	P*
Prevalence	73.6	60.3	15.0	33.4	<b>&lt;0.001</b>	11.4	6.3	<b>&lt;0.001</b>	26.4	39.7	<b>&lt;0.001</b>
Gender											
Male	73.2	55.7	15.1	37.9	<b>&lt;0.001</b>	11.7	6.4	<b>0.001</b>	26.8	44.3	<b>&lt;0.001</b>
Female	73.7	64.3	15.0	29.3	<b>&lt;0.001</b>	11.3	6.3	<b>&lt;0.001</b>	26.3	35.7	<b>&lt;0.001</b>
Age											
25-34	80.5	57.7	7.3	34.4	<b>&lt;0.001</b>	12.2	7.9	0.255	19.5	42.3	<b>0.002</b>
35-44	74.3	53.7	14.1	39.0	<b>&lt;0.001</b>	11.5	7.3	<b>0.035</b>	25.7	46.3	<b>&lt;0.001</b>
45-54	72.1	62.7	17.1	31.8	<b>&lt;0.001</b>	10.7	5.5	<b>&lt;0.001</b>	27.9	37.3	<b>&lt;0.001</b>
55-67	73.7	70.3	13.2	25.9	<b>&lt;0.001</b>	13.2	3.8	<b>&lt;0.001</b>	26.3	29.7	0.474

Note: Teach.- teachers' survey, GP- General Population, \* P-value is a result of a two-sided binomial probability test between GP and Teachers' proportions and significant results are indicated in bold.

age groups ( $p < 0.002$ ) with exception of "total smokers" among ages 55-67 years ( $p = 0.474$ ). Prevalence of smoking among teachers who were occasional smokers was significantly higher than the GP for gender and age with the exception of ages 25-34 ( $p = 0.255$ ).

### Characteristics of smoking among teachers

Almost all teachers who smoked (97.1%) reported primary tobacco use with conventional or rolled cigarettes. Among daily smokers, 8.3% reported having their first cigarette within 5 minutes, 52.1% within the first 6-30 minutes of waking, 16.7% within 31-60 minutes and 22.9% having their first cigarette after an hour of waking. 83.7% of smokers also reported being worried about the health effects of their smoking and 63.5% of smokers believed their smoking has an influence on their students. Characteristics of teachers who smoked are summarized in Table 2.

### Compliance with smoking bans in schools

Complete compliance with smoke-free policies reported by teachers in their schools was 25.8%, with 63.8% having reported people smoke on school grounds and 4.1% that the smoking is permitted anywhere on school premises. A majority (63.7%) of teachers reported less than half their students smoke and 55.9% of them smoke on school grounds. 72.3% of teachers said they would inform their students of the harms of smoking if they were seen smoking; 69.1% said they would reproach them; 53.6% said they would inform the principal; 26.3% would inform their family and 2.8% said they would do nothing. Occasional smokers were significantly less likely than nonsmokers to report reproaching their students for smoking on school grounds ( $p = 0.014$ ).

Of the teachers who smoked, 70% reported smoking inside their home and 32% stated they smoke inside nightclubs, cafes or bars. When asked if they smoked on school grounds, a majority of smokers (69%) stated they did where 10.8% reported being reprimanded by their principal for violating the smoking ban and 6.6% reported their principal did nothing when caught smoking on school grounds (Table 3). From the entire sample of teachers, 56.3% reported having seen other teachers smoking on school grounds; 9.6% inside classrooms, 37.4% in open areas inside, and 9.3% in both inside and outside the school grounds. Of daily teachers who smoked, 34.4% and 27.7% of occasional smokers reported feeling that the behaviors of colleagues had influenced their own.

### Attitudes and Support towards smoke-free schools

More than 95% of teachers were aware that nicotine is addictive and SHS is harmful to health and 86.9% reported they had advised their students within the last 12 months on the benefits of a healthy diet and physical activity. When asked if they had spoken to their students about a life far from addictions and smoking in the past 12 months, 78.7% of teachers reported they had. Logistic regression analysis of smoking status with their responses showed daily ( $p = 0.006$ ) and occasional smokers ( $p < 0.05$ ) were less related to reporting they had spoken to their students about a life far from smoking in the past 12 months as compared to nonsmokers.

The majority of teachers (92.1%) agreed with the enforcement of legislation to protect against passive smoking in indoor public places and 78.7% reported being upset that it is not enforced. Moreover, most teachers (92%) believed that Greece should set the reduction of smoking prevalence as a national goal and almost all (97.9%) of teachers agreed with the systematic enforcement of school-based smoking programs in youth and the health education programs for smoking in schools. Over 75% agreed with their participation in these school-based programs and would volunteer to participate in initiatives aimed at reducing smoking among youth. A simple logistic regression analysis comparing nonsmokers, daily and occasional smokers found that daily and occasional smokers were significantly less related to supporting the ban inside school grounds than nonsmokers ( $p < 0.01$ ) and daily smokers were significantly less related ( $p < 0.001$ ) to support the ban outside on school grounds than nonsmokers.

### DISCUSSION

Teachers in Attica had a lower smoking prevalence than the general population, a generally lower addiction to smoking and high rate of cessation attempts, yet two-thirds were incompliant with smoking bans in schools. They were also highly aware of the risks associated with smoking, supportive of smoking bans and willing to participate in programs aimed at reducing smoking in schools.

Current prevalence of smoking among teachers was in contrast to previous findings of Sichletidis et al in 2006, who found that teachers in Greece had the highest smoking prevalence of 46.4% and lowest cessation attempts at 21.7% as compared to the overall and subpopulations analyzed<sup>19</sup>. Noting that in the current study almost half of

**TABLE 2.** Characteristics and Addiction among School Teachers in Attica, Greece by Total, daily and occasional smoking status

	Daily		Occasional		Total	
	n	%	n	%	n	%
Years being a smoker						
1-5	0	0.0	9	15.3	9	5.9
6-10	7	7.6	7	11.9	14	9.2
11-20	32	34.8	24	40.7	57	37.5
21-30	44	47.8	16	27.1	60	39.5
31-40	9	9.8	3	5.1	12	7.9
Total	92		59		152	
Cigarettes smoked/day						
<10	21	21.6	65	87.8	86	52.8
11-20	55	56.7	3	4.1	58	35.6
21-30	17	17.5	0	0.0	17	10.4
>30	2	2.1	0	0.0	2	1.2
Refused	2	2.1	6	8.1	0	0.0
Total	97		74		163	
Cessation attempts						
Never	34	35.8	23	31.1	57	34.8
1 or more attempts	61	64.2	46	62.2	107	65.2
Total	95		74		164	
Difficult refraining from smoking where prohibited?						
Yes	6	6.3	2	2.7	8	4.8
No	89	93.7	71	97.3	160	95.2
Total	95		73		168	
Smoke when sick in bed?						
Yes	34	35.4	3	4.1	37	21.9
No	62	64.6	70	95.9	132	78.1
Total	96		73		169	
Intention to Quit						
I would like to, but not now	10	10.3	18	24.3	28	16.4
I would like to, but I don't think I can	42	43.3	25	33.8	67	39.2
I do not plan on quitting	42	43.3	7	9.5	49	28.7
Refused	3	3.1	24	32.4	27	15.8
Total	97		74		171	

Note: n- number

smokers among teachers smoked less than 10 cigarettes per day could indicate that tobacco consumption has been declining among teachers in Greece.

Considering that complete smoking bans in public places and smoking prevention programs in schools aiming at students are currently in place in Greece, it is suggested that cumulatively, these two factors could have a possible beneficial effect among teachers.

Meta-analyses on prevention programs in schools have identified they have not had significant effects in reducing smoking initiation among adolescents<sup>20-22</sup>. However, taking into account that the school community includes not only students but also adults (teachers), these studies had not examined the possible effect these programs may have had among adults. Therefore, it is suggested that, although aimed at students, these programs could

**TABLE 3.** Teachers' compliance with smoking bans on school premises by smoking status

	Daily		Occasional		Total	
	n	%	n	%	n	%
Do you smoke...						
Outside, on school grounds?						
Yes	6	6.2	2	2.7	8	5
No	91	93.8	72	97.3	163	95
Total	97		74		171	
Inside the classroom?						
Yes	1	1.0	1	1.4	2	1
No	96	99.0	73	98.6	169	99
Total	97		74		171	
Inside other school premises?						
Yes	72	74.2	46	62.2	118	69
No	25	25.8	28	37.8	53	31
Total	97		74		171	
Do you feel guilty when you smoke in front of students?						
Yes	34	37.0	43	59.7	77	47.0
No	37	40.2	25	34.7	62	37.8
Refused	21	22.8	4	5.6	25	15.2
Total	92		72		164	
Has the principal ever seen you smoking on school grounds?						
I never smoke on school grounds	57	59.4	53	74.6	110	65.9
Yes, and they commented	6	6.3	5	7.0	11	6.6
Yes, and they reprimanded me	13	13.5	5	7.0	18	10.8
Yes, but they didn't say anything to me	10	10.4	1	1.4	11	6.6
I smoke on school grounds but no one has ever seen me	10	10.4	7	9.9	17	10.2
Total	96		71		167	

Note: n-number

have an unexpected positive effect among teachers who were found to have low prevalence of smoking and high cessation attempts in the current study. In addition, the smoking ban law in schools has shown to reduce amount of smoking and prevalence rates among students<sup>11</sup> which could also explain current findings of multiple cessation attempts among teachers and their significantly lower smoking prevalence than the general population. However, evaluative studies of school-based programs are needed to directly measure their effects in the entirety of the Greek school community including in children, parents and teachers.

The current study also identified smoke-free bans on school grounds are not enforced in Attica. Although there was a low prevalence of smoking, a majority of teachers

and students who smoke did not comply with the smoking ban in public spaces. Furthermore, in the current study, teachers who smoked were found to be less related to supporting the bans or teaching their students about a life far from smoking and addictions as compared to non-smoking teachers. Teachers play a key part in curbing smoking among youth as previous studies have shown teachers' smoking is associated with smoking status of students<sup>23,24</sup> as well as a decrease in students' support of smoking bans in schools<sup>12</sup>. With this in mind, it is imperative the smoking ban be enforced in both indoor and on outdoor school grounds to prevent the influence of teachers' smoking habits on their students.

Previous studies have identified that barriers to adoption of smoking bans outdoors include socio-political,

school, individual and smoking ban characteristics<sup>25</sup>. Firstly, if these factors are applied in the current Greek context, a vital consideration should be given to socio-political characteristics of the ban by addressing social norms in order to restore a healthy school environment for the physical health and psychological wellbeing of youth and school staff. Not limited to schools, the regular enforcement of Article 8 of the FCTC is important in reshaping social norms and creating supportive environments in all work and public places and promoting smoking prevention and cessation<sup>26</sup>.

School characteristics include ratification by the director of the school and availability of educational resources. The current study results showed there is inconsistency with enforcement of the ban by principals. In the current study, only half of smokers who were non-compliant reported having been reprimanded for smoking on school grounds. It is important for principals to set the tone for the culture for smoking on school grounds and follow through with proper enforcement and expectations from their staff.

In terms of teachers' individual characteristics as barriers to implementation, the current results showed teachers were very positive toward the smoking bans. Having high awareness of smoking-related harms and most reporting willing to voluntarily work towards a smoke-free environment for their students, highlighted their readiness and willingness to be involved in the process to prevent smoking among youth.

Teachers' responses on how they would address a student or staff smoking on school grounds varied, implying they are not well-informed of their responsibilities regarding the school policy for smoking on school grounds. Furthermore, this implied that there is probably a gap in setting or implementing a common protocol

and training of teachers on how to effectively address non-compliance with the ban with students and colleagues alike. Further research is needed to identify their understanding of smoking ban characteristics including guideline recommendations and outcome expectations in order to address possible issues with communication of implementation goals<sup>25</sup>.

Limitations of the current study include a cross-sectional design to measure prevalence at one point in time. Results represented one urban area of Greece and cannot be inferred to the general population of teachers in Greece. Since results are drawn from a questionnaire, results are subject to recall bias. Lastly, the ELSTAT data on smoking was limited therefore the comparison was also limited to demographic characteristics only where comparison of level of addiction, cessation and attitudes would contribute to further understanding.

## CONCLUSION

Teachers in Attica had lower total and daily smoking prevalence than the general public. Educational programs for prevention of smoking among students may have led to changes in smoking habits and attitudes in teachers, although this remains to be examined. Since teachers are willing to volunteer in programs aimed at reducing youth smoking, effectiveness of the smoking ban on school grounds could be improved by providing teachers with adequate training on the school policy and protocol regarding non-compliance.

## FUNDING

This work was supported by the George D. Behrakis Foundation Boston, MA.

## ΠΕΡΙΛΗΨΗ

### Επιπολασμός του καπνίσματος, συμμόρφωση και στάσεις των εκπαιδευτικών της Αττικής απέναντι στην απαγόρευση του καπνίσματος στους Δημόσιους Χώρους, το 2014

Στεφανία Ε. Τελωνιάτη, RN, MPH<sup>1</sup>, Άννα Τζώρτζη, MD, FCCP<sup>1,2</sup>, Αθανασία Λιοζίδου, M. Psych<sup>3,4</sup>, Μαρίνα Δέμη, MPH<sup>1,2</sup>, Βασω Ευαγγελοπούλου, MD, PhD<sup>1</sup>, Παναγιώτης Κ. Μπεχράκης, MD, PhD, FCCP<sup>1,2,5,6</sup>

<sup>1</sup>"Γεώργιος Δ. Μπεχράκης" Ερευνητικό Εργαστήριο-Ελληνική Αντικαρκινική Εταιρεία, <sup>2</sup>Ινστιτούτο Δημόσιας Υγείας-Αμερικανικό Κολλέγιο Ελλάδος, <sup>3</sup>Εθνική Σχολή Δημόσιας Υγείας, στην Αθήνα, <sup>4</sup>Σχολή Ανθρωπιστικών Επιστημών, Μητροπολιτικό Κολλέγιο, στην Αθήνα, <sup>5</sup>Ίδρυμα Ιατροβιολογικών Ερευνών Ακαδημίας Αθηνών, <sup>6</sup>Ιατρικό Αθηνών

**Εισαγωγή:** Η μη συμμόρφωση με την απαγόρευση του καπνίσματος στους εσωτερικούς Δημόσιους χώρους, έχει σαν αποτέλεσμα την έκθεση των παιδιών σε παθητικό κάπνισμα. Η παρούσα έρευνα επιχειρεί να συνοψίσει τον επιπολασμό του καπνίσματος στους Εκπαιδευτικούς δευτεροβάθμιας εκπαίδευσης της Αττικής, καθώς επίσης να εξετάσει τη συμμόρφωση και τη στάση τους απέναντι στον νόμο για την προστασία από το παθητικό κάπνισμα. **Μεθοδολογία:** Τα δεδομένα για τους εκπαιδευτικούς της Αττικής συλλέχθηκαν από ευρύτερη πολυσταδιακή δειγματοληψία με χρήση quota ως προς τη γεωγραφική κατανομή, ενώ αξεπίπτωση τοπυ καπνίσματος College of Greece, te η σύγκριση έγινε με δευτερογενές, εθνικά αντιπροσωπευτικό, συγκρίσιμο δείγμα γενικού πληθυσμού. Η σύγκριση των απαντήσεων των εκπαιδευτικών με το καπνιστικό τους ιστορικό έγινε με μοντέλλο λογιστικής παλινδρόμησης. Για τη σύγκριση εκπαιδευτικών - γενικού πληθυσμού ως προς τον επιπολασμό του καπνίσματος χρησιμοποιήθηκε binomial proportion test, ενώ η σύγκριση για φύλλο και ηλικιακή κατηγορία έγινε με έλεγχο  $\chi^2$  και Fishers. Η σημαντικότητα ορίστηκε σε  $p < 0.05$  για όλα τα αποτελέσματα. **Αποτελέσματα:** Στην έρευνα συμμετείχαν 647 εκπαιδευτικοί από την Αττική καθώς και 1678 άτομα γενικού πληθυσμού, ηλικίας 25-67 ετών, επίσης κάτοικοι Αττικής. Ο επιπολασμός του καπνίσματος στους εκπαιδευτικούς ήταν 26.4%, σημαντικά χαμηλότερος από το 39.7% του γενικού πληθυσμού ( $p < 0.001$ ). Η συχνότητα του καθημερινού καπνίσματος στους εκπαιδευτικούς ήταν σημαντικά χαμηλότερη ( $p < 0.001$ ) συγκριτικά με τον γενικό πληθυσμό. 25.8% των εκπαιδευτικών ανέφεραν απόλυτη συμμόρφωση με την πολιτική του σχολείου τους ως προς τον έλεγχο του καπνίσματος. Οι καπνιστές εκπαιδευτικοί ήταν λιγότερο πιθανό να αναφέρουν ότι μιλούν για την πρόληψη του καπνίσματος στην τάξη τους ( $p < 0.001$ ), σε σχέση με τους μη καπνιστές. Η πλειοψηφία των καθηγητών συμφωνούσαν και θα προσφερόντουσαν να εργασθούν εθελοντικά σε εκπαιδευτικά προγράμματα που στοχεύουν στη μείωση του καπνίσματος μεταξύ των μαθητών τους. **Συμπέρασμα:** Οι εκπαιδευτικοί της Αττικής εμφάνισαν σημαντικά χαμηλότερο επιπολασμό καπνίσματος σε σχέση με τον γενικό πληθυσμό και επιπλέον είχαν θετική και προληπτική στάση απέναντι στην εφαρμογή του νόμου για την απαγόρευση του καπνίσματος στους κλειστούς δημόσιους χώρους. Η συμμόρφωση με την απαγόρευση του καπνίσματος στους σχολικούς χώρους θα μπορούσε να βελτιωθεί με την εκπαίδευση του διδακτικού δυναμικού στην πολιτική και το πρωτόκολλο που ακολουθεί το σχολείο σε σχέση με το κάπνισμα στους χώρους του.

**Πνεύμων 2017, 30(4):227-235.**

**Λέξεις - Κλειδιά:** Κάπνισμα, Επιπολασμός, Στάσεις, Εκπαιδευτικοί, Νόμος για τον έλεγχο του καπνίσματος, Σχολικά προγράμματα

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