

Smoking in Greece

Where we stand in 2020

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Key words:

- Smoking prevalence
- Greece
- Tobacco control law
- Cessation

Abbreviations:

- CATI: Computer-assisted telephone interviewing
CC: Combustible cigarette
E-cig: Electronic cigarette
E-cigarette: Electronic cigarette
ENDS: Electronic Nicotine Delivery System
ESOMAR: European Society for Opinion and Marketing Research
DK/NA: Do not know/ No answer
GATS: Global Adult Tobacco Survey
HNBT: Heat Not Burn Tobacco
RYO: Roll-your-own
SEDEA: The Market Research and Public Opinion Companies Association

ABSTRACT

BACKGROUND. Since 2008 Greece has the highest smoking prevalence in Europe. With a limited number of outdated publications and a recent enforcement of the tobacco control policy, our study aimed to estimate the smoking prevalence in Greece, describe smokers' characteristics and the stance of the public towards the newly implemented law. **METHODS.** Sample was representative of the adult Greek population according to sex and age based on national census data. Data collection took place on February 2020 using computer assisted telephone interviewing. Differences between groups were assessed with chi-squared tests. Analysis was performed in STATA 13. **RESULTS.** 1976 adults participated in the survey, 48% male and 52% female. Smoking prevalence was 28%. Men presented a slightly higher smoking prevalence (29%) vs women (28%) and a higher ex-smoking prevalence (36% vs 29%), women presented a higher never-smoking prevalence (40% vs 34%), differences highly statistically significant ($p=0.003$). Statistically significant differences ($p<0.001$) were observed between ages, with highest smoking prevalence in 35-44-year-olds (36%) and lowest in 65+ year-olds (15%). History of smoking cessation was higher in men (67%) than women (59%), differences highly statistically significant ($p=0.03$). 32% of smokers reported a decreased use following the tobacco control law enforcement, 4% an increased use while for 64% remained the same. Finally, 85% believed adherence to the law was observed in public places. **CONCLUSIONS.** Smoking prevalence has declined in Greece and an impressive adherence to the tobacco law was observed. Sex and age differences were observed, indicating that tobacco control policies should be tailored to different subgroups' needs.

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INTRODUCTION

Since 2008, according to Eurobarometer, Greece has been placed 1st among the EU countries with the highest smoking prevalence¹⁻⁴, ranging

from 42% in 2008¹ to 37% in 2017².

Nationally representative studies conducted by the Hellenic Statistical Authority in 2009 and 2014, showed that smoking prevalence in Greece, although still high, was however declining in 2014 (37.9% in 2009 vs 32.6% in 2014)⁵.

Limited studies have examined the smoking prevalence as well as smokers' characteristics in Greece; the existing studies⁶⁻¹¹ have several limitations such as small sample sizes, examining certain age or social groups and small geographical areas. Even studies conducted as part of wider European or international surveys, although enrolling larger population samples, were criticized as having low response rates (<50%), many presenting conflicting results compared to those of national, more inclusive surveys⁸.

Furthermore, majority of the aforementioned studies are also considered outdated, not reflecting on the current affairs and the modified tobacco products market; the most recent and inclusive studies available to date, were conducted in 2014 by the Hellenic Statistical Authority⁵ and in 2017 by the Eurobarometer², none of which has examined the use of novel tobacco products including electronic nicotine delivery systems (ENDS).

Additionally, the 2013 Global Adult Tobacco Survey (GATS)¹² showed that, in contrast to the generally observed pattern, smoking prevalence in Greece was associated with higher education, a finding the authors attributed to the lack of anti-smoking campaigns; remarkably though, since 2009, several school-based smoking prevention programs started to be carried out in Greece¹³.

To the authors knowledge there is a lack in recent studies, that are examining smoking prevalence, smokers' characteristics and use of tobacco and novel tobacco products, in a nationally representative population in modern Greece, especially following the tobacco control law implementation¹⁴ enforced in 2019.

Therefore the aim of the current study was to estimate, for the first time, the smoking prevalence in a nationally representative adult population in Greece in 2020, to describe the characteristics of smokers including products used, history and plans for cessation, as well as the stance and beliefs of the public towards the recently enforced tobacco control law. Moreover, the results of the current study are expected to reflect both on the effect of a decade of smoking prevention programs implementation, as well as on the effect of the successful law enforcement.

METHODS

A cross sectional survey based on a nationally representative sample of the adult Greek population was conducted in 2020, following the enforcement of the new tobacco control law.

Sample

Adult Greek residents 18 years old and above at the time of the survey were enrolled. Data collection was performed during the first week of February 2020.

Methodology and data collection

Survey was performed with quota sampling methodology by sex and age, in order to achieve a representative sample of the adult Greek population according to national census data of 2011, published by the Hellenic Statistical Authority¹⁵. Data collection was conducted using computer-assisted telephone interviewing (CATI). Maximum sampling error allowed was 2% at the 95% confidence limit. Data collection was performed by Kapa Research, a Greek survey organization¹⁶, member of The Market Research and Public Opinion Companies Association (SEDEA)¹⁷. Kapa Research conducts surveys according to the European Society for Opinion and Marketing Research (ESOMAR)¹⁸ code for conducting and publishing market research.

Questionnaire and definitions

Participants answered questions on their smoking status, tobacco products used, their willingness and history of cessation attempts, as well as on their stance towards the new tobacco control law enforcement. Based on their smoking behavior and smoking status, participants were classified in four categories: daily smokers (smoking at least one or two cigarettes per day), occasional smokers (smoking less than seven cigarettes per week), ex-smokers (ceased smoking for more than 6 months) and never-smokers (have never smoked)¹⁹.

Statistical analysis

The Chi-square test was used to assess differences between groups. Results are presented as frequencies or percentages. Analysis was performed in Stata 13 (Stata-Corp. 2013. Stata Statistical Software: Release 13. College Station, Texas: StataCorp LP).

RESULTS

Synopsis

A total of 1976 adults participated in the survey, 48% male (n=954) and 52% female (n=1022). Daily smokers were 17% and occasional smokers were 11%, adding up to a smoking prevalence of 28% (Table 1). Ex-smoking prevalence was 33%, never-smoking was 37%, while a 2% refused to answer regarding their smoking status.

With regards to smokers, majority (86%) reported single use of one tobacco product with it mainly being combustible cigarettes (57%), followed by roll-your-own (RYO) (29%), while a small proportion (14%) reported single use of other tobacco products (electronic cigarettes, Heat Not Burn Tobacco (HNBT), cigar, pipe or water-pipe).

Regarding smoking cessation, 63% of smokers reported having attempted cessation at some point, while 37% reported no cessation attempt. Additionally, 52% of smokers reported their willingness to quit in the future, 41% had no intention, while 7% were undecided.

Regarding their view on the tobacco control law implementation, majority (77%) had a positive opinion on the governmental measures for its enforcement, opinion which differentiated depending on the smoking status of the participants ($p<0.001$) (Figure 1).

Additionally, majority (85%) believed that adherence to the law was observed in public places, 13% believed

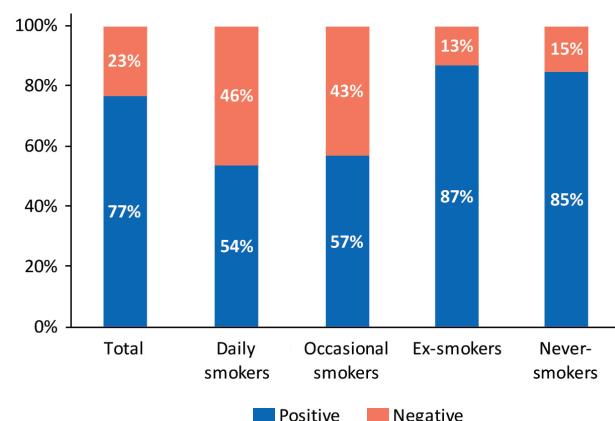


FIGURE 1. Views on measures taken for the tobacco control law enforcement, by smoking status.

that it was not applied, while 2% did not answer. Finally, 32% of smokers reported they have reduced their smoking amount following the law enforcement, 4% reported increased amount, while 64% reported it remained the same.

Analysis by smoking status

Highly statistically significant differences were observed between sexes and smoking status ($p=0.003$), with men presenting a slightly higher smoking prevalence compared to women (29% vs 28%), as well as a higher ex-smoking prevalence (36% vs 29%), while they presented a lower never-smoking prevalence (34% vs 40%) (Table 2).

Additionally, highly statistically significant differences were depicted between age groups ($p<0.001$), with the highest prevalence observed in 35-44-year-olds (36%) and the lowest in 65+ year-olds (15%), while in the rest age groups smoking prevalence was between 27% and 34%.

Regarding smoking cessation, daily smokers reported cessation attempts in a higher frequency compared to occasional smokers; 58% of daily smokers have tried to quit in the past (>6 months ago) vs 38% of occasional smokers, 12% of daily smokers reported a recent cessation attempt (<6 months ago) vs 15% of occasional smokers, while 30% of daily smokers have never tried to quit vs 48% of occasional smokers. These differences were highly statistically significant ($p<0.001$).

Regarding plans on smoking cessation, highly statistically significant differences were observed between daily and occasional smokers ($p=0.006$); 54% of daily smokers reported planning to quit smoking vs 48% of occasional

TABLE 1. Sample characteristics

Variable	N=1976
Sex	
Male	48%
Female	52%
Age	
18-24	7%
25-34	14%
35-44	16%
45-54	19%
55-64	24%
65-74	17%
75+	4%
Smoking status	
Smoker	28%
Non-smoker	70%
DK/NA	2%

Abbreviations: DK/NA: Do not know/No answer

smokers, 37% of daily smokers reported no plan to quit vs 48% of occasional smokers, while 9% of daily and 4% of occasional smokers were indecisive (Table 2).

Analysis by sex

Analysis by sex depicted highly statistically significant differences regarding choice of tobacco products; 55%

TABLE 2. Characteristics by smoking status

Variable	Daily smoker N=338	Occasional smoker N=222	Ex-smoker N=644	Never smoker N=736	DK/NA N=36	p-value
Sex						0.003
Male	173 (18%)	102 (11%)	343 (36%)	323 (34%)	13 (1%)	
Female	165 (16%)	120 (12%)	301 (29%)	413 (40%)	23 (2%)	
Age						<0.001
18-24	22 (16%)	16 (12%)	20 (14%)	76 (55%)	5 (4%)	
25-34	57 (21%)	35 (13%)	50 (19%)	120 (44%)	8 (3%)	
35-44	59 (19%)	54 (17%)	74 (24%)	107 (35%)	15 (5%)	
45-54	80 (22%)	39 (11%)	113 (31%)	129 (35%)	5 (1%)	
55-64	81 (17%)	55 (12%)	167 (35%)	168 (36%)	1 (0.2%)	
65-74	39 (12%)	20 (6%)	162 (48%)	113 (34%)	1 (0.3%)	
75+	0	3 (4%)	58 (68%)	23 (27%)	1 (1%)	
Use						0.267
Single	284 (84%)	199 (90%)				
Double	51 (15%)	22 (10%)				
Triple	2 (1%)	1 (0.4%)				
Multiple	1 (0.3%)	0				
Type of products						<0.001
Single use CC	172 (51%)	102 (46%)				
Single use RYO	82 (24%)	60 (27%)				
Single use HNBT	20 (6%)	14 (6%)				
Single use e-cig	1 (0.3%)	15 (7%)				
Other single use	9 (3%)	8 (4%)				
ENDS + other	39 (12%)	12 (5%)				
Other combinations	15 (4%)	11 (5%)				
Cessation attempt						<0.001
Recent <=6 months	39 (12%)	33 (15%)				
>6 months	197 (58%)	83 (38%)				
Never	102 (30%)	106 (48%)				
Cessation plans						0.006
Yes	182 (54%)	107 (48%)				
No	124 (37%)	106 (48%)				
DK/NA	32 (9%)	9 (4%)				
Post-law smoking amount						0.671
Increased	15 (4%)	7 (3%)				
Decreased	105 (31%)	74 (33%)				
No change	218 (65%)	141 (64%)				

Abbreviations: CC: combustible cigarette, RYO: roll-your own, HNBT: Heat not Burn Tobacco, e-cig: electronic cigarette, ENDS: electronic nicotine delivery system, DK/NA: Do not know/No answer

of females reported single use of combustible cigarettes vs 43% of males, while more males (28%) reported using roll-your own (RYO) vs females (23%). Additionally, more females reported single use of electronic cigarettes (e-cigarettes) than males (4% vs 1% respectively), while more males than females reported use of ENDSs in combination with other products (11% vs 7%). Highly statistically significant differences between sexes were also depicted regarding history of smoking cessation ($p=0.03$), with it being more frequent to men (67%) compared to women (59%). Additionally, regarding plans on smoking cessation, men showed more willingness to quit compared to women (56% vs 48%, $p=0.08$) (Table 3).

Analysis of tobacco products use by age groups

Highly statistically significant differences were observed in use of tobacco products and different age groups ($p<0.001$), with more 35-54-year-olds and 55-74-year-olds reporting single use of combustible cigarettes (56% and

50% respectively) compared to 18-34-year-olds (35%), while more 18-34-year-olds reporting single use of RYO products (46%) compared to the other age groups (Table 4).

DISCUSSION

The present study is the first to be conducted in Greece in the aftermath of the tobacco control law successful enforcement. The study is the first to show smoking prevalence in a nationally representative population in Greece in 2020, also describing the characteristics of smokers, including their smoking status and behavior, tobacco products used, motivation for, and cessation attempts, as well as the attitudes towards the law. In addition to the smoking prevalence, this study also highlights the widespread public trust expressed towards Health authorities and the almost unanimous adherence to the tobacco control law.

Smoking Prevalence

The present study showed smoking prevalence in Greece in 2020 is 28%, placing the country near the European countries average for smoking prevalence (26%)². According to a 2012 nationally representative study²⁰, smoking prevalence in Greece was 37% at the time, thus the country has achieved an impressive 24% decline in smoking prevalence, in the course of the past 8 years.

Age differences

The ever-evolving tobacco market is mainly targeting the youth, however, it is the younger ages that currently depict a lower smoking prevalence in Greece. A previous study²¹ has shown that smoking prevalence among teachers in Attica was significantly lower compared to that of the general public. Interestingly, in Greece, school-based smoking prevention programs are in effect since 2009¹³ which may explain the lower prevalence among adolescents, young adults and teachers as well.

It is suggested that school based programs most likely had a significant contribution in the declining trend of smoking prevalence observed in recent years similarly to the reduction observed in 1978, when the first anti-smoking campaign was adopted in Greece²².

The highest smoking prevalence in our study was observed in the 25-34 and 35-44-year-olds, essential age groups for both the work production force and country demographics. Furthermore, the >65 years old group depicted a lower smoking prevalence and a high ex-smoking

TABLE 3. Cessation characteristics and smoking behavior by sex

Variable	Male	Female	p-value
Type of products			0.001
Single use CC	117 (43%)	157 (55%)	
Single use RYO	77 (28%)	65 (23%)	
Single use HNBT	16 (6%)	18 (6%)	
Single use e-cig	4 (1%)	12 (4%)	
Other single use	14 (5%)	3 (1%)	
ENDS + other	30 (11%)	21 (7%)	
Other combinations	17 (6%)	9 (3%)	
Cessation attempt			0.034
At some point	185 (67%)	167 (59%)	
Never	90 (33%)	118 (41%)	
Cessation plans			0.084
Yes	153 (56%)	136 (48%)	
No	100 (36%)	130 (46%)	
DK/NA	22 (8%)	19 (7%)	
Post-law smoking amount			0.422
Increased	11 (4%)	11 (4%)	
Decreased	95 (35%)	84 (29%)	
No change	169 (61%)	190 (67%)	

Abbreviations: CC: combustible cigarette, RYO: roll-your own, HNBT: Heat Not Burn Tobacco, e-cig: electronic cigarette, ENDS: electronic nicotine delivery system, DK/NA: Do not know/No answer.

TABLE 4. Type of products use by age group

Type of products	18-34	35-54	55-74	75+
Single use CC	45 (35%)	129 (56%)	97 (50%)	3 (100%)
Single use RYO	60 (46%)	57 (25%)	25 (13%)	0
Single use HNBT	7 (5%)	14 (6%)	13 (7%)	0
Single use e-cig	3 (2%)	5 (2%)	8 (4%)	0
Other single use	1 (1%)	2 (1%)	14 (7%)	0
ENDS + other	9 (7%)	22 (10%)	20 (10%)	0
Other combinations	5 (4%)	3 (1%)	18 (9%)	0

Abbreviations: CC: combustible cigarette, RYO: roll-your own, HNBT: Heat Not Burn Tobacco, e-cig: electronic cigarette, ENDS: electronic nicotine delivery system

prevalence, thus indicating their past smoking history. A previous study for the Health Related Quality of Life by smoking status and age, showed significant differences between smokers and never smokers especially for adult current smokers aged >45 years old²³. Prevention policies and interventions should address the specific needs of each age group, aiming to reduce the overall smoking prevalence in order to achieve a healthier population across all age groups; considering that physical health declines with age and risk factors such as smoking accelerate this decline, it is suggested that age specific interventions will ultimately lead to a healthier senior population as well.

Gender differences

Smoking prevalence in Greece is similar among sexes, however, among smokers and in comparison with previous studies⁶, men depict a trend for reduction, while women depict a trend for increase. It is suggested that women in Greece most likely follow the pattern of increasing smoking prevalence associated with the delayed initiation of smoking by women due to socio-economic reasons²⁴.

More women are never smokers in Greece, more than half female smokers reported having tried to quit and yet, less women are ex-smokers compared to men and less women report to having reduced smoking since the smoking ban. Previous studies have shown that women are less likely to successfully complete a cessation attempt and more likely to relapse even after a successful cessation; while the cause for this difference remains yet to be determined, it is suggested that it depends on a complex interplay among geographical, environmental, psycho-social and biological factors²⁴.

The higher use of novel tobacco products depicted

by women in the current study, might indicate their desire to reduce smoking and associated adverse health effects, by choosing what is perceived as an alternative approach; as per previous studies, smokers are using e-cigarettes in order to withdraw from combustible cigarettes or to reduce the amount of smoking in a less stressful and financially more tolerable way as opposed to addressing to cessation clinics²⁵. While men in Greece will benefit from smoking prevention programs, women would rather benefit from programs that augment motivation to quit and provide expert assistance through the cessation attempts. Financially affordable cessation programs with easy access and follow up for all smokers are considered crucial in terms of tobacco control policy.

Tobacco and Novel tobacco Products used

Majority of smokers in Greece use combustible cigarettes and the use of novel products is very low compared to the USA^{26,27} and the UK². In Greece, e-cigarette users are a minority; occasional smokers with a slight female predominance are more likely to use e-cigarettes, as well as those >35 years old, a finding possibly explained by the increased income and smoking prevalence in this age group.

In Greece almost 1/3 of smokers use RYO and the young (18-34 years old) are more likely to report RYO use. Considering Greece has only recently started to emerge out of a decade-long severe financial crisis, the low income could have played a role in the observed RYO use prevalence.

Use of tobacco products may vary by country, mainly due to different tobacco control policies tailored to fit the specific market; however, Young et al showed that RYO cigarettes are more likely to be the choice of male,

low income individuals, younger than the users of combustible cigarette, who additionally are more likely to have a high degree of addiction and unwillingness to quit, while also, they are less likely to consider smoking socially denormalised²⁸.

Smoking status following the tobacco control law enforcement

The current study showed an impressive adherence to the tobacco control legislation, "a first" in Greece, as majority of participants reported adherence to the respective law. The public who expressed their general distrust to the government and health authorities in 2017²⁹, in 2020 totally reversed their stance across all ages, sharing a positive opinion towards the government and health authorities with regards to the smoke free law enforcement and the consequent protection from exposure to passive smoking.

Furthermore, 1/3 of smokers reported having reduced the amount of smoking since the law took effect. The long-requested enforcement of the legislation finally in place, provides therefore a favorable circumstance to enhance, recommend and apply smoking cessation programs. It is likely that the tobacco control law boosts cessation attempts for those who were already considering to quit, similarly to the boosting effect

brought by the plain packaging and other tobacco control measures³⁰.

CONCLUSION

The current study is the first to show smoking prevalence is greatly declining in Greece, approaching the European average and presents the key age and sex differences among smokers, that will aid health care practitioners to achieve better results in smoking prevention and cessation interventions. Furthermore, this study also highlights the widespread public trust expressed towards Health authorities and the almost unanimous adherence to the tobacco control law.

Smoking prevention campaigns coupled with tobacco control policies and the successful implementation of the respective legislation in Greece have been widely accepted and greatly appreciated by the public.

CONFLICT OF INTEREST

None.

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ΠΕΡΙΛΗΨΗ

Κάπνισμα στην Ελλάδα: Πού βρισκόμαστε το 2020

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Εισαγωγή: Από το 2008 η Ελλάδα εμφανίζει τον υψηλότερο επιπολασμό καπνίσματος στην Ευρώπη. Στόχος της παρούσας μελέτης ήταν η εκτίμηση του επιπολασμού του καπνίσματος στη σύγχρονη Ελλάδα, η περιγραφή των χαρακτηριστικών των Ελλήνων καπνιστών καθώς και η άποψη του κοινού αναφορικά με την πρόσφατη εφαρμογή του αντικαπνιστικού νόμου. **Μεθοδολογία:** Δείγμα αντιπροσωπευτικό του ενηλίκου Ελληνικού πληθυσμού ανά φύλο και ηλικία σύμφωνα με εθνικά δεδομένα απογραφής. Η συλλογή των δεδομένων πραγματοποιήθηκε τον Φεβρουάριο 2020 με μεθοδολογία CATI (Computer Assisted Telephone Interviewing), οι διαφορές μεταξύ ομάδων εκτιμήθηκαν με χ^2 , η δε ανάλυση πραγματοποιήθηκε στο STATA

13. Αποτελέσματα: Στη μελέτη συμμετείχαν 1976 ενήλικες, 48% άνδρες και 52% γυναίκες. Ο επιπολασμός του καπνίσματος ήταν 28%, λίγο υψηλότερος στους άντρες (29%) σε σχέση με τις γυναίκες (28%), όπως επίσης και ο επιπολασμός πρώην καπνιστών (36% άνδρες vs 29% γυναίκες). Οι γυναίκες υπερείχαν στον επιπολασμό ουδέποτε καπνιστών (40% vs 34%), διαφορές πολύ στατιστικά σημαντικές ($p=0.003$). Στατιστικά σημαντικές διαφορές ($p<0.001$) παρατηρήθηκαν μεταξύ ηλικιών, με τον υψηλότερο επιπολασμό

καπνίσματος στις ηλικίες 35-44 (36%) και τον χαμηλότερο στις ηλικίες 65+ (15%). Ιστορικό διακοπής του καπνίσματος ήταν συχνότερο στους άντρες συγκριτικά με τις γυναίκες (67% vs 59%, $p=0.03$). 32% των καπνιστών ανέφερε μειωμένη χρήση μετά την επιβολή του αντικαπνιστικού νόμου, 4% αυξημένη χρήση και 64% αμετάβλητη χρήση. Τέλος, 85% ανέφερε ότι ο νόμος εφαρμόζεται στους δημοσίους χώρους. **Συμπεράσματα:** Ο επιπολασμός του καπνίσματος έχει μειωθεί στην Ελλάδα, η δε αναφερόμενη συμμόρφωση με τον νόμο είναι εντυπωσιακή. Οι μεταξύ φύλων και ηλικιών διαφορές υποδεικνύουν την ανάγκη εξατομικεύσης μένων μέτρων για επιτυχή πρόληψη και διακοπή σε κάθε υποομάδα.

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Λέξεις - Κλειδιά: Επιπολασμός καπνίσματος, Ελλάδα, Νόμος κατά του καπνίσματος, Διακοπή καπνίσματος

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