



Characteristics of smoking among young Greek males at the time of their recruitment in the army

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Background: Smoking is one of the biggest health problems worldwide. Several studies that have been recently conducted in Greece demonstrated a high prevalence of smoking among young people. The purpose of the current study is to describe the smoking habit of Greek male young people at the time of their conscription in the army.

Methods: In this study, 1,285 Greek army conscripts that were recruited from September 2013 to November 2014 were included. Their ages ranged from 18 to 28 years. A questionnaire was used for data collection. The questions were based on the Global Tobacco Surveillance System (GTSS).

Results: In total, 50.62% of soldiers (647 persons) answered that they had smoked at least 100 cigarettes in their lives, while 40.08% (589) answered negatively. 45.62% reported that they started smoking at the age of 16–20 years and 20.89% reported starting smoking at the age of 10 to 15. Only 1.82% reported starting smoking before the age of 10 and only 1.36% after the age of 20. Hence, the majority of the soldiers started smoking between 10 and 20 years old.

Conclusions: The prevalence of smoking and secondhand smoking in young Greek males is high. Early guidance should be provided in order to prevent smoking initiation.

Keywords: Males; smoking; army

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Introduction

Smoking is a huge global health problem. Tobacco use constitutes a leading cause of morbidity and mortality. Many adults initiate smoking in childhood or as adolescents. The health consequences later become evident (1). Smoking-related diseases include lung cancer, COPD, cardiovascular

disease, esophageal cancer, cancer of the larynx, pancreas, bladder, kidney, stomach and cervix. Statistics illustrate the scale of the phenomenon very eloquently: Approximately 5 million deaths are caused by smoking each year. Only in 2011, smoking-related deaths were estimated at around 1.2 million in China alone. Overall, deaths from smoking are

estimated to add up to a staggering total of approximately 1 billion over the course of the 20th century (2). Moreover, smoking accounts for at least 39% of all cancer deaths and, more specifically, 87% of lung cancer deaths (3). In Greece, the number of deaths attributed to smoking-related diseases reaches a total of about 19,000. Among these, the majority [15,000] pertains to deaths in men. The fatal smoking-related diseases comprise, in Greece also, malignant tumors, cardiovascular disease and respiratory disease (4). Especially in 2010, 30% of all deaths were related to smoking (5).

The worldwide number of adult smokers nowadays is approximately 800 million (2). In Greece in 2015 according to the World Health Organization (WHO) the smoking prevalence for males ≥ 15 years of age was 52% (6). Every passing day in Greece a great amount of cigarettes is smoked. More than 800 cigarettes are smoked per second. In addition, the 27.7 billion cigarettes smoked by Greeks in 2010 were worth €4.8 billion in tobacco expenditures (4).

This study is an epidemiological study. Its aim was to describe the smoking habits of young Greek males recruited in the Greek army. Notably, military service in Greece is mandatory for all male young people >18 years old. Our study was conducted at the early days of conscription. It is therefore assumed that army conscription had not affected the smoking habits of the conscripts at the time of the survey. As a result, the smoking habits of young males Greek soldiers may indeed reflect the smoking habits of young Greek males in general.

Methods

Material

In our study, 1,285 recruits were included. They were all recruited as soldiers in the Greek army between September 2013 and November 2014. Ethical approval and consent were acquired from the involving institutions, investigational review boards. More specifically, they were recruited in the Special Forces Training Center in Nea Peramos, Attica. The age of the recruits spans from 18 to 28 years old. The 42.18% were 18 years old, 26.23% were aged 19, 22.07% were 20 and 5.97% were 21 years old. The majority (666 persons) lived in urban centers, 382 lived in semi-urban regions and 229 in rural regions. In terms of their educational level, the vast majority were high school graduates (90.68%, 1,159). University or college graduates constituted 1.25% of the examined specimen, technological school graduates 0.7%, secondary school graduates 6.4%

and primary school graduates 0.8%. The vast majority of the recruits were unemployed (95.77%).

Methods

The study data were collected by means of filling out a questionnaire. The questions in the questionnaire that was used were derived from the Tobacco Questions for Survey (TQS) of the WHO. The TQS provides a standard set of questions on tobacco use (7). The completion of the questionnaire took place in the early days of military conscription (1st or 2nd day). For this reason, it is reasonable to assume that military service had not yet affected in any way the smoking habit of these young people at the time. Firstly, the questionnaire was explained and subsequently it was filled out. The questions were relevant to the general characteristics of the recruits (education, age and occupation), smoking habit characteristics (age of smoking initiation, frequency/rate of smoking, time of regular smoking, amount and kind of smoke products used), nicotine dependence (Fagerström test), exposure to secondhand smoking and, lastly, smoking cessation.

Fagerström test

In our study, the Fagerström test was utilized. The test's questions were part of the study's questionnaire. Over the last decade, the importance of nicotine with the difficulty to quit smoking was recognized. Consequently, this led to attempts to measure nicotine dependence and, as a result, the Fagerström Test was established (8,9). This test is widely employed in clinical research as a means of measuring nicotine dependence (8). Thanks to its straightforward answers and rapid results the test is internationally popular. It is widely used in studies that rate cigarette dependence and in smoking cessation therapies and has a high reliability. As indicators of dependence, some of the test's aspects have proved particularly useful (for example: smoking early in the morning and consumption of more than ten cigarettes daily). On the other hand, some doubts have also been raised recently with regards to the accuracy of the Fagerström test (8,9).

Results

Tobacco use

Of a total of 1,278 recruits, 50.62% (647 people) reported

that they had smoked at least 100 cigarettes in their life, whilst 46.08% (589 people) responded negatively. Of these 647 recruits, 47.15% resided in urban areas, 28.87% in a suburban area, while 23.96% in rural areas. The vast majority amongst them was high school graduates (89.87%). The 45.62% reported that they took up smoking at the age of 16 to 20 years and 20.89% at age 10 to 15. Only 1.82% reported starting smoking earlier than the age of 10. The 1.36% began at an age greater than 20 years. The majority of recruits began smoking between the ages of 10 and 20 years (>65%). The limits for the age group categories were set at the ages of 13 and 16, because these are the milestones marking the end of Greek primary education and the end of Greek secondary school and entrance into Greek high school. For the recruits who started smoking at an age of less than 10 years or between 10 to 15 years of age, the percentage did not differ substantially according to the place of residence: urban, suburban and rural areas (1.65%, 2.04% and 2.8%). On the other hand, more were the recruits who started smoking between 16 and 20 years of age and lived in urban areas (62%).

Of the total sample of soldiers, 502 said that they smoke daily (40.6%), 300 not daily, and 359 did not smoke at all. Also, 586 people reported having smoked in the last 30 days (45.85% of the total sample). Also, the vast majority of soldiers smoked manufactured cigarettes or hand-rolled ones (49.11% and 50% respectively). Only 5 soldiers answered that they smoked electronic cigarettes and only 2 smoked pipes. The majority of respondents (23.8%), reported smoking systematically for 1–2 years, 17.1% for 2–3 years and 21.5% approximately for 4–5 years. Forty-five soldiers reported smoking systematically for more than 8 years. The 30.7% smoked 1–9 cigarettes per day, 61% 10–20 cigarettes per day, 6.1% 21–30 and 1.9% >30 cigarettes per day.

Smokers also reported that smoking helps them to relax “always” at a rate of 16.5%, “very often” 14.4%, “often” 31.4%, “rarely” 24.4% and “never” 13%. The 32.7% can cope without cigarettes. Also, for 33% it is rarely unbearable to cope without cigarettes. However, for 5.4% it is always unbearable to stay without cigarettes and for 29% it is usually unbearable. And 16% answered that they smoke in order to be more relaxed, attractive or popular; 19.6% of smokers smoke for this reason very often, 10% often, 13% rarely and 40% never; 12.6% always smoke when people, friends, family members also smoke; 16.4% of smokers always gain confidence from smoking, 6% often, 20.7% frequently, 9.7% rarely and 46.5% never. Approximately

20% of smokers feel uncomfortable without a cigarette in hand; 50% of smokers also are more prone to smoke in certain places or while doing something specific; 30% of smokers smoke because they believe it is fashionable.

Nicotine dependence

In the Fagerström Test 60 recruits were not included, as they did not answer all of the test’s questions. Of the 750 responses that were ultimately evaluated, the test showed that 91.3% of recruits were only a bit addicted to nicotine, 7.6% moderately dependent on nicotine and only 8 recruits were very addicted to nicotine.

Quitting smoking

The 85.5% of recruits (692 persons) had in mind at some time to quit smoking; 30.7% of them were thinking to start smoking cessation efforts next month, whereas 69.3% after at least six months. As far as smoking cessation methods are concerned, 26.7% of smokers had been informed about smoking cessation methods by the media, 22.2% by anti-smoking campaigns and 18.3% by medical professionals; 59% reported that, in recent times, someone advised them to quit smoking; 48.8% of those who answered the question considered it very important that someone had advised them to quit smoking. Also, 483 recruits had made previous attempts to quit smoking; 57.5% of them only tried once, whereas 42.44% attempted twice or more to quit smoking.

The vast majority who tried to quit smoking had made this effort alone without any help (90.9%). Only 8 recruits used a nicotine replacement therapy on their own and only 10 people visited a doctor and received guided smoking cessation treatment and medication. Approximately 50% managed to quit smoking for less than a month, 32.7% for less than a week and 13.3% for less than six months. Only 20 people managed to quit for six months to a year and only six people for more than a year. Their decision to quit smoking was not affected by a doctor or health professional nor by the media.

Secondhand smoke/passive smoking

Of the 1,278 soldiers who took part in the study, 798 reported that a person smoked at home and they were exposed to secondhand smoke (62.4%). The 37.2% were exposed at home on a daily basis, 18.3% weekly, 3.6% once a month, while only 17.13% not at all; 53.7% of the recruits

who were exposed daily to secondhand smoke at home were smokers themselves. As far as secondhand smoking in the workplace is concerned, 95.7% of all soldiers had been exposed to it in a workplace where they were employed. Recruits who were daily exposed to secondhand smoke both at home and in the workplace were themselves daily smokers (50%), non-daily smokers (16.7%) or did not smoke at all (33.1%). Among them, 54.7% lived in urban areas, 27.5% in semi-urban and 17.7% in rural areas.

Discussion

Several studies have been conducted in Greece over the past years in an attempt to elucidate the alarming issue of smoking. For Greeks, this problem has its origins at an early age. The Global Youth Tobacco Survey (GYTS) for Greece, for the academic year 2004–2005, proved that one out of three students had used tobacco products, while 17% of boys were regular smokers (10). Similarly disturbing was the outcome of the European School Survey Project on Alcohol and Other Drugs (ESPAD) study for Greece which came out a little later (in 2007), in the age group close to that (age ≥ 15), which showed that 45% of male students smoked. These rates are approaching the smoking rates of our study. In addition, the HEART-funded Hellas Tobacco Survey, a nationwide household survey conducted in 2010, estimated the prevalence of adult smoking in the general Greek population at 41% (45% among men) (4).

According to the Global Adult Tobacco Survey (GATS) conducted in Greece in 2013, the prevalence of smoking in Greece is 38.2% for the general population and 51.2% for men (11). Respectively, in our study, more than half of the questioned recruits reported having smoked more than 100 cigarettes in their life (50.6%). These results are also consistent with the study by Alexopoulos *et al.* (12). In addition, according to the GAT Survey, smoking frequency is very high (50.7%) at ages 25–44 in the general population (11). The high prevalence of smoking in Greece can be attributed to the fact that smoking is highly tolerated by the Greek population. Greece is one of the leading tobacco producing countries in the European Union with a great part of the population engaged in tobacco cultivation and production (1). On the other hand, and in contrast to our findings, the smoking rates were found to be lower in northern Greek schools in 2012 in a study conducted by Spyrtatos *et al.* concerning ages from 16 to 18 years (24.1% smokers) (13). Besides, in another study in 2009, among young adults aged 18–24 years, smoking

prevalence dropped by 12%. These findings were mostly due to the significant reduction in smoking among males. This development can be attributed to the fact that the tobacco epidemic is now becoming more mature in Greece similarly to that in the developed European countries. Possibly in the future, if a combination of cessation measures and intensified anti-smoking information campaign takes place, an even greater decrease in smoking prevalence could be anticipated (14).

In terms of origin or residence, in our study, soldiers who lived in rural areas were by 67.9% smokers. Instead, Spyrtatos *et al.* reported more frequent cigarette use by residents of urban areas (13). Liozidou *et al.*, despite the fact that 1 in 5 Greek urban adolescents are current smokers, reported that smoking rates among urban adolescents were lower in 2013–2014 (15). However, the area of residence has recently been identified as a non-significant factor despite the fact that earlier reports from Western countries showed that urbanization resulted in an increased smoking prevalence (14).

Former education and employment in our research were not taken into account, because the majority of the adolescents were high school graduates and unemployed. In the GAT Survey, it was shown that smoking rates were high in Greek society at all levels of education. However, they were significantly lower among people with only primary education or less (15.9%) (11). This is in agreement with the smoking prevalence in Greek medical students at the University of Thrace in 2011 (24% of students were smokers) (16–19). On the contrary, Spyrtatos *et al.* reported that technical school students (aged about 16–18) smoked twice more than students with a wider spectrum of education (13) (Tables 1–3).

The proportion of daily smokers in our study (40%), however, differs from other studies. In the GAT Survey, it was 49.7% in men, while Spyrtatos *et al.* reported 84% (11,13). Moreover, in the GAT Survey, the average number of cigarettes smoked per day was close to 20, with 24.8% of the population smoking 25 or more cigarettes per day (11). In our study, soldiers smoked 10 to 20 cigarettes per day (61%) and only 1.9% smoked >30 cigarettes per day. The age that young people initiate daily smoking is regarded to be the age of 18–22 years in Greece (14).

In Greece, the majority of smokers commence smoking at a young age. In our study the majority started smoking between 16 and 20 years. However, 14.8% started smoking before the age of 16. In another study, 58.6% of medical students started smoking at an age of between 16–20 years (16).

Moreover, in the GAT Survey more than half of current active smokers (52.2%) initiated smoking at ages 17–19, followed by 30.3% under the age of 17 (25.5% 15 to 16-year-old and 4.8% less than 15 years old) (11). The high percentage of adolescents who start smoking before the age of 16 confirms that early initiation of smoking is still a serious problem in Greece (1,12). Independent factors of initiating smoking for Greeks have been regarded the male gender, parental smoking, and having pocket-money ≥ 16 Euros (1). Of note, in Greece there is no actual prohibition on selling

Table 1 Fagerström tests questions that were used

A. How soon after waking up do you smoke your first cigarette?
1. After 60 minutes; 2. 31–60 minutes; 3. 6–30 minutes; 4. <5 minutes
B. Is it difficult not to smoke in places, where smoking is prohibited?
1. Yes; 2. No
C. What cigarette of the day is more difficult to deprive yourself?
1. The first of the day; 2. Any other
D. Are you smoking more often in the first hours after awakening compared to the rest of the day?
1. Yes; 2. No
E. Are you smoking even when you are forced to stay in bed because of illness?
1. Yes; 2. No.
F. How many cigarettes a day do you smoke?
1. 10 or less; 2. 11–20; 3. 21–30; 4. 31 or more

All replies received points depending on the answer. A score was calculated for each recruit and every young man was evaluated as very addicted smoker, moderately addicted and lightly addicted.

Table 3 Synopsis of smoking habits of male Greek adolescents in our study

Number of adolescents participating
Smoker's residence
Urban
Suburban
Rural
Age of starting smoking
Before 10 years old
10–15 years old
16–20 years old
After 20 years old
Frequency of smoking
Daily smokers
Smoking products
Standard manufactured cigarettes
Hand rolled cigarettes
Systematic smokers
1–2 years
2–3 years
4–5 years
Nicotine dependence
Only a bit dependent
Quitting smoking
Adolescents who have in mind quitting smoking
Adolescents who tried alone to quit smoking
Passive smoking/second hand smoke
Exposed in passive smoking/second hand smoke

Table 2 The Greek smoking reality

Author	Year	Place	Age	Smoking frequency
GYTS in Greece (1)	2004–2005	Greece	13–15	16.4%
Giannakopoulos <i>et al.</i> (18)	2010	Greece	12–18	~10%
Filippidis (14)	2010	Greece	>18	44.6% among men
GAT Survey (11)	2013	Greece	≥ 15 years old	51.2% of men
Liozidou <i>et al.</i> (15)	2013–2014	Athens and Thessaloniki	12–18	18.2%
Our study	Sep 2013–Nov 2014	Greece	18–28	50.62%

tobacco products to persons less than 18 years, although there are laws and regulations imposing severe restrictions on tobacco advertising, selling tobacco products, warning labels on tobacco packages and bans on smoking in all work areas and in public and private institutions. There are also ministerial instructions on preventing smoking at school. These preventative measures also include proper counseling of the young smokers by teachers, but all these policies have been proven for the most part ineffective (1,12).

In our case, the vast majority of soldiers smoked hand-rolled cigarettes and manufactured cigarettes. Our rates were higher than those in the GATS study [hand-rolled cigarettes (15.7%) versus manufactured cigarettes (27.2%)] and in the study with medical students (hand-rolled cigarettes 43.6% versus manufactured 21.8%) (11,16). The more frequent use of hand-rolled cigarettes is related possibly to their cheaper price (14). The electronic cigarette was not used by young soldiers. This is also confirmed by Filippidis *et al.* where it is reported that Greek people only rarely smoke e-cigarettes, cigars and pipes (14). However, young people that come from an urban environment with college education are more likely to use this electronic device (11). In 2013–2014 in schools in Athens and Thessaloniki (the biggest Greek cities with a population of 3,753,783 and 1,084,001 respectively) the electronic cigarette emerged as the third most likely product of experimentation among school adolescents (15).

Adolescents who have family members that smoke are more likely to become smokers themselves (12,13). Similarly, the social environment, economical status and friends influence the future smoker in initiating smoking (1,13). For example, as it was detected in the GYTS study, the higher educational level of the father can deter a young man from initiating smoking (1). Fashion also seems to lead an adolescent to initiate smoking (12,13). In our study, these factors have influenced the young people's decision to initiating smoking.

High is also the degree of dependency on smoking tobacco detected in Greek adults (11). It is regarded that nowadays the Greek smoking epidemic probably presents a pattern similar to that observed in the United States and Western Europe during the sixties, when more than 40% of adults smoked and smoking rates were almost equal between socioeconomic groups (1). Contrariwise, the rates of nicotine dependence are lower in our study compared to other studies of adult population.

Proper education on smoking cessation appears to be scarce in our case. The majority of soldiers who tried to

stop smoking did so without any help from specialists and eventually failed. Only 134 people were informed by a health professional on ways to stop smoking. This seems to be a common pathway for young people in Greece. On the other hand, older people more often seek help from professionals with regards to smoking cessation (11). It is believed that, despite the recent anti-smoking legislation, the lack of public awareness and the high prevalence of smoking may still be attributed to the inadequacy of anti-smoking and public health activities in Greece. A characteristic example is that the first nationwide anti-smoking campaign was implemented in 1978 (1). In our case, we consider that military service could act as a tool to raise an initial awareness of potential ways to quit smoking though education by specialized nursing and medical staff.

Exposure to secondhand smoke is extremely high in Greece, both at home (89.8%) and in public places (94.1%) (1,2). However, in the GATS study it is described as less (11). It should be taken into account that 21.1% of adolescents had ignorance regarding the harmfulness of passive smoking.

Advantages and disadvantages of the study

Despite the fact that several surveys have been performed over the past decade in Greece, most of them were not nationwide nor representative of the country's adult population. However, two nationwide surveys, 'Hellas Health I' in 2006 and the Eurobarometer survey on tobacco in 2009 showed that smoking prevalence among adults in Greece remains >40% (14). In our study the sample that was studied has the advantage of coming from almost the entire Greek territory. The peculiarities of the Greek land, with its many islands and remote mountainous settlements, can render the collection of data difficult. In addition, 90.48% of our sample was at a crucial age in their lives when young people in Greece finish their school obligations.

A potential disadvantage of our study could be that the soldiers performed self-completion of the questionnaire. Our findings are based only on the questionnaire's answers. For this reason, we cannot be absolutely certain of the accuracy of the answers provided nor of any possible intention of the respondents to deliberately withhold information or mislead the data collectors. The current smoking status was not validated, for example, by biomarkers such as nicotine or cotinine levels. In addition, our study is confined to the recording of smoking habit data at the time of military conscription. The completion

of the questionnaire was performed in the very early days of the conscription. It was thus not possible to observe and evaluate any potential effects of anti-smoking or smoking cessation lectures. Also, it could not be determined how the military service affected the young people's smoking habits. Moreover, the soldiers were all young without serious health problems. It was therefore not possible to assess how health condition affects smoking habit.

Conclusions

Smoking prevalence among young people in Greece is high. Fighting smoking habit in young people is difficult, because smoking is regarded with tolerance by a very large part of Greek society (11). The scarcity of prior education regarding smoking was also noticeable. The well-established harmful effects of smoking were not always known. Appropriate anti-smoking information and measures targeted at preventing the onset of smoking at an early school age should be first line of defense in the battle against smoking. Providing anti-smoking education to young people at school but also later on during their military service could be an alternative way of increasing awareness of the ill effects of tobacco use and deterring potential future smokers.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The study was approved by the involving institutions, investigational review boards.

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