

# Gender and Socio-economic Differences in Daily Smoking and Smoking Cessation Among Adult Residents in a Greek Rural Area

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**Abstract:** Despite the well-known health risks, smoking is still highly prevalent worldwide. Greece has the highest level of adult smoking rate (40%) across the European Union. We investigated gender and socio-economic differences in daily smoking and smoking cessation among Greek adults. We conducted a cross-sectional survey between October and November 2009 in 434 adults residing in a Greek rural area. Data were collected with the use of the World Health Organization Global Adult Tobacco Survey (WHO GATS) Core Questionnaire. Respondents were classified into smokers (if they had smoked at least 100 cigarettes in their lifetime and continued to smoke) or non-smokers. Overall, 58.1% (n=252) were smokers (58.5% male, n=127 and 57.8% female, n=125); 51.2% (n=222) were younger than 18 years-old when they started smoking. Men tended to start smoking at a younger age, to smoke more cigarettes/day and to have smoked a greater average of cigarettes during the last 5 days. Overall, 82.5% of smokers attempted to stop smoking a year prior to the study, with women having a greater difficulty in quitting smoking. The main source of information on smoking was the mass media (73.5%) and books (53.7%), whereas doctors and other health professionals were the least listed source of relative information (27.7 and 8.1%, respectively). Smoking rates among Greek adults were high, but a considerable number of individuals who smoked, wished to quit and had attempted to do so. Smoking cessation clinics are not perceived as a valuable support in quitting effort.

**Keywords:** Adults, gender, rural, smoking, smoking cessation, socio-economic.

## INTRODUCTION

Smoking is a major preventable cause of disease. Despite the well-known risk to health, smoking is still highly prevalent worldwide. Within the European Union (EU) the proportion of daily smokers among the adult population varies greatly from around 18% in Sweden to 42% in Greece, whereas the average for the EU countries was 32% [1]. Since 1995, smoking rates have decreased approximately by 5% across the EU member states, 3 European Free Trade Association countries (Iceland, Norway and Switzerland) and Turkey, especially in men [2]. Striking declines occurred in Turkey (47 to 27%), Luxembourg (33 to 20%), Norway (33 to 21%) and Denmark (36 to 23%) [2].

Although the proportion of European adults who smoke has been in steady decrease for more than 20 years for both genders, research evidence stably places Greece at the top

among the EU member states in tobacco consumption [1-4]. The Greek adult population maintains the highest level of smoking rate (40%) across EU countries, followed by Bulgaria and Ireland, with  $\geq 30\%$  of the adult population smoking daily [2] while smoking prevalence in women is continuing to rise. In Cyprus, the prevalence of tobacco use based on the latest survey available (1 November 2010) shows 38.1% for men and 10.5% for women (23.9% total) [5].

In Greece, there is a slight decrease in tobacco consumption among men but a notable increase among women, which is more evident in stage 3 of the worldwide tobacco epidemic model [6]. Briefly, the 4 stages model of the worldwide tobacco epidemic describes first the rise and decline in smoking prevalence, followed by a similar trend for smoking-related diseases [6, 7].

There are outstanding differences in smoking prevalence between men and women worldwide. In countries like Japan and Pakistan there are 4 times as many men smokers as women, whereas in the United States (US), Europe and Canada there are as many women smokers as men [8,9]. Official data for smoking prevalence in Greece for the years 1999-2001 indicated 46.8% for men and 29% for women

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(World Bank, 1999), whereas the most recent evidence reports 40 and 34% for men and women, respectively [2]. The latter conveys the declining pattern in smoking prevalence in men but not in women. Despite the fact that research findings indicate higher smoking rates in men than in women, smoking prevalence among women is on the increase even among women health professionals [10]. In addition, differences are present between Greek adults in urban and rural areas with higher smoking rates observed in urban areas, especially in women [11].

In order to fight the global tobacco epidemic and safeguard the right of people to the highest standard of health, the World Health Organization (WHO) Framework Convention on Tobacco Control entered into force in February 2005. Since then, it has become one of the most widely embraced treaties in the history of the United Nations with more than 170 countries (Greece ratified the treaty in 2006). It is an evidence-based treaty and WHO's most important tobacco control tool, which provides legal dimensions for international health cooperation and sets high standards for compliance.

The aim of this study was to investigate differences in daily smoking and smoking cessation among adult residents in a rural area in Greece.

## PATIENTS AND METHODS

The survey questions were taken from the Global Adult Tobacco Survey (GATS) questionnaire [12], previously used in other European and global surveys. The GATS Core Questionnaire was constructed by tobacco control and survey design experts to provide a global standard protocol for consistent monitoring of adult tobacco use and has undergone rigorous development and testing. GATS is designed to produce national and sub-national estimates on tobacco use, exposure to second hand smoke, and quit attempts among adults across countries and indirectly measure the impact of tobacco control and prevention initiatives. The survey was conducted between October and November 2009 in a rural area in Northern Greece.

The study protocol was reviewed and approved by the local Ethics Committee.

A total of 434 adults residing in a rural area in Northern Greece were evaluated. Data were collected using a quantitative approach. A cross-sectional survey was conducted in the city of Serres in Northern Greece (part of the Hellenic Network of Health Promotion Hospitals [HHPH]) with about 200,916 residents (2001 census) in 22 boroughs. A self-reported GATS questionnaire was distributed to inhabitants of different age, socioeconomic and employment status living in the broader area of the selected county. The sample comprised of 216 (49.8%) female and 218 (50.2%) male participants. There was a 434 out of 500 (86.8%) response rate to the questionnaires.

Information on demographic, socioeconomic characteristics and smoking behaviour was obtained by self-administered questionnaires. For data analysis purposes responders were classified into 2 groups: a) smokers, and, b) non-smokers. The classification was employed by the WHO guidelines [13]. Participants were classified as smokers if they had smoked at least 100 cigarettes in their lifetime and continued

to smoke. In addition, a second question asked the participants to describe their smoking status by choosing one of the following answers: a) never smoked, b) do not smoke anymore, c) smoke daily, and, d) smoke occasionally. Heavy smokers were defined as those smoking at least 20 cigarettes daily. Ex-smokers were those who had smoked at least 100 cigarettes in their lives but they have not smoked at all over the previous  $\geq 24$  months. Finally, non-smokers were those who had not smoked 100 cigarettes in their lives and they still did not smoke [13]. Never and ex-smokers were also classified as non-smokers.

Three questions assessed readiness to quit smoking; "Do you want to quit smoking now?", "Have you tried to quit using tobacco within the last 12 months?" and "Considering your last attempt to quit smoking, for how long did you not use tobacco?" following the stages of change model [14].

Demographic and socioeconomic characteristics included in this analysis were age groups (15-19, 20-24, 25-44, 45-64 and 65+ years), gender (male, female), ethnic groups, education (elementary school, secondary school, university degree and post graduated studies), marital status (married, living with an intimate partner, living alone, divorced, widowed), annual income and employment status (full time employed, part time employed, unemployed, never employed, retired, agricultural occupation).

The questionnaire consisted of 3 sections with 37 questions in total. The first section included 24 questions about smoking behaviour, the use of nicotine products, such as cigarettes, cigars or nicotine patches in the last 5 days and quitting behaviour. The second section contained 6 scaled questions about participant knowledge of smoking-related diseases and second hand smoking-related diseases, smoking prevention and control legislation, smoking cessation attempts, information received and sources of information on risks in health from nicotine. The third section contained 7 demographic questions (age, gender, ethnicity, marital status, educational level, employment status and annual income). To ensure the quality of data collection, a quality control team examined 10% of the questionnaires.

## STATISTICAL ANALYSES

Statistical analyses were performed using the SPSS version 13.0 software package (SPSS Inc., Chicago, USA). Values were expressed as mean  $\pm$  SD or as percentage. Differences in the independent variables (age, gender, educational level, marital status, ethnic group, annual income and employment status) between groups according to the dependent variables: a) smoking status, and, b) number of cigarettes smoked were analyzed by Student's t test, Chi-square test and one-way ANOVA. Correlations between the parameters were determined by Pearson r or Spearman Rho correlation analyses. All p values were two-tailed with significance defined as  $< 0.05$ .

## RESULTS

### Smoking Behaviour

Among smokers ( $n = 252$ , 58.1%), 47.3 % ( $n = 112$ ) were moderate smokers, usually smoking less than a packet of cigarettes ( $< 20$  cigarettes) per day, 38.3% ( $n = 91$ ) reported

smoking 20 to 40 cigarettes/day and 14.3% (n = 34) smoked more than 40 cigarettes/day.

Cigarettes were the most preferred smoke product and more than 90% (n = 231) of responders smoked them, while the consumption of other tobacco products was marginal; only 3.8% (n = 9) of those interviewed smoked rollup cigarettes and 3.2% (n = 8) smoked cigars.

### ATTITUDES TO SMOKING-RELATED ISSUES

Responders were asked to rate 4 different statements dealing with beliefs about smoking, passive smoking and smoking in public places (Table 1). The majority of participants (n = 384, 88.5%) agreed that passive smoking is damaging to health, although smokers were less likely than non-smokers to support that exposure to passive smoking is detrimental to health. In addition, 99% of all participants (n = 429) strongly agreed that second hand smoking is harmful for children health; 96% of the responders (n = 416) agreed that smoking seriously harms health.

The majority of the participants were in favour of banning smoking in public places. In more detail, almost 90% of the people who had never smoked, as well as 90% of those who had stopped smoking were in favour of such measures compared with 50% of smokers. Current smokers were significantly less likely than non-smokers to believe smoking is harmful to health. A socio-demographic analysis revealed that support for smoking ban in public places is highest among men (73%, n = 158 vs 66%, n = 143 for women), whereas 94% (n = 408) of the participants reported that they have been informed about the smoking health dangers.

The main source of information regarding smoking adverse health effects was mass media (73.5%, n = 319) and books (53.7%, n = 233), whereas medical doctors and other health professionals accounted only for 27.7% (n = 120) and 8.1% (n = 35), respectively. These findings reveal that physicians and other health care professionals are the least listed source of relative information suggesting a broader need for more professional information to tackle smoking. Approximately, 17% of the responders discussed the issue with friends or family members and 3.5% used other sources of information.

### PREVALENCE OF SMOKING AND CHARACTERISTICS OF SMOKERS

More than half of the participants in the survey were current smokers [206 (47.5%) smoked daily, whereas 46

(11%) smoked occasionally]. Approximately, one-fifth of the sample (n = 80, 18%) were former smokers and more than one-fifth (n = 100, 23%) had never smoked. One out of 2 were younger than 18 years old when they started smoking (51.2%), whereas only 0.9% started smoking at an age > 30 years.

### Gender and Age

An equal distribution of smoking prevalence was observed between women (n = 216, 50%) and men. The majority of the participants (n = 229, 53%) were married with children, aged 35-44 years (n = 142, 33%), holding a secondary educational level degree (n = 198, 46%), a full-time job (n = 196, 45%) and an annual income of 10,000-20,000 Euro. The sample was homogenous in terms of ethnicity.

With regards to the number of cigarettes smoked on a daily basis, there were differences in levels of consumption at various ages; 42.5% (n = 108) of responders aged between 20 to 64 years old smoked at least 20 cigarettes/day, whereas younger responders aged between 15-19 and elderly people over 65 years old smoked less than a packet of 20 cigarettes/day (6.4%, n = 15 and 1.1%, n = 5; p ns).

Significant gender differences were found with regard to the age of smoking initiation (mean age = 16.9 ± 3.5 and 18.4 ± 4.9 years for men and women, respectively; p = 0.002), the number of cigarettes smoked/day (22 ± 15 and 16 ± 11 cigarettes/day for men and women, respectively; p = 0.007) and the total number of cigarettes smoked the last 5 days preceding the study (102 ± 80 and 74 ± 56 cigarettes for men and women, respectively; p = 0.009).

### Educational level, Employment Status and Smoking Behaviour

No significant correlations were observed between the level of education, employment status/income and smoking behaviour in the study population.

### Marital Status

There was a significant association between family status and the average number of cigarettes smoked/day, as well as the average number of cigarettes smoked within the last 5 days. Divorced participants (n = 11) had the highest cigarette consumption/day (34 ± 14) followed by married participants (n = 26; 20 ± 18), whereas single (n = 77) and married participants with children (n = 139) smoked fewer cigarettes

**Table 1. Attitudes to Smoking-Related Issues**

	n	Mean	SD
"Do you think that smoking is dangerous for your health?"	434	4.60	0.65
"Do you think that cigarette smoke is harmful for the children?"	434	4.73	0.53
"How dangerous secondhand smoking do you believe is?"	434	4.24	0.71
"Are you in favor of banning smoking in public places (such as in restaurants, in buses, streetcars, and trains, in schools, on playgrounds, in gyms and sports arenas, in discos)?"	434	3.90	1.27

1 = totally disagree, 5 = totally agree.

( $18 \pm 12$  and  $18 \pm 14$  cigarettes for single and married participants with children, respectively;  $p = 0.025$ ).

### SMOKING CESSATION ACTIVITY

A marginally non-significant ( $p = 0.054$ ) relationship was found between gender and the "smoking situation" of the responders. A woman was less likely to start smoking, since nearly 40% of women had never smoked (27.3%) or smoked occasionally (12.5%). On the other hand, women had a greater difficulty in quitting smoking compared with men (33.3 vs 47.6%,  $p < 0.001$ ). Furthermore, women and men find it difficult to quit smoking for different reasons; women were more worried about gaining weight (3 and 10% for men and women, respectively;  $p = 0.022$ ) or living with smokers (12.7 and 23.3% for men and women, respectively;  $p = 0.022$ ), whereas men could not control their desire to smoke (28.9 and 17.1% for men and women, respectively;  $p = 0.022$ ).

Interestingly, when smokers were asked if they wanted to cease smoking 'within the next 6 months', 40.8% stated that they wished to do so and 29.3% attempted to do so within a year prior to the study. Both smokers and ex-smokers identified future health issues as being key reasons for stopping followed by financial reasons (46.7%,  $n = 147$  and 28.6%,  $n = 90$ , respectively). Quitting smoking for family reasons or due to social pressure were the least listed (3.2%,  $n = 10$  and 6.3%,  $n = 20$ , respectively).

Women tended to start smoking at an older age (18.7 and 16.9 years for women and men respectively;  $p = 0.021$ ) and men tended to smoke more cigarettes/day (22.4 and 16.3 cigarettes for men and women, respectively;  $p = 0.001$ ). Men were more likely to use other nicotine products at a significantly higher level than women (0.44 and 0.17 for men and women, respectively;  $p = 0.018$ ).

Finally, men have smoked an average of 105 cigarettes during the last 5 days; 30 more than the average women ( $p = 0.001$ ).

### DISCUSSION

The present study focused on smoking knowledge, attitudes and behaviour of adults in a Greek rural area. Furthermore, we examined how their knowledge and attitudes could affect their smoking behaviour and smoking cessation activity. Despite the fact that smoking rates within Europe follow a pattern of decline, in Greece smoking rates are high. In order to control the globalization of the tobacco epidemic, WHO adopted the Framework Convention on Tobacco Control, a treaty that entered into force on 27 February 2005, establishing international standards for antismoking measures after its ratification [15]. To control tobacco use, WHO recommends 5 policies, namely, smoke-free environments, support programmes for tobacco users who wish to stop, health warnings on tobacco packs, bans on the advertising, promotion and sponsorship of tobacco, and higher taxation of tobacco [16].

Although general smoking bans have proven effective in other European countries, resulting in considerable decreases in smoking rates, it is questionable whether it will have the

same effect in Greece. Unfortunately, the smoking-free legislation imposed on 1 July 2009 in Greece has so far proven ineffective and is often violated, especially with regard to bars/clubs/restaurants. Furthermore, good weather conditions, which allow for outdoor entertainment such as open bars, clubs and restaurants, during long periods of the year, undermine the effectiveness of the ban. The finding that only 6.3% of the study participants would consider to stop smoking due to social pressure is indicative of how much smoking is socially accepted in Greece. To some extent, the fact that Greece is a tobacco producing country may explain why smoking is acceptable in many aspects of social life allowing persistence of this behaviour [17]. Another contributory factor which may explain the results of our study include violation of the law, with absence of enforcement or fines. Thus, Greece continues to have one of the highest per capita consumption rates of tobacco products, mostly packed cigarettes, among EU Member States (40%) [18].

In the present study, smoking prevalence was very high (58.1%) and was equally distributed among men and women (58.5 and 57.8%, respectively). Of note, the National Plan for Smoking in Greece in 2008 reported that 46.8% of men and 29% of women smoke [19]. However, the smoking habits of adults in Northern Greece were reported to be higher than the national average [20].

A representative survey ( $n = 9,030$ ) conducted in Turkey in 2008 revealed substantially lower percentages of smoking prevalence (31.2 in total; 47.9 for men and 15.2% for women) [21]. On average, men consumed more cigarettes/day than women (19 vs 12 cigarettes/day, respectively) [21]. The survey was realised within the context of a project with the WHO and the Centers for Disease Control and Prevention (CDC) in 14 countries, namely Bangladesh, Brazil, China, Egypt, India, Mexico, Philippines, Poland, Russian Federation, Thailand, Turkey, Ukraine, Uruguay and Vietnam.

In our study, women had greater difficulty in quitting, in agreement with previous data. In detail, recent meta-analyses of smoking cessation trials have demonstrated lower abstinence rates for women than men, regardless of whether individuals received group or individual counselling [22], nicotine replacement therapy [22,23], placebo nicotine patch [22], bupropion sustained release or placebo [24,25]. Although there is a debate over whether women quit rates are lower than men in the general population [26] or whether differences are great enough to be clinically significant [27], it is important to identify gender-specific processes underlying tobacco addiction so that interventions can be tailored according to gender.

This study also demonstrated that 94% of the responders were aware of the adverse effects of smoking on health and that 40.8% wished to quit. Despite the fact that 29.3% attempted to quit smoking, their attempts were unsuccessful and only 4% asked for professional help. This is an important finding as there is considerable data that smoking cessation clinics have the highest impact and thus success rates in enabling individuals to quit [28]. It should also be noted that there is no accurate information with regard to

smoking trends, patterns, attitudes and knowledge, thus limiting the possibility of using evidence to justify smoking cessation strategies and interventions. The latter underlines the urgent need for professional help and increased smoking cessation programmes.

Smoking is highly addictive. Smokers who try to give up may suffer from withdrawal symptoms including dizziness, cough, anxiety, restlessness, difficulty in concentrating and depression [29]. The fact that over half of the smokers surveyed in the present study believed that they would be able to quit smoking if they wished to, may be indicative that smokers do not fully acknowledge how highly addictive smoking is; this may lead to unsuccessful quitting attempts or relapses.

Another important finding was that a considerable number of responders were ready to quit 'within the next 6 months' (40.8%) or had attempted to quit smoking in the previous year (29.3%). From public health and health promoting perspective, these findings represent an expressed need that could be useful in the field of planning and implementing research-based and efficacious smoking cessation interventions [30]. These findings also show that there is an intrinsic desire among many smokers to stop smoking but not the supportive social and medical structures to enable them to do so.

Our findings should be taken into consideration for future planning of smoking cessation programmes. Smokers' attitudes and beliefs are paramount in determining likelihood to quit. Educating individuals on the short- and long-term gains of smoking cessation will be beneficial. In this context, several studies have demonstrated an immediate significant reduction in the incidence of heart attacks in countries where smoking bans in public places have been introduced [31]. In general, former smokers are less likely to suffer from cardiovascular disease, lung and upper respiratory tract cancer [32]. Quitting smoking is also associated with improvements in lung function and respiratory symptoms [33], as well as with better outcomes following lung cancer diagnosis (in early stages) [34] or any type of surgery [35].

Interestingly, women tend to have a greater risk for coronary heart disease compared with men, but equal benefit from quitting [36]. The relative benefits of smoking cessation are greater when stopping smoking at younger ages, but smoking cessation is beneficial at all ages [9].

In the present study, the majority of participants agreed that passive smoking is damaging to health, although smokers were less likely than non-smokers to support this statement. In addition, almost all participants strongly agreed that second hand smoking is harmful for children. Indeed, passive smoking is associated with increased morbidity and mortality in both genders and at all ages globally [37]. Therefore, the "democratic" right of non-smokers to survive should be respected by smokers and governments *via* smoke-free legislations [38].

Several other findings have emerged from this study. Of particular interest is the low rating that smokers gave to advice received from doctors. These findings support those outlined by Nagle, *et al.*, [39] who also found a high desire

among nurses to quit smoking, but a lack of confidence in the role doctors could play in smoking cessation. Interestingly, the National Institute for Health and Clinical Excellence (NICE) guidance [40] recommends that all health professionals, including general practitioners, nurses in primary and community care, hospital clinicians, pharmacists and dentists, should advise everyone who smokes to stop and refer them to an intensive support service. In the presence of exceptional circumstances, for people who are not ready to quit, health care providers should advise and encourage them to consider the possibility and to seek help in the future.

This study has several limitations. The small sample size makes it difficult for the findings to be generalised. Future larger studies should be conducted in order to be representative of the total population. Furthermore, this study completely relied on self-report, which is a subjective measurement method to assess smoking status. The presence of objective measurements would have enhanced the validity of these findings. Therefore, results of this study should be interpreted with caution. Finally, cross-sectional surveys, along with all inherent problems of such a study design, provide measurements for the certain period of time and do not provide a cause-effect relationship.

## CONCLUSIONS

Smoking rates among Greek adults were high, but a considerable number of individuals who smoked wished to quit. Furthermore, the majority of the responders (82.5%) had attempted to quit smoking a year prior to the study. However, among heavy smokers the majority was not ready to stop and also did not perceive smoking cessation clinics as a valuable support.

Overall, 58.1% were smokers (58.5% men and 57.8% women). Over half of the responders were younger than 18 years old when they started smoking. Men tended to start smoking at a younger age and to smoke more cigarettes/day than women. Women had a greater difficulty in quitting smoking compared with men. Because women started smoking later than men, this could have affected the exposure time to the harmful effects of smoking. Furthermore, we cannot assess if starting at a later age may influence quit rates.

The main source of information on smoking was the mass media and books, whereas doctors and other health professionals were the least listed source of relative information. There is a need for a greater input from government with close liaison with public health advisors to dedicate greater resources to tackle the high smoking prevalence in Greece. This involves more directed education, genuine enforcement of public smoking bans and enabling easy access to smoking cessation clinics.

## CONFLICT OF INTEREST

This study was conducted independently; no company or institution supported it financially. Some of the authors have given talks, attended conferences and participated in trials and advisory boards sponsored by various pharmaceutical companies. No professional writer was involved in the preparation of this review.

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