Factors Affecting the Decision to Quit Smoking of the Participants of a Hospital-Based Smoking Cessation Program in Greece

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ABSTRACT

Introduction: The purpose of this study was to investigate the factors that affect people who are in the process of quitting smoking.
Methods: A randomly selected sample of 110 participants in a smoking cessation program (SCP) of a hospital in Thessaloniki Greece. Instruments of data collection were: i) the Demographic Data Lifestyle Questionnaire and ii) the Fragerstrom Tolerance Questionnaire. ANOVA tests between the Demographic Data Lifestyle Questionnaire and the Fagerstrom Tolerance Questionnaire relating to the smokers' determination to quit smoking applied.
Results: Work satisfaction was related to whether the participants had difficulty to smoke in places that prohibited smoking and to how many cigarettes they smoked per day. If a non-smoker partner was urging the participant to quit smoking, it affected the hours of the day when the respondents smoked more cigarettes. Pressure from a non-smoking spouse was a deterrent from smoking many cigarettes during morning hours. Those participants who consumed alcohol smoked cigarettes containing higher levels of nicotine.
Conclusion: Smoking cessation is a difficult process which is influenced by many factors such as educational level, work satisfaction and the presence of a partner.

Introduction

During the 20th century, one hundred million people have died because of smoking. Almost 5.4 million people die annually from the "habit" of smoking.[1] It is estimated that in 2030, deaths from smoking will reach 8 million per year, 80% of which will correspond to developing countries. In the 21st century cigarettes will be responsible for the deaths of one billion people.[2] Today, about 215 million Europeans smoke, of which 130 million are men. This number represents 34% of the total population in Western Europe and 47% in Eastern Europe.[3] In terms of percentage of population, Greece has the third highest annual consumption rate of cigarettes worldwide, after Cyprus and Cuba.[4]

Smokers have about 20-25 years less life expectancy.[5] If somebody stops smoking at the age of 50 years old, he increases his life expectancy by approximately 6 years, while stopping at the age of 30 years old increases it by ten years.[6] Smoking is associated with various diseases such as heart and respiratory diseases, stroke and cancer.[7]

Tobacco products have been recognized by W.H.O as addictive, and they are in the same broad category of substances such as cocaine and opioids in the international disease classification system ICD-10.[5] Cigarette smoke has been shown to contain over 4,000 chemicals. The most widely known substance

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in tobacco, nicotine, is considered largely responsible for the addiction of smoking.[8]

Nicotine acts on the brain by stimulating a series of nicotinic receptors. Repeated nicotine intake leads to changes in the sensitivity of those receptors, affecting dopamine secretion. Considering the fact that the secreted dopamine causes feelings of pleasure, it is easily understandable why this process is the cornerstone of dependency.[9]

Quitting smoking causes a series of unpleasant physical symptoms such as chest tightness, heart palpitations, restlessness, and sweating, as well as mental or psychological symptoms such as sadness, anxiety, anger, insomnia, difficulty concentrating, irritability and aggression.[10] These types of problems begin to emerge after the first hours without smoking. Their duration is usually short, 1-3 minutes the first week, and then they weaken steadily. However, those problems may be continuous and very annoying.[11]

There are various studies that describe different smoking cessation programs. Some of them are a pharmacist–led system change intervention program during hospitalization, oral health promotion, i-quit program or cessation advisor programmes with automated text messages sent to the smoker's mobile phone.[12-14] Primary health care settings are very significant for smoking cessation interventions particularly in the National Health System.[14,15]

Furthermore, there are studies concerning which factors influence smoking cessation. Strong associations have been found between age, gender, educational attainment, and smoking habit differences amongst adults who attempted to quit using tobacco.[16] Also, a study from Poland found significant associations between older age, higher educational attainment, or being employed, and quitting.[16]

Smoking cessation in Greece has begun to attract the interest of researchers.[17,18]

Nevertheless, most of the published studies have been carried out in prisons and in a small district region of Northern Greece.[17,18] These reasons stimulated the researchers' interest to investigate the phenomenon further and decided to undertake a research in the area of Thessaloniki which is the second city of Greece, in terms of population and with the greater area of Thessaloniki it reaches approximately 1.800.000 inhabitants. Also, the area classified in eighth highest position in smoking and 9th place for smoking at least once a month in ages between 15-19.[19]

The purpose of this study was to investigate factors that affect smokers who are in the process of quitting smoking to decide to participate in the programme.

Materials and methods

The present study is a descriptive correlational study. The inclusion criteria were: a- being over 18 years old, b- ability to communicate in Greek language, and c- to have an odd number in their registration ticket.

The sampling method used was simple random sampling and the sample consisted of 110 individuals who participated in the smoking cessation program (SCP) in one hospital from Thessaloniki Greece. Potential participants were randomly selected by collecting data from patients who had an odd registration number. One hundred and twenty four questionnaires were collected from a total of 249 individuals who participated in the smoking cessation programme in 2010. However, fourteen questionnaires were excluded from further analysis as they were incompletely answered. Therefore, we proceeded with analysing 110 questionnaires.

Data were collected using a two-part questionnaire. The first part elicited information about the demographic characteristics and lifestyle of the participants, as well as the Fragerstrom Tolerance Questionnaire which reflects the degree of an individuals' dependence on nicotine.[20,21] Fragerstrom Tolerance

Questionnaire was translated and validated earlier to the Greek language and used for many years in the smoking cessation clinic of the hospital in which the research was carried out. The scale consists of eight items. Each item is scored by either a two or three level response with values 0, 1, or 2. Items are summed and the possible scores should range from 0 to 11, where 7 suggest physical dependence on nicotine. The validity and reliability of the scale is supported in previous researchers.[22]

An additional questionnaire with 16 questions based on the bibliography was created by the Smoking Cessation Clinic of the study hospital for eliciting information about how determined and prepared the participants were when they began the smoking cessation process. The questionnaire was pilot-tested before implementation. Also, in this questionnaire each item is scored by either a two or three level response with values 0, 1, or 2. The validity and reliability of this questionnaire was tested in previous pilot study and the results are unpublished.

Ethical approval of the study was granted by the MSc in Primary Care Programme Committee, Medical School University of Thessaly. Permission to conduct the study was received by the hospital's scientific council and by the director of the pulmonary clinic carrying out the smoking cessation programme. All potential participants were informed about the purpose of the study and their right not to participate in the study.

They were asked to complete anonymous questionnaires and those who agreed to participate in the study were asked to sign a written consent form.

Descriptive statistics were used to analyze the demographic characteristics. The researchers investigated whether the respondents' lifestyle features were correlated to the smokers' nicotine dependence and their determination to quit smoking, as outlined by the answers from the Fagerstrom questionnaire.

ANOVA was used to investigate possible correlations between the Demographic Data Lifestyle Questionnaire and the Fagerstrom Questionnaire relating to the smokers' determination to quit smoking. ANOVA statistical test was conducted using Statsoft® Statistica 8. The responses were quantified in each case. The categories raised by the questions about lifestyle were considered as independent variables and all the other categories were considered dependent variables. A p-value<0.05 or less was considered to indicate statistical significance.

Results

The majority of the participants were male (n=65, 59.09%) and were 40-65 years old (n=71, 64.54%). A 41.8% (n=38) of the subjects were Primary School and Junior High School graduates and a 42.9% (n=39) were University and Tertiary Education Institute graduates. The mean age of the sample at the point of starting smoking was 20.81 (0.567) (ranged from 20 - 50). Table 1 presents the participants' demographic characteristics. Regarding the source of information about the smoking cessation programme, for the 47.3% of the participants source of information were friends, for a 34.5% was other and just for the 17.6% source of information was a doctor.

Sixty percent of participants used the Champix® (*varenicline*) method to quit smoking, 10% the Nicorette® nicotine replacement method and 5% the Zyban® (*bupropion*) method. Thirty (33%) participants smoked an average of 35-44 cigarettes per day, prior to their participation in the program.

According to the Fagerstrom questionnaire the vast majority of the participants were addicted to nicotine; 15% of them scored 4-6 points, 80% scored 7-10 points (physical dependence on nicotine), with 35% of those scoring 10 degrees of dependence. Most smokers (n= 82, 74.54%) who participated in this smoking cessation programme smoked

more than 26 cigarettes per day regardless of how satisfied they were with their jobs Furthermore, 65% of them smoked mostly during the morning hours. Half of the respondents (n=55, 50%), who were pressed by their spouses to quit smoking, didn't smoke as often during morning hours.

The level of nicotine in cigarettes smoked by participants who also consume alcohol was higher than those who did not consume alcohol. Cigarettes with nicotine over 1.2 mg were smoked only by participants (8%) who consumed alcohol.

All of the smokers who experienced low stress at work were thinking very often about the benefits of quitting. Among smokers who experienced moderate stress at work 37% were thinking often to quit smoking and 63% were thinking sometimes to quit smoking.

Moreover, out of those smokers who experienced high stress at work 81% were thinking to quit smoking often, 16% sometimes, and 3% never.

Forty percent of the participants felt "guilty" when they smoked in front of family or friends, 50% "never felt guilty", and 10% "sometimes felt guilty". Among non-single smokers (those currently in a relationship), the percentage who felt "guilty" was 46%, as compared to 15% for those who were single.

The percentage of participants that did not care when they smoke in front of relatives and friends is much higher for those without a partner (35%) than in those with a partner (17%). When the spouse was not encouraging the smoker to quit, 41% reported feeling "guilty" and 42% feeling "sometimes guilty".

Most of the participants (67%) according to Fragestrom scale had not physical dependence to nicotine, including smoking a cigarette less than 30 minutes after walking or exercising. Furthermore, 45% of them knew what makes them want to smoke and were willing to avoid those stimuli. Only 12% did not recognize what made them want to smoke. The highest determination to quit smoking appeared among those who had been very satisfied with their jobs.

The ANOVA (Tables 2, 3 and 4) showed that work satisfaction seemed to be related to whether or not smokers had difficulty being in places that prohibited smoking and also to how many cigarettes they smoked per day (P = 0.02, P=0.04 respectively).

Having a partner encouraging the participant to quit smoking affected whether the smoker still smoked even when they were ill (P= 0.043). If a non-smoking partner was encouraging the participant to quit smoking, the respondents were affected in relation to which hours of the day they smoked more cigarettes (P= 0.02). Alcohol consumption was related to nicotine levels in cigarettes (P= 0.042), those participants who consumed alcohol smoked cigarettes with higher nicotine levels. Regarding the total score of the Fagerstrom scale, the fact that many participants had parents who were smokers was found to be related to participants' dependence on nicotine (P= 0.00007).

Discussion

In the present study, the percentage of participants with tertiary education was higher than those who had finished secondary school, primary school, or had no formal education. This is an expected outcome since differences in smoking rate amongst groups of people with different educational level have previously been observed.[23] This difference was observed as early as 1964 and again from 1974 to 1985, where the level of people with higher educational level that stopped smoking was five times greater than those with lower Education.[24] This percentage difference continued to increase during the years that followed.[25,26]

One finding of the research is the education level seems to not be associated with smoking cessation. This is inconsistent with the findings of other studies.[16,27] This difference maybe explained from different research designs and from cultural differences between the two research groups.

Table 1. Demographic characteristics

Variable	N (%)
Gender	
Male	65 (59.10)
Female	45 (40.90)
Age	
30-40	34 (30.92)
41-65	71 (64.54)
>65	5 (4.54)
Educational level	
Primary school	24 (21.83)
Junior high school	14 (12.72)
High School	33 (30.0)
Tertiary Education Institute	20 (18.18)
University	19 (17.27)
Age of starting to smoke	
<20	30 (27.28)
20-40	71(64.54)
41-50	9 (8.18)
Source of information	
Doctor	16 (14.56)
Colleague	8 (7.27)
Commercials	12 (10.90)
Friends	43 (39.09)
Other	31 (28.18)

Table 2. Results of ANOVA between demographic characteristics, working conditions and the Fagerstrom questionnaire (p-values)

The Fagerstrom questionnaire items	Educational level	Job satisfaction	Stress at work	Family status
How soon after you wake up do you smoke your first cigarette?	0.644	0.789	0.201	0.396
Do you find it difficult to refrain from smoking in places where it is forbidden, such as the library, theatre, or doctors' office?	0.755	0.040	0.962	0.707
Which of all the cigarettes you smoke in a day is the most satisfying?	0.880	0.336	0.401	0.410
How many cigarettes a day do you smoke?	0.551	0.020	0.054	0.573
Do you smoke more during the morning than during the rest of the day?	0.657	0.909	0.054	0.420
Do you smoke when you are so ill that you are in bed most of the day?	0.711	0.083	0.476	0.635
The brand you smoke has low, medium, or high nicotine content?	0.585	0.374	0.265	0.914
How often do you inhale the smoke of your cigarette?	0.232	0.740	0.221	0.973
Score	0.184	0.599	0.432	0.723

Table 3. Results of ANOVA related to smokers' determination to quit smoking (p-values)

The Fagerstrom questionnaire Items	My spouse is a smoker	If yes, does he/she wants to quit smoking	If no, does he/she encourage you to quit smoking	Are your parents smokers?
How soon after you wake up do you smoke your first cigarette?	0.531	0.732	0.820	0.431
Do you find it difficult to refrain from smoking in places where it is forbidden, such as the library, theatre, or doctors' office?	0.181	0.183	0.566	0.390
Which of all the cigarettes you smoke in a day is the most satisfying?	0.936	0.057	0.311	0.443
How many cigarettes a day do you smoke?	0.207	0.616	0.080	0.237
Do you smoke more during the morning than during the rest of the day?	0.770	0.958	0.020	0.210
Do you smoke when you are so ill that you are in bed most of the day?	0.293	0.043	0.307	0.435
The brand you smoke has a low, medium, or high nicotine content?	0.084	0.370	0.282	0.144
How often do you inhale the smoke of your cigarette?	0.624	0.070	0.719	0.995
Score	0.954	0.172	0.762	0.00007

Table 4. Results of ANOVA related to smokers' exercising, how long after walking or exercise they lit a cigarette, and alcohol consumption (p-values)

The Fagerstrom questionnaire Items	Exercising	How long after walking or exercise do you lit a cigarette	Alcohol consumption
How soon after you awake do you smoke your first cigarette?	0.971	0.678	0.728
Do you find it difficult to refrain from smoking in places where it is forbidden, such as the library, theatre, or doctors' office?	0.420	1	0.449
Which of all the cigarettes you smoke in a day is the most satisfying?	0.563	0.714	0.805
How many cigarettes a day do you smoke?	0.144	0.396	0.422
Do you smoke more during the morning than during the rest of the day?	0.675	0.566	0.942
Do you smoke when you are so ill that you are in bed most of the day?	0.702	0.866	0.602
The brand you smoke has a low, medium, or high nicotine content?	0.897	1	0.042
How often do you inhale the smoke from your cigarette?	0.376	0.233	0.114
Score	0.458	0.072	0.533

*Significant

Undoubtedly, there is a need for further research.

We found that the overwhelming majority of respondents started smoking after their 17th birthday This is observed in another study which states that the patterns of smoking behaviour are formed usually after 17 years old.[28] Also, there are other factors which affect the smoking habit during school age such as the degree of intelligence (IQ) of the student or how the student wants to pass his free time.[29,30]

Another interesting finding is that when one or both of the parents were smokers then children's dependence on nicotine was greater than when neither parent was a

smoker. This is in accordance with the reports of other researchers who stressed the association between smoking in adolescence with imitative behaviour to model "parents' smoking"[31-38] and with the findings of studies that reported the potential for a child to become a smoker when the mother smokes.[39,40]Although other researchers did not fully explore the nature and the strength of the connection between these two parameters there are some studies that have found that the probability of a child to become a smoker increases when the parents are smokers.[41-44]

It has also been noted that partner's support can help to combat anxiety and stress generated during the effort to quit smoking, and that the partner's opposition to smoking is a factor that acts positively towards quitting.[42]

This study also found an association between alcohol consumption and the use of nicotine. More specifically, the respondents who said they consume alcohol presented a tendency to smoke cigarettes containing higher nicotine levels than those who did not consume alcohol. The way that alcohol and nicotine are connected in alcohol-consuming smokers has not been fully explored, although a possible explanation is suggested by the effect of both substances on cholinergic receptors of nicotine in the brain.[45,46] It is considered that these two substances act in a competitive manner, and its use reduces the pleasant feelings. As a result smokers tend to drink more than non-smokers and those who consume alcohol tend to smoke more than those who do not consume.[47]

Furthermore, we found that the more stress participants' experience, the more they think about quitting. Comparison of these finding with other studies yields conflicting results. Some of them showed that high smoking intensity/prevalence was associated with high job demands or low job controls.[48,49]

Another study found none of these correlations and one of them has shown low job control was related to fewer cigarettes smoked.[50,51] Since these studies have been conducted in different countries, and at different periods of time, it is possible that these conflicting results are due at least in part to cultural or socioeconomic differences. There is a need for further research in order to further clarify this association.

In addition, the finding according to that work satisfaction is related to difficulty being in places that prohibited smoking and the number of cigarettes they smoked per day is an expected outcome because smoking cessation affects quality of life of smokers. Also, it is reported quit smoking is related to decreasing ability to cope with stressors and has negative affect.[52]

The vast majority of participants do not feel guilty to smoke in front of others because they need to smoke and this finding is consistent with the argument of "quit smoking related to decreased ability to cope with stressors and negative affect".[53]

Conclusion

The results of the present study have shown once again that smoking cessation is a difficult experience and it is influenced by many factors such as the level of education, satisfaction from work and existence of a supportive partner.

Furthermore, although the present study cannot draw conclusions which are representative of the entire Greek population, we do believe that our findings may be of interest to health authorities in order to examine future smoking cessations programs.

This study took place in one Greek hospital; therefore the results might not represent the overall population of the country. However, they do provide valuable information and insights into the studied topic and they illustrate the need for further research in this topic.

Acknowledgments

Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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