Original Article

Evaluation of the limited participation by university students in a smoking cessation program*

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Abstract

Objective: To evaluate the limited participation by university students in a smoking cessation program. **Methods:** A cross-sectional, comparative study was conducted at the University of Caxias do Sul, located in Caxias do Sul, Brazil, involving students who enrolled in a smoking cessation program, together with those who did not. **Results:** Of the 108 student who did not enroll in the program, 102 (94.4%) stated that they had no intention to quit smoking (95% confidence interval: 88.29–97.93%). Comparisons between the enrolled and nonenrolled students revealed the following statistical differences: mean age (35 *vs.* 23 years, $p < 0.01$); mean duration of the smoking habit (19.42 *vs.* 7.36 years, $p < 0.01$); considering oneself addicted (100 *vs.* 58.5%, $p = 0.047$); believing oneself able to stop smoking at any time (7.1 *vs.* 22.6%, $p = 0.02$); not knowing why one smokes (37.5 *vs.* 12%, $p = 0.03$); having suffered discrimination (42.9 *vs.* 9.3%, $p < 0.01$). **Conclusion:** Among the university students evaluated, there was a phase, classified as precontemplative or contemplative, during which they were refractory to smoking cessation programs. Although all of the students were aware of the diseases caused by smoking, 41.5% did not consider themselves addicted. The concept of substance dependence does not apply to these students. It would seem more appropriate to define nicotine dependence as resulting from the lifetime consumption of at least 100 cigarettes. These students do not perceive that they are passing through the initial phase of the natural history of tobacco use disorder and do not realize that they are increasing their risk of presenting smoking-related diseases in the future.

Keywords: Smoking; Students; Smoking cessation.

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Submitted: 24/11/05. Accepted, after review: 11/5/06.

Introduction

Since the effects of smoking on health are well known, the University of Caxias do Sul, through the Community Action Pro-Rectory, planned an interdisciplinary study involving the areas of medicine, psychology and physical education for the treatment of university students who smoke. By helping such smokers to quit the habit and giving them the opportunity to practice physical activities on a regular basis, the university would be combating the disease and promoting health.

The main motivation for this effort was that the smoking habit tends to last for various years or even a lifetime, and few people manage to kick the habit prior to the appearance of the clinical manifestations that smoking causes. The majority of smokers start smoking during childhood and adolescence,[1] and the diseases caused by the habit generally appear by the age of forty. In a previous study carried out at the same university,[2] it was reported that 90% of the students who smoke started the habit prior to entering the university and, over the course of their studies, many were not informed about the consequences that smoking had regarding health. The mean age of such students was 21, and they were classified as in the preclinical phase of diseases. It was reported that 17% of the students were smokers: 10% were regular smokers (mean, 20 cigarettes per day); and 7% smoked less than 20 cigarettes per day or were irregular smokers. Considering that there were 33,000 students enrolled in the courses, it was estimated that approximately 5,600 students smoked.

For four months, the smoking cessation program was advertised by radio, television, posters and leaflets. Enrollment sites were created at the university and on the Internet. By the end of the enrollment process, there were 38 volunteers, corresponding to 0.11% of the smoking students, and 14 of those 38 participated in the program. These results were very different from a similar program offered in Germany,[3] in which a group of 1256 adolescent smokers was identified. In that study, 408 (32.3%) of the smokers were monitored, and 188 (46.1%) succeeded in quitting smoking. Various hypotheses have been proposed to explain why, in the present study, the number of students who are apparently uninterested in taking care of their health would be so high. Such students might be refractory to smoking cessation programs, since, in a study carried out by the Centers for Disease Control and Prevention in 1998, 72.9% of a group of students in a similar age bracket had never tried to quit smoking. The confirmation of this hypothesis could be useful in order to better understand the behavior of smokers during the first years of their smoking habit, as well as to help determine strategies for combating the smoking habit during its preclinical phase. Consequently, we found it was necessary to interview the students who enrolled in the program, as well as those who had been informed about the program and decided not to participate in it.

Methods

The study was carried out on the campus of the University of Caxias do Sul.

In order to test the intention of students to continue smoking, a cross-sectional, descriptive study was carried out, with a representative sample of students who smoke and did not participate in the smoking cessation program. Nested within this study, another study was conducted comparing the students who had enrolled in the program to those who did not so that differential factors between such groups could be identified.

Students from the University of Caxias do Sul who were smokers and had heard about the smoking cessation program but had not enrolled in it were interviewed in order to test the smoking phase. The students who participated in the smoking cessation program were classified as the comparison group.

The study subjects who composed the sample of smokers not enrolled in the program were identified at random, by means of stage sampling. Initially, sites where there was a large concentration of students were mapped, as well as the class schedules of the students, so that all the centers of the various courses were included. Later, the dates and the number of interviews needed for the study of each site were determined. In order to guarantee that all students could be included in the study, the interviewers visited the selected sites more than once at different times within a 30-day period. The criterion for subject selection was sequential (study subjects were interviewed until the calculated number of participants was reached). The students who were smokers were identified in four different ways: the subject was seen smoking; other students identified the subject as a smoker; the subject was

seen carrying a pack of cigarettes; the subject was asked whether he/she was a smoker. Five students interviewed all subjects. All of the interviewers were scholarship students and were trained for the application of the questionnaire. They also made sure that the interviews were consistent. Students who had not heard about the smoking cessation program offered by the university were excluded.

The questionnaire included questions regarding the intention to continue smoking and personal characteristics, such as gender and smoking habits, as well as Fagerström test for nicotine dependence. Answer options regarding the reasons to continue smoking were: getting pleasure from smoking; having a sense of well-being while smoking; smoking to alleviate tension, anxiety or depression; smoking to avoid weight gain; not knowing why they keep smoking; and other. Answer options regarding what would cause the subject to quit smoking were: social discrimination; pressure from close friends or family members; a desire to prevent the hazardous effects of smoking on their health; the appearance of the first symptoms of diseases caused by smoking; and economic factors (cost of cigarettes or disease treatment). Subjects were asked nine questions regarding their knowledge of the hazardous effects of smoking on human health, and a score ranging from 0 to 10 was calculated. Such questions had three alternatives as answers: yes, no, and do not know. Subjects were asked whether smoking causes: lung cancer, chronic bronchitis, pulmonary emphysema, myocardial heart infarction, cerebral vascular accident, bladder cancer, vascular diseases, low birth weight and premature aging.

Smokers were considered to be in the precontemplative or contemplative phase when asked "Do you want to continue smoking?" and the answer was anything other than "No, I am trying to quit."The other alternatives were: "Yes, I've never thought about quitting."; "Yes, for a little while longer."; "No, I've been thinking about quitting."; and "I don't know."

Statistical analyses were descriptive, and the alpha error was set at 0.05. The sample size was 108 students, indicating that the precision was near the 9% mean of the population. The 14 subjects who enrolled in the program compared to those who did not had a statistical power of 10%. The comparisons between the two groups were carried out using ANOVA for quantitative variables and Pearson's chi-square or Fisher's exact tests for qualitative variables.

The Ethics in Research Committee of the University of Caxias do Sul approved the study.

The sample comprised 122 students: 14 who enrolled in the smoking cessation program and 108 who did not. Of the 108 students who did not enroll in the program, 102 (94.44%; 95% confidence interval [95% CI]: 88.29%–97.93%) did not intend to quit smoking. Among those same 108 students, the distribution was as follows: 62 (57%) wanted to continue smoking; 40 (37%) were undecided or had thought about quitting; and 6 (5.6%) were trying to quit. The smoking intention, the mean number of cigarettes smoked per day, the Fagerström nicotine dependence levels and the duration of smoking habit presented a pattern of ascending linearity, as shown in Figures 1, 2 and 3.

The characteristics of the 108 students in the study group were as follows: 50 (47.6%) were male; the mean age was 23.04 years (95% CI: 22–24.08), ranging from 17 to 45 years; the mean cigarette consumption was 13.7 cigarettes/day (95% CI: 12.05–15.35); the mean age at initiation of the smoking habit was 15.6 years (95% CI: 15.2–16); and the mean duration of the smoking habit was 7.36 years (95% CI: 6.29–8.4), ranging from less than 1 year to 30 years. The mean score of the

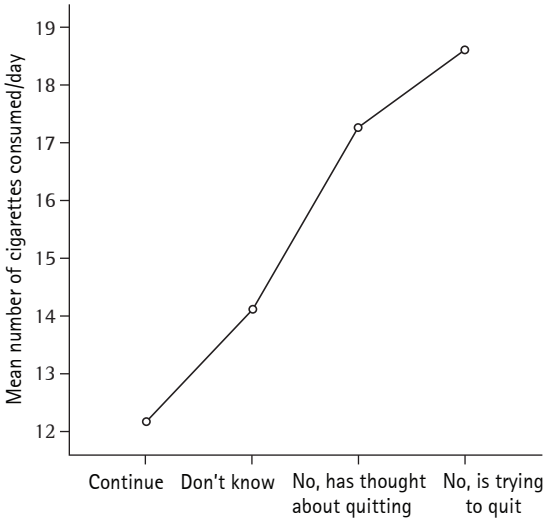

Figure 1 - Means of daily cigarette consumption and intention to quit smoking among the 108 students who did not enroll in the smoking cessation program at the University of Caxias do Sul.

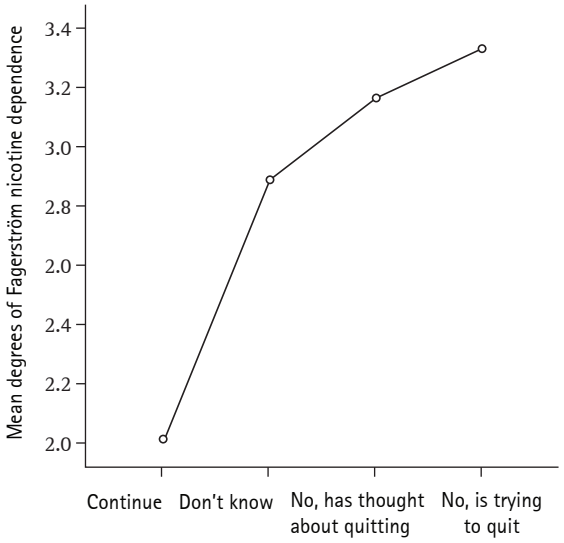

Figure 2 - Means of Fagerström nicotine dependence degrees and intention to quit smoking among the 108 students who did not enroll in the smoking cessation program at the University of Caxias do Sul.

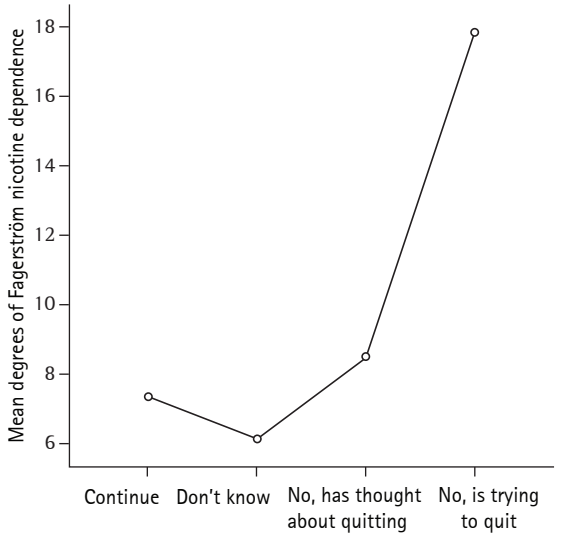

Figure 3 - Means of duration of smoking habit in years and intention to quit smoking of the 108 students who did not enroll in the smoking cessation program at the University of Caxias do Sul.

test regarding knowledge of the health hazards of smoking was 7.98 (95% CI: 7.63–8.33), ranging from 2.2 to 10. The level of nicotine dependence, as measured using the Fagerström test, was 2.38 (95% CI: 1.96–2.8). In this group, 74 subjects (58.5%) considered themselves addicted, 24 (22.6%) believed themselves able to could quit smoking at any time, 42 (39.6%) failed to quit smoking, 40 (37.7%) did not know how to answer (37.7%), and 71 (65.7%) had tried to quit smoking at some time. The subjects gave the following reasons for not quitting smoking: getting pleasure from smoking, 63 subjects (58.3%); having a feeling of well-being while smoking, 25 (23.1%); smoking to relieve stress, 64 (59.3%); fear of gaining weight, 6 (5.6%); wanting to continue smoking without knowing why, 13 (12%). The potential reasons for quitting smoking stated by the subjects were as follows: social discrimination, 10 subjects (9.3%); pressure from close friends or family members, 29 (26.9%); a desire to prevent the hazardous effects of smoking on health, 84 (79.6%); the appearance of the first symptoms of diseases caused by smoking, 35 (32.4%); and economic factors, 21 (19.4%).

The characteristics of the 14 participants enrolled in the smoking cessation program were as follows: 8 were male (57.1%); the mean age was 35 years (95% CI: 28.91–41.09), ranging from 22 to 55 years; the mean cigarette consumption was 21.14 cigarettes/day (95% CI: 17.36–24.92); the mean age at initiation of the smoking habit was 15.57 years (95% CI: 14.31–16.83); and the mean duration of the smoking habit was 19.42 years (95% CI: 12.75-26.09), ranging from 4 to 40 years. The mean result of the test regarding the hazardous effects of smoking on health was 8.11 (95% CI: 7.38-8.84), ranging from 5.6 to 10. The level of nicotine dependence, as measured using the Fagerström test, was 4.07 (95% CI: 2.87–5.27). All of the subjects in this group considered themselves addicted. Only 1 subject (7.1%) felt able to quit smoking at any time, 11 (78.6%) believed they would not be able to quit smoking, and 2 (14.3%) did not know how to answer. Of the 14 subjects, 9 (64.3%) had already tried to quit smoking some time. Stated reasons for not quitting smoking were as follows: getting pleasure from smoking, 6 subjects (42.9%); having a feeling of well-being while smoking, 3 (21.4%); smoking to relieve stress, 9 (64.3%); fear of gaining weight, 2 (14.3%); and wanting to continue smoking without knowing why, 5 (37.5%). Stated reasons for quitting smoking were: 6 subjects, discrimination (42.9%); 4, intimate people or family pressure (28.6%); 13, prevention of hazardous effects of smoking on health (92.9%); 3,

appearance of first symptoms of diseases caused by smoking (21.4%); and 3, economic factors (21.4%).

The comparisons between the enrolled and nonenrolled student groups showed statistical differences in terms of mean age (35 *vs.* 23 years, $p < 0.01$) and mean duration of the smoking habit in years (19.42 *vs.* 7.36, $p < 0.01$). Considering oneself addicted (100% *vs.* 58.5%, $p = 0.047$), believing oneself able to stop smoking at any time (7.1% *vs.* 22.6%, $p = 0.02$), not knowing why they smoked (37.5% *vs.* 12.00%, $p = 0.03$), and having suffered discriminations (42.9% *vs.* 9.3%, $p < 0.01$), respectively (Table 1).

Discussion

Of the students who had not enrolled in the smoking cessation program, 94.4% had no intention to quit smoking. Therefore, they are considered to be in the precontemplative or contemplative phases of smoking, according to the classification by Prochaska et al.[4] The offer of treatment for nicotine dependence was relevant for only 5.6% of such students. Smoking cessation programs are only effective when smokers are willing to quit smoking; if they are not, in accordance with the recommendations by the American College of Chest Physicians,[5] the strategy should be another one, with brief recommendations aiming at motivation. It is important to know the reasons why smokers feel in balance with their addiction for their treatment during this smoking phase. The comparison using those who had enrolled in the program was carried out in order to guide the design of future studies regarding the same topic, since the statistical power of the present study was not high enough for the determination of conclusions regarding the associations between some of the variables. This was due to the low number of participants in the smoking cessation program (14 participants). However, the description of the behavior of these groups of students, most of them young, could contribute to expanding the knowledge on the precontemplative and contemplative phases in university students who smoke and to identifying the factors that motivate them to quit smoking.

The differences between the two groups were as follows: mean age and mean duration of smoking

Table 1 - Comparison of variables between control and study groups (enrolled and nonenrolled students in the smoking cessation program at the University of Caxias do Sul).

Variables	Enrolled	Nonenrolled	p
Males	8 (57.1%)	50 (47.6%)	0.57
Mean age	35.00	23.04	< 0.01*
Mean number of cigarettes/day	21.14	13.7	0.11
Age at initiation of smoking habit	15.57	15.60	0.63
Duration of smoking habit in years	19.42	7.36	< 0.01*
Awareness test (mean)	8.11	7.98	0.82
Fagerström test	4.07	2.38	0.39
Considering oneself addicted	14 (100%)	74 (58.5%)	0.047*
Feeling able to quit at any time	1 (7.1%)	24 (22.6%)	0.02*
Previous smoking cessation attempts	9 (64.3%)	71 (65.7%)	1.0
Pleasure from smoking	6 (42.9%)	63 (58.3%)	0.39
Feeling of well-being when smoking	3 (21.4%)	25 (23.1%)	1.0
Stress relief	9 (64.3%)	64 (59.3%)	0.78
Avoiding weight gain	2 (14.3%)	6 (5.6%)	0.23
Unaware of why one smokes	5 (37.5%)	13 (12%)	0.03*
Social discrimination	6 (42.9%)	10 (9.3%)	< 0.01*
Family pressure	4 (28.6%)	29 (26.9%)	1.0
Prevention of hazardous effects on health	13 (92.9%)	84 (79.6%)	0.35
First symptoms of diseases	3 (21.4%)	35 (32.4%)	0.55
Economic factors	3 (21.4%)	21 (19.4%)	1.0

*Statistically significant values, alpha at 0.05.

habit in years, both of which were higher among the enrolled group; considering oneself addicted and believing oneself able to quit smoking at any time, both of which were higher among the nonenrolled group; and not knowing why one smoked and interference by discrimination, both of which were higher in the enrolled group. Considering, also, the graphic results that showed linear tendencies between the intention to quit smoking and the mean number of cigarettes consumed, as well as between the level of nicotine dependence and the duration of smoking habit, we formulated certain hypotheses regarding the natural history of smoking, which are described below.

In the beginning, most smokers do not consider themselves addicted and believe that they are able to quit smoking at any time. To varying degrees, they recognize that smoking is hazardous to their health, but they do not feel the need to quit smoking. At first they know they smoke for pleasure but, after some time, they cannot rationally explain why they continue smoking. Having the intention to quit smoking is linearly related to the number of cigarettes consumed per day, the degree of nicotine dependence and the duration of the smoking habit.

The result we considered the most relevant was that 58.5% of the students who had not enrolled in the program did not consider themselves addicted. We could infer that the concept of being addicted to nicotine is unclear, and that smoking is not a problem for these students. Since there is no problem, a solution would not be necessary. The comparison of such students to those who enrolled in the program (100% of whom stated that they considered themselves addicted) might suggest that the awareness on the part of the subjects regarding the state of their nicotine dependence could lead young people to take measures early in order not to become heavy smokers or even to kick the habit. Drug dependence, according to the definition by the World Health Organization, is the behavioral pattern in which the use of a given psychoactive drug becomes more important than any other behavior previously considered a priority. Therefore, drug dependence or chemical dependence means the loss of control over the use of a given drug due to a psychological or physical need to use such a drug. In Brazil, the Ministry of Health and the National Cancer Institute, through the National Council for Smoking Control and Primary Cancer Prevention,[6] adopt the concept of drug dependence established by Orleans & Slade,[7] who divided it into main criteria and other criteria. The main criteria consider the compulsive/uncontrolled use, psychoactive effects (alterations in emotional state and behavior) and behavior reinforced by drug use. The other criteria involve the stereotypical pattern of use, consumption despite the hazardous effects, relapse after a period of abstinence and the intense uncontrollable desire (craving) to use the drug. The tenth revision of the International Classification of Diseases considers tobacco use to be a mental and behavioral disorder, and the withdrawal syndrome is codified as F17.2. Such effects, of more advanced stages, were not identified in this group of students and seem not to be useful for the initial dependence phase, since they do not affect these students. However, for some authors,[8] nicotine dependence commonly begins after the consumption of the first 100 cigarettes. For the students evaluated in the present study, the quantification of cigarettes consumed is a concept that is easier to assimilate and makes a better argument in order to convince them that there really is a problem to be solved.

Smoking seems to become a problem at older ages, when the number of cigarettes consumed, the duration and the degree of nicotine dependence increase (Figures 1, 2 and 3). In the present study, the mean age of the enrolled subjects was 35. On average, they smoked 21 cigarettes per day, for 19 years, whereas the means in the other group were 23 years of age, 13.7 cigarettes/day and 7.6 years, respectively. Until it is recognized that smoking is a problem for the individual, and that the hazardous consequences are more important than the benefits, the smoker makes no effort to change this state. Considering that the mean age at the initiation of the smoking habit was 15 years in both groups, and that the duration of the smoking habit was, in the enrolled group, 19 years, which is extremely long, we can conclude that there may have been some sort of damage to some parts of their organisms.

Of the nonenrolled students, 22.6% believed that they could quit smoking at any time, compared to 7% of the enrolled students. The false idea of control regarding the habit is evidence of a lack of knowledge regarding the power of nicotine dependence during the early phase of the smoking habit. While unaware of the dimension of the problem,

the smoker rarely seems to sense the extent of the consequences of smoking. One possible way to feel the effect and test the capacity of the student to control nicotine abstinence is the test to measure the maximum time interval between the consumption of two cigarettes in a week.

All of the participants knew that smoking causes diseases, and the means of results regarding this awareness in both groups was approximately 8. However, this knowledge was not enough to prevent the subjects from smoking. This finding corroborates the results found by other authors,[9,10] who reported that the information on the diseases and the intimidation about the consequences of smoking were probably inefficacious for this group of smokers. During the initial phases, it is possible that being aware of what is happening to the smokers themselves and sensitizing those who belong to a risk group will be useful for furthering the knowledge of the diseases that affect others who are older. For some adolescents, the risks are disregarded. According to one study,[11] adolescents can present risk-taking behavior for a certain period, during which they disregard the risks of smoking. For such adolescents, smoking should be approached using another strategy. In Jerusalem, Israel, some authors,[12] studying school children ranging from 11 to 17 years of age, identified positive associations of smokers with images of smokers and peer pressure.

Conclusion

The majority of university students were refractory to the smoking cessation program. They were aware of the diseases caused by smoking, and 41.5% did not consider themselves addicted to smoking. The best approach for this group would be to motivate them to quit smoking. It is believed that the duration of this phase could be reduced if they soon became aware of the concept that nicotine dependence arises after the lifetime consumption of 100 cigarettes. Other arguments could be that they are passing through the initial phase of tobacco use disorder and do not realize they are increasing their risk of presenting smoking-related diseases in the future.

Acknowledgments

This study received financial support from Random Enterprises

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