Original Article

Smoking among inpatients at a university hospital*

Tabagismo em pacientes internados em um hospital universitário

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Abstract

Objective: To determine the prevalence and characteristics of smoking among inpatients at a university hospital, as well as to evaluate their motivation, interest, and need for help in quitting smoking. **Methods:** A prospective study involving inpatients treated between May of 2008 and April of 2009 on the cardiovascular disease wards at the Antonio Pedro University Hospital, located in the city of Niterói, Brazil. All inpatients were asked to complete a questionnaire designed to collect data regarding demographics, reasons for admission, and smoking status. The smokers also responded to additional questions regarding their smoking habits. The level of nicotine dependence was determined with the Fagerström Test for Nicotine Dependence. **Results:** Of the 136 inpatients who participated in the study, 68 (50.0%) were male. The mean age was 60.7 years. The prevalence of smoking was 13.2%. Among the 49 patients with coronary disease, 36 (73.5%) were smokers or former smokers. The majority of the patients presented with a high level of nicotine dependence and reported withdrawal symptoms during hospitalization. Although most smokers were motivated to quit smoking, they admitted that they needed help to do so. **Conclusions:** Because smoking is forbidden in the hospital environment and most inpatients who smoke are highly motivated to quit, health professionals should view the hospitalization period as an opportunity to promote smoking cessation.

Keywords: Smoking; Inpatients; Smoking cessation.

Resumo

Objetivo: Determinar a prevalência e as características de tabagismo em pacientes internados em um hospital universitário e investigar sua motivação, interesse e necessidade de ajuda para parar de fumar. **Métodos:** Estudo prospectivo de pacientes internados nas enfermarias de cardiologia do Hospital Universitário Antonio Pedro, localizado em Niterói (RJ), entre maio de 2008 e abril de 2009. Foi administrado um questionário contendo perguntas sobre dados demográficos, motivo de internação e sua condição em relação ao hábito tabágico. Os pacientes tabagistas responderam perguntas adicionais sobre o hábito de fumar. A avaliação da dependência de nicotina foi realizada com o Teste Fagerström para Dependência de Nicotina. **Resultados:** Dos 136 pacientes internados que participaram do estudo, 68 (50,0%) eram do sexo masculino, com média de idade de 60,7 anos. A prevalência de tabagismo foi de 13,2%. Dos 49 pacientes internados com diagnóstico de doença coronariana, 36 (73,5%) eram fumantes ou ex-fumantes. A maioria dos pacientes apresentou elevado grau de dependência à nicotina e relatou sintomas de abstinência durante a internação. Apesar de estarem motivados para parar de fumar, os pacientes relataram necessidade de ajuda para abandonar o tabagismo. **Conclusões:** Devido à restrição do ato de fumar em ambiente hospitalar e à elevada motivação dos pacientes, deve-se aproveitar o momento da internação para promover a cessação do tabagismo.

Descritores: Tabagismo; Pacientes internados; Abandono do hábito de fumar.

Introduction

Smoking is considered a pandemic, because, worldwide, approximately five million people die every year from smoking-related diseases.[1] According to statistics released by the Brazilian National Cancer Institute, the number of deaths attributed to smoking, nationwide, is 200,000/year.[1] Smoking currently accounts for 45% of all deaths from cancer, 95% of all deaths from lung cancer, 75% of all deaths from COPD, and 35% of all deaths from cardiovascular diseases.[2]

Smoking-related diseases constitute one of the leading causes of hospitalization, and a reduction in the prevalence of smoking decreases the rates of morbidity and mortality.[3] The basic guidelines for dealing with smoking by hospitalized patients recommend that smokers be provided with counseling and specific care during hospitalization and for at least four weeks after discharge.[4] Few hospitals address smoking by hospitalized patients, even considering that the hospitalization period is an opportune time for smoking cessation. Because smoking is forbidden in the hospital environment, patients are obliged to stop smoking during hospitalization, regardless of their level of motivation. Studies have shown that, despite the ban on in-hospital smoking, 25% of patients smoke in the hospital environment, and that, of hospitalized smokers, 55% report withdrawal symptoms, only 6% receive nicotine replacement therapy, 63% relapse in the first week, and 45% relapse on post-discharge day 1.[5-8]

There are few national data on in-hospital smoking and its management. In a study conducted in a general hospital in the city of São Paulo, Brazil, in which the prevalence of active smoking among inpatients was 17%, the authors drew attention to the need to obtain information about smokers admitted to other hospitals in the country, in order to develop protocols for the treatment of such patients.[9]

The objective of the present study was to determine the prevalence and characteristics of smoking among inpatients at a university hospital, as well as to evaluate their motivation, interest, and need for assistance in quitting smoking.

Methods

This was a prospective study involving 136 inpatients treated between May of 2008 and April of 2009 on the cardiovascular disease wards at the Fluminense Federal University *Hospital Universitário Antonio Pedro* (HUAP, Antonio Pedro University Hospital), located in the city of Niterói, Brazil. The HUAP is a tertiary-care facility that provides medical care to patients residing in an area known as Metropolitan Area II, which comprises the cities of Niterói, São Gonçalo, Itaboraí, Rio Bonito, Maricá, Tanguá, and Silva Jardim, with an estimated population of 1,900,000 inhabitants. The hospital, with 283 inpatient beds and 30 clinical and surgical specialties, primarily receives cases of high complexity, admitting approximately 500 patients per month (6,000 admissions per year). In compliance with the Framework Convention on Tobacco Control and Federal Law no. 9294, issued on July 15, 1996, which prohibits smoking in health care facilities, the HUAP has been a smoke-free facility since January of 2005.

This study was conducted under the auspices of an interdepartmental extension program of smoking control at the HUAP and was approved by the Research Ethics Committee of the Fluminense Federal University School of Medicine. All participants gave written informed consent.

A questionnaire for interviewing inpatients was developed. The interviews were conducted by a physician in training for specialization in cardiology and by two medical students, recipients of scholarships from the extension program, who had been trained for this purpose.

In addition to data collection regarding demographics, such as gender, age, marital status, and level of education, patients were assessed for reasons for admission and smoking status. Smokers were defined as subjects who smoked regularly (at least one cigarette per day for at least one month), former smokers were defined as those who had quit smoking more than one month prior, and nonsmokers were defined as those who had never smoked.[10]

Patients who were smokers were asked to provide additional information: amount of cigarette consumption; age at smoking initiation and duration of smoking; degree of interest in quitting smoking; number of previous attempts to quit smoking; need for assistance in quitting

smoking; level of nicotine dependence; presence of respiratory symptoms, such as dyspnea, cough (dry or productive), and wheezing; family history of smoking; and consumption of alcoholic beverages. In addition, the nicotine withdrawal symptom questionnaire used at the HUAP smoking outpatient clinic was completed (Chart 1).

We determined the level of nicotine dependence (score on the Fagerström Test for Nicotine Dependence): extremely low (0-2); low (3-4); moderate (5); high (6-7); and extremely high (8-10). To identify the motivational stage of change (level of readiness to quit smoking), we used the model detailed by DiClemente et al.[11] Alcohol consumption and possible alcohol abuse/dependence were assessed by the CAGE questionnaire, the name being an acronym for key terms in the instrument's four questions.[12]

In the statistical analysis, qualitative variables are expressed as simple frequencies and percentages, whereas quantitative variables are expressed as arithmetic means, standard deviations, medians, and overall range (minimum and maximum). The nonparametric chi-square test was used in order to detect associations between qualitative variables. For variables that showed significant variation, the nonparametric Mann-Whitney test was used in the comparisons between two groups and the Kruskal-Wallis test was used in the comparisons among three groups. The Student's t-test was used for comparing two arithmetic means. Snedecor's F-test was used in the analysis of variance, and, when its value was significant, the Bonferroni test was used for comparing means between two groups. The level of significance was set at $p \leq 0.05$. The Statistical Package for the Social Sciences, version 13.0 (SPSS Inc., Chicago, IL, USA) was used for the analyses.

Results

Of the 136 respondents, 68 (50.0%) were male. The mean age was 60.7 ± 15.3 years (range, 15-93 years). Sixty-seven (49.3%) were nonsmokers, 51 (36.9%) were former smokers, and 18 (13.7%) were smokers. The proportion of males was greater among the smokers and former smokers than among the nonsmokers ($p = 0.059$ for both). The mean age of the nonsmokers, former smokers, and smokers was 62.6 ± 17.3 years, 60.7 ± 12.4 years, and 53.9 ± 13.3 years, respectively. Although the mean age was lowest for the smokers, the difference was not significant. The three groups did not differ significantly regarding marital status or level of education. Of the 136 patients, 44.1% had not completed junior high, whereas 33.8% had done so.

The leading cause of hospitalization was acute coronary syndrome. Of the 49 inpatients diagnosed with acute coronary syndrome, 73.5% were smokers or former smokers. The three groups differed significantly regarding the mean length of hospital stay, hospital stays being longest among the smokers ($p = 0.005$).

Of the 18 smokers, 10 (55.5%) were male and 8 (44.4%) were female. In 17 of those patients, the level of nicotine dependence was high or extremely high. The mean number of cigarettes smoked per day was 24.7 ± 11.2, the mean duration of smoking was 36.0 ± 16.8 years, and the mean smoking history was 46.7 ± 29.3 pack-years. The mean age at smoking initiation was 15.9 ± 6.6 years (range, 6-32 years). Of the 18 smoking patients, 6 had never attempted to quit smoking, whereas 12 had attempted to quit at least once (Table 1).

Of the smokers, 50% had respiratory symptoms, cough being the most common. All had a family (parental or sibling) history of smoking. Among the 18 smoking patients,

Chart 1 – Nicotine withdrawal symptom questionnaire used at the Antonio Pedro University Hospital, Fluminense Federal University, Niterói, Brazil.

Now that you have not smoked since admission, please describe what you have been experiencing:
( ) Craving ( ) Irritability ( ) Anxiety ( ) Depression ( ) Lack of concentration
( ) Insomnia ( ) Nightmares ( ) Hypesthesia ( ) Tremor ( ) Agitation
( ) Other please specify _____
( ) I am not feeling anything different.
( ) I have not stopped smoking.
Consider positive for withdrawal syndrome if any of the items above is checked.

concomitant alcohol consumption was reported by 8 (44.4%), 6 of whom responded affirmatively to 2 or more questions on the CAGE questionnaire, suggesting alcohol abuse/dependence.

Although smoking is prohibited in the hospital environment, 1 inpatient who smoked was unable to quit during hospitalization. Of the 17 patients who quit smoking during hospitalization, 15 (88.2%) experienced withdrawal symptoms. Craving was the predominant symptom, occurring in 80%.

Table 1 – Profile of the smokers admitted to the cardiovascular disease wards of the Antonio Pedro University Hospital, Fluminense Federal University, Niterói, Brazil.

Characteristic	Result
Cigarettes/day, n	
≤ 19	5
≥ 20	13
Duration of smoking, years[a]	36 ± 16.8
Smoking history, pack-years[a]	46.7 ± 29.3
Age at smoking initiation, years[a]	15.9 ± 6.6
Level of nicotine dependence,[b] n	
Low	1
High	12
Extremely high	5
Withdrawal symptoms, n	
Present	9
Absent	9
Smoking cessation attempts, n	
0	6
1	2
2	1
3	4
≥ 5	5
Motivation for smoking cessation, n	
Yes	17
No	1
Need for smoking cessations assistance, n	
Yes	15
No	3
Family history of smoking, n	18
Alcohol consumption, n	8
Possible alcohol abuse/dependence,[c] n	
Yes	6
No	2

[a]Values expressed as mean ± SD. [b]Assessed by the Fagerström Test for Nicotine Dependence. [c]Assessed by the CAGE questionnaire.

As can be seen in Table 2, we also observed symptoms such as anxiety (in 66.7%), irritability (in 53.3%), and insomnia (in 53.3%).

When the motivational stage of change was assessed at discharge, 17 of the 18 smoking patients expressed a desire to remain abstinent and only 1 was in the precontemplation stage (not interested in quitting smoking). The majority of the smokers (88.8%) admitted that they needed help in order to quit smoking. These patients, as is usual in general hospitals, were not medicated. At the time of data collection, we provided each patient with a (≈20-min) therapeutic intervention focusing on the consequences of smoking and on how to deal with withdrawal symptoms.

Discussion

Smoking results in continuous exposure to numerous toxic substances, which makes it the causative factor in approximately 50 diseases, chief among which are cardiovascular diseases, cancer, and COPD; therefore, it is imperative that all smokers be advised to quit smoking.[13] Millions of people are hospitalized for smoking-related diseases every year. The hospital stay is a window of opportunity to help those who want to quit smoking by providing them with information about the benefits of smoking cessation and the risks of continuing to smoke.[7] Smokers who are hospitalized are usually more susceptible to anti-smoking messages because of their frailty, as well as of their fear of complications and death, resulting from the disease that led to their hospitalization, in addition to being forced to abstain from smoking because smoking is prohibited in the hospital environment.[14]

In the present study, 44.4% of the respondents reported concomitant alcohol consumption, a common association known to make smoking cessation difficult.

In Brazil, there have been few studies of in-hospital smoking cessation treatment and management. In the present study, the prevalence of current smoking was found to be 13.2% among the 136 inpatients evaluated. Of those, 88.2% had concomitant withdrawal symptoms. In a study of 650 hospitalized smokers conducted at a hospital in the United States, the prevalence of active smoking was found to be 25%, and 55% of the patients who

Table 2 - Withdrawal symptoms experienced by the smokers admitted to the cardiovascular disease wards of the Antonio Pedro University Hospital, Fluminense Federal University, Niterói, Brazil.

Symptom	Patients, n (%)
Craving	12 (66.6)
Anxiety	10 (55.5)
Irritability	8 (44.4)
Insomnia	8 (44.4)
Agitation	7 (38.8)
Lack of concentration	7 (38.8)
Hypesthesia of the hands and feet	6 (33.3)
Nightmares	6 (33.3)
Depression	5 (27.7)
Tremors	5 (27.7)
Dizziness	1 (5.5)
Headache	1 (5.5)

were smokers reported withdrawal symptoms.[8] The incidence of smoking among hospitalized patients in smoke-free psychiatric hospitals is nearly 50%.[15] Emmons & Goldstein[16] found that the prevalence of smoking in 304 inpatients treated on a cardiovascular disease ward was 16%. In a study of 110 inpatients conducted at the São Paulo Hospital for State Civil Servants, located in the city of São Paulo, Brazil, the prevalence of smoking was found to be 17%, and 15% of the patients who were smokers reported withdrawal symptoms.[9] Another group of authors[17] found that smokers hospitalized for elective surgery had no severe withdrawal symptoms, suggesting that the psychological stress caused by the surgical procedure might have lessened the withdrawal symptoms.

Practical experience has shown that more than 50% of all smokers who seek specialized centers have a high level of nicotine dependence. In the present study, 17 (94.4%) of the 19 smokers had a high level of nicotine dependence. The majority had smoked more than 20 cigarettes per day for more than three decades and had unsuccessfully attempted to quit at least once. It has been reported that smoking-related diseases claim the lives of one in four individuals who have smoked for 20 years and of one in two who have smoked for 40 years or more.[18]

According to the literature, 80% of all smokers want to quit smoking. However, only 3% successfully manage to quit without formal support.[19] In this study, 17 of the 18 hospitalized smokers were motivated to quit smoking for good. However, most of them admitted they needed help to do so.

Few hospitals identify smokers during hospitalization. Even fewer address smoking during hospitalization and provide follow-up support after discharge, despite the fact that the hospitalization period is an opportune time for smoking cessation, as previously suggested.[16] A study of 4,140 patients hospitalized for ischemic heart disease was conducted between January and September of 2005 at the Heart Institute of the University of São Paulo School of Medicine *Hospital das Clínicas*, located in the city of São Paulo, Brazil.[20] The authors found that the International Classification of Diseases code for smoking was recorded in only 3 patient charts, revealing a near-total lack of documentation of the diagnosis of this disease at an institution that is renowned for its approach to the treatment of smokers. This omission was also noted in the hospital discharge records of all of the smokers evaluated in the present study.

Data suggest that 50% of smokers quit smoking on their own immediately after a cardiovascular event that leads to hospitalization.[21] The success in obtaining these rates is attributable to the prohibition of smoking in the hospital environment and to the high level of motivation of the patients. However, among such patients, the recurrence rate is 70%.[22] The withdrawal symptoms experienced immediately after discharge and the onset of depressive symptoms within 3 to 6 months after discharge are the major factors related to recurrence in these patients.[23]

In reviews of smoking cessation interventions for hospitalized patients, conducted by Munafò et al.,[14] and subsequently by Rigotti et al.,[13] follow-up support for one month after discharge was found to reduce the recurrence rate significantly by month 6 of follow-up, indicating the strategic need to provide patients with follow-up support after discharge. In addition, preventing the recurrence of smoking in patients with cardiovascular disease reduces the risk of death and the risk of recurrence of cardiovascular events by 50%,[24] and, more importantly, it ensures that, at a future time when these patients might be in

a less favorable motivational stage of change, their chances of success will not be reduced because of the worsening of their clinical status.

In the present study, although the majority of the smokers with cardiovascular disease were motivated to quit smoking during hospitalization, they admitted that they needed help to do so. This strengthens the need for health care managers to be sensitized to the issue so that they can act to ensure a multidisciplinary approach to smokers during hospitalization.

According to the Brazilian Thoracic Association guideline recommendations for smoking cessation, published in 2008,[4] it is important to identify smokers during hospitalization and to provide them with counseling, treatment, and post-discharge follow-up support. Very little importance is given to in-hospital withdrawal, which is not treated by most physicians. Post-discharge support, which should be individualized and prolonged, with or without the use of medications, is essential for treatment success.[25] Simply prohibiting smoking in the hospital environment is an insufficient intervention for these patients. At the HUAP, physicians refer all smoking outpatients to experts in smoking cessation, regardless of the nature of the underlying disease. The results of the present study show that this practice should be extended to inpatients.

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