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Factors Associated With Tobacco Dependence in People with Mental Disorders

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Abstract

This study's objective was to identify socio-demographic and clinical factors associated with the degree of tobacco dependence in those with mental disorders, hospitalized in the psychiatric unit of a general hospital. An exploratory study with the participation of 96 smokers, who have mental disorders, hospitalized in the psychiatric unit of a general public hospital between August 2010 – February 2012. Individual interviews were held using the Fagerstrom Test for Nicotine Dependence (FTND). A questionnaire was administered for raising socio-demographic and clinical variables. Bivariate and multivariate analysis was undertaken. Of the 96 smokers, 53.2% had a high or very high degree of tobacco dependence. Those who had previously been hospitalized in a psychiatric unit (OR= 3.59) or who had somatic comorbidities (OR= 2.50) have greater chances of being classified as highly dependent on tobacco than do the other subjects. The variables of psychiatric hospitalization and somatic comorbidities are risk factors for a high degree of tobacco dependence. Knowing the factors involved in tobacco dependence can help in planning the care for the mentally ill.

Keywords: Tobacco; Mental disorders; Socio-demographic; Smoking

Introduction

There are currently over one billion users of tobacco worldwide. It is calculated that half will die prematurely as a result of illnesses related to its use, making smoking one of the main causes of preventable death [1]. Tobacco is responsible for one in every 10 deaths among adults [1]. As the somatic complications appear only one to three decades after smoking is initiated [2], by the end of the 21st century, the death rate could be ten times higher than that found in the previous century [1]. The information on morbidity/mortality is concerning not only because of the number of users of tobacco, but also because of these subjects' degree of tobacco dependence.

Tobacco is one of the principal risk factors for developing chronic physical diseases, especially cardiorespiratory diseases, contributing to reducing survival of those with mental disorders [3]. Tobacco dependence has an important role in this context, given that higher degrees of dependence are found among psychiatric patients than among the other groups of the population [4-6]. It is recognized that tobacco dependence is associated with the presence of depressive and anxious symptoms [7,8]. In addition to the physical harm, the mental health of the psychiatric population is severely compromised through tobacco use [9]. It is accepted that smoking is associated with the seriousness of the psychiatric symptoms [10,11], the occurrence of suicide attempts [12,13] and the need for hospitalization [10].

On the other hand, those with mental disorders find social and psychological benefits in tobacco [14]. It has been noticed within psychiatric services that many patients and professionals smoke cigarettes as a manner to approaching each other [16-18]. The increased social interaction helps to alleviate the stress and the solitude [18,19]. The social and psychological benefits motivate those with mental disorders to increase the daily quantity of cigarettes, worsening the tobacco dependence and the threats to the physical and mental health (dose-response effect), which justifies the need to identify possible factors involved in this issue. This study is important due to the scarcity of publications that approach this topic within the Brazilian psychiatric population. From what we have seen this is the first Brazilian study which investigates the topic by performing a multivariate analysis.

We hypothesized that the degree of tobacco dependence is associated with physical harm and with the history of psychiatric inpatient treatment.

This study's objective was to identify socio-demographic and clinical factors associated with the degree of tobacco dependence in those with mental disorders, hospitalized in the psychiatric unit of a general hospital.

Material and Methods

An exploratory study with persons with mental disorders, hospitalized in the psychiatric unit of a state general hospital in a city in the non-metropolitan region of the state of São Paulo, Brazil. The unit has 18 beds for psychiatric inpatient treatment, with a bed occupancy rate of 83.3%. The mean duration of hospitalization for the subjects is 14.5 days.

Cigarette smoking in the Brazilian health services is in line with Brazilian legislation, which permits smoking as long as there is authorization from the medical team [20]. As a result, each hospital has the freedom to implement its own rules. In the psychiatric ward of this study, the patients who were smokers prior to being admitted are allowed eight cigarettes per day at the following times: 07:30 (two cigarettes); 09:30 (one cigarette); 12:00 (one cigarette); 14:30 (one cigarette); 16:30 (one cigarette); and 18:30 (two cigarettes). Smoking takes place in an open area outside the ward.

A simple random probabilistic sample was selected (95% confidence

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and maximum error of 10%), made up of 96 patients hospitalized in a ward. Inclusion criteria: to be a smoker and to accept to participate in the study. Exclusion criteria: to be below 15 years of age, persons with mental retardation, and those with difficulty in answering the interview questions. The investigation of psychiatric patients was chosen due to the knowledge, gained from the scientific literature, that psychiatric hospitalization is one of the factors which influences this population to smoke cigarretes. Data collection started in August 2010 and was terminated in August 2012 when the number of smokers stipulated by the sample calculation was obtained (n= 96).

The study was approved by the Ethics Committee of Ribeirão Preto College of Nursing, University of São Paulo (1173/2010). This Committee approved the consent procedures. The subjects provided written informed consent to participate in the study. The patients below 18 years old signed the consent, but we also obtained their legal guardian's signature. In case an impairment in the individual's capacity to consent was perceived, we also obtained the legal guardian's signature. Criteria for establishing whether the patients could give written consent without the guardian's signature: psychiatric symptoms controlled; intact cognitive functions; agree to participate voluntarily; be able to understand the study's information.

The smokers were interviewed individually by one of the researchers in the psychiatric unit.

The degree of tobacco dependence was obtained through the Fagerstrom Test for Nicotine Dependence (FTND) (test-retest of 0.91 and Cronbach 0.64), which classifies the degree of dependence as very low (0-2 points), low (3-4 points), medium (5 points), high (6-7 points) and very high (8-10 points) [21].

For surveying the socio-demographic and clinical variables, a questionnaire was administered (Instrument for Identification of Smokers in a Psychiatric Unit of a general hospital (ISPI). The questionnaire was developed for this study, and was made up of the variables: sex; age; educational level; place of current residence; main psychiatric diagnosis; time since diagnosis; therapies received; medications currently being used; previous psychiatric hospitalizations; somatic comorbidities (cardiovascular, digestive, endocrine and respiratory); age at which smoking was initiated; and attempts at quitting smoking.

The main psychiatric diagnosis and the medications being used at the time of the beginning of inpatient treatment were obtained from the subjects' medical records. The responses for the other variables were self-reported. The interviews lasted an average of 43 minutes. The bivariate analysis was accomplished using Fisher's Exact Test. Possible relationships were investigated between the variables, through multivariate statistical analysis, controlling the results by age and sex, among the smokers. The statistical treatment was undertaken using Stata. The discussion of the results was based on the scientific literature.

The variables selected for analysis of their relationship with tobacco dependence: sex; current age; educational level; place of residence; time since psychiatric diagnosis; diagnosis of schizophrenia; therapies received; previous psychiatric hospitalization; use of 1st generation antipsychotics; use of 2nd generation antipsychotics; somatic comorbidities; age when smoking initiated; attempted to quit smoking.

A dependent variable is the degree of tobacco dependence dichotomized in the categories Low/Medium dependence and High dependence, to facilitate the interpretation of the results. The class of Low/Medium dependence was chosen as a reference for the other class. The value of the mean, standard deviation, and minimum and maximum of the amount of tobacco used in each of these categories can be observed in Table 1.

A backward stepwise logistic regression was adjusted [22]. The model is initiated with all the variables present, and the process eliminates each variable which, in the presence of the others, does not contribute significantly to the explanation of the dependent variable. The level of significance was fixed at 5%. The Odds Ratio (OR) was used as the comparator.

Results

Figure 1 illustrates the total number of patients receiving inpatient treatment during the data collection period (Figure 1).

Characterization of the subjects

The majority of the 96 smokers was female (61.5%), had studied only up to junior high school level (53.1%), lived in an urban region (91.7%) and had an occupation (61.5%). The subjects' mean age was 38.2 years old (15 – 69 years old). The majority of the diagnoses (80.2%) were for severe mental disorders (33.3% schizophrenia, 34.4% mood disorders and 12.5% personality disorders). The mean time since diagnosis was four years. 44.8% had received only clinical therapies, 58.3% had a history of psychiatric hospitalization and 52.1% had somatic comorbidities.

Classification of degree of tobacco dependence of the 96 smokers: very low (n= 14, 14.6%); low (n= 18, 18.8%); medium (n= 13, 13.5%); high (n= 28, 29.2%) and very high (n= 23, 24%).

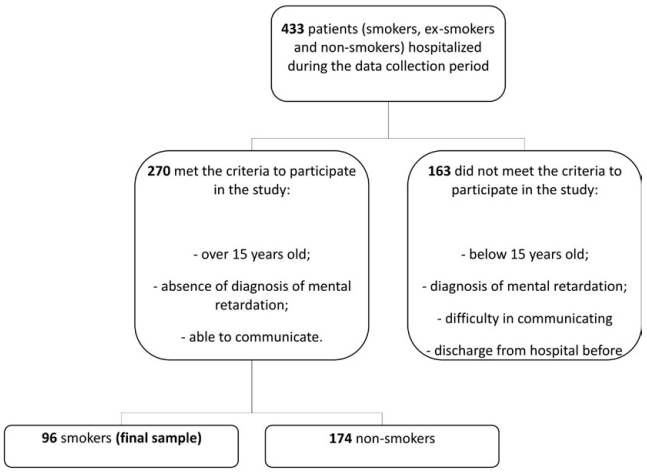

Figure 1: Description of the patients hospitalized during the data collection period.

Degree of tobacco dependence	N	Mean	Standard deviation	Minimum	Maximum
Medium/Low	45	12.1	7.5	1.0	20.0
High	51	34.8	19.8	7.0	100.0
Total	96	24.2	19.0	1.0	100.0

Table 1: Number of cigarettes smoked daily, by degree of tobacco dependence (dependent variable).

Bivariate analysis

Table 2 presents the results of the comparison of the degree of tobacco dependence with the independent variables. The smokers who have received inpatient psychiatric treatment previously have a probability of being classified as having high tobacco dependence which is 3.62 times higher than that of those without a previous history of inpatient treatment (Table 2).

Logistic regression

The binomial logistic regression, with retroselection of the variables, after elimination of the variables which did not present significant contributions, allows one to emphasize and analyze the results (Table 3). It may be observed that previous hospitalization increases the chance of being classified as highly dependent by 3.59. Having comorbidities increases the chance of having high dependence by 2.5.

Collinearity and interactions

The possible existence of collinearity between the variables was investigated, the Variance Inflation Factor (VIF) being evaluated [23].

The study showed that the variable "Place of residence" with the categories 'Urban' and 'Rural' had a VIF of over 10, for which reason it was eliminated from the study. After its elimination, all the variables remained with VIF below 10 and with a mean of 3.55.

Also investigated were the possible interactions between age and the number of hospitalizations, given that the original variables had a correlation coefficient which was small (0.24), although significant. The interaction was not significant, with the likelihood ratio test between the models – with and without interaction – indicating a value of 0.114.

Independent variables	Tobacco dependence				
	Medium/ Low n(%)	High n(%)	Fisher's test	Unadjusted Odds Ratio	Confidence interval 95%
Sex					
Female[a]	25(42.4)	34(57.6)	0.182	0.62	0.27-1.43
Male	20(54)	17(46)			
Current age					
Mean	35.8	40.4	0.087[b]	1.03	1.00-1.06
Standard Deviation	14.6	11.5			
Education					
Up to Junior High[a]	26(51)	25(49)	0.257	1.42	0.63-3.19
Above Junior High	19(42.2)	26(57.8)			
Place of residence					
Urban[a]	39(44.3)	49(55.7)	0.097	0.27	0.05-1.39
Rural	6(75)	2(25)			
Time since diagnosis					
Up to 4 years[a]	27(55.1)	22(44.9)	0.074	1.98	0.88-4.46
4 years and over	18(38.3)	29(61.7)			
Schizophrenia					
No[a]	32(50)	32(50)	0.258	1.46	0.62-3.45
Yes	13(40.6)	19(59.4)			
Therapies received					
Only clinical[a]	17(39.5)	26(60.5)	0.137	0.58	0.26-1.32
Other types	28(52.8)	25(47.2)			
Previous hospitalization					
No[a]	26(65)	14(35)	0.002	3.62	1.54-8.49
Yes	19(33.9)	37(66.1)			
1st generation antipsychotics					
No[a]	19(50)	19(50)	0.387	1.23	0.54-2.79
Yes	26(44.8)	32(55.2)			
2nd generation antipsychotics					
No[a]	30(53.6)	26(46.4)	0.089	1.92	0.84-4.40
Yes	15(37.5)	25(62.5)			
Somatic comorbidities					
No[a]	25(56.8)	19(43.2)	0.053	2.15	0.94-4.90
Yes	19(38)	31(62)			
Age when smoking initiated					
Up to 15 years[a]	29(49.2)	30(50.8)	0.362	1.27	0.56-2.90
16 years and over	16(43.2)	21(56.8)			
Attempted to quit smoking					
Yes[a]	37(45.7)	44(54.3)	0.395	0.74	0.24-2.22
No	8(53.3)	7(46.7)			

[a]Reference category
[b]t test for equality of means

Table 2: Degree of tobacco dependence in relation to each one of the independent variables.

Degree of tobacco dependence		Odds Ratio	Standard Error	Z	P>|z|	Confidence Interval 95%
Previous hospitalization	No	1	1.65	2.78	0.006	1.46-8.86
	Yes	3.59				
Somatic comorbidity	No	1	1.15	1.99	0.047	1.01-6.16
	Yes	2.5				

Table 3: Results of the logistic regression for the dependent variable of tobacco dependence.

Discussion

Our investigation shows that the majority of those with mental disorders who smoked were highly dependent on tobacco (high and very high degree). After control of the potential confounding variables, it was identified in this study that the subjects who had previously been hospitalized in psychiatric units and who had somatic comorbidities have a higher chance of being classified more highly dependent on tobacco than the other subjects.

The high degree of tobacco dependence found in the present study is consistent with the Brazilian and international scientific literature. Research undertaken in Australia with persons with psychotic disorders (n= 1,812) revealed a mean score of 5.9 (high degree of dependence) in the Fagerstrom Test for Nicotine Dependence (FTND) [10]. A Brazilian study observed that 56.3% of schizophrenics attended in psychiatric units (n= 83) were heavy smokers (≥ 8 points in the previous version of the FTND) [24].

Another study undertaken in Brazil, in a psychiatric inpatient treatment unit evaluated the degree of tobacco dependence of 103 patients, hospitalized in three distinct periods. The mean scores obtained on the FTND revealed that the subjects were heavy smokers (≥ 6 points): 1st census (6.71), 2nd census (7.44) and 3rd census (7.57) [25].

In Turkey, a statistical difference was evidenced in comparing the degree of tobacco dependence of 80 persons with mental disorders (hospitalized in a psychiatric unit) with 80 controls (general population). Among those with mental disorders, there was a greater frequency of high/very high degree of dependence (26.8%) than among the controls (9.1%) [7].

The multivariate analysis undertaken in the present study revealed that the psychiatric hospitalizations stand out as the principal risk factor for the higher degrees of tobacco dependence.

Similarly, 1,848 persons with mood disorders, in three Primary Healthcare Centers in Pelotas, Brazil, who had received psychiatric inpatient treatment in the previous year, had an increased risk of being a tobacco user, although the association with the degree of tobacco dependence was not investigated [26].

In a psychiatric hospital in England, an ethnographic case study identified that tobacco is considered important for ensuring mental well-being and promoting social interactions during inpatient treatment [18]. One study undertaken in a Brazilian psychiatric ward revealed that cigarettes are used during inpatient treatment to cope with the difficulty of coexisting with the other patients and with the lack of activities [27].

In two psychiatric wards in Norway, participant observation and interviews were undertaken with the professionals (n= 23) and patients (n= 15). The rooms set aside for smoking cigarettes on the wards were seen by the patients as "sanctuaries", that is, places where they could converse about subjects which would be prohibited in the presence of the professionals, showing the strength of the culture of smoking in the mental health institutions [16].

The culture of smoking in psychiatric institutions may be indirectly related to the higher degree of dependence, as the incentive to smoke leads to the use of a large quantity of cigarettes (many times greater than was smoked prior to the inpatient treatment) and to the development of tolerance to the effects of the tobacco, characterizing an increase in the degree of dependence.

After controlling for the confounding variables, the present study identified that the presence of somatic comorbidities is also a risk factor for a high degree of tobacco dependence.

The association between tobacco dependence and somatic comorbidities found in the present study may be understood based on the recognition of the influence of tobacco on the organism, given that the greater the degree of tobacco dependence, the higher the number of cigarettes smoked and, as a consequence, the greater the occurrence of morbidities (dose-response effect).

In an analysis of 1,812 Australian outpatients with a psychotic disorder, greater occurrence of medical complications was identified among the smokers than among the non-smokers over their lifetimes. In addition, the smokers had a worse perception of their physical health than the other subjects [10]. A study with 34,653 Americans showed that those who met the DSM-IV criteria for tobacco dependence presented greater harm to their physical and mental quality of life, in comparison with ex-smokers [9].

A retrospective cohort investigation in the medical records and death certificates of 591,266 Americans who were hospitalized in psychiatric hospitals between 1990 and 2005 identified that a significant proportion of the deaths (schizophrenia - 53%, bipolarity - 48% and depressives - 50%) was due to illnesses related to tobacco (cancers, and cardiovascular and respiratory diseases) [3].

The present study fills a gap in the Brazilian scientific literature through investigating, based on a multivariate analysis, the factors associated with tobacco dependence among those with mental disorders. The knowledge of these factors brings important contributions for psychiatric professionals, bearing in mind that tobacco is currently prohibited in collective environments, including the some environments of psychiatric inpatient treatment.

Finally, the association of degree of tobacco dependence with the occurrence of episodes of psychiatric inpatient treatment and with the presence of somatic comorbidity reveals two essential perspectives on this issue: the encouragement to use tobacco in psychiatric institutions (the smoking culture) and the harm caused by this practice to the physical health of those with mental disorders, making the need for intervention clear.

The present study provides health professionals with valuable information regarding the factors involved in the degree of tobacco dependence of persons with mental disorders. In emphasizing smoking's risk to health and indicating that the culture of psychiatric hospitals reinforces the behavior of smoking cigarettes, it is hoped that this study may help health professionals to reflect on their professional practice. The next studies must address this same issue, comparing the

results found with the general Brazilian population. Furthermore, other variables must be investigated so as to extend knowledge on the topic.

Limitations of the study: 1) as the variable of the psychiatric hospitalization was used dichotomously (yes/no), it was not possible to assess the dose-response relationship – whether the increase in exposure (number of hospitalizations) is associated with the increase in the outcome (degree of tobacco dependence); 2) the study design does not permit one to establish the time relationship between the independent and dependent variables; 3) some important variables with the potential to confound were not included in the regression model (severity of the psychiatric symptoms, use of alcohol and illicit substances, interest in quitting, and provision of clinical support to quit).

Conclusions

The majority of those with mental disorders who were hospitalized in the psychiatric unit had high and very high degree of tobacco dependence. The variables of hospitalization in a psychiatric ward and somatic comorbidities are associated with tobacco dependence.

The knowledge of the factors involved in tobacco dependence could help the health professionals in planning interventions geared towards the psychiatric population, contributing to these individuals' physical and mental health.

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