

Interfering Factors to the Abandonment of Smoking Cigarettes for the Participants of the National Program for Tobacco Control

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Abstract

Introduction: Smoking is considered a chronic and epidemic disease because the nicotine as well as with other drugs causes, physical, psychological and behavioral addiction.

Objective: To verify the interfering factors to the abandonment of smoking cigarettes participants of the National Program for Tobacco Control, assisted by Day-Hospital Professor Esterina Corsini of the Federal University of Mato Grosso do Sul, a central-west region of Brazil.

Method: Cross-sectional study conducted between August 2004 and December 2010, during the evaluation of smokers for admission to the National Program of Tobacco Control attended by Day-Hospital Professor Esterina Corsini of the Federal University of Mato Grosso do Sul. This is a national program coordinated by the Ministry of Health in Brazil. The study included 370 smokers older than 18 years old who sought the program spontaneously or were referred by health professionals, who agreed to participate. For data collection, a standardized form by the National Cancer Institute was used, administered by a psychologist in the initial interview. Data analysis was performed using the chi-square tests, chi-square trend, Fisher's exact and prevalence ratios with 95% confidence interval.

Results: Of the 370 smokers, 49.5% were male, and 50.5% were female, with a mean age of 47.47±11.52 years old. As the education, 44.8% had at least nine years of study and 54.9% with up to eight

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years of study. The age of onset of smoking was reported between 11 and 16 years old (57%). The stomach problems were the most frequently cited comorbidity (52.2%). Nicotine dependence measured by Fargeström test achieved Average, Low or Very Low score at 44.32%, and High or Very High in 55.68% of the cases.

Conclusion: It was perceived that the greater the degree of nicotine dependence, the lower the number of smokers who successfully quit smoking.

Keywords

Nicotine; Smoking; Tobacco
Use Cessation; Therapeutics.

Introduction

Smoking is considered a chronic and epidemic disease, since nicotine as with the use of other drugs causes addiction, physical, psychological and behavioral [1, 2]. It is estimated that five million deaths each year occur worldwide related to smoking, responsible for 10 thousand per day, which corresponds to the death of one person every six seconds, with a life expectancy derating in 15 years [3].

The person who has the habit of smoking developed tolerance, characterized by the amount of nicotine that the individual need to supply the brain receptors. The greater the tolerance, the greater the need for nicotine and physical addiction. Also, there are other factors that help maintain the addiction and smoking habits, such as cigarette industry marketing, sociocultural and behavioral factors [4].

A study conducted in Ribeirão Preto, in southeastern Brazil pointed out that frustrated smoking habit abandonment experiences were expressed by more than 80% of smokers. Thus, the people may need expert help due to their dependence. The subjects of that study also exhibited a high or very high degree of dependence on nicotine [5].

Many actions recommended by the World Health Organization through the Convention on Tobacco Control Picture (CTCP) have been implemented internationally to assist governments to combat this epidemic. Brazil is a signatory to the CTCP in 2003

and established the National Program for Tobacco Control (NPTC) that operates mainly in the following areas: prevention of the onset of smoking, especially in children and adolescents; stimulus actions to smoking cessation; protection of non-smokers from exposure to smoke indoors; and implementation of laws to regulate the products arising from tobacco and marketing [6].

Through the National Cancer Institute (INCA), the Ministry of Health in Brazil coordinates the National Program for Tobacco Control (NPTC), which trains professionals to operationalize in the states and municipalities of the country [7]. In 2004, INCA technicians trained health professionals in the public area in the city of Campo Grande, the state capital of Mato Grosso do Sul (MS), a center-west region of Brazil, to coordinate smoking cessation groups in their municipalities.

In August of the same year, a multidisciplinary group of professionals from the areas of psychology, medicine, nursing, nutrition and physiotherapy started the implementation of the NPTC at Day-Hospital Professor Esterina Corsini of the Federal University of Mato Grosso do Sul (UFMS). On the same date, the first group of smokers selected for this study was formed, with participants referred by professionals of UFMS or spontaneous demand. From this date, the groups were systematically trained every two months.

With the progress and structure of the program, it was necessary an evaluation of this initiative because, there were questions about different aspects over the years, such as a number of cases attended, epidemiological profile (clinical, socio-demographic and smoking history), the effectiveness of the approach used and the effective cessation of smoking.

Based on these aspects, the following research question was formulated: which factors interfere in the abandonment of smoking cigarettes in group participants attended in the National Program for Tobacco Control?

Thus, this study aims to determine the interference factors to the abandonment of smoking cigarettes participants of the National Program for Tobacco Control, attended in the Day-Hospital Professor Esterina Corsini of the Federal University of Mato Grosso do Sul, a central western region of Brazil.

Method

It is a cross-sectional study conducted between August 2004 and December 2010 during the evaluation of smokers for admission to the National Program for Tobacco Control attended by Day-Hospital Professor Esterina Corsini of the Federal University of Mato Grosso do Sul, Brazil.

The study population consisted of all participants attending the service with the intention to stop the habit of smoking tobacco and agreed to participate voluntarily in the study. According to the program, the former smoker is the participant who claimed to have been abstinent for 12 months. In this study, only those who reported the cessation of smoking when contacted were considered abstinent.

Patients evaluated by the psychology service during the admission interview in Group Cessation of Smoking from August 2004 to December 2010 were included. Indians, under 18, pregnant women and those who did not agree to participate and did not sign the Consent and Informed Form (TCLE) were excluded.

Data collection was performed after approval of the research protocol by the Research Ethics Committee, using a standard form and published by INCA. The form consists of variables for patient's identification (gender, age group and education), physical examination (weight, height, blood pressure, the he smoked the last cigarette, among others), past medical history (lesions in the mouth, diabetes mellitus, hypertension, heart diseases, malignant tumor, seizures, depression, psychological treatment), smoking history and evaluation of the degree of motivation. The degree of dependence was punctuated by the *Fagerström Test for Nicotine Dependence* (FTND), evaluating the following questions: How soon after waking up do you smoke your first cigarette? Do you find it difficult not to smoke in prohibited places, such as churches, buses, etc.? What cigarette during the day brings the most satisfaction? How many cigarettes do you smoke per day? Do you smoke more frequently in the morning? Do you smoke even sick?

For each answer, a certain value is assigned, and the sum of points allows the evaluation of the degree of dependence (very low: 0-2; low: 3-4, average: 5; high: 6-7; and high: 8-10), according to the NPTC Protocol of the Ministry of Health. The test was validated in Brazil by Carmo and Pueyo [8], and it was renamed as Nicotine Dependence Test (NDT).

Participants were questioned individually during the evaluation for admission to the cessation group, in a private atmosphere. At that time, the objectives of the NPTC and research were explained, and if they were in agreement with that, they signed the consent form.

Data were analyzed using descriptive statistics. To verify possible associations between the study variables, the Chi-square tests, chi-square trend, Fisher exact were used and calculated prevalence ratios with their respective 95% confidence intervals. To estimate the adjusted reasons prevalence, Cox Regression was used (time equal to one unit) using the significant variables greater than 20%.

Epi Info 3.5.1 software and BioEstat version 5 were used [9].

This study was approved by the Ethics Research Committee of the Federal University of Mato Grosso do Sul, under Protocol N° 1,811, of September 30, 2010.

Results

Socio-demographic and cultural data

Table 1 shows that of the 370 smokers who attended for the first interview, 187 (50.5%) were men and 183 (49.5%) were women, most of them

Table 1. Number and percentage of smokers by smoking cessation and identification of variables. Campo Grande/MS, 2006-2010 (n=370).

Domains/ Facets	Smoking cessation				PR ^a (IC 95%)	p
	Yes (n=66)		No (n=304)			
	No	%	No	%		
Gender						
Female	36	19.7	147	80.3	1	0.362 ^b
Male	30	16.0	157	84.0	1.23 (0.79-1.90)	
Age						
Without information	2	6.5	29	93.5	-	0.348 ^c
≥ 60	9	22.0	32	78.0	1	
≥ 40 < 60	44	19.5	182	80.5	1.13 (0.60-2.13)	
< 40	11	15.3	61	84.7	1.44 (0.65-3.18)	
Education						
Without information	-	-	1	100.0	-	0.996 ^c
Illiteracy/ Literacy	27	18.5	119	81.5	1	
Elementary	16	15.7	86	84.3	1.18 (0.67-2.07)	
High school	21	19.6	86	80.4	0.94 (0.56-1.57)	
Higher level	2	14.3	12	85.7	1.29 (0.34-4.88)	

(61.1%) were aged between 40 and 59 years old and the average age was 47.47±11.52. As for education, 67% of the sample reported having studied up to elementary school. When related to smoking cessation, these identification variables showed no significant association.

Smoking history, degree of nicotine dependence and smoking cessation

Concerning the smoking history, it was observed that 11.6% of participants reported the habit starting between five and ten years old, 57% between 11 and 16 years old and 23.5% between 17 and 20 years old. Also, 34% reported living with smokers at home. The degree of nicotine dependence as measured by the *Fagerström* scale scores were very high (21.9%) high (33%) and Average (19.5%) (**Table 2**).

Table 2. Distribution of smokers by age at onset of smoking, living with smokers at home and nicotine addiction. Campo Grande/MS, 2006-2010 (n=370)..

Variables	No	%
Age of onset of smoking		
Without information	2	0.5
5 and 6 years old	3	0.8
7 and 8 years old	15	4.1
9 and 10 years old	25	6.7
11 and 12 years old	56	15.1
13 and 14 years old	62	16.8
15 and 16 years old	93	25.1
17 and 18 years old	59	15.9
19 and 20 years old	28	7.6
21 and 22 years old	10	2.7
23 and 24 years old	3	0.8
25 and 26 years old	5	1.4
27 to 34 years old	4	1.1
35 to 39 years old	4	1.1
40 to 59 years old	-	-
60 years old	1	0.3

Note: if $p \leq 0.05$ statistically significant difference. The "without information" was removed from the calculation test. a: PR = Prevalence Ratio; b: Chi-square test; c: Chi-Square trend test.

Variables	No	%
Smokers at home		
Without information	1	0.3
No	243	65.7
Yes	126	34.0
Nicotine dependence (Fagerström)		
Without information	1	3.0
Very high	81	21.9
High	124	33.5
Average	73	19.7
Low	59	16.0
Very low	32	8.6

Table 3. Number and percentage of smokers according to the reasons to quit smoking and smoking cessation. Campo Grande/MS, 2004-2010 (n=370).

Variables	No	%
Reason to quit smoking ^a		
Because it is affecting the health	288	77.8
By fearing a future health problem	286	77.3
For the welfare of the family	117	31.6
Asked by the children	113	30.5
By being antisocial	105	28.4
Pressure from others	96	25.9
Because he does not like to be dependent	91	24.6
Being a bad example for children	86	23.2
Because he spends a lot of money with the addiction	60	16.2
By smoking restrictions in environments	42	11.4
By causing halitosis	1	0.3
Stopped smoking		
Yes	66	17.8
No	304	82.2

^a: Each smoker could indicate one or more answers.

Smokers seeking the National Program for Tobacco Control at Day-Hospital Professor Esterina Corsini, reported several reasons for quitting smoking, highlighting the fact of smoking affecting their health (77.8%) and fear of future health problems (77.3%). However, the data in **Table 3** show that after five years of implementation of the NPTC, only 17.8% of the 370 participants remained abstinent of cigarette.

The study participants reported various health problems and the most frequently were gastric disorders (52%), depression (28.9%), hypertension (21.4%) and diabetes (8.4%).

Table 4 shows the significant association (p=0.003) between nicotine dependence measured by the *Fagerström* scale and the number of smokers who do not quit smoking.

Table 4. Number and percentage of smokers according to smoking cessation, the degree of nicotine dependence, living with smokers at home, participation in support groups and resource use to stop smoking. Campo Grande/MS, 2006-2010 (N=370).

Variables	Smoking cessation				PR ^a (IC 95%)	p
	Yes (n=66)		No (n=304)			
	No	%	No	%		
Nicotine dependence						
Without information	1	100.0	-	-	-	0.003 ^c
Very low	9	28.1	23	71.9	1	
Low	15	25.4	44	74.6	1.11 (0.55-2.24)	
Average	16	21.9	57	78.1	1.28 (0.64-2.59)	
High	15	12.1	109	87.9	2.33 (1.12-4.82)	
Very high	10	12.3	71	87.7	2.28 (1.02-5.08)	
Smokers at home						
Without information	-	-	1	100.0	-	0.467 ^b
No	46	18.9	197	81.1	1	
Yes	20	15.9	106	84.1	1.19 (0.74-1.93)	

Variables	Smoking cessation				PR ^a (IC 95%)	p
	Yes (n=66)		No (n=304)			
	No	%	No	%		
Participation in support groups						
Yes	6	23.1	20	76.9	1	0.433 ^d
No	60	17.4	284	82.6	1.32 (0.63-2.77)	
Use of resources to stop smoking						
Without information	-	-	1	100.0	-	0.084 ^b
Yes	15	12.8	102	87.2	1	
No	51	20.2	201	79.8	0.63 (0.37-1.08)	

Note: if $p \leq 0.05$ statistically significant difference. The "without information" was removed from the calculation test.
^a: PR = Prevalence Ratio; ^b: Chi-square test; ^c: Chi-Square trend test.

Table 5 shows the association between nicotine dependence and smoking cessation in the multivariate analysis.

Table 5. Multivariate analysis for smoking cessation according to the variables included in the model. Campo Grande/MS, 2006-2010 (n=370).

Variables	p	Prevalence ratio (PR)	CI 95% (PR)
Nicotine dependence	0.037	1.22	1.01-1.48
Body Mass Index	0.108	0.79	0.60-1.05
Resources to stop smoking	0.128	0.64	0.36-1.14
Diabetes	0.148	0.23	0.03-1.69
Convulsive crisis	0.200	1.99	0.69-5.68
Malignant tumor	0.201	0.27	0.04-1.99
Hypertension	0.437	0.75	0.37-1.54

Note: Cox regression – if $p \leq 0,05$, statistically significant difference.

Discussion

This study found a significant association between the *Fagerström* Test and the variable dependence on nicotine, indicating that the greater the degree of dependence on nicotine, the lower the number

of smokers who quit. Other studies have also reported that nicotine addiction hinders are smoking cessation [5, 10, 11].

The results of this study are similar to those of a survey conducted in Chile, which found that 45% of smokers in school age began the habit between 12 and 13 years old, with a gradual increase in the daily consumption of cigarettes as advancing in high school [12]. Research developed by the Global Youth Tobacco Survey (GYTS) showed that the prevalence of tobacco used in the age group of 13 to 15 years old was 35.1% in Chile and 2.8% in Canada. [13] Another study conducted in Londrina, the state of Paraná, southern Brazil, showed that the factors age ≥ 15 years old and have smoking friends were associated in a multivariate analysis to the regular use of cigarettes. [14]

The ease of access to cigarettes and the idea that smoking is a sign of maturity and freedom were other marked points [15]. This age group is easily influenced by smoking industry marketing investing millions to reach this population [16].

According to INCA, during a lawsuit by US states against the tobacco industry, there were secret files that were part of internal documents of large Tobacco companies. In these documents, the children and young people were called "restocking reserves" and seen as strategic targets because they must become dependent on cigarettes still early to replace those who quit an addiction or died. INCA reported on its website some internal memos clippings of the tobacco industry, including some dealing with the marketing to children and adolescents, as circulated in the media on January 23, 1975, which stated that "They represent the cigarette business tomorrow. As the age group of 14 to 24 years old matures, they become the key part of the total volume of cigarettes, at least for the next 25 years" [17].

Among those surveyed in this study and those who sought the program for the cessation of smoking, 49.5% were female. A female audience is a group in which the prevalence of smoking has

grown, with a range in 2010 of 250 million smokers worldwide, highlighting the investment of smoking industry in achieving their goal [18].

The results of a global survey by the Global Youth Tobacco Survey (GYTS), WHO initiative since 1998, showed a feminization increasing of smoking. However, the prevalence among young women in some countries is equal or greater than that men [19].

Cigarette industries use a fully focused strategy to reach this audience, supported by research that evaluates the behavior and reactions of women to the stimuli, such as the color of cigarette packs, trying to reach the female imagination with their meaning, as blue symbolizing peace, pink meaning femininity and red meaning power. Besides these, other strategies are used, such as the creation of aloe and flavored cigarettes and the association of smoking with the idea of autonomy, strength, refinement, contemporaneity [20].

By analyzing on the precocity at the beginning of smoking cigarettes, it is worth remembering that the sooner the onset of smoking, the bigger the likelihood of being affected by diseases such as respiratory, cardiocirculatory and neoplastic, besides the risk of death by smoking [18]. Smokers who seek treatment are motivated by concern for the health, the risk of illness as a result of this habit and the manifestation of the effects of smoking over the years [5, 21].

Regarding the abandonment of the habit of smoking tobacco, 66 of the participants reported remaining abstinent. Another study conducted with employees of a hospital in the South of Brazil reported that 36% of smokers in the sample had relapsed. Although they had made several attempts to quit smoking [22].

About the cessation of smoking and level of education, it was observed that there was no significant association. In research conducted by the surveillance system and Risk and Protective Factors for Chronic Diseases Survey Telephone (VIGITEL) in Brazilian

state capitals and the Federal District in 2006, 2007, 2008 and 2009 to individuals 18 years and over, it was found the number of years of education influenced the smoking cessation [23]. A prospective cohort study conducted with smokers in the United States, Canada, UK and Australia also showed an association between education and the abrupt abandonment of the habit of smoking tobacco [24].

As can be seen in this study, quitting tobacco smoking habit is a difficult challenge, given that out of ten smokers for this purpose, only three did it without help. This study had some limitations, such as difficulties in contacting some of the participants attended, by the change of address or change of phone number without an appropriate update in the database. However, these losses did not interfere with our results.

Conclusion

It was possible to verify the interfering factors in the abandonment of smoking cigarettes participants of the National Program for Tobacco Control in the Day-Hospital Professor Esterina Corsini of the UFMS with this study. From the analyzed results, mainly it can be inferred that the greater the degree of nicotine dependence, the lower the number of smokers who successfully quit smoking.

These results show the relevance of the thematic discussion to alert health professionals about the responsibility towards children and adolescents in the implementation of policies for the prevention of smoking to combat this epidemic and to develop actions to promote within the NPTC in units that offer treatment for smoking effectiveness.

It is recommended to continue the NPTC because it is a privileged space for reception of smokers seeking help for the cessation of smoking. It is suggested that in the initial assessment of the smoker, there is a separation level of nicotine dependence in groups, to stronger work motivation for smoking cessation, opening groups in the evening hours to

allow accessibility prevented to workers from attending at other times and conduct active searches to monitor the membership of the participant to the program systematically.

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