



## EMOTIONAL FACTORS ASSOCIATED WITH SMOKING IN INDIVIDUALS ENROLLED IN A TOBACCO CESSATION PROGRAM

*Fatores emocionais associados ao hábito de fumar em usuários de um programa antitabagismo*

*Factores emocionales asociados con el hábito de fumar de usuarios de un programa de cesación de tabaquismo*

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### ABSTRACT

**Objective:** To characterize the population enrolled in a smoking treatment program and to identify the emotional factors associated with smoking. **Methods:** Cross-sectional study carried out in 2016 using secondary data extracted from the records of a smoking treatment program in the municipality of Água Clara, Mato Grosso do Sul, Brazil. The data analyzed refer to 173 participants who had undergone the initial interview of the program from January 2012 to September 2015. The following variables were studied: gender, age, smoking history, degree of nicotine dependence, emotional factors and other health-disease conditions. The data were analyzed using descriptive statistics, and the association between the degree of dependence and emotional factors was analyzed using Fisher's exact test. **Results:** There was a predominance of women (63.6%, n=110), with a mean age of 45.99 years, mean age of onset of smoking of 14.38 years and mean time of cigarette use of 31.62 years. Of the symptoms presented, emotional disorders were predominant (75.1%, n=130), with a 38.2% (66) rate of depression. Regarding the degree of nicotine dependence, 68.2% of the participants presented high or very high levels, with an association between high and very high levels of dependence and emotional factors such as anxiety and depression ( $p<0.05$ ). **Conclusion:** The program participants are adult women with a long time of cigarette use and consequently compromised health. There was an association between emotional factors and a greater degree of nicotine dependence.

**Descriptors:** Family Health Strategy; National Program of Tobacco Control; Health Promotion.

### RESUMO

**Objetivo:** Caracterizar a população atendida por um programa de tratamento do tabagismo e identificar os fatores emocionais associados ao hábito de fumar. **Métodos:** Estudo transversal, realizado em 2016, com dados secundários extraídos dos registros do programa de tratamento do fumante do município de Água Clara, Mato Grosso do Sul, Brasil. Os dados analisados referem-se a 173 participantes que realizaram a entrevista inicial do programa, de janeiro de 2012 a setembro de 2015. Foram estudadas as variáveis: sexo, idade, história tabagística, grau de dependência da nicotina, fatores emocionais e outras condições de saúde-doença. Analisaram-se os dados por meio de estatística descritiva, e a associação do grau de dependência aos fatores emocionais foi analisada pelo teste exato de Fisher. **Resultados:** Verificou-se a predominância do sexo feminino (63,6%, n=110); com idade média de 45,99 anos; média de idade de início do hábito de fumar de 14,38 anos; e média de tempo de uso do cigarro de 31,62 anos. Dos sintomas apresentados, predominaram os transtornos emocionais (75,1%, n=130), com confirmação de 38,2% (66) para depressão. Com relação ao grau de dependência da nicotina, 68,2% (118) apresentaram grau "elevado ou muito elevado", sendo observada associação entre nível "elevado e muito elevado" de dependência e fatores emocionais, como ansiedade e depressão ( $p<0,05$ ). **Conclusão:** Os participantes do programa são mulheres em idade adulta, com tempo prolongado de uso do cigarro e decorrente presença de comprometimentos na saúde. Foi observada associação entre fatores emocionais como ansiedade e depressão e o maior grau de dependência da nicotina.

**Descritores:** Estratégia Saúde da Família; Programa Nacional de Controle do Tabagismo; Promoção da Saúde.



## RESUMEN

**Objetivo:** Caracterizar la población asistida por un programa para tratamiento del tabaquismo e identificar los factores emocionales asociados al hábito de fumar. **Métodos:** Estudio transversal realizado en 2016 con los datos secundarios de registros del programa de tratamiento para fumadores del municipio de Agua Clara, Mato Grosso do Sul, Brasil. Los datos analizados son de 173 participantes que realizaron la entrevista inicial del programa entre enero de 2012 y septiembre de 2015. Se estudiaron las variables sexo, edad, historia de tabaco, grado de dependencia de nicotina, factores emocionales y otras condiciones de salud-enfermedad. Se analizaron los datos a través de la estadística descriptiva. La asociación del grado de dependencia y los factores emocionales ha sido analizada por el test exacto de Fisher. **Resultados:** Se verificó la predominancia del sexo femenino (63,6%, n=110) con la media de edad de 45,99 años; la media de edad del inicio del hábito de fumar de 14,38 años; y la media del tiempo de consumo de cigarro de 31,62 años. Entre los síntomas presentados hubo predominancia para los trastornos emocionales (75,1%, n=130) y la confirmación del 38,2% (66) de depresión. Respecto el grado de dependencia de nicotina el 68,2% (118) presentaron grado “elevado o muy elevado” con asociación entre el nivel “elevado y muy elevado” de dependencia y los factores emocionales como la ansiedad y la depresión ( $p < 0,05$ ). **Conclusión:** Los participantes del programa son mujeres en edad adulta con largo uso del cigarro y la presencia de problemas de salud. Se observó la asociación entre los factores emocionales y el mayor grado de dependencia de nicotina.

**Descriptores:** Estrategia de Salud Familiar; Programa Nacional de Control del Tabaquismo; Promoción de la Salud.

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## INTRODUCTION

Smoking is considered the leading cause of preventable death worldwide, killing about 6 million people every year<sup>(1)</sup>. It is associated with several health problems, especially respiratory and cardiovascular diseases and cancer, thus making smokers more prone to premature death compared to nonsmokers or former smokers<sup>(2)</sup>. In Brazil, there are 200,000 deaths per year, and it is estimated that if this rate of expansion continues, there will be 10 million deaths per year worldwide by 2030, with about 70% these occurring in developing countries such as Brazil<sup>(3,4)</sup>.

Health promotion policies have set smoking as a priority issue. One of the tasks of primary care is to carry out actions aimed at fighting smoking, preventing its start and assisting in smoking cessation. Given the large number of smoking-related diseases and the resulting financial and social damages, smoking has become a priority issue that should be addressed in health care actions<sup>(1,5,6)</sup>.

Research conducted by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística – IBGE*) in 2008 found that there are about 25 million active smokers in Brazil (17.2% of the country's population), with a higher prevalence in the South region (19%) and a lower prevalence in the Southeast and Midwest regions (16.6% in both regions)<sup>(7)</sup>.

Data from the Ministry of Health indicated that in Campo Grande, capital of Mato Grosso do Sul, Brazil, the total of adult smokers ( $\geq 18$  years) is 10.6% of its population<sup>(8)</sup>. According to research conducted by the National Cancer Institute (*Instituto Nacional do Câncer – INCA*)<sup>(9)</sup>, the age at which smoking begins is predominantly 17 to 19. The Midwest region had the highest rate of youths who started smoking before the age of 15 and the highest percentage of people seeking treatment to quit smoking (48.4%) when compared to other capitals. Other data should be highlighted: most smokers are aged 45-64. The same research carried out by INCA<sup>(9)</sup> demonstrated that women are the ones who mostly seek treatment for smoking, which is due to their greater concern with their own health; in addition, they present more morbidities and psychological problems.

A study conducted in the United States and Australia found that smokers are more likely to have mental disorders such as schizophrenia, anxiety and depression and that smokers who have emotional impairments tend to smoke a higher number of cigarettes per day<sup>(10)</sup>.

Psychological factors should be considered when developing effective strategies to help people who wish to overcome tobacco dependence and to prevent the onset of this habit. These factors may influence both the increased predisposition to the onset of tobacco use and may also be an obstacle to successful treatment.

Although the public policies used to tackle smoking are proving efficient, a fact demonstrated by the reduction in the prevalence of smoking in Brazil from 32.7% in 1997 to 14.8% in 2011, the smoking treatment of people with psychiatric disorders is more difficult. Studies estimate that up to 75% of individuals with psychiatric disorders are smokers, and the high consumption of tobacco in this population may explain the high rate of morbidity and mortality<sup>(11,12)</sup>. Such evidence reinforces the need for a unique look at the different strategies used in smoking cessation programs, using indicators more complex than the rates of success and failure.

Therefore, it is believed that the operationalization of the health promotion policy requires the consolidation of practices targeted at individuals and collectivities, taking into consideration the health needs of the population of a given territory and

prioritizing the uniqueness of the subjects and groups, because the social, cultural, economic and political context in which they live can influence the way of living of this community<sup>(13)</sup>.

Thus, understanding the magnitude of the problem and knowing the comorbidities associated with smoking become preponderant for health planning teams to develop public policies that are more adequate to these individuals<sup>(14)</sup>. Given that, this study aimed to characterize the population served by a smoking treatment program and to identify the emotional factors associated with smoking.

## METHODS

This is a cross-sectional study carried out in 201 using secondary data from the records of the Smoker Approach and Treatment Program (*Programa de Abordagem e Tratamento do Fumante – PATF*) in the municipality of Água Clara, Mato Grosso do Sul, Brazil. The data analyzed refer to 173 participants who attended the initial interview of the program from the beginning of its activities in January 2012 to September 2015. The information used in this study comes from the medical records of the participants who were interviewed at the beginning of the program by a psychologist for evaluation and follow-up during the program. Such interviews were recommended by the Ministry of Health for the municipalities that implemented the Smoking Cessation Program.

The available secondary data used for the characterization of the study participants were: gender, age, previous pathological history, smoking history, use of dental prostheses and symptoms of depression, which were recorded according to interview responses based on a questionnaire that contained 58 closed-ended questions. In some questions, the participant could choose one or more responses. To assess the degree of nicotine dependence, Fagerstrom scale responses included in the same interview were used. To assess the degree of depression, only those people who initially reported frequent depression episodes were considered. The confirmation or refutation of the diagnosis of depression and its degree were determined through diagnostic criteria included in the interview.

The characterization of the patients was performed using descriptive statistics and is depicted in tables. The analysis of the association between the degree of dependence of nicotine and factors such as anxiety and depression was performed using Fisher's exact test in SPSS version 22.0 with a significance level of 5%<sup>(15)</sup>.

The present study complied with all the recommendations set forth in Resolution 466/12 of the National Health Council and was approved by the Research Ethics Committee of the Federal University of Mato Grosso do Sul (*Universidade Federal do Mato Grosso do Sul – UFMS*) on November 18, 2015 under Approval No. 1.328.150.

## RESULTS

The mean age of the 173 participants included in the present study was 45.99±0.96 years (mean ± standard error of mean). The majority were women (63.6%, n=110) and the mean age of onset of smoking was 14.38±0.36.

There was a high frequency of emotional disorders (depression and anxiety) among the participants, affecting 75.1% (n=130) of them. Only 35.8% (n=62) of the participants reported current or previous psychological or psychiatric treatment. According to the records, depression was confirmed in 38.2% (n=66) of the participants, with the majority of these – 22% (n=38) – presenting moderate depression.

The frequency of current symptoms and other conditions, such as drinking and use of medications, are depicted in Table I.

Table I - Distribution of the participants according to symptoms, drinking, degree of depression, use of medication, and use of dental prosthesis. Água Clara, Mato Grosso do Sul, Brazil, 2016.

Variable	n (%)
<b>Symptoms *</b>	
Depression or anxiety	130 (75.1)
Stomach problems	118 (68.2)
Lung problems	90 (52.0)
Respiratory allergy	85 (49.1)
Psychiatric/psychological treatment	62 (35.8)
Hypertension	49 (28.3)
Mouth wounds/bleeding	41 (23.7)
Cutaneous allergy	38 (22.0)
Heart problems	29 (16.8)
Seizure or epilepsy	22 (12.7)
Diabetes	16 (9.2)
Anorexia nervosa or bulimia nervosa	12 (6.9)
Malignant tumor or lesion	6 (3.5)
<b>Drinking</b>	
Never	73 (42.2)
Seldom	50 (28.9)
Weekends	39 (22.5)
Every day	11 (6.4)
<b>Tendency for alcoholism</b>	
No	163 (94.2)
Yes	10 (5.8)
<b>Degree of depression</b>	
None	107 (61.8)
Mild	15 (8.7)
Moderate	38 (22.0)
Severe	13 (7.5)
<b>Current use of medication</b>	
No	65 (37.6)
Yes	108 (62.4)
<b>Use of dental prosthesis</b>	
No	82 (47.4)
Yes	91 (52.6)

\* The participant could choose more than one response option.

Many participants use some type of medication for continuous treatment (62.4%, n=108), usually for health problems associated with smoking. In addition, most of them use dental prostheses (52.6%, n=91), although the mean age of the participants was 45.9 years.

The study participants smoked cigarettes for 31.62±0.97 years. In addition, they pointed out anxiety (82.7%, n=143) and sadness (77.5%, n=134) as the main conditions associated with cigarette use. For 78% (n=135) of the interviewees, smoking has a calming effect, as described in Table II.

Table II - Distribution of 173 patients according to situations associated with cigarette and sensations related to smoking. Água Clara, Mato Grosso do Sul, Brazil, 2016.

Variable	n (%)
<b>Situations associated with cigarette use*</b>	
Time after meals	163 (94.2)
Anxiety	143 (82.7)
Sadness	134 (77.5)
Coffee	131 (75.7)
Alcoholic beverage	80 (46.2)
Work	45 (26.0)
Joy	35 (20.2)
Talking on the phone	19 (11.0)
<b>Smoking can calm one down</b>	
No	26 (15.0)
Yes	135 (78.0)
Sometimes	12 (6.9)

\* The participant could choose more than one response option.

An association between anxiety and a higher degree of nicotine dependence was found using the Fisher's test (Figure 1).

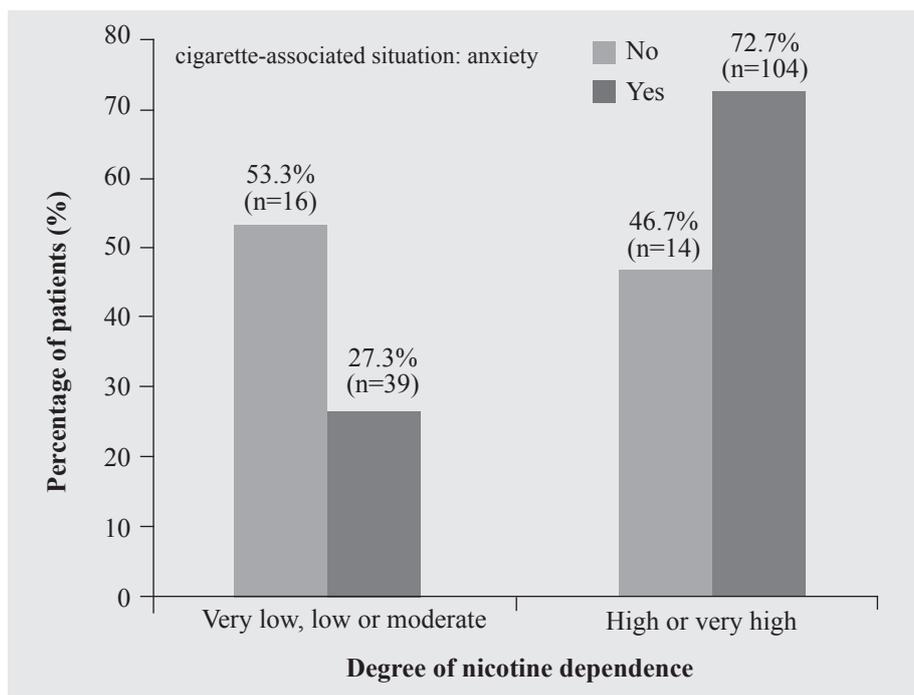


Figure 1 - Association between degree of nicotine dependence and self-reported anxiety. Each column represents a percentage value.

Note: \* Significant difference in relation to individuals who did not report depression or anxiety (Fisher's Exact Test,  $p=0.006$ ).

The results depicted in Figure 1 show that there is an association between anxiety and a greater degree of nicotine dependence. In all, 72.7% ( $n=104$ ) ( $p=0.006$ ) of those who smoked a larger number of cigarettes when feeling anxious presented high or very high degrees of dependence, while only 46.7% ( $n=14$ ) ( $p=0.006$ ) of those who did not associate moments of anxiety with cigarette use had the same degrees of dependence.

Regarding previous attempts to quit smoking, 79.7% (n=138) of the patients had already made other attempts, remaining at least one day without smoking; however, 75.7% (n=131) of these did not use any resources, such as medication or support from a health professional (Table III).

The main reason for seeking smoking cessation treatment is concern about health, with 82.7% (n=143) of the participants reporting being concerned about their health in the future and 79.8% (n=138) reporting feeling the damages caused by cigarette use. The majority (62.4%, n=108) of the participants denied interactions with other smokers at home. In the assessment of the degree of nicotine dependence at initiation of treatment, 68.2% (n=118) of the participants presented high or very high degrees (Table III).

Table III - Distribution of 173 patients according to previous attempts, use of resources, reasons for smoking cessation and degree of nicotine dependence. Água Clara, Mato Grosso do Sul, Brazil, 2016.

Variable	n (%)
<b>Number of attempts trying to quit smoking</b>	
Never tried	16 (9.2)
Tried but did not succeed	19 (11.0)
1 to 3	94 (54.3)
More than 3	44 (25.4)
<b>Use of any resource to quit smoking*</b>	
None	131 (75.7)
Medication	41 (23.7)
Health professional	3 (1.7)
Brochures	0 (0.0)
<b>Reasons for smoking cessation*</b>	
Concern about health in the future	143 (82.7)
It is affecting my health	138 (79.8)
I do not like being dependent	67 (38.7)
Smoking is anti-social	64 (37.0)
Family's well-being	53 (30.6)
Cost of cigarettes	53 (30.6)
My children asked me to stop	52 (30.1)
Someone is pushing me	48 (27.7)
Due to smoking bans	45 (26.0)
Bad example for children	43 (24.9)
<b>Degree of dependence</b>	
Very low	8 (4.6)
Low	25 (14.5)
Moderate	22 (12.7)
High	70 (40.5)
Very high	48 (27.7)

\* The participant could choose more than one response option.

Individuals who reported having symptoms of depression or anxiety had higher degrees of dependence (high or very high) – 72.3% (n=94) (p=0.036) compared to those who did not present any emotional disorder (55.8%, n=24) (p=0.036). Only 27.7% (n=36) (p=0.036) of the people who had some mental disorder presented the lowest degrees of dependence (very low, low or medium). These data are depicted in Figure 2.

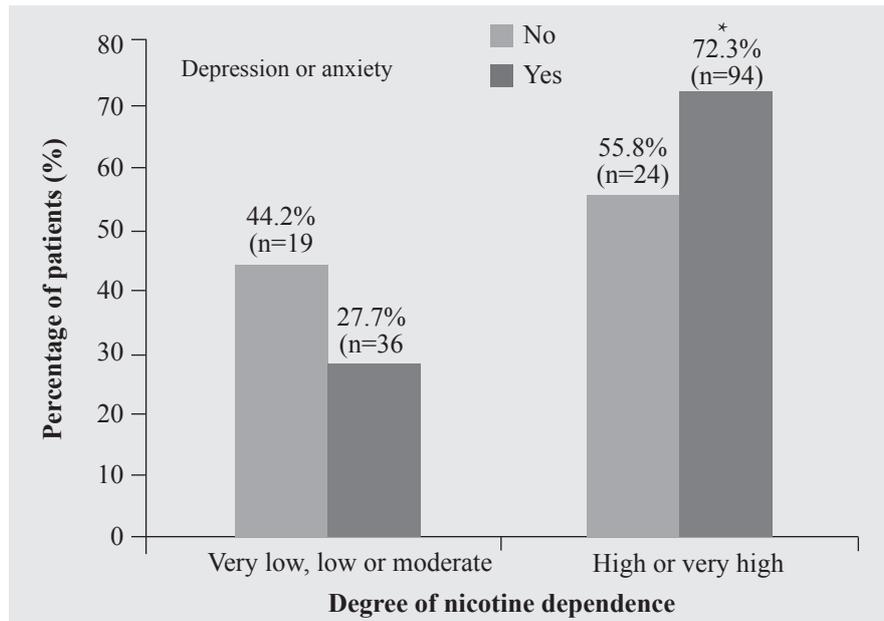


Figure 2 - Association between the degree of nicotine dependence and self-reported depression or anxiety. Each column represents a percentage value.

Note - \* Significant difference in relation to individuals who did not report depression or anxiety (Fisher's Exact Test,  $p=0.036$ ).

## DISCUSSION

Although the incidence of male smoking (22%) is much higher than in the female population (13.3%) in Brazil<sup>(7)</sup>, there is a greater demand for smoking treatment among women than among men<sup>(9)</sup>. This finding points to the need for a better understanding of the issues that explain this phenomenon in order to develop strategies to capture the male population and to potentiate the programs taking into consideration the singularity of the female population.

Research has shown that women have more access to information and therefore understand the risks to their health better. They also have a negative perception of their own health, which leads them to seek such services more often than men, who only seek treatment when diseases are already in a serious or even lethal stage<sup>(16)</sup>. This may indicate a gap in primary health care levels because the smoking male population is at the margin of the care actions offered<sup>(9)</sup>, which places them in groups at higher risk for cerebrovascular diseases and cancer, for instance. These factors generate physical disability and higher costs for the health system because men generally access the care network through specialized care services<sup>(17)</sup>.

The Ministry of Health has implemented a document addressing men's health. The document shows that men's main reasons for not seeking primary health care services are related to their position as the family provider, i.e., health services opening hours coincide with their working hours and they have difficulty accessing care services both because of appointment scheduling and service queues, which make them miss work<sup>(17)</sup>. These factors may justify the poor search for treatment among men in the present study.

In the present research we found that people who seek the PATF are mostly aged 40 years. It appears that there is little adherence of young adults, which may represent the difficulty faced by the local program in sensitizing this age group. More than that, this finding points to the need for revising and improving the adequacy of policies aimed at the control of tobacco use so that they can include all audiences – a challenge to be overcome<sup>(9)</sup>.

Considering this theme a critique and taking into account the search for strategies to tackle the lack of young people in smoking cessation programs in the United States of America, a pilot study was conducted to assess the impact of SMS (short message service) messages to promote smoking cessation in young adults. The study presented positive results and showed that tailoring interventions to the profile of their users may lead to a more successful treatment<sup>(18)</sup>. Linking the American study to the current study, the identification of vulnerable populations and populations with low adherence to proposed health programs becomes necessary to redefine goals and behaviors, especially those aimed at raising awareness of the importance of the program's adherence, because the earlier the start of the successful treatment, the lower the risks to people's health.

It is worth noting the presence of a series of symptoms and diseases that are self-reported by the participants in the present study, many of which may be generated or even worsened by smoking. In addition, the high frequency of medication use should be highlighted. It is usually related to problems caused by smoking, even among younger participants. These findings are in

line with those found in another study, which identified a significant increase in the incidence of noncommunicable diseases in people aged 35-59 years, with a higher prevalence among women<sup>(19)</sup>.

Another highlight of the present study is the high number of people who already use dental prostheses, which does not match the mean age of the participants and thus demonstrates the impact of cigarettes on people's oral health. A study carried out in Fortaleza, Ceará, Brazil, identified a strong association between smoking and patients' oral health, with smoking being the main risk factor for tooth loss followed by age<sup>(20)</sup>.

With regard to alcoholism, many study participants exhibited a frequent use of alcoholic beverages combined with smoking, a factor that hinders smoking cessation. Other studies have reported the relationship between smoking and drinking, showing that smoking increases the chances of developing alcoholism and vice versa<sup>(21,22)</sup>. The study found a low demand for smoking treatment among alcoholics or those who exhibited a tendency for alcoholism, thus indicating the alcoholic patient's reluctance to seek treatment for both smoking and alcohol dependence. The strong link between alcohol and tobacco makes the patient feel less confident about the success of treatment. Additionally, the lack of effective measures and specific programs for this purpose can contribute to this scenario<sup>(23)</sup>.

The analysis of the effect of emotional factors on smoking in the present study showed that the majority of smokers who arrive at the smoking treatment service present emotional problems such as anxiety and depression. Additionally, these factors are also associated with a higher degree of dependence among smokers. Most of the participants analyzed had emotional disorders and a high or very high degree of dependence. The participants with a high or very high degree of dependence according to the Fagerstron scale correspond to "heavy" smokers, i.e., individuals who generally smoke more than 20 cigarettes per day or who have a low tolerance for long periods of abstinence<sup>(9)</sup>. These results are consistent with the results found in other studies that have demonstrated a greater frequency of emotional problems, such as depression and anxiety, in dependent smokers compared to the general population<sup>(24,25)</sup>.

Smoking duration is long for most of the smokers participating in the present study. In addition, smoking is present at almost all moments of the life of these individuals, symbolizing a company that is present in good and bad events. The smoker can see the cigarette as a crutch to lean on to manage daily stress, thus failing to face problems in a real way<sup>(26)</sup>.

In this regard, another study related smoking to the anxiolytic effect that smokers usually attribute to it and found that the calming effect of smoking is real, especially for people who are more anxious in the face of stressful daily situations<sup>(27)</sup>. This finding reinforces the results found in this study, in which 82.7% of the participants smoke more when they are anxious and 78% say they feel that smoking can calm them down.

The presence of participants with moderate depression was significant in the present study. According to the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders)<sup>(28)</sup>, moderate depression occurs when symptoms compromise the performance of daily activities, such as work and the social activities; however, even with certain difficulties, individuals do not interrupt their functions and do not present suicidal thoughts. Other studies have confirmed the association between smoking and depression, demonstrating that an individual's mental state may interfere with his/her degree of tobacco dependence<sup>(29,30)</sup>, which reinforces the assumption that smokers regularly present depressive episodes and high rates of suicide and suicidal ideation more frequently.

These data are of great relevance because achieving the expected results from tobacco control policies requires addressing smokers' emotional issues more emphatically. To this end, a better preparation of the team is required, which will play a key role in the treatment. Research has described emotional disorders as anomalies for the family health care teams, which are not prepared to serve patients that present such pathologies. These pathologies are not commonly present in the practice of health care teams, which still follow a biomedical model of care; in addition, these pathologies require the provision of a more individualized care by health professionals<sup>(31)</sup>.

Other authors have pointed out life's adversities as factors determining relapse. They have also reported that people with childhood traumas were more likely to relapse in their attempt to quit, with women being more fragile in the face of these adversities<sup>(32)</sup>. These findings may contribute to a better understanding of the results found in the current research. There was a predominance of women attending the smoking treatment program analyzed in the present study. Many of them presented with emotional disorders, with the smoking habit being reinforced by the presence of these pathologies, which, consequently, led to relapses during the process.

The results of the present research point to the need to invest more in mental health policies as a form of prevention and reduction of diseases, such as the initiation and continuity of smoking. In addition to their initial complaint, people who seek health services bring with them other issues that need to be addressed. Only then will the service be truly effective. Health professionals need to be prepared – through adequate and permanent training – to deal with the different needs that emerge in the care of smokers in order to offer a more comprehensive service capable of solving the patient's condition<sup>(31)</sup>.

The limitations of the present study are related to the use of secondary data, whose accuracy and quality depend on the professional who recorded them. It should be noted that there may have been some failure to record data; however, important information gaps have not been identified.

The present study is related to health promotion policies<sup>(13)</sup> as it seeks to better understand the characteristics of the population served and therefore serves as a support for the development of actions targeted at the needs of this population. It also seeks to highlight the factors related to the problems that are priority issues – such as smoking – to facilitate understanding and the search for more efficient solutions.

Concern about compromised health is the primary reason reported by people with long-term tobacco use, i.e., a high degree of dependence, to seek a smoking cessation program. Further research on the theme should identify the relevant aspects of mental health that impact on innumerable diseases, particularly smoking.

## CONCLUSION

The population that seeks smoking treatment is mainly adult, with a predominance of women, very early onset of smoking, history of attempts to quit smoking without the use of any resources, compromised health due to problems associated with smoking, prevalence of emotional disorders and frequent use of medication. There was an association between emotional factors such as anxiety and depression and the degree of nicotine dependence.

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