The International Journal of Psychosocial Rehabilitation
Volume 20, Number 2
July 2016– December 2016

Psycho-emotional characteristics that facilitate smoking cessation

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Citation:
David RM, Ramos D, Freire ACPF, Batista ALP & Ramos EMV. (2016) Psycho-emotional characteristics that facilitate smoking cessation . The International Journal of Psychosocial Rehabilitation. Vol 20 (2) 96-108

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Abstract

Objectives: To investigate and clarify which psycho-emotional factors are related to success in smoking cessation**.**
Results: Of the 65 individuals who participated in the study, 36 were successful in smoking cessation. There was an association between the level of addiction to nicotine and an unsuccessful outcome in smoking cessation ($p = 0.009$). It was also observed that failure in smoking cessation was associated with both the presence of depressive episodes ($p = 0.037$) but also of severe psycho-emotional disorders ($p <.001$). In the binary logistic regression analysis for the psycho-emotional disorders and relapse chances in Group Success there was no statistical significance ($p> 0.05$) in all the variables studied.
Conclusion: Among the factors related to failure in smoking cessation, the presence of severe psycho-emotional and current untreated alcoholism should be highlighted. The factors related to successful cessation were the absence of alcoholism and lower levels of dependence on nicotine.

Key-words: Smoking, Affective Disorders Psychotic, Smoking Cessation, Health Public.

Introduction:

It is known that smoking is a worldwide public health problem and the leading cause of preventable death in the world as a result of tobacco-related diseases.[1] Therefore, various measures to combat smoking are being carried out in order to promote the prevention and treatment of this disease, defined by the World Health Organization as "a mental and behavioral disorder due to nicotine dependency syndrome", which is included in the International Classification of Diseases (ICD) in the section for mental and behavioral disorders due to psychoactive substance use (ICD- F.17).[2]

In Brazil, anti-smoking actions are intense, with regulatory policies, [3,4] socio-educational campaigns[5,6] and smoking cessation programs.[7,8] Among these interventions, the latter have been developed in most health care centers, however, there is still no consensus on the success rate in smoking cessation due to the methodological diversity adopted by cessation programs. Freire et al.,[9] presented a model of a smoking cessation program which demonstrated high success rates when compared to those found in the literature, [7,8,10-13] with the implementation of new procedures such as: intensification of the frequency of meetings (from once to twice a week), including a specific date of termination of tobacco and participation of former smokers in the treatment.

It is worth noting that one of the factors that interferes with successful smoking cessation is nicotine abstinence syndrome, which is characterized by the manifestation of a set of symptoms such as: bradycardia, gastrointestinal discomfort, increased appetite, weight gain, anxiety, dysphoria, depression, insomnia, irritability, nervousness, fatigue and difficulty concentrating.[14,15] On the one hand, such symptoms frequently lead to smoking and on the other hand, the great difficulty in dealing with these symptoms increases the likelihood of relapse, particularly during the critical period of abstinence (less than six months of cessation) since the intensity and frequency of symptoms varies from individual to individual.[16] In addition, other factors that can also influence non-adherence to anti-smoking treatment and smoking cessation are high levels of anxiety and depression, living with other smokers, a high degree of nicotine dependence and low motivation to participate in anti-smoking therapies.[17,18]

There is a clear association between smoking and psycho-emotional disorders such as depression, anxiety, attention deficit, panic syndrome and psychiatric disorders,[18] however; it is not yet well established in the literature which psycho-emotional characteristics are determinant in success in smoking cessation and continued abstinence. The psycho-emotional disorders are related to mood swings, behavioral changes and emotional instability, however, during tobacco abstinence these factors are intensified, such as depression, the individual present no interest in the outside world, there is the feeling of intense sadness and long-lasting, which undermines the social, emotional and especially professional life and these negative influences make it difficult to achieve success in smoking cessation. [19]

According to the study Zvolensky et al. (2015),[20] former smokers with a history of depression, are likely to have relapse to smoking even after 10 years of abstinence compared to former smokers with no history of the disorder. Moreover, the chances of relapse to smoking further increase over time in cases withdrawal of current depression and / or applicant and such relapse is associated with symptoms such intensity.[21] Given the above, this study aimed to investigate and clarify which psycho-emotional factors are related to success in smoking cessation.

Methods

Study design and sample selection

This was a prospective, descriptive study conducted at the Faculty of Science and Technology - FCT / UNESP of Presidente Prudente/SP, to understand how some participants in a smoking cessation program even with some personal characteristics that initially suggest the failure in the smoking cessation process managed to get the success, ie, they managed to remain for at least six months without smoking. The study was approved by the Research Ethics Committee of this institution under protocol no. 245/2008.

The study sample consisted of 65 participants of both sexes, female predominance (68%) divided into two groups: Relapse group (n = 29), characterized by those who did not stop smoking and the Success group (n = 36) characterized by successful smoking cessation for at least six months.

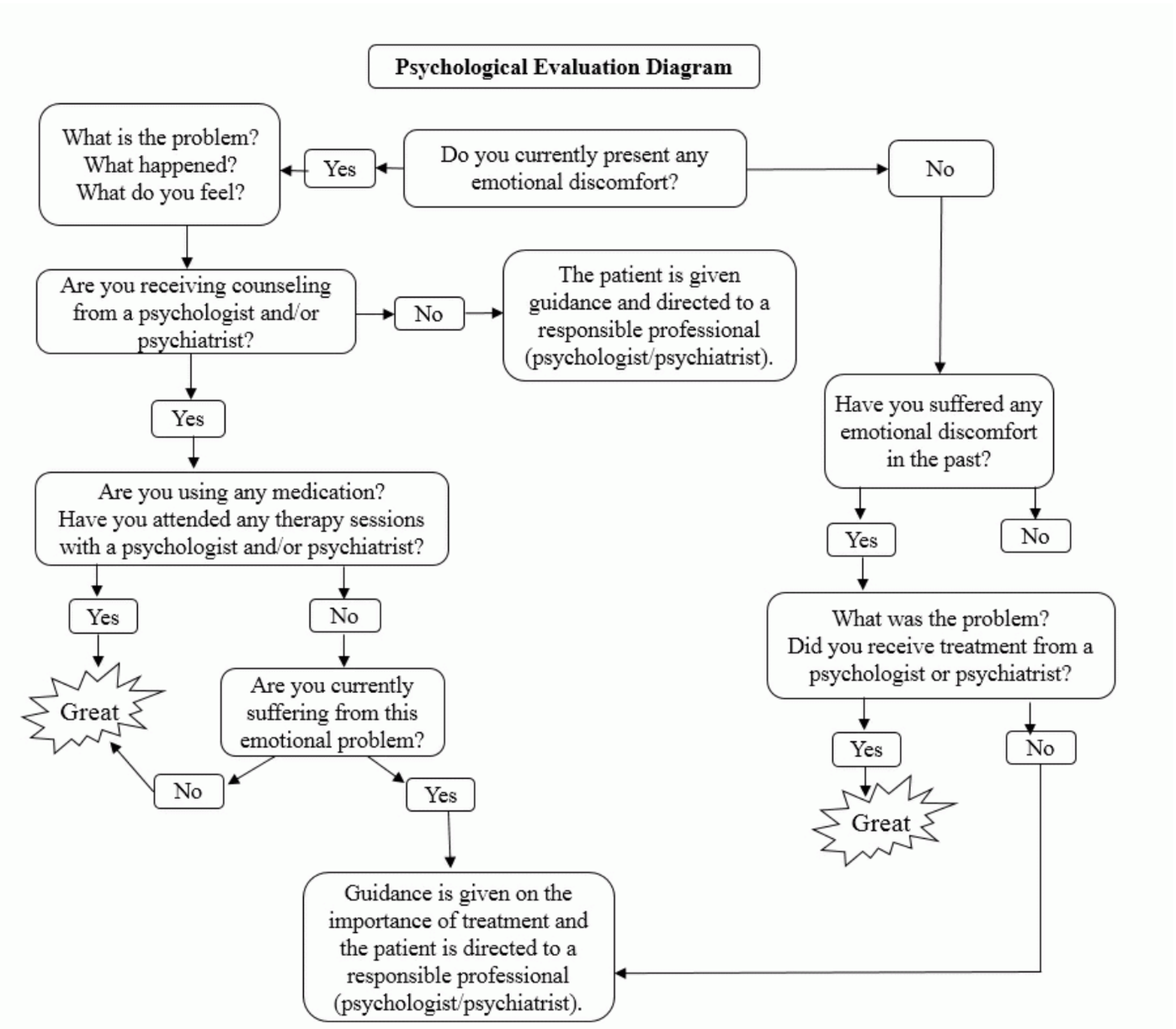
We included in the study individuals of both sexes, aged between 35 and 65, that participated of at least three meetings before the date of smoking cessation proposed by the health care team and who remained abstinent for at least six months. We excluded individuals who abandoned the program. PROCAT uses an intensive approach with cognitive behavioral therapy (CBT) associated with drug therapies and nicotine replacement. The therapy is performed in groups through structured sessions which take place twice a week, each session lasting 60 minutes. The first five sessions consist of socio-educational classes, after which begins the so-called "Stopping Day" (pre-established date for cessation) that occurs after the presentation and discussion of all educational classes on the themes proposed by National Cancer Institute - INCA. Individual reports in group meetings begin from the sixth therapy session.[9]

For monitoring the withdrawal situation of each individual, an abstinence control sheet was completed which included the presence or absence of relapses, at all meetings after the proposed date of cessation.

During the PROCAT admission phase, all participants underwent an initial evaluation, at which information was collected on personal data, anthropometric measurements (weight and height) and smoking history (number of cigarettes smoked per day; duration of smoking in years), education level and socioeconomic classification according to the Brazilian Association of Research Companies – ABEP- 2012.[22] The motivational stage for change in behavior according to the Prochaska and DiClemente stages[23] was also evaluated, adapted for the Brazilian population.[24] In addition, the degree of dependence on nicotine was evaluated through the Fagerström Test, which consists of a scale of six items and scoring from 0 to 10. The classification of nicotine dependence encompasses five levels: very low (0-2 points); low (3-4 points);

moderate (5 points); high (6-7 points); and very high (8-10 points).[25] Individuals who present a score of over 6 points are more likely to have greater difficulty in stopping smoking due to abstinence syndrome.[26] Subsequently, a psychological assessment was performed in order to verify the psych-emotional state of the participants who would be subjected to the withdrawal process and investigate possible psycho-emotional disorders that could influence this process. It should be emphasized that the identification of psycho-emotional disorders was conducted through self reporting by the participants, and some presented the prescription drugs that they frequently used. This evaluation followed the schematic plan presented below (Figure 1).

Figure 1



A psycho-emotional disorder was considered as something which provoked significant changes in the psychological and emotional area of the individual, reflected in individual behavior in social life, in the context of work or family. After the psychological evaluation, the following psycho-emotional disorders were

identified: alcoholism, anxiety, depressive episodes, severe disorders (characterized by: panic disorder, bipolar disorder and deep/recurrent depression), critical moment of life (characterized by situations of emotional instability for the following reasons: loss of loved-ones, financial problems, marital crisis/separation and family conflict). In severe disorders and critical life categorie when the individuals were classified if they had at least one of the subclasses. If the individual present more than one category of psycho-emotional disorders, it was considered for classification only the category of most serious disorder.

Statistical Analysis

Data were analyzed using the statistical software Statistical Package for Social Sciences (SPSS), version 18.0. Data normality was assumed or rejected by the Shapiro-Wilk test. Numerical variables were expressed as mean and standard deviation, and categorical variables were described in absolute and percentage values. For comparison between groups the independent t test was used for parametric data and the Mann-Whitney test for nonparametric data. The chi-square test was used to analyze categorical data. Was used Spearman correlation test to check the relationship between variables. In addition we performed a regression test Binary Logistic to check the chances of relapse according to the classification of psycho-emotional disorders. Adopted the statistical significance level of $p < 0.05$.

Results

The sample was predominantly female in both groups (83% in the Relapse group and 56% in Success group) and presented homogeneity as there were no statistical differences in relation to demographic or smoking-related data. (Table 1).

Table 1. Profile of the studied sample. Data expressed as mean and standard deviation.

Characteristics	Relapse Group (n=29)	Success Group (n=36)	*p*-value
M/F	5/24	16/20	---
Age (years)	48.74 ±13.93	53.28±12.18	0.148
Weight (kg)	66.41±14.72	70.78±13.23	0.166
Height (m)	1.60±0.09	1.63±0.09	0.122
BMI (kg/m²)	25.82±4.27	26.83±4.26	0.281
Cig/Day (unit)	21.63±12.19	22.92±13.63	0.978
Pack-years	31.16±22.31	40.00±27.58	0.141
Fagerström	6.07±2.20	5.50±1.69	0.104

Legend: M/F = male / female; BMI = body mass index; kg/m² = kilograms per meter squared; Cig/Day (units) = cigarette units consumed per day; pack-years = ratio of time and smoking load; Fagerström: average nicotine dependence. *Difference significant= $p<0.05$.

In this study it was observed that the majority of individuals from both groups were in the contemplation stage, i.e., they were aware that smoking was a problem and seriously planned to change their behavior (Table 2). In addition, Table 2 presents the association between the nicotine addiction level and failure in smoking cessation ($p = 0.009$), as the majority of members of the group of smokers who failed to quit smoking presented higher

nicotine dependence (very high level) when compared with the group that stopped smoking. It was further noted that there was a marginal difference (p = 0.054) between the groups in relation to socioeconomic classification. Additionally, there was a negative correlation between success in smoking cessation and socio-economic level (r = -0.374; p = 0.002), which suggested that the higher the socioeconomic status of the individual the smaller the chance of succeeding in smoking cessation.

Table 2. Descriptive analysis of the sample with respect to the Prochaska and DiClemente stage, Fagerström, Educational level and Socio-Economic Class

Characteristics	**Relapse Group (n=29) N (%)**	**Success Group (n=36) N (%)**	***p*-value (χ^2)**
Prochaska and DiClemente stage			0.682
Pre-contemplation	6(20.7)	9 (25.0)	
Contemplation	23 (79.3)	27 (75.0)	
Preparation	0 (0)	0 (0)	
Action	0 (0)	0 (0)	
Maintenance	0 (0)	0 (0)	
Fagerström			0.009*
Very low	2 (6.9)	2 (5.6)	
Low	6 (20.7)	8 (22.2)	
Average	3 (10.3)	3 (8.3)	
High	8 (27.6)	22 (61.1)	
Very high	10 (34.5)	1 (2.8)	
Educational Level			0.874
Higher education Complete	6 (20.7)	8 (22.2)	
College Complete/ Higher education Incomplete	12 (41.4)	12 (33.3)	
Secondary Complete/ College Incomplete	3 (10.3)	3 (8.3)	
Primary Complete/ Secondary Incomplete	6 (20.7)	11 (30.6)	

Illiterate/ Primary Incomplete	2 (6.9)	2 (5.6)	
Socioeconomic [a]			0.054
Class A1	0 (0)	0 (0)	
Class A2	1 (3.45)	1 (2.8)	
Class B1	2 (6.9)	8 (22.2)	
Class B2	6 (20.7)	15 (41.7)	
Class C1	10 (34.5)	9 (25.0)	
Class C2	9 (31.0)	3 (8.3)	
Class D and E	1 (3.45)	0 (0)	

Legend: [a]= Socioeconomic classification according to the Brazilian Association of Research Companies - ABEP- 2012. Data presented in absolute values (n) and percentage of occurrence (%) χ^2= Chi-square test. *Difference significant= $p<0.05$.

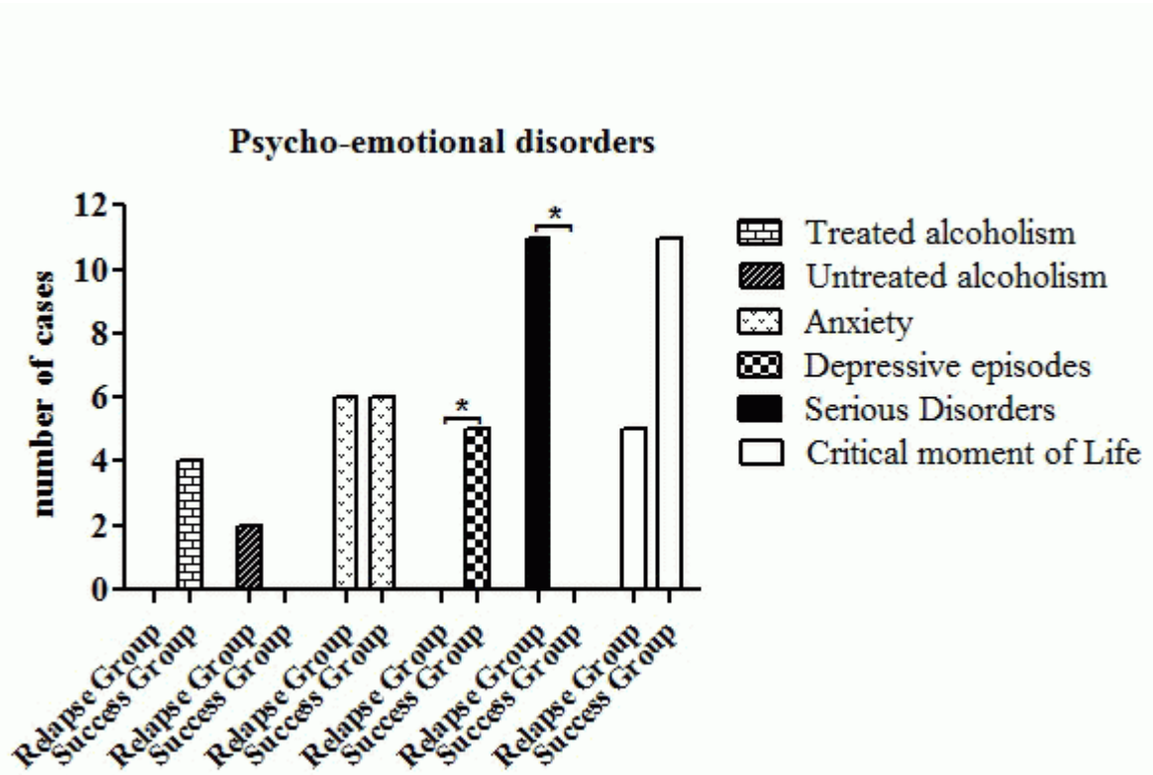
Table 3 demonstrates that failure in smoking cessation was associated with both the presence of depressive episodes ($p = 0.037$) and the presence of severe psycho-emotional disorders such as: Panic Disorder, Bipolar Disorder and Deep/Recurrent Depression ($p <.001$). In addition, it was noted that although not statistically significant, there was a marginal difference between the groups in relation to treatment for alcoholism, which allowed us to assume that alcoholism, when treated, greatly increases the chances of success in smoking cessation. Figure 2 is a graphical representation of the prevalence of psycho-emotional disorders according to the relapse and success groups. Among the individuals who demonstrated some kind of psycho-emotional disorder, 13 were attending psychological and/or psychiatric counseling, representing 28% in the relapse group and 14% in the success group.

Table 3. Association between the psycho-emotional characteristics and success in smoking cessation according to the group: Relapse Group (RG) and Success Group (SG).

Psycho-emotional Characteristics	**RG (n= 29)** **N (%)**	**SG (n=36)** **N (%)**	***p*-value**
Presence/Absence	24/5	26/10	0.316
Treatment for alcoholism	0 (0)	4 (11.1)	0.064
Not treated for alcoholism	2 (6.7)	0 (0)	0.109
Anxiety	6 (20.7)	6 (16.7)	0.678
Depressive Episodes	0 (0)	5 (13.9)	0.037*
Serious Disorders	11 (37.9)	0 (0)	0.000*
Critical Life Moments	5 (17.2)	11 (30.5)	0.215

Legend: Serious disorders= Panic Disorder, Bipolar Disorder and Deep and/or Recurrent Depressio; Critical Life Moments = characterized by situations of mourning, financial problems, marital crisis/separation, family conflict. Data presented in absolute values (n) and percentage of occurrence (%). Chi-square test. * *Difference significant= $p<0.05$.

Figure 2



Logistic regression analysis (Table 4) shows that the psycho-emotional disorders except treated alcoholism, adversely impacted the chances of success Group to remain abstinent, because untreated alcoholism, depressive episodes and serious disorders have 100% relapse chance. Already treated alcoholism, anxiety and critical life time have 29%, 41% and 50% chance of relapse respectively. However, for all variables there was no statistical significance ($p> 0.05$).

Table 4. Binary logistic regression of psycho-emotional disorders and risk of relapse for Success Group.

Variáveis	B	S.E.	Wald	df	Sig.	Exp(B)	OR	95% C.I. L	95% C.I. H
Presence/Absence	20,376	20096,485	0,000	1	0,999	0,707	0,293	0,000	[a]
Treatment for alcoholism	-21,718	28078,094	0,000	1	0,999	0,000	1	0,000	[a]
Not treated for alcoholism	-0,539	0,705	0,585	1	0,445	0,583	0,417	0,146	2,323
Anxiety	-22,030	40192,970	0,000	1	1,000	0,000	1	0,000	[a]
Depressive Episodes	-22,030	16408,711	0,000	1	0,999	0,000	1	0,000	[a]
Serious Disorders	-0,693	0,688	1,015	1	0,314	0,500	0,500	0,130	1,925
Constant	0,827	0,453	3,328	1	0,068	2,286			

Legend: OR = odds ratio; L = lower; H = higher; 95% C.I. = 95% Confidence Interval for Exp (B); S.E = standard error; a = A floating-point overflow occurred when calculating this statistic. Therefore, its value is defined as missing from the system.

Discussion

In the present study it was found that the psycho-emotional characteristics with higher prevalence in the relapse group were serious disorders (Panic Disorder, Bipolar Disorder and Deep/Recurrent Depression) with 37.9% and anxiety with 20.7%. What is interesting is that these serious disorders, even when being monitored, are directly associated with failure in smoking cessation, however, this could be justified by the exacerbation of psycho-emotional symptoms during the period of abstinence, which greatly increases the risk of relapses during treatment.[27] In addition, high levels of nicotine dependence are significantly associated with level of depression and low rates of success[11,28] this corroborates the findings of the present study, which also found an association between high levels of nicotine dependence and failure in smoking cessation.

Considering that the sample was predominantly female, this prevalence may be related to gender. According to Silva et al. (2012),[29] female smokers; present more intense and frequent depressive disorders than male smokers; have more difficulty enduring and controlling the symptoms of withdrawal syndrome according to the phase of the menstrual cycle; and receive less cessation support than men, which makes them more susceptible to relapses. Male smokers more commonly present the symptom of anxiety than depression.[30]

Although anxiety did not present statistical significance in the present study, it can be considered one of the complicating factors in the cessation process, since the relationship between smoking and anxiety is a kind of vicious circle, on the one hand there are patients who smoke to alleviate the feeling of anxiety and on the other hand, there are those that compulsively smoke because they are very anxious.[17,31] It is important to point out that the difference between healthy and pathological anxiety is very subtle. However, anxiety becomes

pathological when there are feelings of fear without genuine threat or in cases of a sensation which is disproportionate to the situation that originated it;[32] in more advanced cases this can eventually become Panic Syndrome.

Another factor related to failure in smoking cessation is the simultaneous consumption of alcohol or untreated alcoholism, which in this study was characteristic of the Relapse group but without statistical significance. Individuals who consume alcoholic drinks start smoking tobacco earlier and smoke a higher number of cigarettes over a longer period compared to subjects who do not consume alcohol.[33,34] Kahler et al. (2009),[35] conducted a study with 4832 individuals and found that those who drank more than once a week, four or more units of alcohol (considered heavy consumption), had lower smoking cessation rates compared to the other participants.

In the present study, the psycho-emotional characteristics which facilitated cessation success were: the absence of simultaneous consumption of alcohol (untreated alcoholism) and/or treated alcoholism, the absence of severe psycho-emotional disorders and lower levels of nicotine dependence. It should be pointed out that the Success group presented higher incidences of the characteristic denominated "Critical moment of life" characterized by conflicting situations such as: Mourning, Financial problems, Marital crisis/separation and Family conflicts. These situations are in fact challenging, but even so, our study showed that despite these life setbacks, it was possible to succeed in the withdrawal process; the most important element in these cases was not to lose focus on the treatment. Although there is no data in the literature relating to this variable, it is believed that the higher frequency of meetings in the early stages of the Intervention Program (PROCAT) may have contributed to successful termination. In addition, another important factor was the presence of mild to moderate depressive episodes, reported by the participants themselves. The literature reports other factors associated with successful cessation, such as younger individuals being more likely to give up smoking than older individuals; participants in physical or religious activity (which provide positive reinforcements to abandon the cigarette) and non consumers of alcoholic beverages.[36] According to Jesen (2012)[37], successful predictive factors of short-term cessation are lower daily cigarette consumption, participation in CBT sessions and the use of medication to control the symptoms of withdrawal. In the long term, the predictors of success are the absence of depressive symptoms and early cessation.

Since psycho-emotional disorders are determining factors in the success of smoking cessation, it is of paramount importance that smoking cessation centers and tobacco control and support programs evaluate and identify these factors so that the psycho-emotional characteristics of clients can be tracked, thus offering more effective treatment, with specific approach strategies which contribute to the reduction in relapse rates and increased success rates during cessation.

Conclusion

From the results presented, it was concluded that the presence of severe psycho-emotional disorders (panic disorder, bipolar disorder and deep/recurrent depression) and simultaneous untreated alcoholism, were related to failure in smoking cessation. The factors related to successful cessation were the absence of alcoholism and lower levels of nicotine dependence. However, the smoking cessation process is complex, delicate and requires health centers, a specialized multidisciplinary team that takes into account the psycho-emotional characteristics of individuals during treatment of smoking in order to choose the best action strategy that provides the success in cessation and maintenance of long-term abstinence.

Abbreviations

ICD: International Classification of Diseases; FCT: Faculty of Science and Technology; PROCAT- Program of Anti-Smoking Awareness and Guidance; CBT: cognitive behavioral therapy; ABEP: Brazilian Association of Research Companies; INCA: National Cancer Institute.

Human Subjects Approval Statement

The study was approved by the Research Ethics Committee of this institution under protocol nº. 245/2008.

Authors' contributions

DR and EMCR conceptualized the study. RMD, APCFF and ALPB collected the data. RMD analysed the data and wrote the first draft. All authors contributed to the final manuscript and approved its contents.

Conflict of Interest Disclosure Statement

All authors of this article declare they have no conflicts of interest.

Acknowledgments
The authors are thankful the FAPESP (Sao Paulo State Research Foundation) by support (Proc. nº: 2013/04091-0 and 2013/03147-2).

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