ORIGINAL ARTICLE

Results of a smoking cessation program for women using nicotine replacement and group cognitive behavior therapy

Resultados de um programa de cessação de tabagismo para mulheres com uso de adesivo de reposição de nicotina e terapia cognitivo comportamental em grupo

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Abstract

Introduction: Female smoking attracted special attention due to an increase in the prevalence of smoking. In order to understand the phenomenon and create better treatment strategies, this study described the cognitive schemas of 112 women seeking treatment to stop smoking, depression and anxiety symptoms and the results of a smoking cessation behavior cognitive therapy study. The schema therapy model proposes an evaluation and intervention approach based on emotional regulation and on early maladaptive schemas that might be involved in dysfunctional behaviors common in substance dependence. The collection of data included a structured interview on smoking patterns and emotional factors involved in smoking and in the process of quitting. Objective: We aimed to describe the results of a multicenter smoking cessation program for women using nicotine replacement and group cognitive behavior therapy with nicotine replacement, and to evaluate the relationship between cognitive dysfunctional schemas and treatment efficacy. Method: to assess the cognitive schemes the Young Schema Questionnaire. The Cognitive Behavioral Therapy groups were conducted at the same time as the medical care and were applied by psychologists and medical doctors according to a defined protocol. Results: differences in smoking cessation were not found between treatment groups, 27 (51.9%) women of the cognitive behavioral group with nicotine replacement and 25 (48.1%) from the medication group did so. Our results provided evidence that the cognitive schemas of women who sought treatment for quitting smoking. It was also evident that the overall time throughout which the individual had smoked correlated to smaller rates of being able to quit smoking. Discussion: The lack of studies that assess the cognitive schemas of women smoking is a strong point of this study. Studies that evaluate the contribution for smoking and their impact on cessation are necessary can improve treatment.

Keywords: Depression; Anxiety; Smoking Cessation; Cognitive Therapy; Tobacco Use Disorder.

Resumo

Introdução: O tabagismo feminino atraiu atenção especial devido a um aumento na prevalência de tabagismo. Para entender o fenômeno e criar melhores estratégias de tratamento, este estudo descreveu os esquemas cognitivos de 112 mulheres que procuraram tratamento para parar de fumar, sintomas de depressão e ansiedade e resultados do estudo da terapia cognitiva para o comportamento de cessação do tabagismo. O modelo de terapia de esquemas propõe uma abordagem de avaliação e intervenção baseada na regulação emocional e em esquemas iniciais mal-adaptativos que podem estar envolvidos em comportamentos disfuncionais comuns na dependência de substâncias. A coleta de dados incluiu uma entrevista estruturada sobre padrões de tabagismo e fatores emocionais envolvidos no tabagismo e no processo de cessação. Objetivo: Nosso objetivo foi descrever os resultados de um programa multicêntrico de cessação do tabagismo para mulheres que usam reposição de nicotina e terapia cognitivo-comportamental em grupo e avaliar a relação entre esquemas disfuncionais cognitivos e eficácia do tratamento. Método: avaliar os esquemas cognitivos através do Questionário de Esquemas de Young. Os grupos foram conduzidos ao mesmo tempo que os cuidado usual

e dirigidos por psicólogos e médicos segundo um protocolo definido. Resultados: não foram encontradas diferenças na cessação do tabagismo entre os grupos de tratamento, 27 (51,9%) mulheres do grupo cognitivo-comportamental com reposição de nicotina e 25 (48,1%) do grupo de reposição. Nossos resultados evidenciaram os esquemas cognitivos de mulheres que procuraram tratamento para parar de fumar. Também ficou evidente que o tempo total pelo qual o indivíduo havia fumado se correlacionou com menores taxas de possibilidade de cessação. Discussão: A falta de estudos que avaliem os esquemas cognitivos de mulheres fumantes é um ponto forte do estudo. Estudos que avaliem a contribuição para o tabagismo e o impacto na cessação são necessários para melhorar o tratamento.

Palavras-chave: Depressão; Ansiedade; Hábito de Fumar; Terapia Cognitiva; Transtorno por Uso de Tabaco.

Introduction

Tobacco use is among the leading causes of preventable death. The tobacco epidemic kills nearly 6 million people every year. By 2030, more than 8 million people is expected to die from tobacco-related diseases and 80% of deaths will occur in "lowmiddle-income" countries. The costs of tobacco use are measured in its huge toll of illness. Economies also suffer from rising health care costs and reduced productivity[1-2].

Decades of history and experience with the tobacco industry's promotion practices clearly show that the industry has taken gender roles and norms into consideration in its market strategies for almost a century. Since the 1920's when American women first began to be targeted by the tobacco industry, various images and themes have been used to encourage women to smoke, by promoting its social acceptability, and to highlight the supposed desirable attributes of particular brands of cigarette[3].

Among those addicted to smoking, special attention has been given to the female population, due to an increase in the overall number of women smokers and a smaller reduction of those who are stopping smoking compared to men[4].

Women are also more prone to manifest symptoms associated with depression and anxiety, which may be mitigated by the use of tobacco. It is also possible that psychological distress might underline the greater level of difficulty and failure in quitting smoking which has been observed in women as compared to men[5].

Cognitive Behavioral Therapy (CBT) is commonly used for the treatment of substance abuse and addiction[6]. CBT group programs are effective in helping people quit smoking[7]. A systematic review found statistical differences in abstinence rates in favor of the intervention groups, all of which used cognitive behavioral therapy[8].

Schema focused Cognitive Therapy (Schema Therapy) is a form of CBT[9]. The schemas refer to an abstract cognitive construct that seems to influence the interpretation of information and problem resolution[10].

Maladaptive schemas are those associated with considerable suffering and emotional disorders, including substance abuse[11-12].

According to Young such maladaptive schemas can be classified in five great domains: (1) The domain of disconnection and rejection, which includes the schemas of emotional deprivation, distrust/abuse, social isolation, and defectiveness/shame; (2) The domain of impaired autonomy and performance, which involves the schemas of failure, dependence/incompetence, vulnerability to harm or illness, and enmeshment; (3) The domain of impaired limits, with the schemas of entitlement, insufficient self-control and self-discipline; (4) The domain of being other-directedness, with the schemas of submission, and self-sacrifice; (5) The domain of over vigilance and inhibition, with the schemas of emotional inhibition and unrelenting standards[13].

According to Shorey et al., among alcohol addicts, women showed greater use of maladaptive schemas than men in 14 out of the 18 schemas studied. A reduction in the number of schemas in addicted individuals treated with group CBT was reported in a variety of studies[11-12- 14-15- 16]. There are no studies on Young's schemas and schema therapy in the smoking population[11].

Objectives

In this study, we aimed to describe the results of a multicenter smoking cessation program for women using nicotine replacement and group cognitive behavior therapy with nicotine replacement, and to evaluate the relationship between cognitive dysfunctional schemas and treatment efficacy in a smoking cessation program for women.

It was evaluated whether participation in a Cognitive Behavioral Therapy group improved the rates of smoke quitting.

Methods

Women part of a both gender randomized controlled clinical trial that studied the efficacy of nicotine replacement therapy and Group Cognitive Behavioral Therapy were recruited from two hospitals, both in large cities in Brazil: São Paulo – *Hospital do Coração/Associação do Sanatório Sírio*; and Recife – *Instituto de Medicina Integral Professor Fernando Figueira (IMIP)*. The research ethics committees from Hospital do *Coração – HCor* approved the study protocol for both study sites. The treatment protocol proposal was publicized by mail to patients of the *Hospital do Coração – HCor*, and an average of 60,000 individuals were reached. In Recife, the study was advertised by local media and other means of communication. Patients were invited to an explanatory meeting where they were informed of the purpose of the study and filled out a pre-assessment form.

Psychoeducational conferences were presented at both centers, along with the study objectives and treatment characteristics. This pre-assessment process has excluded 60 individuals in the medical and psychiatric

screening. Thus, 217 patients took part in the original clinical trial (112 females). The number of patients excluded for each criterion was not recorded.

Patients were included if they were female, 18 years old or more, were capable of understanding and responding to the proposed questionnaires. Exclusion criteria were: fulfilling DSM-IV criteria for bipolar disorderdepression, psychosis, substance use disorder for drugs and/or alcohol, dementia, current pregnancy, contraindication to nicotine patches, prior use of bupropion and/or varenicline in the, previous 12 months before randomization and those who refused to sign the consent form. After signing the informed consent, patients were randomly allocated to receive Cognitive Behavioral Therapy plus nicotine replacement or nicotine replacement alone. Randomization was achieved electronically, with stratification 1:1 according to each participating center (*HCor – São Paulo and IMIP – Recife*). The secrecy of the randomized list was kept by means of a central automated randomizing system, online, with 24-hour availability, at *Hospital do Coração*. Half of the participants were randomly allocated to nicotine replacement only and the other group received both Cognitive Behavior Therapy and nicotine replacement.

The three physician's participants were trained on how to assess smoking cessation and relapses episodes, in order to minimize the risks of bias. All patients received variable doses of nicotine replacement according to the number of cigarettes smoked per day for the last 12 weeks. The Cognitive Behavioral Therapy groups were conducted at the same time as the medical care and were applied by two psychologists from both institutions. Follow-up was conducted by telephone by a single independent and blind evaluator. At baseline, all participants had to complete the evaluation instruments. Evaluations were repeated after treatment at week 6 and after the follow up at week 52.

The behavioral support program aimed to modify the cognitive dysfunctions of the smoker behaviors associated with nicotine dependence and relapse prevention and took place in six therapy sessions (six consecutive sessions per week) with a group of 10 patients on average, for one hour. This program used behavioral techniques to help in the smoking cessation process.

The number of women included in the study was 112 randomly divided into the treatment groups (Behavior Cognitive Therapy and Nicotine therapy 53 and Nicotine therapy and usual care 59 women). The study took place in a time frame of 52 weeks. 97 women complete all the evaluations).

The topics covered in the sessions were previously planned and focused on changing beliefs and behaviors that were related to smoking and physical and psychological dependence. During the group sessions, the participants exposed difficulties and experiences, coping strategies to deal with the will to smoke and results obtained. In the sessions, the triggers and risk situations related to smoking and coping were worked through the techniques of behavioral change and relaxation, Cognitive Behavioral Therapy and motivational interview techniques.

Instruments

The initial assessment form had questions regarding clinical and smoking history (number of cigarettes per day, years of smoking, nicotine dependency and motivation to stop, and psychiatric history) and also on demographic and clinical data.

The Young Cognitive Schema Questionnaire – short form[9-13] was used to assess the cognitive schemas. The State-Trait Anxiety Inventory – STAI[17], the Beck Depression Inventory – BDI[18], Prochaska & Di Clemente stages of change[19] were used to assess anxious, depressive symptoms and the motivation stages such as pre-contemplation, contemplation, preparation, action and maintenance during the process of change. The Fagerstrom Questionnaire for Nicotine Dependence[20] and Reasons for smoking scale[21] were used to assess smoking patterns.

Statistical analysis

The categorical variables were presented by absolute and relative frequencies and the comparisons amongst the proportions were evaluated by the Fisher exact test. The continuous variables were described by measurements of position (averages/means, medium, standard deviation and interquartile intervals). The comparisons amongst the groups were evaluated by the Mann-Whitney (MW) and t-test[22.] Variables showing significant correlations at the above tests were considered as predictor candidates and included in a logistic regression analysis. Akaike's criterion in a stepwise backward selection was used to propose the final model[23].

STAI scores and Beck depression inventory scores were evaluated with linear mixed models to test effect of both treatments at baseline and the end of the treatment. This model considered the effect of treatment differences in the follow-up period[23].

All tests used a significance level of 5% and the analysis was conducted using the R 3.2.1 software[24].

Results

Baseline clinical, psychological profile and smoking characteristics

One hundred and twelve women aged of 50.71 ± 11.23 years (mean ± sd) took part in this study. Among them, 43.8% lived with other smokers, and 36.6% reported previous unsuccessful treatments to stop smoking.

The following medical conditions were identified: hypertension (27.7%), chronic obstructive pulmonary disease (14.3%), cardiovascular disease (6.3%), cancer (2.7%) and cerebrovascular accident (0.9%).

The baseline BDI score was 13.1 (± 8.2), which characterizes minimal or light depressive symptoms. The STAI-trace score was 46.2 (± 9.0) and the STAI-state score was of 42.9 (± 9.2). These scores indicate a moderate anxiety condition.

Baseline smoking patterns are shown in table 1: reasons for smoking, stages of change, reasons for quitting, and nicotine physical dependency according to the Fagerstrom questionnaire. There were no differences among the two groups.

Table 1 – Characteristics of smoking, physical dependency/addiction, and reasons for quitting smoking before the beginning of treatment by treatment group

Variables	Factor	Medication (n=60)	Medication and Therapy (n=52)	Total (n=112)
Smokes due to Stimulus	Score equal to or greater than 7	40 (66.7%)	38 (73.1%)	78 (69.6%)
Smokes due to Ritual	Score equal to or greater than 7	27 (45%)	32 (61.5%)	59 (52.7%)
Smokes for Pleasure	Score equal to or greater than 7	49 (81.7%)	44 (84.6%)	93 (83%)
Smokes due to Tension	Score equal to or greater than 7	56 (93.3%)	51 (98.1%)	107 (95.5%)
Smokes due to Physical Dependency	Score equal to or greater than 7	43 (71.7%)	43 (82.7%)	86 (76.8%)
Smokes out of Habit	Score equal to or greater than 7	16 (26.7%)	13 (25%)	29 (25.9%)
Motivation Stage for quitting smoking	Pre-contemplation	7 (11.7%)	3 (5.8%)	10 (8.9%)
	Contemplation	31 (51.7%)	35 (67.3%)	66 (58.9%)
	Preparation	20 (33.3%)	12 (23.1%)	32 (28.6%)
	Action	1 (1.7%)	2 (3.8%)	3 (2.7%)
	Maintenance	1 (1.7%)	0 (0%)	1 (0.9%)
Physical dependency by Fagerstrom	1 – Very low / Low	22 (36.7%)	21 (40.4%)	43 (38.4%)
	2 – Medium	18 (30%)	7 (13.5%)	25 (22.3%)
	3 – High / Very high	20 (33.3%)	24 (46.2%)	44 (39.3%)

Cognitive schemas profile

Cognitive schemas domains prior to treatment were detailed in table 2.

Table 2 – Cognitive schemas domains at the beginning of treatment by treatment group

Scores at baseline – mean ± standard deviation	Medication (n=60)	Medication and therapy (n=52)	Total (n=112)
Disconnection and rejection domain	47.63 ± 21.69	50.81 ± 19.06	49.11 ± 20.48
Impaired autonomy and performance domain	35.12 ± 14.55	36.02 ± 14.3	35.54 ± 14.37
Impaired limits domain	28.03 ± 9.28	26.56 ± 10.34	27.35 ± 9.77

| Other-directedness domain | 25.05 ± 9.58 | 27.62 ± 11.28 | 26.24 ± 10.44 |
| Over vigilance and inhibition domain | 21.98 ± 9.61 | 25.5 ± 9.41 | 23.62 ± 9.64 |

Efficacy results: women who quit smoking after treatment and in the follow up

Only 79 women completed treatment and had their data collected at the 6th week of treatment. In the 52nd week (telephone follow-up), 97 women have been contacted and had their cessation data collected. There were no differences between groups of treatment (p = 0.104). At the end of therapy in the sixth week, 25 (78.1%) women of the cognitive behavioral group with nicotine replacement stopped smoking and 29 (61.7%) of the medication only group did so. After 52 weeks of follow-up, 27 (51.9%) women of the cognitive behavioral group with nicotine replacement and 25 (48.1%) from the medication group did so. At the follow up from the 112 women who began treatment 52 (53.6%) stop smoking (p = 0.104).

Differences between those who quit smoking and those who did not

Age (p= 0.026) and the number of years smoking were different in those who stop smoking. Those who stopped have smoked for a shorter period of time (66.6 ± 11.8 *versus* 60.2 ± 13.8) than those who did not; p = 0.021. There was also a score decrease in the oriented to others (p=0,010) and Impaired autonomy and performance (p=0,049) schemas domains.

Table 3 describes the cognitive schemas domains, clinical and emotional variables related to smoke quitting.

Table 3 – Cognitive schemas, clinical and emotional variables before and after treatment of the women who stopped smoking at the follow-up

Variables	Stopped smoking at week 52		p-value
	No (n=45)	Yes (n=52)	
Disconnection and rejection domain	2.6 ± 10.8 (n=31)	5.9 ± 18.6 (n=44)	0.375
Impaired autonomy and performance domain	0.9 ± 9.3 (n=31)	5 ± 10.8 (n=44)	0.049
Impaired limits domain	1.7 ± 6.3 (n=31)	2.7 ± 8.1 (n=44)	0.267
Other-directedness domain	0.2 ± 7.8 (n=31)	5.5 ± 10.6 (n=44)	0.010
Over vigilance and inhibition domain	0.9 ± 8.0 (n=31)	4.1 ± 8.4 (n=44)	0.168
Age	54.1 ± 9.9 (n=45)	48.6 ± 11.7 (n=52)	0.026
Years as a smoker over Age (%)	66.6 ± 11.8 (n=45)	60.2 ± 13.8 (n=52)	0.021
Depression at baseline	14.6 ± 7.6 (n=45)	12.4 ± 8.4 (n=52)	0.163
State anxiety at baseline	42.0 ± 8.1 (n=45)	43.9 ± 9.4 (n=51)	0.345

Differences between those who received Cognitive Therapy and those who did not

Differences in the cognitive schemas amongst the treatment groups were higher in the over vigilance and inhibition domain, but not significant (control group 25.5 ± 9.4 and behavior therapy group 22.0 ± 9.6, p = 0.054). Comparing to baseline, the cognitive behavioral therapy group had a significant decrease in the over vigilance and inhibition schemas domain (at the end of treatment).

The scores of this domain decreased 5.41 ± 7.3 in the CBT group against -0.07 ± 8.1 in the nicotine replacement only group (p = 0.001).

Compliance and adherence predictors

Compliance to medication was low in both groups. Only 10 women in the medication group (16.7%) and 11 women in the cognitive behavioral therapy group with nicotine replacement (21.2%) used the medication for four weeks or more (p=0.716).

Those on both groups who did not comply with medication had at baseline higher physical dependence (p = 0.006) and higher scores in the autonomy and performance domain (p = 0.027). Also, women of the nicotine replacement group who smoked due to ritual (p=0.006) or due to pleasure (p=0.038) had a better compliance to both the nicotine replacement therapy and to the medical appointments. No differences in Fagerstrom scores were found for those who comply with nicotine replacement (p = 0.182). There was no relation of compliance to motivation (p = 0.716).

Twenty-seven women (84.4%) attended at least four group therapy sessions. There was a tendency for those who attend to quit the smoking habit (23 (85.2%, p = 0.098). No differences in the Fagerstrom scores were found (p = 0.554).

Logistic regression

A logistic regression was conducted with the smoking cessation related variables (Table 4).

For every 1.0% of additional time smoking (years of smoking), the chances of stop smoking at the 52nd week of follow-up showed a reduction of 5.7%. A score decrease in the Oriented to Others schema domain, increased by 6.6% the chances of not smoking at the 52nd week of follow-up. Every additional point on the Beck Depression reduced 5.8% the chance of cessation (Table 4). There were no group treatment effects.

There were no differences in the scores of the other-directedness (p = 0.251) and over vigilance and inhibition schemas domains (p = 0.155) from the 1st week to the treatment end. No differences were found for age (p = 0.304), depression at baseline (p = 0.089) and state of anxiety at baseline (p = 0.386).

Table 4 – Final Logistic Regression using the Akaike's criterion

Coefficient	Odds ratio	P value
Other-directedness domain	1.066	0.037
Time as a smoker / Age (%)	0.943	0.012
Depression at baseline	0.942	0.118

AUC = 75,9%

Discussion

The effectiveness of nicotine replacement indicated in this study (around 50%) was greater than that reported in the literature, despite the small adherence to nicotine replacement. The randomized trial of Otero et al.with nicotine replacement, showed a 32% cessation rate after one year of treatment and Chatkin et al., had a 25.4% cessation rate and Hurt et al. (1994) a 27.5% cessation rate after the one year follow-up[25-26].

Pain and Prasad found that patients with low physical dependence benefit from cognitive behavioral therapy, while patients with a high degree of nicotine dependence need replacement to achieve abstinence. They did not compare combined treatments, only counseling or nicotine replacement. This might explain our better results. In our study, patients reported physical dependence as a reason for smoking and their scored addictions were high and very high. Nicotine replacement occurs more slowly and with lower peaks than when smoking a cigarette. Thus, withdrawal symptoms are less intense because adhesive use produces a more steady nicotine blood presence and this may reduce the chances of relapse[27-28].

Patients in this study attend a small number of therapy sessions. In other studies, treatments were more intensive and with more sessions[25-29] and all showed similar percentages of cessation after treatment. Despite similar cessation rates, the authors believe that an additional number of sessions and include follow-up sessions could increase the cessation number and further the maintenance of cessation.

França et al. evaluated the factors involved in smoking cessation. The authors reported that participation in maintenance therapy seems to favor abstinence. They also found that high physical dependence was hindering the cessation process. Patients who were undergoing cognitive behavioral therapy maintenance sessions, in addition to regular sessions, showed 27 times more abstinence compared with those who underwent cognitive behavioral therapy without maintenance sessions. Iliceto et al. reinforces the findings of França et al. regarding maintenance of sessions and the degree of nicotine dependence and additionally found in their study that women are 1.5 times more likely to continue to smoke than men[30-31].

Moderate and severe dependence, enhances the abstinence syndrome favoring relapse [32]. This present study also found high physical dependence on the participants. In relation to adherence to therapy, the study showed good adhesion to four of the six group sessions. Despite the good adhesion, the number of sessions may have been insufficient for a better treatment outcome in the therapy group.

Moreover, Stead and Lancaster, analyzed forty-one smoking cessation studies with over 20,000 participants. They found weak evidence that more sessions of cognitive behavioral therapy combined with pharmacotherapies (nicotine replacement, varenicline and bupropion) have a major impact on cessation compared to a minimal intervention or usual care. The authors found no strong evidence that the provision of more intensive behavioral support was associated with better effects[7]. The literature is not yet clear on whether or not the largest number of sessions for smoking cessation should be favored.

Borges and Barbosa, studying women smokers, showed that cigarettes are a "companion" to face the anxiety and loneliness, as well as a source of pleasure and relaxation. Anxiety and loneliness are related to the disconnection and rejection domain, the most frequent schema domain among women in this study. Shorey et al., in patients who were substance users, also found increased scores in the disconnection and rejection and other directedness domains. Our results provided evidence that the cognitive schemas Other-directedness and Impaired autonomy and performance showed a significant relationship with depressive and anxiety symptoms. The cognitive behavioral therapy group had a significant decrease in the over vigilance and inhibition schemas domain. This domain has as its characteristics difficulty in self-expression and health impairment because of the suppression of feelings and personal choices. Cognitive therapy reinforces the importance of coping with anxiety and stress through adaptive and functional responses. In cognitive-behavioral treatment of smoking skills trainings, problem solving and social support are used and they can assist in the proper expression of feelings[12-33-34].

Other-directedness domain presents characteristics such as submission to other people and suppressing their feelings and needs, mainly for fear of abandonment. Excessive approval seeking and recognition by others are also features of these schemas. Shorey et al. compared the opioids dependent men and women and identified in women subjugation and self-sacrifice (present in the domain Other-directedness). For Young et al. these are dysfunctional coping strategies for situations such as submission to others. To cope with these feelings, the individual can make use of substances. The Other-directedness domain has characteristics similar to those mentioned by Young, and according to the findings of the present study its reduction may help to promote the maintenance of cessation[9-11].

This study identified that the longer time one smokes the lower the odds of cessation. Earlier smoking initiation and longer smoking history translate to greater difficulty in quitting smoking. The aversive symptoms caused by nicotine in the beginning of its use tend to disappear with continued use and the development of tolerance. Initially, nicotine stimulates aversion mechanisms, but after some use, negative reinforcement mechanisms are developed. With continued use, more frequent doses stimulate an enhanced effect and and increased dependence. Psychological characteristics, such as use of long cigarettes can bring greater fear of abandonment and lower confidence[8-21-35].

Some limitations of this study should be mentioned. The first refers to the number of patients treated and how this may have impacted the analysis and the significance of the findings. This sample was too small and no maintenance therapy during follow-up was offered.

The lack of studies that assess the cognitive schemas of women smoking is a strong point of this study. Studies that evaluate the contribution of cognitive schemes for smoking and their impact on cessation can improve treatment. The necessary number of therapy sessions that optimizes the results should also be better investigated.

Our results provided evidence that the overall time throughout which the individual had smoked correlated to being able to quit smoking. Only a decrease in the other directness cognitive schema domain was related to a better outcome. Mediation and moderators studies focused on schema therapy are needed to improve the effectiveness of Cognitive Behavior Therapy for smokers.

Clinical Trial registration: NCT01734330

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