Journal of Affective Disorders 191 (2016) 94–99

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

Smoking cessation and depressive symptoms at 1-, 3-, 6-, and 12-months follow-up

Rubén Rodríguez-Cano [a,*], Ana López-Durán [a], Elena Fernández del Río [a,b], Carmela Martínez-Vispo [a], Úrsula Martínez [a], Elisardo Becoña [a]

[a] Smoking Cessation and Addictive Disorders Unit, Faculty of Psychology, Department of Clinical Psychology and Psychobiology, University of Santiago de Compostela, Spain
[b] Department of Psychology and Sociology, Faculty of Social Sciences and Work, University of Zaragoza, Spain

ARTICLE INFO

Article history:
Received 11 August 2015
Received in revised form
18 October 2015
Accepted 23 November 2015
Available online 26 November 2015

Keywords:
Smoking cessation
Depression
12-months follow-up
Beck Depression Inventory
Relapse

ABSTRACT

Background: The relationship between tobacco and depressive symptoms has been examined. However, there is little information on the evolution of these symptoms when an individual quits. The aim of this study was to analyze the evolution of depressive symptoms over time (pre-, post-treatment, 1-, 3-, 6-, and 12-months follow-up) in relation to smoking status 12 months after having received a psychological treatment for smoking cessation.
Method: The sample was made up of 242 adults who received cognitive-behavioral treatment for smoking cessation (64.4% women; mean age=41.71 years). The BDI-II was used to assess depressive symptomatology. Participants were classified into three groups according to smoking status at 12-months follow-up (abstainers, relapsers, and smokers).
Results: There were no significant differences in depressive symptoms among the three groups at pre-treatment. At the end of treatment, abstainers and relapsers presented less depressive symptomatology than smokers. At follow-up, abstainers continued to present less depressive symptomatology than smokers, whereas in relapsers, symptoms began to increase as the relapses occurred. Regarding the evolution of depressive symptomatology, the abstainer and relapser groups showed a significant reduction at the end of treatment. Only in the group of abstainers did the decrease continue during 12 months follow-up.
Limitations: The decrease of the initial sample size from 562 to 242 participants. Variables such as self-esteem and self-efficacy were not assessed.
Conclusions: Smoking cessation is associated with a decrease in depressive symptomatology, that is maintained over time. In contrast, relapse is associated with an increase of such symptoms. These findings signify the potential importance of addressing depressive symptomatology in smoking cessation treatment.

1. Introduction

The relationship between tobacco consumption and depression is well established (Tsoh et al., 2000) and has been addressed from multiple perspectives in recent years. People with depression are more likely to be smokers (Breslau et al., 1998; Holma et al., 2013; Lasser et al., 2000) and to be nicotine dependent (Dierker and Donny, 2008). The evidence also indicates that smokers have a higher risk of experiencing depression (Bandiera et al., 2015; Breslau and Johnson, 2000; Grant et al., 2004).

With regard to nicotine withdrawal symptoms, which include some depressive-like symptoms (Hughes, 2007b), findings indicate that smokers with a history of depression are more likely to experience depressive symptoms, and of greater severity, in the withdrawal syndrome (Covey et al., 1990; Langdon et al., 2013). In addition, smokers frequently use tobacco to cope with discomfort that these symptoms cause (Leventhal et al., 2013).

People with depression also have more difficulty quitting smoking (Ziedonis et al., 2008) and are more likely to relapse (Brodbeck et al., 2014; Zvolensky et al., 2015). In their meta-analysis, Hitsman et al. (2013) found that the existence of a history of major depression in the past, but not in the present, hinders the achievement of abstinence. In addition, evidence suggests that specific symptoms of depression such as anhedonia and low positive affect predict relapse at follow-up (Leventhal et al., 2008).

* Correspondence to: Smoking Cessation and Addictive Disorders Unit, University of Santiago de Compostela, Faculty of Psychology, Department of Clinical Psychology and Psychobiology, Campus Vida, 15782 Santiago de Compostela, Spain.

http://dx.doi.org/10.1016/j.jad.2015.11.042
0165-0327/

Leventhal et al. (2014) found that life-time anhedonia predicted smoking cessation outcome better than history of depressive disorder and lifetime depressed mood. Further, studies have found that the introduction of cognitive-behavioral mood management techniques significantly improves the effectiveness of smoking cessation interventions (Gierisch et al., 2012). For example, MacPherson et al. (2010), examined the effect of including behavioral activation techniques in a smoking cessation intervention, and found improved abstinence outcomes and decreases in depressive symptomatology.

The findings regarding whether smoking cessation increases the likelihood of depression are inconclusive. Tsoh et al. (2000) found that the likelihood of experiencing depression is similar between those who quit smoking and those who do not, except for those smokers with a previous history of depression, whose risk would be maintained for at least 6 months, according to Glassman et al. (2001). The review by Ragg et al. (2013) indicates that the risk of experiencing depressive symptoms when quitting is not higher in individuals with a history of major depression, because their mood may improve after quitting smoking. Similarly, in a study of smokers with depression, Mathew et al. (2013) found that both those who quit and those who remained abstinent demonstrated significant improvements in psychological functioning compared to those who continued smoking at 3 and 6 months follow-up. The authors note that the increase in depressive symptoms seems to be more closely related to the failure to successfully quit smoking.

In an attempt to explain these discrepancies, Hughes (2007a) notes that the belief that smoking cessation increases depressive symptomatology is due to the attribution that nicotine has antidepressant effects and to the symptomatology associated with the withdrawal syndrome that appears after quitting. However, some research suggests that smokers do not smoke in order to gain the antidepressant effects of smoking and furthermore, depressive symptoms are not the most frequent symptoms when undergoing withdrawal. In fact, with respect to other drugs, the evidence indicates that smoking cessation is related to an improvement of depressive symptoms. Similarly, a recent meta-analysis of longitudinal studies carried out by Taylor et al. (2014) found that both in general and clinical populations (individuals who suffer some mental disorder), smoking cessation is associated with a decrease in depression, anxiety, and stress and an improvement in positive mood and quality of life.

Therefore, the published studies confirm the existence of a clear relationship between smoking and depression, although there are discrepancies between some of the studies about the nature of this relationship and how the variables affect each other. Evaluation of depressive problems at different moments of the process of smoking cessation would help to clarify this relationship, especially taking into account not only the comparison of smokers and abstainers but also including those who initially quit smoking but who relapse later on.

The aim of the present study is to analyze the relationship between depressive symptomatology, assessed with the Beck Depression Inventory-II (BDI-II) at different times (pre-, post-treatment and at 1-, 3-, 6- and 12-months follow-up) and smoking status 12 months after having received a cognitive-behavioral treatment for smoking cessation. To our knowledge, this is the first study that compares depressive symptoms at different times across three groups depending on smoking status at 12 months follow-up: abstainers (those who quit smoking since the end of treatment until 12-months follow-up), smokers (those who never quit smoking), and relapsers (those who quit smoking at the end of treatment but who relapsed before the 12-months follow-up). The hypotheses of this study are: (1) people who quit smoking at the end of treatment and remain abstinent at 12 months have fewer depressive symptoms at all the assessed times (pre-, post-treatment and follow-ups) compared to participants who did not quit smoking and those who relapsed, and (2) as the time without smoking increases, people who remain abstinent at 12 months present a greater decrease of depressive symptoms than smokers and relapsers at all the evaluations performed.

2. Methods

2.1. Participants

The initial sample consisted of 562 smokers who received cognitive-behavioral treatment for smoking cessation who met the inclusion and exclusion criteria of the study. Inclusion criteria were: aged 18 or over; wishing to participate in the treatment program; and smoking 10 or more cigarettes per day. Exclusion criteria were: a diagnosis of severe mental disorder (bipolar disorder and/or psychotic disorder); concurrent dependence on other substances (alcohol, cannabis, cocaine and/or heroin); having participated in the same or similar treatment over the previous year; having received pharmacological smoking cessation treatment (nicotine replacement therapy, bupropion, varenicline) in the past year; suffering from a physical pathology with a high life risk that would require immediate individual intervention (e.g., recent myocardial infarction); smoking a type of tobacco other than cigarettes (e.g., cigars); and failing to attend the first treatment session. All participants were recruited between 2009 and 2014.

As the aim of this study was to assess depressive symptomatology across all follow-ups, we included only those cases who completed the BDI-II at all times (pre-, post-, and 1-, 3-, 6-, and 12-months follow-up). Therefore, the final sample was made up of 242 smokers.

2.2. Instruments

2.2.1. Smoking Habit Questionnaire

The smokers filled out the 56-item Smoking Habit Questionnaire (Becoña, 1994), designed to gather information both on sociodemographic variables (gender, age, marital status, educational level) and tobacco use (i.e., number of cigarettes smoked per day).

2.2.2. Fagerström Test for Nicotine Dependence

(FTND, Heatherton et al., 1991). This scale is made up of 6 items and the scores range from 0 to 10 points. Information related to nicotine dependence was obtained at baseline. In the present sample, the reliability obtained by means of Cronbach's alpha was 0.59.

2.2.3. Beck Depression Inventory-II

(BDI-II; Beck et al., 1996; Sanz and Vázquez, 2011). This is a 21-item self-report scale measuring current depressive symptoms. The internal consistency obtained in Spanish sample by Cronbach's alpha was 0.90.

2.2.4. Micro+ Smokerlyzer

(Bedfont Scientific Ltd., Sittingbourne, UK). This was used to measure carbon monoxide (CO) in exhaled air in order to corroborate self-reported abstinence at the end of treatment and at follow-ups (1, 3, 6 and 12 months).

2.3. Procedure

The initial assessment of all smokers was carried out in a face-to-face interview and the above-described instruments were