

HAZARDOUS ALCOHOL DRINKING AS PREDICTOR OF SMOKING RELAPSE (3-, 6-, and 12-MONTHS FOLLOW-UP) BY GENDER

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Abstract

Diverse studies have found a relation between alcohol consumption and smoking relapse. Few studies have analyzed the relation of smoking relapse with pretreatment alcohol consumption and gender differences. The main purpose of this study is to analyze the influence of alcohol consumption in smoking relapse over 12 months (3-, 6-, and 12-months follow-up) and to determine possible gender differences. The sample included 374 smokers who quit smoking by participating in a psychological smoking cessation treatment. We assessed hazardous pretreatment alcohol drinking (AUDIT), cigarette consumption (FTND; number of cigarettes) and sociodemographic variables. Higher scores on hazardous pretreatment alcohol drinking predict smoking relapse at 3-, 6-, and 12-months after smoking cessation. In males, higher scores on hazardous pretreatment alcohol drinking predict relapse at 6 and at 12 months. In females, higher scores on hazardous pretreatment alcohol drinking predict tobacco relapse at 3 months. Hazardous pretreatment alcohol drinking predicts relapse at all intervals after smoking cessation (3-, 6-, and 12-months follow-up). However, the influence of hazardous pretreatment alcohol drinking on smoking relapse differs as a function of gender, as it is a short-term predictor in women (3 months) and a long-term predictor in men (6 and 12 months).

Key words: hazardous alcohol drinking; 12-months follow-up; smoking relapse, gender differences.

1. Introduction

Alcohol consumption is more common in smokers than in non-smokers (Lohse, Rohrmann, Bopp, & Faeh, 2016) and is related to initiation of regular tobacco consumption (Reed, Wang, Shillington, Clapp, & Lange, 2007). Alcohol consumption increases the self-report pleasure (or satisfaction) effect of smoking (Harrison, Hinson, & McKee, 2009) and hence, its influence on smoking relapse (Lisha, Carmody, Humfleet, & Delucchi, 2014).

Diverse studies have analyzed the influence of alcohol on smoking relapse. Some studies conclude that shortly after quitting smoking, alcohol consumption reduces the capacity to remain abstinent from smoking (Kahler et al., 2014; McKee, Krishnan-Sarin, Shi, Mase, & O'Malley, 2006), and is a strong predictor of relapse in the first month (Bold et al., 2016). Also, it has been observed that alcohol consumption at baseline predicts smoking relapse in situations where alcohol is consumed (Shiffman et al., 1997; Kahler, Spillane, & Metrik, 2010).

Other studies analyzed whether pretreatment alcohol consumption influences smoking relapse. For example, studies with smokers from general population found that high levels of alcohol consumption at baseline predict smoking relapse in the first months (Augustson et al., 2008) and after more than one year of abstinence (Krall, Garvey, & García, 2002; VanderVeen et al., 2012). The influence of pretreatment alcohol has also been studied in people receiving smoking cessation treatment. Thus, greater pretreatment alcohol consumption implies a higher probability of smoking relapse (Leeman et al., 2008), even after long periods of abstinence (Koçak et al., 2015). However, in studies that assess how alcohol influences in long-term smoking relapse, its influence at different periods throughout a year (3-, 6-, and 12-months) was not analyzed, nor was its influence corroborated by biochemical validation assessment. Smoking relapse is a dynamic process

(Shiffman et al., 2005) and it is affected by different variables depending on the time when relapse happens (Piasecki, Fiore, McCarthy, & Baker, 2002; Cui, Weng, Moriarty, & Levine, 2006). Thus, there is a need to test the possible influence of the pretreatment drinking in different smoking relapse periods.

When the influence of alcohol consumption on tobacco relapse is examined in depth, some gender differences should be taken into account. First, men show a higher percentage of yearly pure alcohol consumption per capita, both in the United States (13% of the men and 4.2% of the women) and in Spain (15.9% of the men and 6.7% of the women) (World Health Organization, 2014). Second, previous work suggests women are more likely to smoking relapse than men (Japuntich et al., 2011; Smith, Bessette, Weinberger, Sheffer, & McKee, 2016). Third, smoking relapse is affected by different variables by gender (Nakayima & al'Abase, 2012; McKee, Maciejewski, Falba, & Mazure, 2003; Pormeleano et al., 2005) and, concretely, gender seems to be a key variable regarding to the influence of alcohol in smoking relapse. For example, King, McNamara, Conrad, and Cao (2009) observed that alcohol increases smoking urge and behavior in men, whereas in women, it only increases smoking urge. In another study, Kahler et al. (2012) showed that, in women, the belief that they had consumed alcohol influenced in smoking relapse more than the actual physiological effects of alcohol consumption.

There is a lack of studies evaluating the influence of pretreatment alcohol consumption on smoking relapse across the different follow-ups (3-, 6-, and 12-months follow-up) in smokers who seek smoking cessation treatment, both in general and by gender. Therefore, the goal of the present study is to analyze the influence of alcohol consumption on smoking relapse across 12 months (3-, 6-, and 12-months follow-up) and to determine possible gender differences in smokers who quit smoking by a psychological smoking cessation treatment. The hypotheses of the study are: (a) Hazardous pretreatment

alcohol drinking predicts smoking relapse at short and long term (3-, 6-, and 12-months follow-up) and (b) Hazardous pretreatment alcohol drinking predicts greater probability of smoking relapse in men than in women, at short and long term (3-, 6-, and 12-months follow-up).

2. Methods

2.1. Participants

Participants included 374 former smokers who had quit smoking after a psychological smoking cessation treatment to study the process of smoking relapse (3-, 6-, and 12-months follow-up). The inclusion criteria for the study were: being more than 18 years old and being abstainers at the end of the treatment (not having smoked even a puff in the 24 hours prior to assessment). The exclusion criteria were: being dependent on a substance other than nicotine (cannabis, cocaine and/or heroin), having a severe mental disorder diagnosis (psychotic disorder or bipolar disorder), having participated in the same treatment during the past year, having received pharmacological treatment to quit smoking in the past year (nicotine replacement therapy, varenicline and/or bupropion), consuming another type of substance containing nicotine other than tobacco (i.e., cigars, cigarillos, or pipe) and/or presenting a high-risk physical pathology requiring immediate intervention (e.g., recent myocardial infarction).

Regarding sociodemographic variables, the participants' mean age was 41.14 years ($SD = 10.74$). Of them, 60.4% were women ($n = 226$), 50% were married or lived with a partner ($n = 187$), and 41.7% reported concluding more than high school ($n = 156$) (see Table 1).

2.2. Instruments

Smoking Habit Questionnaire (Becoña, 1994). This questionnaire collects sociodemographic information (gender, age, marital status, and educational level) and issues related to tobacco consumption.

Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991). This questionnaire evaluates nicotine dependence by means of 6 items with scores ranging from 0 to 10. Scores equal to or higher than 6 indicate nicotine dependence.

Alcohol Use Disorder Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993; Spanish version, Contel, Gual, & Colom, 1999). This questionnaire has 10 items with 4 response options and scores ranging from 0 to 40. It assesses aspects of hazardous alcohol drinking such as: quantity and frequency, difficulty to control consumption, withdrawal syndrome, and problems derived from consumption.

Micro+ Smokerlyzer (Bedfont Scientific Ltd, Sittingbourne, UK). This is a measure of carbon monoxide in exhaled air. It is used to corroborate the self-report of smoking abstinence at the end of the treatment and across the follow-ups (3-, 6-, and 12-months).

2.3. Procedure

The participants attended an initial interview and completed the above-mentioned questionnaires. The study was authorized by the Bioethics Committee of the University of Santiago de Compostela, and all the participants signed the informed consent form. A cognitive behavioral smoking cessation treatment (Becoña, 2007) was applied in group format by Master's level psychologists to groups of 6-8 people for 6 weekly sessions (one per week). The components of the treatment were: therapeutic contract (writing commitment of following the treatment and make an attempt to quit to smoke), self-

registers (daily number of cigarettes, self-reported pleasure, and smoking situations), and graphic representation consumption (number of cigarettes per day represented graphically), general information on tobacco and health (e.g., health smoking consequences and positive aspects of quitting smoking), nicotine fading (comprised the reduction of 30% of nicotine per week), strategies to reduce nicotine withdrawal syndrome (e.g., recommended drinking less alcohol and coffee), physiological feedback of cigarette consumption (CO in exhaled air in every treatment appointment), problem solving skills (e.g., identify and define a problem, looking for solutions, practice one solution, and assess the effect of this solution in this problem) and relapse prevention (e.g., not accepting cigarettes from other smokers).

Abstinent participants after treatment ($n = 374$) were selected from 611 smokers who sought cognitive-behavioral treatment for smoking cessation. Smoking status was assessed at 3-, 6- and 12-months follow-up. There are no differences in hazardous pretreatment alcohol drinking between abstinent participants (included, $n = 374$) and smokers (excluded, $n = 237$) at the end of treatment.

2.4. Smoking status at the end of treatment and follow-ups

The abstinence criterion at the 3-months follow-up was not having smoked, not even a puff, in the week prior to assessment and, at the 6- and 12-months follow-up, not having smoked, not even a puff, in the 30 days prior to assessment (Velicer, Prochaska, Rossi, & Snow, 1992). The validation of abstinence was carried out by means of self-report and assessment of CO (< 10 ppm). Those participants who did not come to the follow-ups were considered as smokers (West, Hajek, Stead, & Stapleton, 2005). Concretely, 13.6% ($n = 51$) at 3 months, 11.5% ($n = 43$) at 6 months, and 13.6% ($n = 51$) at 12 months. There were no significant differences in any study variables between participants considered as relapsers and those who attended to the follow-ups.

2.5. Statistical Analysis

Descriptive statistics were calculated for the sociodemographic variables (age in years, marital status, and educational level), nicotine dependence (FTND), and hazardous pretreatment alcohol drinking (AUDIT). Gender differences in sociodemographic variables, FTND and AUDIT was analyzed with chi-square tests and Student's *t*-test. Effect size was addressed by the analysis of Cramer's *V* and Cohen's *d*.

Subsequently, hazardous pretreatment alcohol drinking effects in the relapse were examined using regression logistic models, where smoking relapse at follow-ups (3-, 6-, 12- months) was the dependent variable, AUDIT was the independent variable, and FTND, age, marital status and educational level functioned as covariates. Odds ratio (*OR*) was presented for the unique effect of AUDIT, and Adjusted odds ratios (*AOR*) showed the AUDIT effect controlled by covariates. Following, as a significant difference was found in pretreatment AUDIT by gender [$t = -5.429, p = .001$], same regression logistic models were run separately by women and men.

The analyses were performed with the IBM SPSS 20. The level of statistical significance was $p < .05$.

3. Results

The sample included 374 abstinent participants at the end of the treatment. The mean pretreatment nicotine dependence according to the FTND was 4.68 ($SD = 2.12$), with 36.4% of the sample scoring 6 or more points. The mean pretreatment consumption of cigarettes was 19.68 ($SD = 7.12$). The mean of CO level at pretreatment was 22.67 ppm ($SD = 10.90$) and this level was reduced at 2 ppm ($SD = 1.54$) at the end of treatment. The mean AUDIT score was 3.47 ($SD = 3.18$). The rates of smoking relapse showed that, at the

3-months follow-up, 42.2% of the sample had relapsed ($n = 158$), 49.5% ($n = 189$) had relapsed at the 6-months follow-up, and 58.8% ($n = 220$) had relapsed at 12 months (see Table 1).

Men scored higher on the hazardous pretreatment alcohol drinking than the women ($M_{\text{males}} = 4.59$ vs. $M_{\text{females}} = 2.73$, $t = -5.429$, $p < .05$). There were significant gender differences in marital status $\chi^2 = 10.913$, $p < .05$. When comparing being separated or widowed with being single, women had a higher probability of being separated or widowed than men ($\chi^2 = 9.106$, $p < .025$). There were also gender differences in educational level ($\chi^2 = 10.955$, $p < .05$). When having less than a high school education and having high school education are compared, men had less than a high school education level education more frequently than women ($\chi^2 = 5.478$, $p < .025$). When comparing completing more than high school with not having completing high school, women were more likely to have more than high school education than men ($\chi^2 = 10.840$, $p < .025$). Lastly, there were no significant differences in the probability of relapse as a function of gender (see Table 1).

3.1. Hazardous pretreatment alcohol drinking as smoking relapse predictor at 3-, 6-, and 12- months follow-up

At the 3-months follow-up, participants who relapsed obtained higher scores on the hazardous pretreatment alcohol drinking ($t = -2.688$, $p < .05$) and on the FTND ($\chi^2 = 10.019$, $p < .05$). Relapsers at 6 months scored significantly higher on hazardous pretreatment alcohol drinking ($t = -3.490$, $p < .05$) and on the FTND ($\chi^2 = 5.874$, $p < .05$). At the 12-months follow-up relapsers were older, older relapsers ($t = -2.688$, $p < .05$) and obtained higher scores on hazardous pretreatment alcohol drinking ($t = -3.160$, $p < .05$) and on the FTND ($\chi^2 = 3.864$, $p < .05$) (see Table 2).

Logistic regression models show that participants with higher pretreatment scores on hazardous pretreatment alcohol drinking a greater probability of relapse at 3 ($OR = 1.09, p < .05$), 6 ($OR = 1.13, p < .05$) and 12 months ($OR = 1.11, p < .05$). This effect were evident over and above sociodemographic variables and nicotine dependence. Concretely, the pretreatment scores on hazardous pretreatment alcohol drinking T predicted relapse at 3 months ($AOR = 1.09, p < .05$), at 6 months ($AOR = 1.13, p < .05$), and at the 12-months follow-up ($AOR = 1.12, p < .05$) (see Table 3).

3.2. Hazardous pretreatment alcohol drinking as smoking relapse predictor at 3-, 6-, and 12-months follow-up by gender

Regarding gender differences, men who relapsed at the 3-months follow-up had a greater probability of presenting higher scores on the FTND than did abstainers ($\chi^2 = 4.964, p < .05$). Moreover, men who relapsed at the 6- ($t = -3.075, p < .05$) and 12-months follow-up ($t = -3.075, p < .05$) scored higher on hazardous pretreatment alcohol drinking than male abstainers. Women who relapsed at 3 months were more likely to present higher scores on hazardous pretreatment alcohol drinking ($t = -2.776, p < .05$) and on the FTND ($\chi^2 = 5.089, p < .05$) than female abstainers. At 12 months, female relapsers were older than women who remained abstinent ($t = -2.006, p < .05$) (see Table 4).

According logistic regression analysis by gender, higher scores on hazardous pretreatment alcohol drinking predicted relapse in women at 3 months ($OR = 1.15, p < .05$) and, in men, at 6 ($OR = 1.17, p < .05$) and 12 months ($OR = 1.16, p < .05$). Same pattern of results were found after analyzing the effect of AUDIT controlled by covariates (see Table 3).

4. Discussion

The present study examines the influence of hazardous pretreatment alcohol drinking on smoking relapse. For this purpose, a sample of smokers who quit smoking after attending a psychological cognitive behavioral smoking cessation treatment was analyzed at 3-, 6-, and 12-months follow-up. The results showed that hazardous pretreatment alcohol drinking predicts smoking relapse at all the follow-ups. Moreover, we observed that hazardous pretreatment alcohol drinking influences the smoking relapse differentially as a function of gender.

The first hypotheses, which proposed that hazardous pretreatment alcohol drinking would predict tobacco relapse at short and long term (3-, 6-, and 12-months follow-up), was confirmed. Previous studies found that alcohol consumption at baseline predicted smoking relapse (Augustson et al., 2008; Leeman et al., 2008), even after long periods of abstinence (Koçak et al., 2015; Krall et al., 2002; VanderVeen et al., 2012). However, none of these studies appraised how alcohol influences in smoking relapse in a group of people who attended a smoking cessation treatment and whose abstinence was later assessed at different periods over a year (3-, 6-, and 12-months follow-up). Therefore, it is necessary to assess pretreatment alcohol consumption in smoking cessation treatment programs because such consumption may indicate, at that time, whether a person is more likely to relapse later on.

The second hypotheses of the study, which stated that hazardous pretreatment alcohol drinking predicts greater short- and long-term probability of relapse in men than in women (3-, 6-, and 12-months follow-up), is partially confirmed. The results show that hazardous pretreatment alcohol drinking predicts relapse at 6 and 12 months in men and only at 3 months in women. In contrast to women, men consume greater quantities of pretreatment alcohol. Moreover, various studies have shown that alcohol consumption

reduces the capacity to remain abstinent from tobacco (McKee et al., 2006; Kahler et al., 2014) and that the conjoint consumption of alcohol and tobacco at baseline causes alcohol consumption to increase the smoking urges (Kahler et al., 2010; Shiffman et al., 1997). Thus, at long term, men are more likely to be in situations where alcohol is consumed, increasing their probability of smoking relapse.

An unexpected outcome was that hazardous pretreatment alcohol drinking predicts relapse at 3 months in women but not in men. A possible explanation for this is that some variables related to smoking relapse differ in men and women. Previous research found that the pharmacological effect of nicotine on tobacco relapse was greater in men than in women (Perkins et al., 2006). This could be an explanation which indicates that hazardous pretreatment alcohol drinking is not a predictor of smoking relapse in men at 3 months. On another hand, the absence of the effect of pretreatment alcohol drinking on smoking relapse in women, when compared with men, at 6 and 12 months may be explained by the influence of different variables related to smoking by gender. In this sense, some studies showed that stressful life events (McKee, et al., 2003), more sensitivity to contextual and social variables rather than to alcohol drinking (King et al., 2009) and a greater levels in social support (Manchon-Walsh et al., 2007) have more influence on the smoking behavior of women than of men.

The results obtained in this study are innovative because they show hazardous pretreatment alcohol drinking is a predictor of smoking relapse across the 12 months follow-up. Moreover, the influence of the hazardous pretreatment alcohol drinking on smoking relapse differs across the follow-ups as a function of gender.

The current study has several limitations. The first is the reduced sample size when dividing the sample by gender. In spite of this, 374 abstainers who participated in a smoking cessation treatment with a 12-months follow-up is a large sample, and we

corroborated abstinence by means of CO measurement for one year. The second limitation is the use of the AUDIT to assess hazardous pretreatment alcohol drinking. This instrument presents the typical limitations of all self-report instruments. However, it is one of the most commonly used tests to detect risky alcohol consumption in clinical contexts. The third limitation involves the generalization of the data, which is limited to people who quit smoking by means of a smoking cessation treatment. Therefore, the results cannot be generalized to other samples of smokers.

To conclude, this study reveals the complexity of the influence of pretreatment alcohol drinking on the process of smoking relapse. Although hazardous pretreatment alcohol drinking predicts smoking relapse during the 12 months after smoking cessation (3-, 6-, and 12-months follow-up), we observed that the influence of gender on relapse depends on the temporal moment of the relapse. Thus, pretreatment alcohol consumption as a predictor of relapse exerts short-term influence on women (3 months) and long-term influence on men (6 and 12 months).

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Table 1 Sociodemographic Characteristics, Nicotine Dependence, Hazardous Alcohol Drinking and Relapse Percentages by Gender (N = 374).

	Initial sample (N = 374)		Males (n = 148)		Females (n = 226)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Age in years	41.14	10.74	42.09	11.31	40.52	10.33	-1.390	.165	.147
AUDIT	3.47	3.18	4.59	3.53	2.73	2.70	-5.429	.001	.574
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>	Cramer's <i>V</i>
Marital Status							10.913	.004	.171
Single	136	36.4	48	32.4	88	38.9			
Married	187	50	88	59.5	99	43.8			
Other ^a	51	13.6	12	8.1	39	17.3			
Educational Level							10.955	.004	.171
Basic	76	20.3	42	28.4	34	15			
Middle	142	38	55	37.2	87	38.5			
Higher	156	41.7	51	34.5	105	46.5			
FTND							0.384	.536	.032
Total score < 6	238	63.6	97	65.5	141	62.4			
Total score ≥ 6	136	36.4	51	34.5	85	37.6			
Relapse rates									
3-months follow-up	158	42.2	60	40.5	98	43.4	0.292	.589	.028
6-months follow-up	189	50.5	78	52.7	115	50.9	0.461	.497	.035
12-months follow-up	220	58.8	86	58.1	134	59.3	0.052	.820	.012

Note. FTND = Fagerström Test for Nicotine Dependence pretreatment score; AUDIT = Alcohol Use Disorders Identification Test total pretreatment score.

^adivorced/widowed.

Table 2

Significant Differences in Sociodemographic Characteristics, Nicotine Dependence, and Hazardous Alcohol Drinking by Smoking Status at Follow-ups (N = 374).

3-months follow-up							
	Abstainers (n = 216)		Relapsers (n = 158)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
AUDIT	3.09	2.94	3.98	3.43	-2.688	.008	.281
	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>	Cramer's <i>V</i>
FTND					10.019	.002	.164
Total score < 6	152	70.4	86	54.4			
Total score ≥ 6	64	29.6	72	45.6			
6-months follow-up							
	Abstainers (n = 185)		Relapsers (n = 189)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
AUDIT	2.90	2.66	4.03	3.54	-3.490	.001	.361
	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>	Cramer's <i>V</i>
FTND					5.874	.015	.125
Total score < 6	126	69.7	109	57.7			
Total score ≥ 6	56	30.3	80	42.3			
12-months follow-up							
	Abstainers (n = 154)		Relapsers (n = 220)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Age in years	39.81	9.56	42.08	11.43	-2.086	.038	.219
AUDIT	2.88	2.59	3.88	3.49	-3.160	.002	.332
	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>	Cramer's <i>V</i>
FTND					3.864	.049	.102
Total score < 6	107	69.5	131	59.5			
Total score ≥ 6	47	30.5	89	40.5			

Note. FTND = Fagerström Test for Nicotine Dependence pretreatment score; AUDIT = Alcohol Use Disorders Identification Test total pretreatment score.

Table 3

Logistic Regression Analysis Output: AUDIT as Predictor of Smoking Relapse at 3-, 6- and, 12-Months Follow-up (N = 374) and by Gender.

	Abstainers (%)	Relapsers (%)	OR (95% CI)	AOR (95% CI)
Sample (N = 374)				
3-months follow-up	216 (57.8)	158 (42.2)	1.09* (1.02-1.17)	1.09* (1.02-1.17)
6-months follow-up	185 (50.5)	189 (49.5)	1.13* (1.05-1.21)	1.13* (1.05-1.21)
12-months follow-up	154 (41.2)	220 (58.8)	1.11* (1.04-1.20)	1.12* (1.04-1.20)
Gender				
Males (n = 148)				
3-months follow-up	88 (59.5)	60 (40.5)	1.07 (0.98-1.18)	1.06 (0.96-1.17)
6-months follow-up	70 (47.3)	78 (52.7)	1.17* (1.05-1.30)	1.16* (1.04-1.29)
12-months follow-up	62 (41.9)	86 (58.1)	1.16* (1.04-1.29)	1.16* (1.03-1.29)
Females (n = 226)				
3-months follow-up	128 (56.6)	98 (43.4)	1.15* (1.04-1.28)	1.17*(1.05-1.31)
6-months follow-up	115 (50.9)	111 (49.1)	1.09 (0.99-1.21)	1.09 (0.98-1.21)
12-months follow-up	92 (40.7)	134 (59.3)	1.10 (0.98-1.22)	1.09 (0.98-1.25)

Note. OR = Odds Ratio; AOR = Adjusted for sociodemographic (age, marital status, and educational level) and nicotine dependence; Odds Ratio; CI = confidence interval.

* $p < .05$.

Table 4

Significant Differences in Sociodemographic Characteristics, Nicotine Dependence, and Hazardous Alcohol Drinking by Gender at Follow-ups (N = 374).

	Males (n = 148)							Females (n = 226)						
	3-months follow-up							3-months follow-up						
	Abstainers (n = 88)		Relapsers (n = 60)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>	Abstainers (n = 128)		Relapsers (n = 98)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>	Cramer's <i>V</i>	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>	Cramer's <i>V</i>
AUDIT	4.24	3.28	5.10	3.84	-1.462	.146	0.245	2.30	2.40	3.30	2.97	-2.776	.006	.305
FTND					4.964	.026	.183					5.089	.024	.150
Total score < 6	64	72.7	33	55				88	68.8	53	54.1			
Total score ≥ 6	24	27.3	27	45				40	31.3	45	45.9			
	6-months follow-up							6-months follow-up						
	Abstainers (n = 70)		Relapsers (n = 78)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>	Abstainers (n = 115)		Relapsers (n = 111)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
AUDIT	3.67	2.85	5.41	3.89	-3.075	.003	.506	2.43	2.44	3.05	2.93	-1.756	.080	.234
	12-months follow-up							12-months follow-up						
	Abstainers (n = 62)		Relapsers (n = 86)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>	Abstainers (n = 92)		Relapsers (n = 134)		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
AUDIT	3.65	2.81	5.27	3.85	-3.075	.003	.512	2.37	2.31	2.99	2.92	-1.691	.092	.229
Age in years	41.13	9.88	42.79	12.25	-0.881	.380	.147	38.91	9.28	41.62	10.89	-2.006	.046	.272

Highlights

- Pretreatment alcohol drinking assessment helps for predicting smoking relapse.
- Hazardous pretreatment alcohol drinking predicts smoking relapse during 12 months.
- Alcohol drinking influence depends on the temporal moment of the relapse by gender.

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