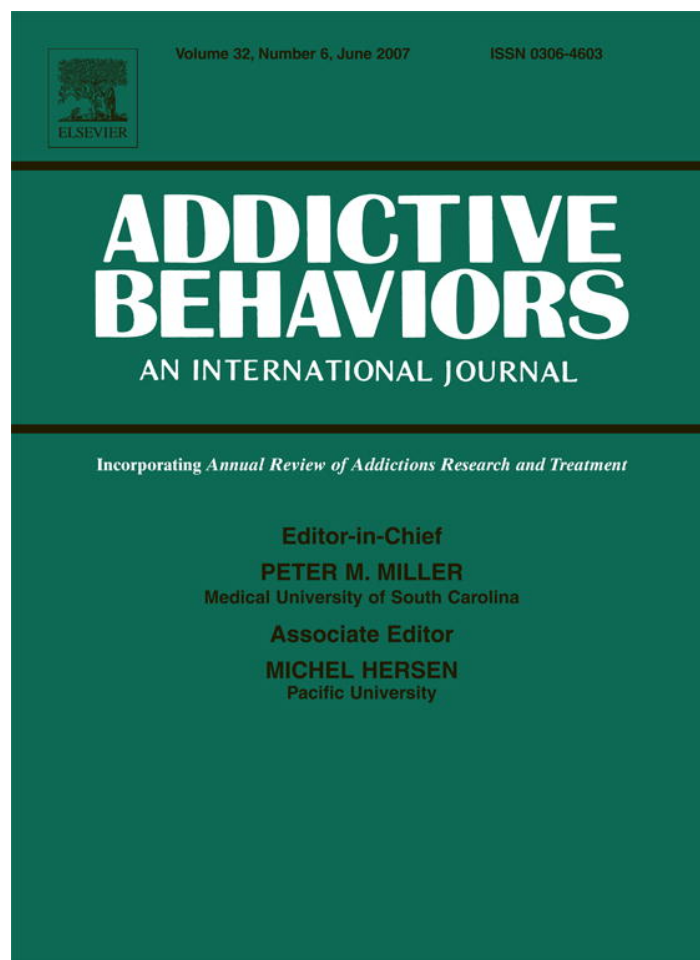


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Short communication

Smoking-associated factors in myocardial infarction and unstable angina: Do gender differences exist?

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Abstract

The aim of this study was to investigate demographic and psychological characteristics associated with smoking in patients with acute coronary syndrome (myocardial infarction or unstable angina). Interviews were conducted with 348 consecutive hospitalized patients with acute coronary syndrome and included questions about demographic characteristics, coffee consumption, heart disease risk perception, economic status, alcohol consumption, depression, anxiety, and stress. Female group multivariate analysis showed that smoking in females was significantly and negatively associated with age, heart disease risk perception, and positively associated with coffee consumption. Male group multivariate analysis showed that for males, smoking was significantly and negatively associated with age, heart disease risk perception, and positively associated with coffee and alcohol consumption. Unlike studies conducted with non-heart disease patients, our results do not show an association between smoking and depression. Compared with nonsmokers, smokers with acute coronary syndrome are younger, more likely to drink coffee, and less likely to perceive smoking as a heart disease risk. Male smokers are also more likely to drink alcohol, indicating that they use more psycho-stimulants than do nonsmoking men and women who smoke.

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Keywords: Smoking; Depression; Gender; Alcohol; Caffeine

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1. Introduction

Many studies have been conducted on smoking and characteristics of smokers, but few have included patients with coronary heart disease. Smoking cessation is strongly correlated with decreases in coronary heart disease morbidity and mortality.

Evidence indicates that some smoking-associated factors reduce the likelihood of smoking cessation. These factors are depression (Breslau, Kilbey, & Andreski, 1991; Murphy et al., 2003) anxiety (Breslau et al., 1991), stress (Parrott, 1993), coffee consumption (Swanson, Lee, & Hopp, 1994), and alcohol consumption (John, Hill, Rumpf, Hopke, & Meyer, 2003).

The extent to which smokers perceive the risk of heart disease may influence their motivation to stop smoking; therefore, smokers' perception of risk of heart disease was assessed. Only 29% and 39% of current and heavy smokers, respectively, believe that they have a higher-than-average risk of infarction (Ayanian & Cleary, 1999).

The purpose of this study was to investigate in-patients with myocardial infarction (MI) or unstable angina (UA) stratified by gender, to determine whether socio-demographic characteristics, depression, anxiety, stress, risk perception, and coffee and alcohol consumption are associated with smoking.

2. Methods

2.1. Subjects

Study procedures were carried out at a university-affiliated hospital specializing in cardiac care. The study cohort included 134 smokers and 211 nonsmokers less than 80 years of age who had MI or UA and noncardiac pathologies or cognitive impairment.

2.2. Procedures

Subjects were interviewed on the third day after a MI or on the second day after an UA and not on the same day that coronary angiography was performed. The interviews included questions about demographic characteristics (gender, age, education, marital status) and economic status evaluated with the Critério de Classificação Econômica Brasil (CCEB) (Associação Brasileira de Empresas de Pesquisas, 2000).

The measures used were the Portuguese version of the 21-item Beck Depression Inventory (BDI) (Gorenstein & Andrade, 1998), the Humor Module of the Primary Care Evaluation of Mental Disorders (PRIME-MD) (Fráguas & Henriques, 1999), the State-Trait Anxiety Inventory (STAI) (Spielberger, Gersuch, & Lushene, 1979), the Rhode Island Stress and Coping Inventory (RISCI) (Fava, Ruggiero, & Ginley, 1998), AUDIT (The Alcohol Use Disorder Identification Test) (Figlie, Pillon, Laranjeira, & Dunn, 1997). One question was asked about coffee consumption (yes/no) and the number of cups consumed per day.

Heart disease risk perception was evaluated by 3 questions: 1) How much do you think the number of cigarettes a person smokes correlates with myocardial infarction or angina pectoris? 2) How much do you think the number of cigarettes a person smokes will affect his or her health in the future? 3) In your opinion, what is the probability of heart disease worsening if a smoker does not quit?

Answer options to questions 1) and 2) were 4—very much/3—much/2—not very much/1—nothing/0—I don't know.

Table 1
Socio-demographic, clinical and psychological characteristics according to smoking status

		Nonsmokers	Smokers	Total	<i>p</i>
Age		62.74±9.82	54.25±9.47	59.45±10.52	<0.001
Gender	Female	70 (33.2)	30 (22.4)	100 (29.0)	0.020
	Male	141 (66.8)	104 (77.6)	245 (71.0)	
Education	Not schooled	94 (44.5)	34 (25.4)	128 (37.1)	<0.001
	Schooled	117 (55.5)	100 (74.6)	217 (62.9)	
Economic Classification	A1+A2	34 (16.1)	37 (27.6)	71 (20.6)	0.025
	B1+B2	100 (47.4)	60 (44.8)	160 (46.4)	
	C+D+E	77 (36.5)	37 (27.6)	114 (33)	
Major Depression	No	120 (56.9)	64 (47.8)	184 (53.3)	0.098
	Yes	91 (43.1)	70 (52.2)	161 (46.7)	
Depression		11.6±9.13	11.79±8.19	11.68±8.76	0.845
Anxiety trait		45.0±9.73	44.49±10.41	44.80±9.99	0.638
Anxiety state		42.84±8.87	41.84±9.73	42.45±9.22	0.325
Stress		17.64±8.1	19.54±8.17	18.37±8.17	0.035
Coping		20.64±5.74	20.22±5.76	20.47±5.74	0.51
Coffee consumption	No	99 (46.9)	16 (11.9)	114 (33.0)	<0.001
	Yes	112 (53.1)	118 (88.1)	231 (67.0)	
Alcohol consumption		1.24±2.94	2.63±3.67	1.78±8.76	<0.001
Risk perception		10.43±4.52	8.99±4.66	12.92±5.58	0.004

Continuous variables are reported as mean±S.D. and categorical variables as *N* (percentage).

Table 2
Socio-demographic and psychological characteristics according to gender

		Female	Male	<i>p</i>
Age		60.89±10.73	58.86±10.40	0.104
Education	Not schooled	59 (59.0)	69 (28.2)	<0.001
	Schooled	41 (41.0)	176 (71.8)	
Economic Classification	A1+A2	6 (6.0)	65 (26.5)	<0.001
	B1+B2	47 (47.0)	113 (46.1)	
	C+D+E	47 (47.0)	67 (27.3)	
Coffee consumption	No	38 (38.0)	76 (31.0)	0.211
	Yes	62 (62.0)	169 (69.0)	
Alcohol consumption		0.72± 1.98	21±3.80	<0.001
≥20 cigarette/day	No	78 (78.0)	149 (60.8)	0.002
	Yes	22 (22.0)	96 (39.2)	
Major depression	No	38 (38.0)	146 (59.6)	<0.001
	Yes	62 (62.0)	99 (40.4)	
Depression (BDI)		14.90±9.41	10.36±8.14	<0.001
Trait anxiety		46.09±8.73	44.28±10.43	0.100
State anxiety		42.47±9.08	42.44±9.29	0.979
Stress		18.95±8.66	18.14±7.96	0.403
Coping		20.25±0.79	20.56±5.74	0.646
Risk perception		9.47±5.09	10.03±4.42	0.335

Continuous variables are reported as mean±S.D. and categorical variables as *N* (percentage).

Answer options to question 3) were 5—very probable/4—probable/3—not probable, not improbable/2—little probable/1—not probable/0—I don't know.

The number of the chosen answers was computed, and then the value of the 3 answers was added, so that a score of risk perception could range from 0 to 13. Higher scores indicate higher heart disease risk perception. Zero scores were considered nonrespondent.

Data about clinical characteristics and prescriptions were collected from medical records.

2.3. Statistical analysis

In the univariate analysis, the chi-square test was used to compare the categorical variables, and the Student *t* test was used to compare the continuous variables. $P < 0.05$ was considered statistically significant. The *t* test was revised with Levene's Test for Equality of Variances when the samples had variances. The AUDIT (alcohol consumption) score variable was tested in the female and male samples with the Mann–Whitney test. Coping was tested in smokers and nonsmoker with the Mann–Whitney test. Because depression, the main variable of interest, interacts with gender, an analysis comparing males and females was also done.

In the multivariate analysis, considering smoking as a dependent variable, the significant variables for smoking status on univariate analysis were analyzed with 3 multiple logistic regression models looking at total population, male population, and female population. The multiple logistic regressions were performed with the Stepwise Backward Method and nonsignificant variables removed according to the Wald Statistics Test.

3. Results

Mean age for the whole population was 59.45 ± 10.52 years. As reported in Table 1, smokers compared with nonsmokers were more frequently male, younger, highly educated, and of higher economic status.

Table 3
Female socio-demographic, clinical, and psychological characteristics

		Nonsmokers	Smokers	<i>p</i>
Age		63.49±9.92	54.83±10.21	<0.001
Education	Not schooled	45 (64.3)	14 (46.7)	0.101
	Schooled	25 (35.7)	16 (53.3)	
Economic Classification	A1+A2	3 (4.3)	3 (10.0)	0.433
	B1+B2	32 (45.7)	15 (50.0)	
	C+D+E	35 (50.0)	12 (40.0)	
Coffee consumption	No	34 (48.6)	4 (3.4)	0.001
	Yes	36 (51.4)	26 (86.6)	
Alcohol consumption		0.57±1.72	1.07±2.49	0.231
Major Depression	No	27 (38.6)	11 (36.7)	0.857
	Yes	43 (61.4)	19 (63.3)	
Depression (BDI)		15.53±10.02	13.43±7.77	0.310
Trait anxiety		46.96±7.91	44.07±10.27	0.176
State anxiety		43.69±8.43	39.63±10.04	0.059
Stress		18.23±8.37	20.63±9.21	0.205
Coping		20.27±5.57	20.20±6.37	0.994
Risk perception		10.21±0.58	7.73±0.97	0.025

Continuous variables are reported as mean±S.D. and categorical variables as *N* (percentage).

Table 4
Male socio-demographic and psychological characteristics

		Nonsmokers	Smokers	<i>p</i>
Age		62.38±9.78	54.09±9.29	<0.001
Education	Not schooled	49 (34.7)	20 (19.2)	0.008
	Schooled	92 (65.3)	84 (80.3)	
Economic Classification	A1+A2	31 (22.0)	34 (32.7)	0.163
	B1+B2	68 (48.2)	45 (43.3)	
	C+D+E	42 (29.8)	25 (24.0)	
Coffee consumption	No	65 (46.1)	11 (10.6)	<0.001
	Yes	76 (53.9)	93 (89.4)	
Alcohol consumption		1.57±3.34	3.08±4.21	<0.001
Major depression	No	93 (65.9)	53 (50.9)	0.018
	Yes	48 (34.1)	51 (49.1)	
Depression		9.65±7.99	11.32±8.29	0.114
Trait anxiety		44.04±10.40	44.61±10.50	0.673
State anxiety		42.42±9.09	42.47±9.60	0.648
Stress		17.34±7.97	19.22±7.87	0.068
Coping		20.82±5.83	20.22±5.61	0.424
Risk perception		10.54±4.36	9.35±4.42	0.036

Continuous variables are reported as mean±S.D. and categorical variables as *N* (percentage).

Smokers had a mean stress score significantly higher, consumed coffee and alcohol more frequently, and had a heart disease risk perception global score lower than that of nonsmokers. No significant differences were detected between smokers and nonsmokers in major depression PRIME-MD diagnostics, in depression BDI scores, anxiety trait, anxiety state, and stress coping.

Table 5
Logistic regression model for total population, female sample, and male sample

	B	P	OR	95% Lower	C.I. Upper
<i>Total sample</i>					
Age	-0.0745	<0.0001	0.9282	0.9025	0.9547
Education	0.5222	0.0691	1.6857	0.9599	2.9602
Alcohol consumption	0.1008	0.0030	1.1061	1.0255	1.1930
Coffee consumption	1.8763	<0.0001	6.5295	3.4000	12.5393
Risk perception	-0.0905	0.0014	0.9135	0.8641	0.9657
<i>Female sample</i>					
Age	-0.0905	0.0009	0.9134	0.8658	0.9637
Coffee consumption	2.0922	0.0022	8.1026	2.1273	30.8619
Risk perception	-0.1084	0.0328	0.8972	0.8122	0.9911
<i>Male sample</i>					
Age	-0.0770	<0.0001	0.9259	0.8968	0.9560
Alcohol consumption	0.0854	0.0352	1.0892	1.0059	1.1793
Coffee consumption	1.7316	<0.0001	5.6499	2.6682	11.9636
Risk perception	-0.0827	0.0153	0.9206	0.8611	0.9843

The female compared with the male (Table 2) were less well educated and had a lower economic status. Moreover, they were less frequently heavy smokers, more frequently classified as having major depression, and had higher BDI mean scores. The female group univariate analysis of smoking-associated factors showed that women who smoked were significantly younger, more frequently coffee consumers, and had lower heart disease risk perception global scores, than did nonsmoking women (Table 3). Male smokers were also significantly younger, more frequently educated, alcohol consumers, coffee consumers, and had lower heart disease risk perception global scores than did male nonsmokers (Table 4).

Multivariate analysis for the whole population (Table 5) showed that smoking was significantly and positively associated with alcohol consumption and coffee consumption, and was negatively associated with age and heart disease risk perception. The female sample multivariate analysis (Table 5) showed that smoking is significantly and negatively associated with age and heart disease risk perception, and is positively associated with coffee consumption. For males, the multivariate analysis showed (Table 5) that smoking is significantly and negatively associated with age and heart disease risk perception, and positively associated with coffee consumption and alcohol consumption.

4. Discussion

This investigation showed that smoking among men or women is associated with being younger and that MI or UA occurs sooner in smokers than in nonsmokers, because smoking is a strong risk factor for coronary heart disease. On the other hand, the association between smoking and coronary heart disease decreases with age (Rigotti, & Pasternak, 1996).

Coffee and alcohol consumption are associated with smoking among men, which suggests that men with MI or UA who smoke use psycho-stimulants much more often than do nonsmokers. Male smokers consume alcohol and caffeine in addition to nicotine. Among women, smoking was also strongly associated with coffee consumption, but not with alcohol consumption. We can speculate that this may be attributable to cultural factors, as there is a prevalence of older women in the investigated population, and for this population, alcohol consumption culturally is considered a masculine behavior.

Smoking in this coronary artery disease population is also associated with lower heart disease risk perception, which can mean that smoking risk denial can be an important factor in continued smoking. Smokers with MI or UA were more likely not to believe that the number of cigarettes smoked concurs with their disease, or would affect health in the future or may complicate heart disease evolution if they do not quit.

On the global population, our results did not show an association between smoking and depression, contrary to findings from others (Breslau et al., 1991; Murphy et al., 2003). However, unlike these studies, we investigated a tobacco-related diseased population, and depression is an independent risk factor of this disease (Frasure-Smith & Lesperance, 2003). Depression may be as prevalent in smokers as in nonsmokers with ischemic heart disease, and that could be the reason why no association was found between smoking and depression in this population. Nevertheless, despite the same analysis by gender showing that women were more frequently depressed than were men, no difference was found between smoking and nonsmoking females, contrary to findings in men, where smokers were significantly more depressed than nonsmokers.

In conclusion, it was observed that in MI or UA, smoking is associated with lower age, coffee consumption, and lower heart disease risk perception for both genders, but for males smoking is also associated with alcohol consumption, showing that men who smoke use more psycho-stimulants than do nonsmoking men and women who smoke.

Acknowledgments

Sources of funding: FAPESP (Fundo de Amparo à pesquisa do Estado de São Paulo).

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