

# Smoking, alcohol consumption and substance abuse in patients with psoriasis: a cross-sectional study

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**Background:** The role of smoking and alcohol consumption in the pathogenesis of psoriasis is well-known; however, certain published studies have focused on the relationship between substance abuse and psoriasis. The present study was conducted to evaluate the prevalence of tobacco smoking, and substance and alcohol use in patients with psoriasis.

**Methods:** Patients with a definite diagnosis of psoriasis at ages of 15 or more were recruited and general information of patients and their smoking behavior, alcohol consumption and substance abuse were further collected.

**Results:** 203 patients (103 men and 100 women) with psoriasis were included in this cross-sectional study. There were 76 smokers (37.45%) and 49 patients (24.1%) who consumed alcohol. Smoking, opium and alcohol consumption were significantly higher in men with psoriasis compared with women ( $P$ -values = 0.0001, 0.003, 0.002, respectively). Tranquilizer use was higher in married patients ( $P$  = 0.002), and those with joint involvements ( $P$  = 0.009). Hookah use was considerably high in female psoriatic patients, although not statistically significant ( $P$  = 0.37). Moreover, patients older than 40 years, and with nail disease (odds Ratio = 3.8) were more prone to hookah use.

**Conclusion:** Our study revealed that the prevalence of smoking, opium and alcohol consumption is higher in men with psoriasis. Moreover, tranquilizer use is higher in married patients, and those with joint involvements. These findings should prompt public health workers to consider the modifiable habitual risk factors in patients with psoriasis.

**Keywords:** psoriasis, smoking, alcohol, hookah, substance abuse

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## INTRODUCTION

Psoriasis is an immune-mediated chronic skin disorder which affects approximately 2-4% of the general population. This disorder is considered as a multi-factorial disease in whose development, both genetic and environmental factors play important roles <sup>1-4</sup>. The role of smoking and alcohol consumption in the pathogenesis of psoriasis points to the impact of contributing environmental factors

according to epidemiological evidence <sup>5-8</sup>.

In a systematic review, a strong association was demonstrated between psoriasis and prevalence of smoking, and also between smoking and the increased incidence of psoriasis. It has further been shown that smoking accelerates the oxidative damage and cultivates inflammatory changes, and increases the expression of genes related to psoriasis. Some of these inflammatory and oxidative factors also trigger atherosclerosis <sup>9</sup>.

Better understanding of the mechanisms by which smoking is involved in psoriasis pathogenesis, can result in an improved view on psoriasis pathogenesis and novel therapies which might reduce the risk of atherosclerosis morbidities in psoriasis patients <sup>9</sup>.

Smokers are to be informed about the risk of smoking-induced psoriasis along with other well-established adverse effects of any amount of smoking. Furthermore, patients with appointed disease should be talked into quitting smoking to reduce the risk of disease worsening and metabolic syndrome associated with psoriasis <sup>10</sup>.

Very few studies have been published on the relationship between substance abuse and psoriasis. Also, these studies have contradictory results regarding smoking and alcoholism, which could be due to the various study populations and genetic backgrounds. Therefore, the present study was conducted to evaluate the prevalence of tobacco smoking, and substance and alcohol use in patients with psoriasis.

## MATERIALS AND METHODS

A total of 203 consecutive patients with definite diagnosis of psoriasis at ages of 15 or more were recruited between September 2015 and September 2016. This study was approved by the ethics committee of Tehran University of Medical and written informed consents were obtained from all participants.

We collected the general information regarding age, sex, marital status, educational level, associated diseases, disease location, age of onset (early-onset <40 years; late-onset >40 years), treatment of psoriasis and smoking behavior (current smoker vs. ex-smoker), alcohol consumption and substance abuse.

For statistical analysis, SPSS Version 16 was used. Categorical variables were reported as frequencies and percentage. To compare the quantitative and qualitative variables between two or more groups, independent samples t-test and chi-square test were respectively employed. A two-tailed  $P < 0.05$  was considered statistically significant.

## RESULTS

Two hundred and three patients (103 men and 100 women) with psoriasis were included in this

cross-sectional study. Ninety one patients (44.8%) were younger than 40 years and 148 (72.9%) were married. Chronic plaque type of psoriasis was the most common type (93.1%) and lower extremities (92.6%) were the most common site of involvement. There were 76 smokers (37.45%) and 49 patients (24.1%) addicted to alcohol. Thirty nine patients (19.2%) smoked more than 130 packs of cigarettes per year. Other demographic characteristics and data regarding substance abuse are shown in Table 1.

Further analyzed was the association between smoking, alcohol consumption and substance abuse and patients' characteristics. Our findings revealed that smoking (current and ex-users), and opium (ex-user) and alcohol consumption were significantly higher in men than women. Married people had higher levels of tranquilizer use compared with the singles. The use of tranquilizers and alcohol was also higher in patients with educational levels of high school or lower. Moreover, patients older than 40 years had a remarkable history of smoking and hookah and opium use. Disease duration of more than 12 months was associated with more substance and cigarette usage.

Also studied was the relationship between disease characteristics and patients' smoking and substance abuse habits. We found that patients with psoriasis on head and neck were more prone to opium, cigarette and alcohol (85% or higher), where cigarette (odds Ratio = 2.25), hookah (odds Ratio = 2.86) and tranquilizers (odds Ratio = 3.8) were statistically significant. Additionally, hand and foot psoriasis was associated with significant levels of smoking (odds Ratio = 6.14). Patients with psoriatic arthritis had significantly higher levels of tranquilizer use in comparison to patients without arthritis. Moreover, cigarette (odds Ratio = 2.4) and hookah (odds Ratio = 3.8) use was higher in patients with nail involvement.

## DISCUSSION

Our findings demonstrated that smoking, opium and alcohol consumption were significantly higher in men with psoriasis compared with women. Tranquilizer use was higher in married patients, and those with head, neck and joint involvements. Hookah use was considerably high in female psoriatic patients, although not statistically significant. Furthermore, patients older than 40

**Table 1.** Demographic data, smoking, alcohol and substance use in 203 psoriasis patients

Variables	Values N=100 (%)	Cigarette N= 76 (37.4%)	Hookah N=67 (33%)	Tranquilizers N= 36 (17.7%)	Alcohol N=49 (24.1%)	Opium N=17 (8.4%)
<b>Sex</b>						
Male	103 (50.7%)	64 (84.2%)	37 (55.2%)	21 (58.3%)	34 (69.4%)	15 (88.2%)
Female	100 (49.3%)	12 (15.8%)	30 (44.8%)	15 (41.7%)	15 (30.6%)	2 (11.8%)
<i>P</i> -value		0.0001	0.37	0.36	0.003	0.002
<b>Age</b>						
<40	91 (44.8%)	21 (27.6%)	42 (62.7%)	16 (44.4%)	17 (65.4%)	1 (5.9%)
≥ 40	112 (55.2%)	55 (72.4%)	25 (37.3%)	20 (55.6%)	9 (34.6%)	16 (94.1)
<i>P</i> -value		0.0001	0.001	0.9	0.98	0.001
<b>Disease duration</b>						
<1 year	119 (58.6%)	29 (38.2%)	41 (61.2%)	13 (36.1%)	19 (38.8%)	5 (29.4%)
≥1 year	84 (41.4%)	47 (61.8%)	26 (38.8%)	23 (63.9%)	30 (61.2%)	12 (70.6%)
<i>P</i> -value		0.0001	0.65	0.003	0.002	0.01
<b>Educational level</b>						
≤diploma	145 (71.5%)	52 (68.4%)	44 (65.7%)	26 (52.2%)	27 (55.1%)	15 (88.2%)
>diploma	58 (28.5%)	24 (31.6%)	23 (34.3%)	10 (47.8%)	22 (44.9%)	2 (11.8%)
<i>P</i> -value		0.09	0.11	0.002	0.02	0.27
<b>Marital status</b>						
Single	55 (27.1%)	16 (21.1%)	17 (25.4%)	1 (2.8%)	14 (28.6%)	0
Married	148 (72.9%)	60 (78.9%)	50 (74.6%)	35 (97.2%)	35 (71.4%)	17 (100%)
<i>P</i> -value		0.14	0.44	0.002	0.52	0.05
<b>Nail involvement</b>						
	66 (32.5%)	38 (57.5%)	39 (59.1%)	10 (15.1%)	22 (33.3%)	12 (18.1%)
<i>P</i> -value		0.003	0.0001	0.14	0.12	0.07
<b>Psoriatic arthritis</b>						
	50 (24.6%)	19 (38%)	19 (38%)	15 (30%)	13 (26%)	7 (14%)
<i>P</i> -value		0.57	0.24	0.009	0.72	0.27
<b>Disease location</b>						
Face-scalp	142 (70%)	65 (45.7%)	59 (41.5%)	33 (23.2%)	42 (29.5%)	20 (14.1%)
Hands	54 (26.6%)	37 (68.5%)	21 (38.8%)	6 (11.1%)	17 (31.4%)	9 (16.6%)
Upper extremities	170 (83.7%)	-	-	-	-	-
Lower extremities	188 (92.6%)	-	-	-	-	-
Trunk	151 (74.4%)	-	-	-	-	-
Genital	67 (33%)	-	-	-	-	-
<b>Treatment</b>						
Topical	174 (85.7%)					
Systemic	120 (59.1%)					
Phototherapy	145 (71.4%)					

years, with head, neck and nail disease, were more prone to the use of hookah.

The prevalence of smokers in our study population was 37.5% (80% of men and 16% of women) which is considerably higher than the prevalence in the Iranian population (8.3% overall and 30% in men)<sup>11</sup>. This is consistent with the findings of a meta-analysis based on 25 studies by Armstrong *et al.*, who revealed that patients with psoriasis were more likely to be either current or former smokers compared with those without psoriasis. They also found an association between current and former smoking and psoriasis incidence (OR of 1.78)<sup>9</sup>.

In a case-control study by Mills *et al.*<sup>12</sup>, a dose-

response relationship was observed between the risk of developing psoriasis and daily cigarettes smoked (5.3 times in smokers consuming 20 or more cigarettes per day). In another study by Gupta *et al.*<sup>13</sup>, it was shown that cigarette smoking among men augmented the severity risk of psoriasis on the extremities. In our study, smoking was higher in men, patients older than 40 years, and a disease duration of more than a year. The significant finding was the association between palmoplantar psoriasis and smoking, consistent with previous studies. It can be claimed that the effect of psoriasis on patients' appearance and quality of life, emotional problems, and difficulties in social and family life are major factors contributing to the increase in

cigarette consumption among patients<sup>14</sup>.

Besides, strong evidence suggests an association between smoking and psoriasis onset. Studies confirm that smoking promotes inflammatory changes, enhances gene expression associated with psoriasis, and increases oxidative damage. Improved knowledge on the effect of smoking on psoriasis incidence and severity conduces to the introduction of new psoriasis therapies. Given the overlap between psoriasis and atherosclerosis pathogenesis, new therapeutic approaches may also reduce the risk of cardiovascular disease in psoriatic patients<sup>15</sup>.

In our study, hookah smoking was significantly higher in patients older than 40 years and in those with head, neck and nail involvement. The interesting point is the higher number of female patients who were current or former hookah smokers. Historically, hookah smoking was a pastime activity enjoyed by men in the Mediterranean countries. Over the past two decades, this habit has become popular in other parts of the world<sup>16</sup> and has spread to women and the youth<sup>17</sup>. Factors contributing to hookah popularity may be the easy accessibility, social acceptance as part of the cultural heritage, and flavored aromatic tobacco. Evidence suggests that hookah is not only addictive, but it is also associated with smoking-related health problems. In Iran, women are more restricted on cigarette smoking, while hookah has been a traditional entertainment for many, including women<sup>18</sup>. Thus, health providers and policy makers might consider designing and informing hookah smoking prevention measures for the community, particularly women.

We found that 24% of our patients had a history of alcohol consumption, and it was significantly higher in men and patients with lower educational levels. In a systematic review by Brenaut et al.<sup>19</sup>, alcohol consumption was observed to be higher in psoriasis patients compared with the general population. However, they concluded that whether alcohol represents a genuine risk factor or is merely a consequence of psoriasis is yet to be clarified. Besides, it is hard to claim that alcohol consumption is higher in psoriasis patients than in general population.

The psoriatic patients' poor quality of life has been associated with excessive alcohol consumption, increased smoking, and higher use

of tranquilizers<sup>20</sup>. In a study by Davidsson et al.<sup>21</sup> cigarette smoking and the use of tranquilizers, antidepressants, and sleeping medications were reported to be statistically correlated with impaired psoriasis-related quality of life. In our study, married people and those with lower educational levels were considerably more prone to the use of tranquilizers. As expected, history of psoriatic arthritis was associated with more tranquilizer use.

There existed certain limitations in our study. First, our study is a cross-sectional one, not providing information as to whether smoking is an effect or a cause of severe psoriasis. Second, our findings were not compared with the control group, and we used data from general population. Third, the severity of psoriasis was not recorded according to PASI; however, we are a referral center and it is more likely that the treated patients were severe cases under phototherapy or systemic agents. Fourth, it is hard to generalize the results of a hospital-based study to the community.

In conclusion, smoking, and opium and alcohol consumption are higher in men with psoriasis compared women. Moreover, tranquilizer use is higher in married patients, and those with head, neck and joint involvements. Moreover, hookah use is considerably high in female psoriatic patients. These findings should prompt public health workers to consider the modifiable habitual risk factors in patients with psoriasis.

**Conflict of Interest:** None declared.

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