

# Prevalence of Nicotine and Opium Dependence among Psychiatric In-patients in Kerman, Southwestern Iran

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## Abstract

**Background:** Many psychiatric patients have nicotine and other substance dependence.

**Objective:** To determine the prevalence of nicotine and opium dependence among psychiatric in-patients in Kerman, a city in southwestern Iran.

**Methods:** Three groups of psychiatric inpatients, chronic medical patients and a sample from local population, each including 400 subjects were selected. Nicotine dependence was evaluated by Fagerstrom test for nicotine dependence. Scores  $>7$  were considered positive for nicotine dependence. Opium dependence was evaluated by a semi-structured interview based on DSM IV.

**Results:** 115 (28.75%) out of 400 psychiatric patients had nicotine dependence which was significantly higher than that of the two other groups ( $p<0.0001$ ). 140 (35%) of psychiatric patients had opium dependence that did not differ from chronic medical patient but was higher than the control group ( $p<0.0001$ ). Frequencies of nicotine and opium dependence were higher among males in all three groups. The highest frequencies of nicotine and opium dependence were observed among patients with post-traumatic stress disorder.

**Conclusion:** Psychiatric patients are predisposed to substance dependence. One plausible reason for opium dependence in our patients is cultural factors. Substance dependence associated with other psychiatric disorders should be considered whenever treatment plan is made.

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**Keywords** • Nicotine dependence • opium dependence • psychiatric disorders •Iran

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## Introduction

**S**tandardized mortality reports have repeatedly demonstrated excess mortality from both natural and unnatural causes among psychiatric patients as compared to the general

Table 1: Distribution of substance dependence among studied groups				
Number (%:95% CI) of subjects with substance dependence				
Substance	Psychiatric patients (n=400)	Chronic medical patients (n=400)	Normal people (n=400)	p value
Nicotine	115 (28.75: 24.31-49.92)	38 (9.50: 6.63-14.45)	40 (10.00:7.06-15.34)	<0.0001
Opium	140 (35.00: 30.33-61.82)	146 (35.50: 31.78-64.7)	90 (22.50: 18.41-38.17)	<0.0001

population. Substance abuse, alone or in combination with other psychiatric disorders has been repeatedly found to increase mortality rates.<sup>1</sup> There are several explanations as to why psychiatric patients abuse substances. Nevertheless, no unique reason for different groups of patients and substances was identified. However, there may be some shared mechanism, for example many drugs such as nicotine, cocaine and amphetamine activate the mesolimbic dopamine system.<sup>2</sup> Opium and nicotine dependence are two major problems in our psychiatric in-patients in Kerman, a city with a population of around 1,000,000 in southeastern Iran. In the present study, we report on the frequency of nicotine and opium dependence among psychiatric in-patients admitted to one of Kerman hospitals.

### Patients and Methods

In this cross-sectional study, 1200 subjects in three groups, each of 400 subjects, were studied. The first group included psychiatric patients who were consecutively admitted to Kerman psychiatric hospital over a nine-month period. Two other matched control groups, one from chronic medical patients with impressions of diabetes mellitus, idiopathic hypertension, ischemic heart disease, chronic obstructive pulmonary disease and rheumatoid diseases, and another group selected from local general population were studied. Mean±SD duration of illness in psychiatric patients was 8.3±8.6 years and in chronic medical patients was 8.2±8.8 years

with no significant difference between the two groups ( $p>0.92$ ). The age range for all three groups was 20-70 years. The mean±SD ages of psychiatric patients, chronic medical patients and normal control group were 38.8±13.5, 36.9±14.3, and 37.6±14.5 years, respectively. There was no statistical difference ( $p=0.157$ ) between group means. To be included in the study, subjects had to be able to answer the relevant questions thus in the group of psychiatric patients, mentally retarded patients were excluded. Axis I diagnosis made by the attending physicians was rechecked based on DSM IV diagnostic criteria. Four main diagnostic groups including schizophrenia (SCH), bipolar mood disorder (BMD), major depressive disorder (MDD) and post-traumatic stress disorder (PTSD), based on frequency of patients referral, were selected. Nicotine dependence was assessed by Fagerstrom test for nicotine dependence. A test score  $>7$  was considered positive for nicotine dependence.<sup>3</sup> Opium dependence was assessed by a semi-structured interview based on DSM IV criteria. The data were analyzed by  $\chi^2$  test, using Epi-Info 6 software (WHO and CDC, Atlanta, USA).

### Results

The frequency of distribution of substance dependence among psychiatric patients, chronic medical patients, and the normal control group are shown in the Table 1. Frequency of nicotine dependence among psychiatric patients was significantly higher than that among the two other groups ( $p<0.0001$ ).

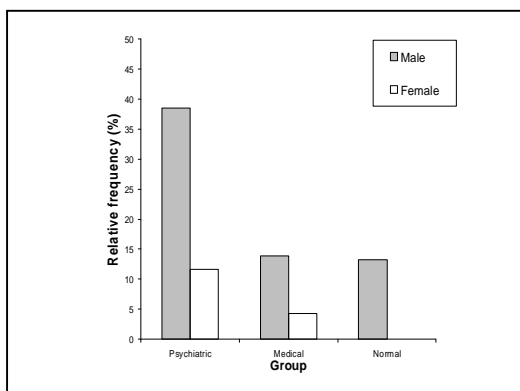


Fig1: Frequency of nicotine dependence categorized by gender

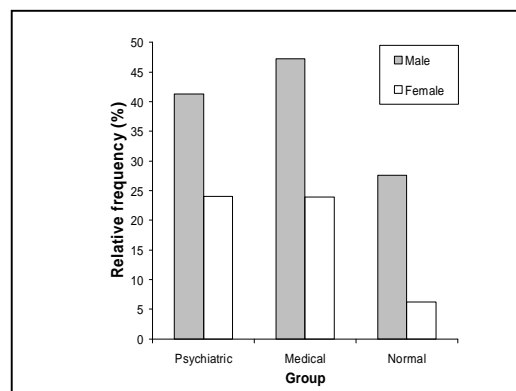


Fig 2: Frequency of opium dependence categorized by gender

**Table 2:** Distribution of substance dependence among psychiatric patients

Substance	Number (%) of subjects with substance dependence			
	Post-traumatic stress disorder (n=19)	Major depressive disorder (n=54)	Schizophrenia (n=55)	Bipolar mood disorder (n=153)
Nicotine	14 (73.4)	17 (31.5)	17 (30.9)	35 (22.9)
Opium	11 (57.9)	27 (50.0)	16 (29.1)	44 (28.8)

There was no significant difference between the first two groups, however, opium dependence in these two groups was significantly higher than that in the third group ( $p < 0.0001$ ).

In all three study groups, there was a higher frequency of nicotine and opium dependence among males than females (Figs 1 and 2). Male psychiatric patients had the highest frequency of nicotine dependence among groups studied ( $p < 0.001$ ). Frequency of opium dependence in psychiatric male patients did not differ significantly from that in chronic medical male patients (Fig 2). They were, however, significantly higher than that in normal population ( $p < 0.001$ ).

Frequency of nicotine dependence in female patients with psychiatric disorder was significantly ( $p < 0.001$ ) higher than that in female subjects of the other two groups (Fig 1). The prevalence of opium dependence in female psychiatric patients and chronic medical patients did not differ substantially. However it was significantly ( $p < 0.001$ ) higher than that of normal female subjects (Fig 2).

The frequency of dependence on both nicotine and opium was 21.5% in psychiatric patients, 7.5% in chronic medical patients, and 8.0% in the sample from local population.

Frequencies of nicotine and opium dependence in four subgroups of psychiatric patients are represented in Table 2. The highest frequencies of nicotine and opium dependence were seen among patients with post-traumatic stress disorder (PTSD).

## Discussion

There were several reports showing high prevalence of nicotine dependence in psychiatric patients. Hughes et al examined smoking rates among a relatively large ( $n=277$ ) young adult outpatient psychiatric population and compared these with rates reported from local and national population-based samples. That study was the first to provide evidence to support the hypothesis that increased smoking rates are specifically related to psychiatric diagnosis, even when other contributing factors are controlled. Therein, the rate of smoking was highest among patients with schizophrenia (88%), followed by mania (70%), major depressive disorder (49%), and anxiety, personality, or adjustment disorder (45%-47%) as compared with the control population (30%).<sup>4</sup> In our study, the highest

nicotine and opium dependence was among veterans of Iran-Iraq war suffering from severe PTSD. Self medication hypothesis has often been used to explain the relationship between PTSD and substance dependence.<sup>5</sup> Self-medication may have a role in other psychiatric disorders. It was studied among schizophrenic patients. In a recent review, Dalack et al, stated that the prevalence of cigarette smoking among persons with schizophrenia is between 40% and 100% which is higher than those with other psychiatric diagnoses, and as much as three times higher than the prevalence in the general population.<sup>6</sup> Therefore, it is possible that patients with schizophrenia self-medicate with nicotine to alleviate both positive and negative symptoms as well as to improve their cognitive abilities.<sup>7</sup> It is proposed that dissociation of cortical-subcortical dopaminergic activity is related to psychotic symptoms in schizophrenia and that nicotine was suggested to increase glutaminergic transmission in the cortex and can affect striatal dopamine levels. This, ultimately could modulate and potentially normalize the disturbance.<sup>8,9</sup>

We found that the rate of nicotine dependence in schizophrenics and patients with mood disorders is similar. However, in some other reports, the prevalence of regular smoking in schizophrenic patients was higher than those with mood disorders.<sup>6,10</sup> In one study performed on 265 schizophrenic out-patients, smokers had a significantly earlier onset of schizophrenia, higher rates of alcohol and drug abuse, more positive symptoms, and higher rates of schizoaffective disorder (depressive type). These suggest reasons in favor of the effects of nicotine on the cholinergic system, psychological and social factors, and the relationship between depression and nicotine dependence.<sup>11</sup>

Existence of depression may predispose the patient to nicotine dependence. In one study, Breslau et al, stated that a history of major depression increased smoker's risk to nicotine dependence and more severe dependence and subjects with a history of nicotine dependence at baseline had a significantly higher prevalence of major depressive disorder during the 14-month follow up interval.<sup>12</sup> In another research by Breslau et al, major depressive disorder and anxiety disorder were associated specifically with nicotine dependence.<sup>13</sup> In another study, smokers frequently had a lifetime history of

major depression, alcohol and drug abuse/dependence.<sup>14</sup>

Prevalence of nicotine dependence was also high among bipolar patients. In one study, the frequencies of ever smoking, and current daily smoking were 63%, and 51%, for the bipolar patients and 45%, and 33%, respectively, for the controls.<sup>15</sup> Heavy smoking was found in both genders with bipolar mood disorder.<sup>15</sup> Smokers of both sexes are higher in sensation seeking than their non-smoking counterparts; they scored higher in the disinhibition, experience seeking and boredom susceptibility components of sensation seeking.<sup>16</sup> Consequently, increased pleasure activity and sensation seeking in bipolar patients may account for their increasing frequency of nicotine dependence. We found that the frequency of opium dependence was the same in psychiatric and chronic medical patients and that it was higher than local population sample. The frequency of nicotine dependence, however, was higher in psychiatric patients than both chronic medical and local population groups. It means that psychiatric disorder per se, independent of its type, could increase the frequency of nicotine dependence.

There is little information on frequency of opium dependence among psychiatric patients. One reason being the availability of this substance. Opium is expensive in various parts of the world. In Iran, especially in its southern parts, opium is not so expensive; one gram for almost 1 US\$. Its use also is culturally accepted and even advised for various reasons, either medically or mentally. Therefore, it is not surprising that the frequency of opium dependence was higher in psychiatric and medical patients than the local population. The use of opium for melancholia and mania may be traced back to ancient classical medicine. After Paracelsus and Sydenham, the psychiatry of the German romantic era widely discussed the therapeutic uses of opium and even the Engelken family has proposed a structured schedule for treatment of depression with opium in the first half of the nineteenth century.<sup>17</sup> An examination of substance abusers in a contemporary practice reveals a high frequency of psychiatric disorders. In some cases, these probably represent preexisting conditions, but in others, the disorder may be initiated or aggravated by the biological and social consequences of the substance abused. The severity of patient's psychiatric disorder is predictive of response to substance abuse treatment. A high proportion of affective disorders has been found among opium dependent patients.<sup>18</sup> High frequency of opium dependence, as one of abused substances in all of main diagnostic groups in psychiatric patients in this study, is an important matter of concern in their therapeutic plan. In one study, the percentage of

co-morbidity of substance dependence and psychiatric disorders was 23.9%.<sup>19</sup>

High frequency of co-morbidity between opium dependence and nicotine dependence in psychiatric patients is another important point. This high co-morbidity rate was observed in two other groups. Nicotine per se, elevates the frequency of other substance dependence.<sup>20</sup>

Co-morbidity of nicotine dependence and opium dependence in our psychiatric patients are matters which should be considered in the treatment plan. Male patients are especially at higher risk of substance dependence. Some limitations existed in this research; we examined only inpatient subjects, frequencies of nicotine and opium dependence may differ in outpatient subjects. Opium is the most frequent substance abused by patients in our culture, however it is not the only substance used and the frequency of other abused substances should be evaluated. We only studied dependence rather than abuse of nicotine and opium. Further researches should be conducted to provide complementary results.

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