Nicotine and opium dependence in psychiatric patients

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ABSTRACT

Objective: Many psychiatric patients have nicotine and other substance dependence. The goal of this research is examining the frequencies of nicotine and opium dependence among psychiatric inpatients in Kerman, Iran.

Methods: Three groups of psychiatric inpatients, chronic medical patients and a sample from the local population, each including 400 subjects were selected. Psychiatric patients were evaluated in Kerman Psychiatric Hospital, Kerman, Iran in the year 2001. Nicotine dependence was evaluated via Fagerstrom test for nicotine dependence, score above 7 was considered positive for nicotine dependence. Opium dependence was evaluated by semi-structured interview based on The Diagnostic Manual of Mental Disorders, 4th edition.

Results: One hundred and fifteen (28.75%) psychiatric patients had nicotine dependence which was higher than 2 other groups (X^2=4, degrees of freedom (df)=4, p<0.0001). One hundred and forty (35%) psychiatric patients had opium dependence which did not differ from chronic medical patients but was higher than the third group (X^2=21.97, df=2, p<0.0001). Frequencies of nicotine and opium dependence were higher among male subjects in all 3 groups. Highest frequencies of nicotine and opium dependence were seen among patients with post traumatic stress disorder (PTSD). The highest coefficient of contingency between nicotine dependence and opium dependence was seen among psychiatric patients.

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 by treating physicians in any treatment plan.

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Substance dependence disorders, at least sometimes may change the clinical features of mental illness or interact with treatment. Substance dependence may cause considerable morbidity and mortality among psychiatric patients. Standardized mortality ratios for psychiatric patients, derived from comparisons with the general population and matched control groups, have repeatedly demonstrated excess mortality from both natural and unnatural causes among psychiatric patients. Substance abuse disorders alone or in combination with other psychiatric disorders have been repeatedly found to increase mortality rates.[1] There are several explanations why psychiatric patients abuse substances, and of course, there are no same reasons for different groups of patients and different substances, although there may be some shared mechanism, for example, many drugs such as nicotine, cocaine and amphetamine activate the mesolimbic dopamine system.[2] Opium and nicotine dependence are 2 major problems in our psychiatric inpatients in Kerman Psychiatric Hospital (Kerman is a city with about 1/000/000 population in southern Iran). In the present study, we report on the nicotine and opium dependence among psychiatric inpatients in this hospital and discuss the findings.

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Method. In this cross-sectional study, 1200 subjects in 3 different groups, each including 400 subjects were studied. The first group included psychiatric patients who were consecutively admitted over a 9-month period to the Kerman Psychiatric Hospital in the year 2001. Two other matched groups, one from chronic medical patients with impressions of diabetes mellitus, idiopathic hypertension, ischemic heart disease, chronic obstructive pulmonary disease and rheumatoid diseases and one from the local general population were selected. Duration of illness in psychiatric patients was 8.3 years (standard deviation [SD] = 8.6) and in chronic medical patients was 8.2 years (SD = 8.8). There was no significant difference between 2 groups (p>0.92). All subjects in the 3 groups were aged 20-70 years. The mean age $\pm$ SD of psychiatric patients was 38.8±13.49, for chronic medical patients was 36.9±14.3 and the sample of local general population was 37.6±14.5 years. There was no statistical difference (p=0.157). To be included in study, subjects had to be able to answer related questions. In the group of psychiatric patients, subjects were ruled out if they had mental retardation. Axis I diagnosis of treating physicians was determined and was rechecked by researchers based on the Diagnostic Manual of Mental Disorders, 4th edition (DSMIV) criteria. Four main diagnostic groups including schizophrenia (SCH), bipolar mood disorder (BMD), major depressive disorder (MDD) and post traumatic stress disorder (PTSD) based on frequent types of patient's referral to this hospital were determined. Nicotine dependence was assessed by Fagerstrom test for nicotine dependence and score above 7 was considered positive for nicotine dependence.[3] Opium dependence was assessed by semi structured interview based on DSM IV. Data were analyzed by chi-square test through Epi-info 6 software.

Results. The highest frequency of nicotine dependence was seen in psychiatric patients. There was no statistical relationship between frequency of opium dependence in psychiatric patients and chronic medical patients. Frequency of opium dependence in these 2 groups was significantly higher than in the local population sample (**Table 1**). In all 3 studied groups there were higher frequencies of nicotine and opium dependence among male patients than among female subjects (**Table 2**). The male psychiatric patients showed highest frequency of nicotine dependence (X^2 = 63.41, df=2, p<0.0001), frequency of opium dependence in psychiatric male patients and chronic medical male patients did not differ significantly and was higher than the normal population sample (X^2 with Yates correction = 22.91, df=2, p<0.0005). Frequency of nicotine dependence in female patients with psychiatric disorder was higher than female subjects in the 2 other groups (X^2 = 15.57, df=2, p<0.0005), frequency of opium dependence between female psychiatric patients and chronic medical patients did not differ and was higher than female subjects in the third group (X^2 = 14.77, df=2, p<0.001). In the psychiatric patients, 86 subjects had both nicotine and opium dependence (X^2 = 131.94, df=2, P<0.0001, Tchouproff coefficient of contingency [rT*]=0.4). In chronic medical patients, 30 subjects had both nicotine and opium dependence (X^2 = 94.54, df=2, p<0.0001, rT=0.34). In the local population sample 32 subjects had both dependence (X^2 = 112.25, df=2, p<0.0001, rT=0.37). The highest coefficient of contingency was seen among the psychiatric patients. Frequencies of nicotine and opium dependence in 4 subgroups of psychiatric patients were represented in **Table 3**. Highest frequencies of nicotine and opium dependence were seen among PTSD patients.

Discussion. There were several findings, which showed high prevalence of nicotine dependence and cigarette smoking in psychiatric patients, similar to findings in other studies. Hughes et al examined smoking rates among a relatively large (N=277), young adult, outpatient psychiatric population and compared these with rates among local and national population based samples. That study was the first to provide data to support the hypothesis that increased smoking rates are specifically related to psychiatric diagnosis, even when other factors are controlled. The rate of smoking was highest among patients with schizophrenia (88%), compared with mania (70%), major depressive disorder (49%), and anxiety, personality, or adjustment disorder (45-47%) and with the control population (30%).[4] We found that the highest nicotine and opium dependence was seen among PTSD patients, they are Iran-Iraq veterans and suffered from severe PTSD. Post traumatic stress disorder commonly co-occurs with other psychiatric disorders including substance dependence.

The self-medication hypothesis has often been applied to understand the relationship between PTSD and substance use disorder.[5] Self medication may have a role in other psychiatric disorders; it was studied among schizophrenic patients. Numerous research has been carried out on smoking habits of schizophrenics and high smoking rates in various studies were detected. In a recent review Dalack et al stated the prevalence of cigarette smoking among persons with schizophrenia to be 40-100% higher than among those with other psychiatric diagnoses and as much as 3 times higher than the prevalence in the general population,[6] so it is possible that patients with schizophrenia self-medicate with nicotine to alleviate both positive and negative symptoms as well as to improve cognition.[7] It is proposed that dissociation of cortical-subcortical dopaminergic activity is related to psychotic symptoms in schizophrenia and nicotine was suggested to increase glutamatergic transmission in the

Table 1 - Frequencies of nicotine and opium dependence among 3 studied groups.

Groups	Nicotine dependence		Statistical analysis		Opium dependence		Statistical analysis	
	N	%	X^2	*p*	N	%	X^2	*p*
Psychiatric patients	115	28.75	4	<0.0001	140	35	22	<0.0001
Chronic medical patients	38	9.5			146	36.5		
Local population sample	40	10			90	22.5		

Table 2 - Frequencies of nicotine and opium dependence among male and female subjects of studied groups.

Groups	Nicotine				Statistical analysis			Opium				Statistical analysis		
	Dependent		Non-Dependent		X^2	df	*p*	Dependent		Non-Dependent		X^2	df	*p*
	N	%	N	%				N	%	N	%			
Psychiatric patients														
Male - 254	98	38.5	156	61.4	52.1	2	<0.0001	105	41.3	149	58.7	11.54	1	<0.0001
Female - 146	17	11.6	129	88.4				35	24	111	76			
Chronic medical patients														
Male - 216	30	13.9	186	86.1	16.2	2	<0.001	102	47.2	114	52.8	23.3	1	<0.0001
Female - 184	8	4.3	176	95.7				44	23.9	140	76.1			
Local population sample														
Male - 304	40	13.2	264	86.8	28.4	2	<0.0001	84	27.6	220	72.4	17.9	1	<0.0001
Female - 96	0	0	96	100				6	6.25	90	93.75			

Table 3 - Frequencies of nicotine and opium dependence among psychiatric subgroups.

Diagnosis	Nicotine dependence		Statistical analysis			Opium dependence		Statistical analysis		
	N	%	X^2	df	*p*	N	%	X^2	df	*p*
PTSD (n - 19)	14	73.4	21.8	4	<0.0001	11	57.9	19	9	<0.01
MDD (n - 54)	17	31.5				27	50			
SCH (n - 55)	17	30.9				16	29.1			
BMD (n - 153)	35	22.9				44	28.8			
Others (n - 119)	32	26.9				42	35.3			

PTSD - post traumatic stress disorder, SCH - schizophrenia, BMD - bipolar mood disorder, MDD - major depressive disorder

cortex and can affect striatal dopamine levels and ultimately is able to modulate, and potentially normalize, this disturbance.[8,9] We found that the rate of nicotine dependence in schizophrenics and patients with mood disorders is nearly the same, however, in other research the prevalence of regular smoking in schizophrenic patients was higher than mood disorder patients.[6,10] In one study on 265 schizophrenic outpatients, smoking patients 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). Suggested reasons included the effects of nicotine on the cholinergic system, psychological and social factors, and the relationship between depression and nicotine dependence.[11]

Existence of depression may predispose a patient to nicotine dependence. In one study Breslau et al[12] stated that a history of major depression increased smoker's risk to nicotine dependence and severer 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.[12] In another research, major depressive disorder and anxiety disorder were associated specifically with nicotine dependence.[13] In another study, smokers frequently had a lifetime history of major depression, alcohol and drug abuse or dependence.

The prevalence of nicotine dependence was also high among bipolar patients. In one study the frequencies of ever smoking was 63% and current daily smoking was 51%, for the bipolar patents and 45% and 33% for the controls. Heavy smoking was found in both genders with bipolar mood disorder.[15] Findings show that smokers of both sexes were higher in sensation seeking than their nonsmoking counterparts. They scored higher in the disinhibition, experience seeking and boredom susceptibility components of sensation seeking,[16] so increased pleasure activity and sensation seeking in bipolar patients may account for increasing frequency of nicotine dependence.

We found that the frequency of opium dependence was the same in psychiatric and chronic medical patients and higher than the local population sample, but frequency of nicotine dependence was higher in psychiatric patients than both chronic medical and local population groups. Therefore, psychiatric disorder per se independent of its type could raise the frequency of nicotine dependence. There is little information on the frequency of opium dependence among psychiatric patients; one reason is availability of this substance. Opium is expensive in various parts of the world; in Iran especially in its southern parts opium is not expensive. Currently, one gm costs approximately one US $ and is culturally accepted and advised for various reasons, medically or mentally. So it was no surprise that frequency of opium dependence was higher in psychiatric and medical patients than in the local population group. The use of opium for melancholia and mania may be traced to ancient classical medicine. After Paracelsus and Sydenham, the psychiatry of the German Romantic Era widely discussed therapeutic opium use with the Engelken family going on to develop a structured opium treatment of depression in the first half of the nineteenth century.[17] 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 biologic and social consequences of substance abuse. The severity of patient's psychiatric disorder is predictive of response to substance abuse treatment. High proportions of affective disorders have been found among opioid dependent patients.[18] A high frequency of opium dependence as one abused substance in all 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 comorbidity of substance dependence and psychiatric disorders was 23.9% (n=56) of 234 substance dependence patients.[19] The high frequency of comorbidity between opium dependence and nicotine dependence in psychiatric patients is another important point, although this high comorbidity rate was seen in 2 other groups. Nicotine per se elevated the frequency of other substance dependence. Subjects with nicotine dependence had higher rates of alcohol and drug dependence in one study.[20]

Comorbidity of nicotine dependence and opium dependence in our psychiatric patients are matters which should be considered in the treatment plan. We conclude that male patients are especially at high risk of substance dependence. Some limitations existed in this research, first we examined only inpatient subjects and frequencies of nicotine and opium dependence may differ in an outpatient sample. Second opium is the frequent substance that is abused by patients in our culture, but is not the only one, and frequency of all substances dependence may be higher. Third we studied only dependence and did not study nicotine, and opium abuse. We hope further research will reveal complimentary results.

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