Smoking Habits in Bipolar and Schizophrenic Outpatients in Southern Israel

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Background: Although rates of cigarette smoking have been found to be higher in schizophrenic and depressed patients than in the general population, data regarding rates in bipolar patients are limited. This study further examines the relationship between bipolar disorder and smoking and compares the rate of smoking in bipolar disorder patients with rates in schizophrenic patients and in the general population.

Method: Seventy bipolar patients and 64 schizophrenic patients (diagnosed using DSM-IV criteria) treated at the largest specialized public bipolar and schizophrenia clinics in southern Israel were interviewed regarding their smoking habits. The interview included a questionnaire relating to personal information, past and present smoking, and drug abuse and the Fagerstrom scale for nicotine dependence. Data from these patients were also compared with data from the general Israeli population.

Results: Data indicate that the rate of smoking does not appear to differ between bipolar (43.0%) and schizophrenic (45.0%) patients, whereas the rate for both patient groups is higher than that for the general Israeli population (27.5%). Smoking intensity was not found to be different between the 2 groups of patients.

Conclusion: Smoking in patients with schizophrenia was suggested to be related to nicotine cholinergic dysfunction, but this suggestion cannot explain the equally high rates of smoking in bipolar patients. Schizophrenia, bipolar disorder, and smoking may all be related to dopamine transmission, and, therefore, dopaminergic interactions may provide a better explanation for the results.

(J Clin Psychiatry 2001;62:269–272)

Received Oct. 12, 1999; accepted Sept. 6, 2000. From Beer Sheva Mental Health Center, Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel.

This study was supported by a Stanley Foundation Center grant.

Parts of the data included in the present manuscript were presented in the Annual Meeting of the Israeli Society for Biological Psychiatry, 1998.

The authors thank R. H. Belmaker, M.D., for his useful comments and E. Shahar, M.D., U. Leowenthal, M.D., and Y. Osher, Ph.D., for their technical assistance.

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The high prevalence of smoking in psychiatric patients has been intensively studied during the last decade. Studies suggest that the smoking rate for institutionalized schizophrenic patients (of whom up to 85% are smokers) is as much as 3 times the rate in the overall population while the rate in outpatients ranges between 70% and 80%.[1–3] Smoking in individuals with schizophrenia has been demonstrated to be more prevalent than in overall psychiatric patient populations.[4,5] Possible causes for the phenomenon may be related to the disease itself, reversal of neuroleptic treatment side effects, or social factors, especially institutionalization.[2,6,7] Recent studies suggested that increased smoking in schizophrenia may be related to disease-related dysfunction in nicotinic receptors,[8] cholinergic sensory gating deficits,[9] or alleviation of cognitive deficits in schizophrenia.[10] Alternatively, data also suggest a dopaminergic interaction between smoking and schizophrenia (e.g., Court et al.[11] and Levin et al.[7]).

Ample information also suggests that depression and depressive symptoms may be related to increased smoking (e.g., Hughes et al.[12]; for reviews, see Covey et al.[13] and Glassman[6]) as well as to increased difficulties in cessation of smoking and a high incidence of depression occurring during smoking cessation attempts (e.g., Glassman et al.[14]). The increased smoking rate in depressed patients was suggested to be related to self-medication (e.g., Glass[15]) or shared genetic vulnerability.[6] A recent study also reports an increased rate of smoking (51% compared with 33% in controls) in a population of bipolar patients,[16] but data regarding this disorder are still limited.

The present study was designed to further examine the relationship between bipolar disorder and smoking and compare the rate and intensity of smoking in bipolar disorder patients with those in schizophrenic patients and in the general population. To minimize social influences of psychiatric hospitalization on smoking, the study examined 2 populations of psychiatric outpatients: bipolar and schizophrenic patients, all receiving treatment in the outpatient clinic of a defined catchment area in southern Israel.

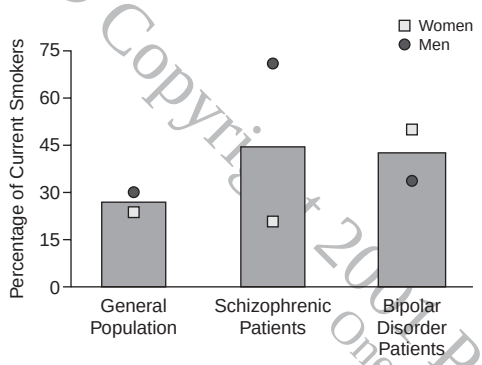
METHOD

Seventy bipolar outpatients (38 women and 32 men) and 64 schizophrenic outpatients (33 women and 31 men) gave informed consent and were interviewed regarding

Table 1. Demographic Data for Patients With Bipolar Disorder or Schizophrenia

	Bipolar Disorder			Schizophrenia		
Variable	Total	Women	Men	Total	Women	Men
N	70	38	32	64	33	31
Age, y, mean ± SD	43.2 ± 15.2	41.2 ± 15.0	45.6 ± 15.3	40.9 ± 11.7	40.8 ± 12.3	41.1 ± 11.3
Age at onset, y, mean ± SD	29.1 ± 12.6	28.1 ± 11.8	30.4 ± 13.6	26.6 ± 9.2	27.5 ± 9.2	25.7 ± 9.3

Figure 1. Rate of Current Smoking in the General Population (Israeli Ministry of Health Survey, N = 3000[a]) and in Patients With Schizophrenia (N = 64) or Bipolar Disorder (N = 70)[b]



[a]Office of the Statistician, Israeli Ministry of Health, unpublished communication, 2000.
[b]Bars represent rates of smoking in the study's population groups. The rates for schizophrenic (45.0%) and bipolar patients (43.0%) are significantly higher than the rates for the general population (27.5%) (for schizophrenic patients, $\chi^2 = 9.89$, df = 1, $p < .002$; for bipolar patients, $\chi^2 = 8.03$, df = 1, $p < .005$).

Table 2. Bipolar and Schizophrenic Patients With Past and/or Present Smoking Experience[a]

	Bipolar Disorder		Schizophrenia	
Patients	N/Total N	%	N/Total N	%
All	42/70	60	35/64	55
Women	22/38	58	13/33	39
Men	20/32	62	22/31	71

[a]No significant differences were found between the patient groups.

Table 3. Fagerstrom Scale for Nicotine Dependence Scores (mean ± SD)[a]

Patients	Bipolar Disorder	Schizophrenia
All	5.4 ± 2.8	6.1 ± 2.4
Women	5.5 ± 2.6	5.0 ± 2.3
Men	5.4 ± 3.2	6.5 ± 2.4

[a]No significant differences were found between patient groups (Kruskal-Wallis nonparametric analysis of variance).

their smoking habits. These patient groups comprised all outpatients (i.e., not a sample) receiving treatment at the largest specialized public bipolar and schizophrenia clinics in southern Israel, our defined catchment area. The population of the study does not include all of the outpatients of the catchment area, since the area also included other (nonspecialized) psychiatric clinics.

All patients were diagnosed with type I bipolar disorder or schizophrenia according to DSM-IV criteria. All lived in community dwellings, received pharmacologic treatment, and were in full or partial remission. Demographic data are presented in Table 1. The interview included a questionnaire, completed by the interviewer, relating to personal information, past and present smoking, family smoking habits, and drug abuse. The questionnaire also included the Fagerstrom scale for nicotine dependence,[17] designed to evaluate the intensity of smoking. Data were also compared with data from the general Israeli population as reported in the 1997 report of the Israeli Ministry of Health based on a sample of 3000 subjects (Office of the Statistician, Israeli Ministry of Health, unpublished communication, 2000).

Chi-square analysis was used to compare the rate of smoking between populations (general, bipolar, and schizophrenic) and the rate of ever smoking (past or present smokers) in bipolar and schizophrenic patients. Kruskal-Wallis nonparametric analysis of variance was used to compare the Fagerstrom score of currently smoking bipolar and schizophrenic patients.

RESULTS

As shown in Figure 1, the rate of current smoking for bipolar patients was no different than the rate for schizophrenic patients ($\chi^2 = 0.08$, df = 1, NS), and both patient groups demonstrated a significantly higher rate compared with the general population (for bipolar patients, $\chi^2 = 8.03$, df = 1, $p < .005$; for schizophrenic patients, $\chi^2 = 9.89$, df = 1, $p < .002$). Rates of having ever smoked did not differ between bipolar and schizophrenic patients (Table 2), and no differences were observed between the patient groups in the Fagerstrom score for nicotine dependence (Table 3).

Family data indicate that 53% of bipolar smokers and 55% of schizophrenic smokers come from families where either the father, the mother, or both smoked. None of the patients was found to have drug or alcohol abuse habits.

A gender effect was evident in rates of current smoking and having ever smoked for schizophrenic patients among whom rates were significantly higher for men than for women (for current smoking, $\chi^2 = 15.97$, df = 1, $p = .0001$ [see Figure 1]; for having ever smoked, $\chi^2 = 6.43$, df = 1, $p < .02$) [see Table 2]) , but not for bipolar patients (for current smoking, $\chi^2 = 1.73$, df = 1, NS; for ever having smoked, $\chi^2 = 0.15$, df = 1, NS).

DISCUSSION

The attempt to understand the interaction of different factors affecting the high prevalence of smoking in psychiatric patient populations may depend on the specificity of the phenomenon. Accordingly, if increased smoking were related to schizophrenia alone, it may be rational to study the interactions between smoking and the biological mechanisms of the disease or the effects of neuroleptic treatment (although neuroleptic treatment is not limited to schizophrenic patients and may also be relevant to bipolar disorder). However, if increased smoking is less specific and appears in other groups of psychiatric patients, it may be rational to direct studies at the common mechanisms of these diseases or at the common social consequences of psychiatric disorders. Most previous studies concentrated on one population of patients (compared with statistics of the general population in the country of origin of the study). While suggesting important information, the design of these studies limited the possibility to compare different groups of patients. To overcome this difficulty, the present study compared 3 groups of subjects from a similar social environment, all outpatients in the same public mental health center located in the south of Israel.

The results obtained in the present study indicate that schizophrenic and bipolar patients smoke more than the general population. The rate of smoking found for schizophrenic patients is lower than rates demonstrated in other studies, but smoking rates in schizophrenia have been demonstrated to be related to the severity of illness,[18] and the patients in the present study are all outpatients in full or partial remission. Results also indicate that smoking experience (having ever smoked) and smoking intensity do not significantly differ between these groups of patients.

The results indicate a significant effect of gender on smoking habits in southern Israeli schizophrenic patients. Gender effects were previously demonstrated in other studies of smoking and psychiatric disorders (e.g., Anda et al.[19]) and should be further investigated.

The present study supports previous findings that individuals afflicted with bipolar affective illness smoke more than the general population.[16] Additionally, the present study indicates that rates of current smoking and having ever smoked for bipolar patients are not lower than those for schizophrenic patients. This possible similarity in smoking rates between bipolar and schizophrenic patients may indicate that the source of the phenomenon may be related to a common feature of these diseases. The high rate of smoking in schizophrenic patients has been suggested to be related to nicotinic cholinergic dysfunction.[20] Cholinergic transmission may also be abnormal in bipolar disease (e.g., Jope et al.[21]), but data regarding such an abnormality are inconsistent (e.g., Castillo et al.[22]). Alternatively, schizophrenia and bipolar disorder are related to the dopamine system, and smoking and nicotine addiction have been suggested to be also associated with dopamine.[11,23,24] Recent genetic findings indicate a possible association of polymorphism of dopamine-related genes with schizophrenia (e.g., Arinami et al.[25] and Serretti et al.[26]), bipolar disorder (e.g., Perez de Castro et al.[27]), and smoking (e.g., Anokhin et al.[28]), and the relevance of dopamine to smoking is also supported clinically by the efficacy of bupropion, a dopamine uptake inhibitor, in smoking cessation. Therefore, a dopaminergic mechanism may explain the high rates of smoking in both schizophrenic and bipolar patients.

Drug name: bupropion (Zyban).

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