

# Cigarette Smoking, Nicotine Dependence, and Motivation for Smoking Cessation in Psychiatric Inpatients

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**Objective:** Cigarette smoking is the leading preventable cause of death and disease in Canada, and is disproportionately more frequent among psychiatric patients. Smoking cessation interventions can be successfully implemented with psychiatric patients, yet no Canadian studies have evaluated smoking prevalence, nicotine dependence, and motivation for smoking cessation in psychiatric inpatients. Our study did so to help plan appropriate interventions for these patients.

**Method:** All inpatients aged 18 years or older admitted to acute-care psychiatry units at the Foothills Medical Centre in Calgary, Alberta, during a 6-month period completed a survey involving questions from the Canadian Tobacco Use Monitoring Survey, the Fagerstrom Test for Nicotine Dependence (FTND), the Readiness to Quit Ladder, and the Decisional Balance for Cigarette Smoking. Responses were analyzed for correlation with discharge diagnoses, age, and sex.

**Results:** Among the total inpatients ( $n = 342$ ), 211 (62%) completed the survey. Among those, 55% were current cigarette smokers and 17.5% were former smokers. Nicotine dependence (FTND  $\geq 6$ ) was reported in 45.2% of smokers. Smoking prevalence and nicotine dependence severity was greatest in the substance use disorders (SUD) and psychotic disorders groups. Current smokers endorsed more negative than positive attributes of smoking. Regarding smoking cessation, 51% of patients were precontemplative, 12.7% contemplative, and 36.2% preparatory or action-oriented, despite few receiving advice to quit.

**Conclusions:** Cigarette smoking and nicotine dependence are highly prevalent in psychiatric inpatients. However, self-reported motivation for smoking cessation is noteworthy, emphasizing that cessation advice and appropriate follow-up care should be provided to psychiatric inpatients who smoke.

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### Clinical Implications

- Cigarette smoking and nicotine dependence are markedly greater in psychiatric inpatients, compared with the general population.
- Patients with SUD and psychotic disorders have the highest prevalence of cigarette smoking and nicotine dependence.
- Motivation for smoking cessation in psychiatric inpatients is considerable, emphasizing that assistance with smoking cessation should be provided.

### Limitations

- Questionnaire answers may be prone to the negative attributes of cigarette smoking and the desire to quit being overreported.
- The study lacked structured instruments to validate clinical psychiatric and nicotine dependence diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision.
- Psychiatric comorbidity was substantial and difficult to account for in the analysis.

**Key Words:** *cigarette smoking, psychiatric inpatient, nicotine dependence, smoking cessation, motivation, readiness*

Smoking prevalence is at least 2 times higher in people with mental illness or substance use problems than in the general population, and it has been estimated that 44% of the US tobacco market is supported by those with mental illness.<sup>1</sup> In Canada, smoking rates have decreased from 35% to 19% in the general population, yet smoking continues to be the leading cause of preventable death and disease—with an estimated 37 000 Canadians dying of tobacco-related causes every year.<sup>2–5</sup> Public health programs are now shifting their focus to identify and reach subgroups with persistently higher rates of tobacco use, notably those with mental illness and addiction.<sup>6,7</sup>

People with mental illness smoke more heavily, have higher nicotine dependence, experience more withdrawal symptoms, and have lower smoking quit rates than the general population.<sup>1,8–13</sup> The result is longer lifetime exposure to tobacco and more tobacco-related medical comorbidities, including tobacco-related deaths.<sup>14–17</sup> Beyond the inherent addicting qualities of nicotine, prior work has suggested various biopsychosocial hypotheses to try to explain why cigarette smoking is more prevalent in psychiatric populations that are beyond the scope of this paper.<sup>18,19</sup> Studies of smoking in psychiatric populations have predominantly focused on comparing the prevalence of smoking in schizophrenia with other severe mental illnesses,<sup>8</sup> with few studies specifically addressing the prevalence of smoking in general psychiatric inpatient populations. Ability to generalize previous findings to Canadian acute-care psychiatric inpatients is uncertain, as samples have often involved chronically institutionalized populations, specific diagnostic groups or specialized care units, or countries with a greater prevalence of smoking in the general population.<sup>8,11,20–27</sup> One Canadian survey at a provincial psychiatric hospital involving long stay patients found smoking rates of 62.7% for patients with schizophrenia,<sup>28</sup>

while another Canadian mixed inpatient–outpatient study found that a large proportion (40%) of patients with schizophrenia who smoke were interested in quitting.<sup>29</sup> To our knowledge, there have been no Canadian studies evaluating the prevalence of cigarette smoking and nicotine dependence or motivation for smoking cessation among patients typically admitted to general acute-care psychiatric inpatient units.

Although it may be more difficult for smokers with a mental illness to quit smoking, for various reasons, there are data now to support that many of these smokers have some interest in quitting, including those with severe symptoms admitted to psychiatric hospitals and addiction centres.<sup>23,30,31</sup> There is also increasing evidence that successful smoking cessation interventions can be implemented in psychiatric populations.<sup>32–34</sup> Treatment of nicotine dependence alongside other psychiatric interventions may not only improve overall health outcomes but may also help prevent medication failures and substance use relapse.<sup>35,36</sup> Health care providers play an important role in smoking cessation and it has been shown that health care providers who offer even brief encouragement to quit smoking can have a significant impact on a patient quitting, although those with mental illness may need more intensive interventions in addition to advice.<sup>37,38</sup>

Many studies have explored how to help inpatients quit smoking while they are in hospital, yet relatively few have included psychiatric inpatients.<sup>39</sup> While smoking bans in psychiatric facilities are becoming more common, there is little evidence to suggest they impact long-term smoking cessation rates, emphasizing the importance of better understanding smoking issues in this setting to develop effective interventions.<sup>40,41</sup> The purpose of our study was to determine the prevalence of cigarette smoking and the degree of nicotine dependence, and to assess smokers' attitudes towards smoking, motivation for quitting, and the frequency that advice to quit was provided in a sample of Canadian acute-care psychiatric inpatients aiming for the findings to help design relevant interventions and build on limited prior research in this patient group. We hypothesized that psychiatric inpatients would have a high prevalence of cigarette smoking where the majority of inpatients would be nicotine dependent, more positive attributions to smoking, limited motivation to quit, with infrequent advice to quit being provided.

## Methods

All patients aged 18 years or older admitted to any acute-care inpatient psychiatry unit at Foothills Medical Centre in Calgary, Alberta, during a 6-month period (from November 10, 2004, to May 10, 2005) completed a questionnaire about their smoking. All subjects provided voluntary written informed consent prior to their inclusion in the study, which was

### Abbreviations used in this article

CTUMS	Canadian Tobacco Use Monitoring Survey
DBCS	Decisional Balance for Cigarette Smoking
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision
FTND	Fagerstrom Test for Nicotine Dependence
RTQL	Readiness to Quit Ladder
SUD	substance use disorder

reviewed and approved by the University of Calgary Research and Ethics Review Board.

### **Subjects**

Patients were referred to participate in the study by their inpatient psychiatrist once patients were felt to be adequately psychiatrically stabilized and within 1 to 2 weeks of anticipated discharge from hospital. Among the total inpatient psychiatry admissions ( $n = 342$ ), 43 declined to participate and 88 were unavailable (usually owing to brief admission or leaving against medical advice), providing a sample of 211 respondents (62% completion rate—comparable to previous inpatient studies with 55% to 64% of inpatients responding).<sup>23,24,27</sup> Information regarding a participant's length of hospitalization and primary discharge diagnosis were collected from the health record. If a patient had multiple diagnoses, the treating psychiatrist confirmed the primary discharge diagnosis. Community resource information was provided to all patients who expressed an interest in smoking cessation. During the study, patients on 2 of the 3 units had access to a smoking room, and a policy of a maximum of 1 cigarette per hour was in effect. Although access was limited to those patients who used the smoking room, access was not limited to those with off-unit privileges, which included all patients surveyed. Despite prior unit restrictions, more than one-half of patients reported no change (33%) or an increase in smoking (23.5%) in the last 12 months. Patients requiring very brief stabilization (less than 5 days) were often not included in the study, having been diverted to a regional short-stay unit at a different hospital.

### **Instruments**

Participants spent about 10 minutes completing a questionnaire comprised of items from the CTUMS and 3 scales: the FTND, the RTQL, and the DBCS.<sup>42–44</sup> The FTND is a 6-item questionnaire, where higher scores correlate with degree of nicotine dependence, ranging from 0 to 10 points. Although the correlation between FTND score and the DSM-IV-TR–International Classification of Disease, 10th revision, diagnosis is not ideal, a score of 6 or more on the FTND is widely used as a cut-off score indicative of nicotine dependence and is generally accepted as a better predictor for physical dependence, tobacco liking, and relapse in the general population.<sup>45–48</sup> The wide use of FTND offers comparisons between populations, and is often used in those studies looking at groups with mental illness.<sup>8,9,22,24,25,30,33,42,45,49,50</sup> The RTQL assesses current smokers' Stage of Change for smoking cessation as follows: action (actively cutting down or quit recently), preparatory (desire to quit in the next 30 days), contemplative (desire to quit in the next 6 months), and precontemplative (no timeline or not interested).<sup>43</sup> The DBCS is a 20-item scale measuring smokers' perceptions of positive and negative attributes of smoking.<sup>44</sup> Smokers were also asked to quantify

their concern about smoking and their perceived difficulty with quitting.

In addition to questions from CTUMS, patients were asked to check off the reason for reducing smoking if they had, how they intend to quit (if they plan to do so), both from a list of options provided, and to circle a score between 0 (very easy) and 10 (extremely hard) that would describe how difficult it would be for them to quit smoking permanently. Patients were asked whether they had received advice on smoking cessation from health care providers while in hospital.

### **Statistical Analysis**

Analysis was performed on SPSS version 9 software (SPSS Inc, Chicago, IL, 2006). Descriptive statistical and chi-square analysis of categorical variables were used to compare diagnostic groups. Further analysis of diagnostic subgroups was limited by small  $n$  values and therefore was not performed. Chi-square analysis compared stages of change, and perceived pros and cons of smoking. Comparisons of continuous variables were conducted using ANOVA procedures with primary diagnostic groups (psychotic disorders, SUD, mood disorders, and other) as the independent variable. A significant finding on ANOVA was followed-up with pairwise comparison (Tukey Honestly Significant Differences test) to determine the source. Correlations between number of cigarettes smoked daily, FTND scores, and RTQL scores were completed.

## **Results**

### **Demographics**

Primary diagnoses in the study completers were grouped as shown in Table 1. The SUD group included primary diagnoses of alcohol dependence ( $n = 10$ ), cocaine dependence ( $n = 5$ ), opiate dependence ( $n = 2$ ), polysubstance dependence ( $n = 3$ ), and other or unspecified substance dependence ( $n = 3$ ). People in the SUD group were not admitted solely for detoxification and often had significant impaired functioning, psychosocial stressors, and (or) comorbidities. Sex varied significantly across the diagnostic groups ( $\chi^2 = 7.89$ ,  $df = 3$ ,  $P < 0.05$ ) with men more prevalent in the psychosis and SUD groups. Length of stay varied significantly among the 4 groups ( $F = 5.05$ ,  $df = 3, 207$ ,  $P < 0.005$ ). Post hoc testing revealed that patients with psychotic disorders had significantly longer lengths of hospital stays (mean 42.8 days, SD 38.4), compared with the mood disorder group (mean 22.3 days, SD 12.2;  $P < 0.005$ ) (Table 1).

### **Cigarette Smoking Prevalence and Nicotine Dependence**

The overall prevalence of current cigarette smoking was 55% ( $n = 116$ ). Among current smokers, 86% smoked daily and 14% occasionally. The majority of former smokers (92.1%) endorsed smoking daily previously with a mean quitting age

**Table 1 Demographic data**

Primary diagnosis	Frequency, <i>n</i>	Men, %	Age, years	Length of stay, days	Post-secondary education, %
Psychotic disorders	84	58.3 <sup>a</sup>	40.9	42.8 <sup>b</sup>	62.2
Schizophrenia	54				
Schizoaffective disorder	8				
Brief psychotic disorder	3				
Delusional disorder	6				
Postpartum psychosis	1				
Other	12				
Mood disorders	70	41.4	41.4	22.3	63.8
Major depressive disorder	48				
Bipolar disorders	21				
Other	1				
SUDs	31	48.4 <sup>a</sup>	40.7	30.8	64.5
Substance dependence	23				
Substance abuse	2				
Substance-induced psychosis	4				
Substance-induced mood disorder	2				
Other diagnosis	26	30.8	38.7	30.9	72.0
Adjustment disorder	4				
Cognitive disorders—dementias	2				
Personality disorders	5				
Eating disorders	2				
Anxiety disorders	9				
Other	4				
Total	211	47.9	40.7	32.8	55.0

<sup>a</sup> There were significantly more men than women in the psychotic disorders group and the SUD group.

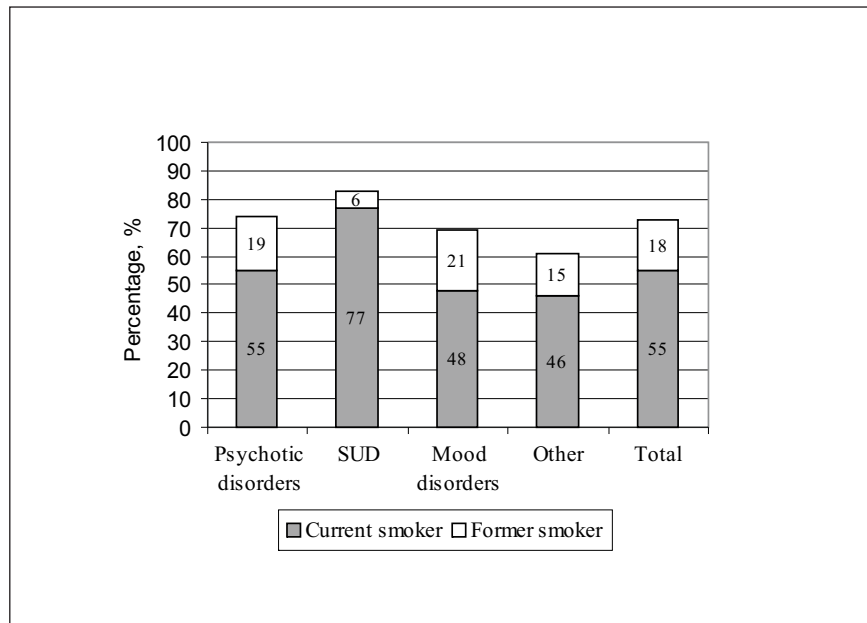
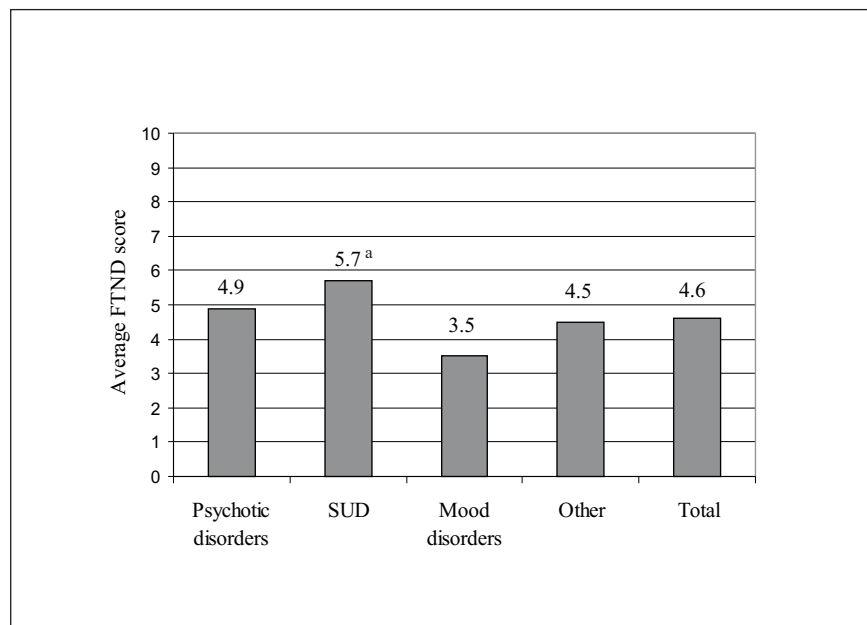
<sup>b</sup> There were significantly longer lengths of stay in the psychotic disorders group, compared with the mood disorders group.

of 35.6 years, SD 15.6 years. The SUD group reported the highest prevalence of current smoking (77.4%) and lowest percentage of former smokers (6.5%), though these variables were not statistically different between the diagnostic groups (Figure 1). Nicotine dependence severity in current smokers varied significantly among the diagnostic groups ( $F = 2.81$ ,  $df = 3, 101$ ,  $P < 0.05$ ). Post hoc testing revealed that the SUD group displayed significantly higher FTND scores (5.7, SD 2.3) than the mood disorders group (3.5, SD 3.0;  $P < 0.05$ ) (Figure 2). Among all current smokers, 45.2% had high nicotine dependence (FTND  $\geq 6$ ), with the SUD group having the highest percentage (65.2%) (Table 2). The number of cigarettes smoked daily correlated positively with nicotine dependence scores ( $r = 0.50$ ;  $P < 0.001$ ).

### Motivation

The majority of current smokers (79.3%,  $n = 92$ ) expressed concern about their smoking, with 40.5% ( $n = 47$ ) somewhat concerned, 20.7% ( $n = 24$ ) considerably concerned, and 18.1% ( $n = 21$ ) seriously concerned. Ratings of concern about smoking and perceived difficulty of quitting did not vary significantly across the diagnostic groups (Table 2). Those with higher nicotine dependence did not have statistically greater concern about their smoking than others.

From the RTQL, 51.0% ( $n = 52$ ) of current smokers were precontemplative, 12.7% ( $n = 13$ ) contemplative, 17.6% ( $n = 18$ ) preparatory, and 18.6% ( $n = 19$ ) in action, which was not significantly different between diagnostic groups. Stage of change indicated by RTQL score was not statistically related to the number of cigarettes smoked daily or the degree of nicotine dependence.

**Figure 1 Percentages of current and former smokers by diagnostic group****Figure 2 Average FTND score by diagnostic group**

<sup>a</sup> The FTND score for SUD, at 5.7, was greater than for mood disorders, at 3.5 ( $P < 0.05$ )

All diagnostic groups endorsed more negative than positive attributes of smoking. Scores on the cons scale of the DBCS varied significantly by stage of change ( $F = 4.36$ ,  $df = 3, 89$ ,  $P < 0.01$ ). Post hoc testing revealed that contemplative smokers endorsed significantly more cons (41.8, SD 5.6) than precontemplative smokers (32.0, SD 8.8;  $P < 0.005$ ).

In the past 12 months, 43.1% ( $n = 50$ ) of current smokers reported having reduced their smoking, while 23.3% ( $n = 27$ ) increased their smoking. For smokers who were not currently trying to quit, the most commonly cited reasons for past

attempts at reduction were effects on physical health (30.2%), external smoking restrictions (24.5%), other reasons (18.9%), and cost (15.1%). Least common reasons were social and family pressure (5.6%), doctor's advice (3.8%), and athletic activities (1.9%). Smokers reported they would plan to quit by the following means: on own (50.5%), nicotine patch (20.4%), or with bupropion (10.8%). Smokers were less likely to consider professional counselling (8.6%), cessation programs (5.4%), or nicotine gum (4.3%) for quitting. The 2 most commonly reported reasons for smoking were to relax or calm down (46.1%) and because of habit or

**Table 2 Smoking prevalence, cessation attempts, and motivation to quit by diagnostic group**

	Diagnostic group				
	Psychotic disorders	SUD	Mood disorders	Other diagnosis	Average
<b>Current smokers</b>					
FTND $\geq$ 6, %	47.5	65.2	26.7	45.5	45.2
Cigarettes per day	17.9	19.2	14.5	19.3	18.3
First cigarette, mean age, years	14.5	14.8	15.4	16.1	15.0
Smoking onset, mean age, years	17.5	17.3	18.0	16.7	17.5
Other tobacco in past month, %	48.8	25.0	35.3	25.0	35.3
<b>Smoking cessation in past year</b>					
Quit attempts lasting 24 hours	3.5	4.7	2.3	4.0	3.4
Quit attempts lasting 1 week	1.2	0.8	1.2	0.6	1.1
Longest prior quit period, years	1.5	1.4	1.1	0.7	1.5
<b>Motivation to quit smoking</b>					
Concern <sup>a</sup>	2.5	2.6	2.1	2.1	2.3
Perceived difficulty <sup>b</sup>	6.7	7.5	6.7	6.6	6.9
RTQL <sup>c</sup>	5.8	5.3	5.4	5.9	5.6
Positive smoking features <sup>d</sup>	23.3	25.9	23.0	28.3	24.4
Negative smoking features <sup>d</sup>	30.0	34.8	35.5	36.2	33.5

<sup>a</sup> Mean scores based on a 1-to-4 scale of concern about smoking (1 = not at all; 2 = somewhat; 3 = considerably; 4 = seriously)

<sup>b</sup> Mean scores based on a 1-to-10 scale of perceived difficulty to quitting (1 = very easy to 10 = extremely hard)

<sup>c</sup> Mean scores based on a 1-to-10 scale (1 to 5 = precontemplation; 6 = contemplation; 7 = preparation; 8 to 10 = action)

<sup>d</sup> Mean scores out of a possible score of 50 for importance of positive and negative features to smoking based on 1 to 5 scale (1 = not important to 5 = very important)

addiction (28.7%). The majority of former smokers reported quitting because of physical health reasons (67.6%) and had quit on their own without assistance (91.9%).

### Advice

Among current smokers, a minority had received advice to quit smoking from their physician (36.2%) or nurse (36.9%). Smoking cessation options were also only offered to a minority of patients by their physician (29%) or their nurse (26.3%). Advice and smoking cessation options were offered equally to the different diagnostic groups.

### Discussion

Among all study participants, 55% were classified as current smokers. They were predominantly daily smokers, averaging 18.3 cigarettes daily, with 44.8% nicotine-dependent by FTND scores. These findings are consistent with previous studies that have found similarly elevated rates of 52% to 61% of smoking in psychiatric outpatient populations, 42% to 80% on acute care psychiatric units in other countries, and 71% to 79% in psychiatric facilities where average admissions last

several years.<sup>8,20,21,23,51–55</sup> While treatment groups and population samples are difficult to compare, the reported prevalence of smoking in psychiatric samples appears to be at least twice that found in community samples.<sup>2,45</sup> Prevalence of nicotine dependence also appears much greater, with 44.8% of our inpatients nicotine-dependent, compared with 9% to 18% in the general public, as reported in a recent review by Hughes et al.<sup>56</sup> Ideally, the current study should have confirmed DSM-IV-TR criteria for nicotine dependence for comparability; however, other general population studies<sup>45</sup> have also shown lower average FTND scores of 3.07 to 4.30, compared with the mean FTND score of 4.60 found across diagnostic groups in the our study. FTND scores in our sample might have also been artificially lower, as patients were sampled just prior to their discharge from hospital where access to smoking was limited. Mean FTND scores in our study were comparable to or lower than those reported in other psychiatric samples. De Leon et al.<sup>22</sup> found an average FTND of 6.2 for inpatients (schizophrenia, schizoaffective, bipolar disorder, and major depression), while a Spanish and an American mixed inpatient–outpatient

study found FTND scores of 6.6 and 6.3, respectively.<sup>25</sup> The higher severity of nicotine dependence reported in the aforementioned studies may reflect higher prevalence of smoking in the general population of other countries (European), samples with potentially greater severity of psychiatric illness reflecting differences in admitting practices between countries, and (or) specific, more homogenous diagnostic groups (for example, only psychotic patients). The current study attempted to include a sample typical of patients and diagnoses admitted to acute care Canadian hospitals to allow for generalization of findings to inpatients treated by Canadian psychiatrists.

Despite prior reports suggesting patients with psychotic disorders have the highest prevalence of smoking and nicotine dependence, our study found a nonsignificant trend toward higher prevalence in patients with SUD.<sup>8,20,57</sup> In our sample, only the SUD group reported significantly greater severity of nicotine dependence by FTND, compared with the mood disorder group. These data replicate findings by Poirier et al,<sup>11</sup> where a mixed outpatient–inpatient psychiatric population had highest rates of smoking in substance-related disorders at 87% and lower rates in patients with schizophrenic disorders (66%) and mood disorders (51%). Our findings confirm that cigarette smoking and other SUDs are highly comorbid, and suggest greater difficulty of quitting for this group in that they reported the lowest percentage of former smokers, one of the lowest number of quit attempts (more than once weekly), and the highest perceived difficulty quitting.<sup>36</sup> These associations are consistent with recent literature suggesting the primary cause of death in SUD populations is the sequelae of cigarette smoking rather than their identified drug of dependence.<sup>15</sup>

Our findings are consistent with those reported in a recent meta-analysis by de Leon and Diaz.<sup>8</sup> Although they reported greater prevalence of smoking in schizophrenia, compared with other severe mental illnesses, SUDs were not directly compared, and the presence of a SUD is a known confounder in comparing differing patient groups or patient groups with control subjects.<sup>8</sup> Although the prevalence of smoking and nicotine dependence were lower in our sample for the patients with psychosis to that previously reported, numerous other factors might have contributed to this finding.<sup>8,11,20,21,25,52</sup> The heterogeneity of the psychotic disorders group in our study may have lowered the found smoking prevalence, compared with previously studied, more homogeneous samples of mainly schizophrenia or schizoaffective disorders. Consistent with this view is the smoking prevalence finding in a mixed psychosis inpatient unit to be 49.4%, which is in the lower range of smoking rates recorded for inpatients with schizophrenia (41% to 87%).<sup>8,24</sup> Also, our sample was an acute-care inpatient population, compared with institutionalized patients who may have more refractory mental disorders and have

shown greater smoking prevalence and nicotine dependence.<sup>20,21</sup> Differences in inpatient smoking prevalence may also reflect international differences in community smoking prevalence; for example, a German study<sup>27</sup> that found 68.8% of newly admitted inpatients with schizophrenia and (or) schizoaffective disorder smoked, in the context of a 32.2% community smoking prevalence rate. Canadian prevalence data corresponding to the timing of our study suggests a much lower community prevalence of cigarette smoking at 19%, which could be expected to impart a lower found prevalence in our inpatient sample.<sup>58</sup>

Our study is also consistent with de Leon and Diaz's<sup>8</sup> conclusion that nicotine dependence was not consistently higher in patients with schizophrenia, compared with patients with other severe mental illnesses. Smoking and nicotine dependence are more prevalent in patients with mood disorders, compared with the general population, and while many studies suggest lower rates of smoking in depressed patients, compared with psychotic patients, the prevalence of smoking in bipolar disorders (particularly bipolar I) may be similar to that in psychotic disorders.<sup>25,26,50,51,52,59</sup> It has been suggested that the severity of mental illness, independent of diagnosis, is correlated with smoking,<sup>26,52</sup> which may contribute to the similar prevalence of smoking and nicotine dependence across diagnoses in our study, where illness severity was relatively homogenous in that all subjects required hospital admission.

In our study, the majority (51%) of smokers were precontemplative about quitting, paralleling population data where 51% of Canadian smokers and 47% of Ontario smokers were not ready to quit within the next 6 months, and an international review that concluded that 50% to 60% of smokers are precontemplators, 30% to 40% are contemplators, and 10% to 15% are preparing for change.<sup>60–62</sup> Our sample had a relatively high percentage (36.2%) in the preparation or action stages, compared with general population data.<sup>61,62</sup> Nonetheless, similar data were reported in another study, where 24% of acute-care psychiatric inpatient smokers endorsed preparing to quit.<sup>41</sup> Further, an earlier Canadian study looking at a more specific group of out-patients with schizophrenia confirmed that motivation for smoking cessation can be substantial (42% in contemplation or above).<sup>49</sup> However, our percentage of action-oriented patients might have been inflated by the RTQL classifying patients who are cutting down, rather than who have stopped, as being in action. It is possible that in both studies inpatients might have reported greater motivation to quit smoking in the context of perceived social expectations, involvement in a smoking related study, and (or) a partial or total smoking ban being in place.

A higher proportion of negative attributes of smoking has been shown to correlate with the progression in stage of change moving toward preparation and action.<sup>63</sup> This trend was replicated in our results as positive attribution decreased progressively with increased readiness to quit. Overall, more cons than pros of smoking were reported, supporting the finding of a large proportion of people classified in later stages of change. Cohen<sup>61</sup> has suggested that those preparing or currently quitting smoking have more favourable attitudes toward tobacco control measures. This was reflected in our sample where smoking restrictions was rated an important motivator for smokers who had tried to reduce their smoking. Although, in general, more cons than pros of smoking were reported, the difference was not statistically significant and this may indicate that there is room for clinicians to provide education on the negative health effects of smoking, in particular for the precontemplative group, where deficits in knowledge are usually the most profound.<sup>61</sup> In general, our study confirms the finding that psychiatric inpatients appear to express similar motivation for smoking cessation, as seen in the general population.

Although more than one-half of patients (51.4%) expressed an interest in quitting, only one-third of patients received advice on quitting smoking or were provided with smoking cessation options. This is much lower than in the general Canadian population, where one-half of smokers seeing a health care provider in the last year had received advice to quit smoking.<sup>64</sup> It is disappointing that psychiatric inpatients in regular daily contact with health care providers in a supervised setting, where their smoking status is usually known, are generally not encouraged to quit smoking. This is not unique. Prochaska et al<sup>53</sup> reviewed 250 medical records of patients admitted to inpatient psychiatry and found that only one patient had been given advice to quit smoking or referred to a smoking cessation program. Historically, many psychiatric facilities may have unintentionally promoted smoking, using cigarettes to manage conflicts and modify behaviour through an implicit or explicit token economy, with some staff reportedly viewing smoking restriction as undermining patients' autonomy.<sup>65,66</sup> It has been hypothesized that psychiatric institutionalization may teach patients to self-medicate with smoking, and can even encourage smoking in nonsmokers.<sup>65,67</sup> Keeping this in mind, the frequency of smoking cessation advice reported in our study may reflect improvement and a shift in attitudes. It is possible that published outcomes from inpatient smoking bans, generally reported to produce less than expected increases in agitation, especially when nicotine withdrawal is treated, have swayed mental health care providers toward believing that smoking

cessation treatment may be possible in this setting.<sup>53,68</sup> Although hospital smoking bans by themselves appear to have a limited impact on smoking cessation<sup>40,41</sup> (such as the one in effect throughout the Calgary Health Region since 2002<sup>69</sup>), its presence might have influenced people to report higher motivation and staff to be more aware of addressing quitting. More efficacious and better tolerated medications for smoking cessation may also provide the impetus for smoking cessation to gain greater priority in inpatient psychiatric care.

The current study is limited by its focus on primary psychiatric diagnosis without attention to comorbidity. Comorbid medical and psychiatric conditions are typical in acute care settings and may account for differences in reported severity as well as prevalence of cigarette smoking and nicotine dependence. Patients with comorbid SUDs and psychotic disorders would be expected to have the highest prevalence of cigarette smoking, nicotine dependence, and lowest quit rates,<sup>70,71</sup> thus requiring augmented screening and treatment approaches suggested by recent guidelines.<sup>72</sup> In addition, use of biological markers to verify self-reported smoking behaviour may have improved study validity, even though it has been shown that self-reports of substance use behaviour are reliable when provided voluntarily,<sup>73</sup> as was the case in this study. An expired carbon monoxide measurement device was initially incorporated into the study design, but was refused by almost all study participants, therefore dropped from the protocol.<sup>74</sup>

In conclusion, our study confirms prior work identifying the high prevalence of cigarette smoking and nicotine prevalence in psychiatric inpatients. Although many inpatients report being in the precontemplative stage of change, a significant subset report readiness for smoking cessation paralleling rates observed in the general population. Despite this, few patients were provided advice or options to quit smoking. Future studies should examine factors limiting the amount of smoking cessation advice given to motivated psychiatric inpatients and determine the interventions that are most effective for them.

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## Résumé : Le tabagisme, la dépendance à la nicotine et la motivation de cesser de fumer chez les patients psychiatriques hospitalisés

**Objectif :** Le tabagisme est la principale cause de décès et de maladie évitable au Canada, et est disproportionnellement plus fréquent chez les patients psychiatriques. Les interventions pour cesser de fumer peuvent être mises en œuvre avec succès auprès des patients psychiatriques, et pourtant, aucune étude canadienne n'a évalué la prévalence du tabagisme, de la dépendance à la nicotine, et de la motivation de cesser de fumer chez les patients psychiatriques hospitalisés. Notre étude l'a fait pour aider à planifier des interventions appropriées à ces patients.

**Méthode :** Tous les patients hospitalisés de 18 ans et plus admis dans des unités de soins psychiatriques actifs au centre médical Foothills de Calgary, Alberta, durant une période de 6 mois ont répondu à un sondage comprenant des questions de L'enquête de surveillance de l'usage du tabac, du test de dépendance à la nicotine de Fagerström (FTND), de l'échelle de préparation à l'abandon, et de la balance décisionnelle pour le tabagisme. Les réponses ont été analysées quant à leur corrélation avec les diagnostics de sortie, l'âge et le sexe.

**Résultats :** Sur la totalité des patients hospitalisés ( $n = 342$ ), 211 (62 %) ont rempli le sondage. Parmi ces derniers, 55 % étaient des fumeurs de cigarettes actuels et 17,5 %, d'anciens fumeurs. La dépendance à la nicotine (FTND = 6) a été déclarée par 45,2 % des fumeurs. La prévalence du tabagisme et la gravité de la dépendance à la nicotine étaient plus importantes dans les groupes de troubles liés à l'utilisation d'une substance (TUS) et de troubles psychotiques. Les fumeurs actuels reconnaissaient plus d'attributs négatifs que positifs au tabagisme. En ce qui concerne l'abandon du tabac, 51 % des patients étaient au stade précontemplatif, 12,7 % au stade contemplatif, et 36,2 % au stade préparatoire ou axé sur l'action, même si l'n'avait été conseillé de cesser qu'à peu d'entre eux.

**Conclusions :** Le tabagisme et la dépendance à la nicotine sont très prévalents chez les patients psychiatriques hospitalisés. Cependant, la motivation de cesser de fumer autodéclarée est remarquable, ce qui fait valoir que l'on devrait prodiguer aux patients psychiatriques hospitalisés qui fument des conseils pour cesser et des soins de suivi appropriés.

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