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# The impact of smoking cessation on schizophrenia and major depression

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## Abstract:

**Objective:** This review sought to determine whether quitting smoking behaviour places people with a history of schizophrenia or major depression at risk of worsening symptoms or relapse.

**Method:** Literature searches of Embase, MEDLINE, the Cochrane Library and PsycINFO.

**Results:** Six studies involving 735 people diagnosed with schizophrenia, schizoaffective disorder or psychotic disorder did not find significant change in mental health status after quitting smoking. Five out of six studies involving 1,293 people with a history of major depression did not find an increased risk of depression with abstinence from smoking, while one study did. Two of these studies found an improvement in depressive symptoms among quitters.

**Conclusions:** There is no published evidence to support the hypothesis that quitting smoking is harmful to the mental health of people with schizophrenia. Smoking cessation does not appear to place smokers with a history of major depression at increased risk of worsening symptoms nor relapse, and may even improve their mood. Psychiatrists and other mental health professionals should provide their patients with the same level of support to quit smoking that is given to the rest of the population.

**Keywords:** clinical practice, depression, psychotic disorder, schizoaffective disorder, schizophrenia, smoking cessation

Mental illness is associated with significant excess mortality, and increased chronic physical illnesses, such as cancer and cardiovascular disease – the latter being the major cause of death among people with mental illness.<sup>1</sup> Smoking contributes to not only physical comorbidities but also to a substantial financial burden in this population,<sup>2</sup> exacerbating social disadvantage.<sup>3,4</sup> People with psychotic illnesses have a higher rate of preventable risk factors, such as poor diet, low levels of physical activity and smoking.<sup>5</sup> Among people with schizophrenia, physical comorbidities account for 60% of premature deaths not related to suicide.<sup>6</sup> The global prevalence of smoking in people with schizophrenia may be double that of the general population.<sup>7</sup> According to a 2010 survey of people living with psychotic illness in Australia, two-thirds (66.1%)

were current smokers, two and one-half times the population rate of 25.3%.<sup>5</sup> Among people with depression, the rate of smoking is slightly higher than that of the general population.<sup>8</sup>

Despite this, the physical health of people with mental illness is often neglected, both in terms of prevention and treatment.<sup>9</sup> Also, people with mental illness do not receive the same support to quit as the general population. Studies in the US and Australia have found that psychiatrists are less likely than family physicians to advise

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their patients to quit smoking.<sup>10,11</sup> One reason given for their reluctance is the concern that people with mental illness who quit smoking will suffer a worsening of their mental health condition.<sup>12–14</sup> In some cases, individual and systemic factors reinforce smoking.<sup>15,16</sup>

Yet many people with schizophrenia who smoke want to quit<sup>17</sup> and have roughly the same level of preparedness to quit as the general population.<sup>18</sup> They also want to quit for the same reasons: to save money and to improve health.<sup>19</sup>

Individual studies that have measured the impact of quitting on depressive symptoms have conflicting results.<sup>13,20–22</sup> One difficulty arises from the fact that symptoms of nicotine withdrawal – such as feeling depressed, agitation and difficulty sleeping – are common in depression.<sup>3,23</sup>

The objective of this review is to examine the evidence that surrounds quitting smoking in people with schizophrenia and major depression, to determine whether quitting worsens their mental health state.

## Method

A literature search was undertaken of Embase.com [Embase + MEDLINE], Cochrane and PsycINFO for relevant studies related to smoking cessation in people with schizophrenia and major depression. The search was limited to studies published from 2000 until June 2011.

### Inclusion criteria

Only papers written in English were included, and studies in all settings (inpatient, outpatient or community) were considered. Participants were adults diagnosed with schizophrenia, schizoaffective disorder, psychotic disorder or major depression, using internationally recognised criteria (e.g. DSM-IV, ICD-10), who had attempted to quit smoking during the course of the study.

Studies were not limited by type of intervention. We included both pharmacological and psychological/behavioural interventions. Study designs included comparisons between different interventions, or of an intervention against either placebo or standard care.

Included studies were required to have reports on smoking status at the end of the study period (i.e. still smoking or successfully quit) and any changes in psychiatric symptoms. Studies had to measure and report on psychiatric symptoms before and after quitting smoking by use of a standard, validated tool (e.g. Positive and Negative Syndrome Scale (PANSS), State Trait Anxiety Inventory (STAI), Brief Psychiatric Rating Scale (BPRS) for schizophrenia; and Hamilton Depression Rating Scale (HAM-D) or the Beck Depression Scale for depression).

## Results

### Schizophrenia

Of the 404 papers identified, only seven satisfied the inclusion criteria.<sup>24–30</sup> Two studies<sup>25,26</sup> reported on the same trial, so they were treated as one study, bringing the total back to six.

These six studies, involving 735 people with schizophrenia, found no change in mental health status as a result of quitting smoking (Table 1). All studies took place in outpatient or community settings. Interventions tested included single pharmacotherapy, combination pharmacotherapy and pharmacotherapy plus cognitive/behavioural interventions. All subjects were randomly assigned to treatment groups and only one study included a minimal intervention self-quitting group. All study participants smoked at least 10 cigarettes/day prior to the interventions. The shortest follow-up period was 7 days and the longest was 12 months.

None of the studies had measured mental health symptoms before and after quitting smoking as a primary outcome, but all of the studies reported on mental health symptoms as a secondary outcome. The diversity of interventions tested and outcome measures used meant that no direct comparison between these studies could be made.

### Major depression

Of the 1647 papers identified, six met the inclusion criteria. These six studies involved 1293 people with major depression or a history of major depression who had attempted to quit smoking (Table 2). Of these, 349 did successfully quit smoking.

Three studies examined the mental health effects of quitting smoking on people with depression or a history of depression as a primary outcome.<sup>13,31,32</sup> Two studies measured or commented on the changes in mental health status as a secondary outcome.<sup>21,33</sup> One study looked specifically at the effect of successful and unsuccessful quitting attempts on depressive mood, anxiety and suicide-related outcomes.<sup>34</sup>

Five studies involving 1193 people with a history of depression (307 quitters) found there was no increased risk of depression following smoking cessation.<sup>21,31–34</sup> Two of these five studies found an improvement in depressive symptoms among the abstainers. Kahler et al. found significant reductions in depressive symptoms among continuous abstainers, at 1 and 12 months after quitting.<sup>21</sup> Blalock et al. found an association between prolonged abstinence from smoking and an increase in positive affect, and a decrease in depressive symptoms.<sup>33</sup>

The sixth study, involving 100 people with a history of depression (42 quitters), found there was an increased risk of depression with abstinence from smoking;<sup>13</sup> however, the study's validity has been questioned due to large and unequal losses to follow-up between the successful and unsuccessful quitters.<sup>31</sup>

**Table 1. Summary of included studies: schizophrenia.**

Citation	Study type	Intervention/s	Setting	Participant characteristics	Diagnostic criteria	Symptom measures	Follow-up period and symptom measures	Study findings	Limitations
Baker et al. 2006. <sup>24</sup>	RCT	(a) NRT + CBT + motivational interviewing; (b) routine care.	Community	N = 298 participants with non-acute psychotic disorder; > 15 cigs/d.	DIP accords with ICD-10.	BPRS, BDI-II, STAI, SF 12.	3, 6 and 12 mo.	No significant differences between groups or across occasions for BPRS. STAI anxiety scores reduced significantly from baseline to 6 mo. BDI-II scores significantly lower at each follow-up relative to baseline. SF12 mental component scores significantly lower at baseline than at each follow-up.	Modest overall cessation rate: 12% at 12 mo. for those whom attended all sessions.
Evins et al. 2005, <sup>25,26</sup> (same trial, two papers).	RCT	(a) bupropion + CBT (b) placebo + CBT.	Community	N = 53 participants with schizophrenia/schizoaffective disorder; taking antipsychotics; > 10 cigs/d.	DSM-IV	HAM-D, PANSS, SANS, Simpson-Angus, Barnes Akathisia Scale.	1 week after quit date and end of trial (12 weeks).	No significant effect of 7-day point prevalence abstinence on clinical measures.	None of placebo group achieved continuous abstinence at end of trial.
Gallagher et al. 2007 <sup>27</sup>	RCT	(a) contingent reinforcement (money); (b) contingent reinforcement + nicotine patch (16 weeks); (c) self-quit.	Community	N = 181 participants with psychotic spectrum or affective disorder; > 10 cigs/d.	DSM-IV	BSI	12 weeks after intervention.	No statistically significant changes in self-reported BSI psychiatric symptoms for any of the groups, over time.	Symptom changes were measured as a secondary outcome. Varied psychiatric conditions. Low quit rates limit power of effect. Not blinded.
George et al. 2000. <sup>28</sup>	RCT	Nicotine patch PLUS (a) ALA quit smoking program	Community	N = 45 participants with schizophrenia or schizoaffective	DSM-IV	AIMS, BDI, PANSS, WEPS	Smoking status follow-up at 6 mo post-treatment.	No significant difference in psychiatric symptoms or medication side effects between either group	Changes in symptoms were measured as a secondary outcome.

Table 1. (Continued)

Citation	Study type	Intervention/s	Setting	Participant characteristics	Diagnostic criteria	Symptom measures	Follow-up period and symptom measures	Study findings	Limitations
		OR (b) specialised schizophrenia program.		disorder; taking antipsychotics; > 10 cigs/d.				(a) and (b), or between those taking atypical or typical antipsychotics. No significant difference in dyskinetic and extrapyramidal symptoms between abstainers and continued smokers.	Small sample size. Unclear when follow-up psychiatric symptom measures done.
George et al. 2008. <sup>30</sup>	RCT	Group therapy PLUS (a) bupropion + nicotine patch OR (b) placebo + nicotine patch.	Outpatient	N = 58 participants with schizophrenia, schizoaffective disorder; taking antipsychotics; > 10 cigs/d; motivation to quit score > 7.	DSM-IV	BDI, PANSS	6 mo post-quit date.	Neither bupropion nor smoking abstinence significantly affected the positive or negative symptoms of schizophrenia.	Subjects highly motivated to quit; therefore not a true representative sample. Small sample size.
Williams et al. 2010. <sup>29</sup>	Randomised clinical trial (compared 2 treatments, but with no control group).	Nicotine patch PLUS behavioural counselling, either (a) TANS; or (b) MM.	Outpatient	N = 100 participants with schizophrenia, schizoaffective disorder; taking atypical antipsychotic medications; >10 cigs/d.	DSM-IV	BDI, PANSS	3, 6 and 12 mo after quit date.	No differential change between treatment groups on BDI, PANSS (positive and negative subscales). No differential change between smokers and those who achieved abstinence on BDI, PANSS (positive and negative subscales).	Changes in symptoms were measured as a secondary outcome. One group received more frequent and longer treatment sessions. Randomisation using an adaptive urn randomisation process that accounts for motivation, gender, ethnicity and heavy versus light smoking.

AIMS: Abnormal Involuntary Movement Scale; ALA: American Lung Association; BDI: Beck Depression Inventory; BSI: Abnormal Involuntary Movement Scale; BPRS: Brief Psychiatric Rating Scale; CBT: Cognitive Behaviour Therapy; cigs/d: cigarettes a day; DIP: Diagnostic Interview for Psychosis; DSM: Diagnostic and Statistical Manual of Mental Disorders; HAM-D: Hamilton Depression Rating Scale; HDRS: Hamilton Depression Rating Scale; ICD: International Classification of Diseases; MM: medication management; mo: months; NRT: Nicotine Replacement Therapy; PANSS: Positive and Negative Syndrome Scale; RCT: randomised controlled trial; SANS: Scale for the Assessment of Negative Symptoms; SF-12: 12-item Short Form Survey on general functioning; STAI: State Trait Anxiety Inventory; TANS: Treatment of Addiction to Nicotine in Schizophrenia; WEPS: Webster Extrapyramidal Symptom Scale

**Table 2. Summary of included studies: depression.**

<b>Citation</b>	<b>Study type and intervention</b>	<b>Study participants/setting</b>	<b>Diagnostic criteria</b>	<b>Number of quitters</b>	<b>Depression symptom measures</b>	<b>Follow-up period and symptom measures</b>	<b>Study findings</b>	<b>Limitations</b>
Berlin I, et al. 2010. <sup>34</sup>	Secondary analysis of data from a RCT. Behavioural counselling PLUS (a) sertraline OR (b) placebo.	133 adult smokers with past major depression, recruited from the community.	DSM-III-R	27	HDRS	End of treatment, 7 to 8 weeks following quit date.	Smokers who attained continuous abstinence (from week 4 quit day until week 11) showed no increase in depression, suicide ideation or anxiety. Compared to continuous abstinence, non-abstinence was associated with significant increase in total HDRS score.	Those lost to follow-up were considered non-abstainers and their mood was not recorded. Abstinence was self-reported.
Blalock JA et al. 2008. <sup>33</sup>	Intervention trial with uncontrolled randomisation. Behavioural counselling or mood management counseling.	21 smokers with current threshold and sub-threshold depressive disorders (MDD, dysthymic disorder with a history of MDD, MDD in partial remission, or depressive disorder not otherwise specified).	DSM-IV CES-D	9	BDI, CES-D, SCID, PANAS	CES-D at 3 mos. BDI, PANAS at each treatment session and at 3 mos.	None of the prolonged abstainers (3 mos) experienced worsening of their depressive disorder. At the 3-month follow-up, 44% of prolonged abstainers were in complete remission of their baseline depressive disorders, compared with 0% remission among non-abstainers. Findings suggest abstinence may be associated with improvement in affect.	The intensive treatment offered may have affected quitters to report more positive outcomes. Excluded patients in complete remission of depression. Three patients had dysthymia, not major depression.
Glassman AH, et al. 2001. <sup>13</sup>	Observational: sertraline or placebo.	100 smokers with major depression history, but currently free of major depression and not on antidepressants for at least 6 mos. Recruited from the community.	DSM-IV	42	Not stated.	3 and 6 mos post treatment (approx. 5 and 8 mos post quit date).	Smokers with a history of depression who abstain are at a significantly increased risk of a new episode of major depression for at least 6 mos.	39% of unsuccessful quitters were lost to follow-up and their depression status not recorded.

(Continued)

Table 2. (Continued)

Citation	Study type and Study intervention	Study participants/ setting	Diagnostic criteria	Number of quitters	Depression symptom measures	Follow-up period and symptom measures	Study findings	Limitations
Kahler CW, et al. 2002. <sup>21</sup>	RCT Standard smoking cessation treatment or standard treatment + CBT follow-up.) for depression.	164 adult smokers with a history of major depressive disorder recruited from the community (179 minus the 15 drop-outs before follow-up.)	DSM-III-R	56	LIFE BDI, POMS	LIFE at 1, 6, 12 months. BDI, POMS at sessions 1,5,6,7,8, and 12 mos, although not at 6 mos. Non-abstinent participants had no change in depressive symptoms over time.	Abstinent participants had significant reductions in depressive symptoms at 1 and 12 mos, although not at 6 mos. Non-abstinent participants may have led to more depression at 12-mo follow-up.	Adding CBT for depression gave rise to more negative effects on mood during the quit phase and paradoxically may have led to more depression at 12-mo follow-up.
Prochaska JJ, et al. 2008. <sup>31</sup>	RCT Staged intervention comprising computer delivered motivational feedback, psychological counselling and pharmacotherapy (NRT or bupropion) or brief advice.	322 daily smokers with unipolar depression Recruited from outpatient clinics.	PRIME-MD	37 (3 mo), 48 (6 mo), 38 (12 mo), 51 (18 mo).	BDI-II, SF-36, STAXI	BDI-II, SF-36, STAXI at 3,6,12,18 mos.	No indication of worse outcomes among successful quitters. Only significant difference: greater reduction in alcohol use among abstainers.	Missing data and dropouts may have been influenced by alcohol-related behavior.
Torres LD, et al. 2010. <sup>32</sup>	Cohort or brief advice.	3056 smokers without a current MDE from an international online smoking cessation trial. 553 with a history of MDE.	CES-D	1131. Of these, 164 reported a history of depression..	Mood screener CES-D.	1 mo.	No evidence was found that abstinence increases the risk of MDE in smokers, with or without a history of depression.	Self-reported data (via internet). Was not possible to examine the timing of cessation in relation to MDE. Large number lost to follow up.

BDI: Beck Depression Inventory; BDI-II: Beck Depression Inventory, 2nd revision; CBT: Cognitive Behaviour Therapy; CES-D: Centre for Epidemiologic Studies Depression Scale; DSM: Diagnostic and Statistical Manual of Mental Disorders; HDRS: Hamilton Depression Rating Scale; LIFE: Longitudinal Interval Follow-Up Evaluation; mo: month; MDE: Major Depressive Episode; PANAS: Positive and Negative Affect Schedule; POMS: Profile of Mood States; PRIME-MD: Primary Care Evaluation of Mental Disorders; RCT: Randomised Control Trial; SCID: Structured Clinical Interview for DSM Disorders; SF-12: 12 item Short Form Survey on general functioning; SF-36: Mental Component Summary of the Medical Outcomes Study Short Form; STAI: State Trait Anxiety Inventory; STAXI: State Trait Anger Expression Inventory

## Discussion

This review found no published clinical evidence to suggest that quitting smoking is harmful to people with schizophrenia, finding only one small study that indicated an increased risk of depression follows quitting. None of the six papers reviewed found a significant change in mental health status following smoking cessation.

Our findings support a 2010 review of interventions for smoking cessation in people with severe mental illness, which found that 'treating tobacco dependence in patients with stable psychiatric conditions does not worsen mental state'.<sup>35</sup> This review also challenges the reluctance of some psychiatrists and other mental health professionals to offer patients with schizophrenia or major depression support to quit smoking.

The limitations of our literature review are the small number of studies that matched our selection criteria. The majority of included studies aim to evaluate or compare the effectiveness of different interventions in achieving cessation (not the impact of cessation) and only one study included a group of minimal intervention self-quitters. The lack of focus on symptom outcomes in the published research highlights the need for further studies with patient outcomes as a primary measure.

The studies within our review involve a range of study types and interventions and use a range of outcome measures, which prevented the pooling of this data. Although validated tools were used, the literature reports some concerns about how these tools were applied, as there may be multiple dimensions of, or multiple forms to, schizophrenia and so the traditional tools may capture different and/or incomplete aspects of the illness.<sup>36</sup> All studies were conducted in community or outpatient settings and may not truly represent people at the more severe end of the disease spectrum, those who are acutely admitted or in long-term institutional care.

Importantly, the studies reviewed showed that people with a history of depression can successfully quit without increased risk of relapse. Further research involving people with current depression is needed.

The heterogeneity of study types and interventions meant it was not possible to analyse outcomes (successful quitting, symptom measures) adjusted for the type of intervention; therefore, to assess if particular interventions can reduce the likelihood of relapse, following smoking cessation.

## Conclusion

Despite prevailing beliefs, the available evidence does not support the hypothesis that smoking cessation exacerbates the symptoms of schizophrenia or major depression. Research that examines the reluctance to address smoking by mental health professionals suggests that a culture exists in mental health that tolerates, and in

some cases, reinforces smoking.<sup>15,16</sup> The belief that quitting can worsen symptoms has supported this culture.

Our findings support the need for all smokers to be advised by their health professional to quit, and to be given the support necessary to do so.<sup>37</sup> This approach is supported by general population studies, which may or may not include people with mental illness, that find that quitting smoking reduces stress<sup>38</sup> and improves feelings of mental well-being.<sup>39</sup> Quitting smoking also reduces financial stress<sup>40</sup> and improves physical health.<sup>3</sup>

This review offers support to people with schizophrenia and major depression who would like to quit smoking. Providing health professionals with the evidence that offering the right quitting support will improve patients' physical health without damaging their mental health, will contribute to the culture and practice changes that are needed to reduce smoking in this already vulnerable population.

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## Disclosure

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper.

## References

1. Lawrence D, Kisely S and Pais J. The epidemiology of excess mortality in people with mental illness. *Can J Psychiatry* 2010; 55: 752–760.
2. Steinberg ML, Williams JM and Ziedonis DM. Financial implications of cigarette smoking among individuals with schizophrenia. *Tobacco Control* 2004; 13: 206.
3. Scollo M and Winstanley M (eds). *Tobacco in Australia: facts and issues*. 3rd ed. Melbourne: Cancer Council Victoria, 2008.
4. World Health Organization. Blas E and Sivasankara K (eds). *Equity, social determinants and public health programmes*. Geneva: WHO, 2010.
5. Morgan V, Waterreus A, Jablensky A, et al. *People living with psychotic illness 2010*. Report on the second Australian national survey, Commonwealth of Australia, 2011.
6. Lambert TJ, Velakoulis D and Pantelis C. Medical comorbidity in schizophrenia. *Med J Australia* 2003; 178: 67–70.
7. De Leon J and Diaz FJ. A meta-analysis of worldwide studies demonstrates an association between schizophrenia and tobacco smoking behaviors. *Schizophrenia Res* 2005; 76: 135–157.
8. Ragg M and Ahmed T. *Smoke and mirrors: a review of the literature on smoking and mental illness*. Sydney: Cancer Council NSW, 2008.
9. Kisely S. Excess mortality from chronic physical diseases in psychiatric patients – the forgotten problem. *Can J Psychiatry* 2010; 55: 749–751.
10. Doran CM, Valenti L, Robinson M, et al. Smoking status of Australian general practice patients and their attempts to quit. *Addict Behav* 2006; 31: 758–766.
11. Thorndike AN, Stafford RS and Rigotti NA. US physicians' treatment of smoking in outpatients with psychiatric diagnoses. *Nic Tobacco Res* 2001; 3: 85–91.

12. Weinberger A, Reutenauer E, Vessicchio J, et al. Survey of clinician attitudes toward smoking cessation for psychiatric and substance abusing clients. *J Addict Dis* 2008; 27: 55–63.
13. Glassman AH, Covey LS, Stetner F, et al. Smoking cessation and the course of major depression: a follow-up study. *Lancet* 2001; 357: 1929–1932.
14. Hughes J. Depression during tobacco abstinence. *Nic Tobacco Res* 2007; 9: 443–446.
15. Lawn S, Pols R and Barber J. Smoking and quitting: a qualitative study with community living psychiatric clients. *Soc Sci Med* 2002; 54: 93–104.
16. Wye P, Bowman J, Wiggers J, et al. Smoking restrictions and treatment for smoking: policies and procedures in psychiatric inpatient units in Australia. *Psychiatric Services* 2009; 60: 100–107.
17. Lucksted A, McGuire C, Postrado L, et al. Specifying cigarette smoking and quitting among people with serious mental illness. *Am J Addict* 2004; 13: 128–138.
18. Etter M, Mohr S, Garin C, et al. Stages of change in smokers with schizophrenia or schizoaffective disorder and in the general population. *Schizophrenia Bull* 2004; 30: 459–468.
19. Addington J, El-Guebaly N, Addington D, et al. Readiness to stop smoking in schizophrenia. *Can J Psychiatry* 1997; 42: 49–52.
20. Covey L, Glassman A and Stetner F. Major depression following smoking cessation. *Am J Psychiatry* 1997; 154: 263–265.
21. Kahler CW, Brown RA, Ramsey SE, et al. Negative mood, depressive symptoms, and major depression after smoking cessation treatment in smokers with a history of major depressive disorder. *J Abnormal Psychology* 2002; 111: 670–675.
22. Tsoh JY, Humfleet GL, Munoz RF, et al. Development of major depression after treatment for smoking cessation. *Am J Psychiatry* 2000; 157: 368–374.
23. Hughes JR, Higgins ST and Bickel WK. Nicotine withdrawal versus other drug withdrawal syndromes: similarities and dissimilarities. *Addiction* 1994; 89: 1461–1470.
24. Baker A, Richmond R, Haile M, et al. A randomized controlled trial of a smoking cessation intervention among people with a psychotic disorder. *Am J Psychiatry* 2006; 163: 1934–1942.
25. Evins A, Cather C, Deckersbach T, et al. A double-blind placebo-controlled trial of bupropion sustained-release for smoking cessation in schizophrenia. *J Clin Psychopharmacol* 2005; 25: 218–225.
26. Evins A, Deckersbach T, Cather C, et al. Independent effects of tobacco abstinence and bupropion on cognitive function in schizophrenia. *J Clin Psychiatry* 2005; 66: 1184–1190.
27. Gallagher SM, Penn PE, Schindler E, et al. A comparison of smoking cessation treatments for persons with schizophrenia and other serious mental illnesses. *J Psychoactive Drugs* 2007; 39: 487–497.
28. George TP, Ziedonis DM, Feingold A, et al. Nicotine transdermal patch and atypical antipsychotic medications for smoking cessation in schizophrenia. *Am J Psychiatry* 2000; 157: 1835–1842.
29. Williams JM, Steinberg ML, Zimmermann MH, et al. Comparison of two intensities of tobacco dependence counseling in schizophrenia and schizoaffective disorder. *J Substance Abuse Treatment* 2010; 38: 384–393.
30. George TP, Vessicchio JC, Sacco KA, et al. A placebo-controlled trial of bupropion combined with nicotine patch for smoking cessation in schizophrenia. *Biol Psychiatry* 2008; 63: 1092–1096.
31. Prochaska JJ, Hall SM, Tsoh JY, et al. Treating tobacco dependence in clinically depressed smokers: effect of smoking cessation on mental health functioning. *Am J Pub Health* 2008; 98: 446–448.
32. Torres LD, Barrera AZ, Delucchi K, et al. Quitting smoking does not increase the risk of major depressive episodes among users of Internet smoking cessation interventions. *Psychological Med* 2010; 40: 441–449.
33. Blalock JA, Robinson JD, Wetter DW, et al. Nicotine withdrawal in smokers with current depressive disorders undergoing intensive smoking cessation treatment. *Psychol Addictive Behav* 2008; 22: 122–128.
34. Berlin I, Chen H and Covey L. Depressive mood, suicide ideation and anxiety in smokers who do and smokers who do not manage to quit smoking after a target quit day. *Addiction* 2010; 105: 2209–2216.
35. Banham L and Gilbody S. Smoking cessation in severe mental illness: what works? *Addiction* 2010; 105: 1176–1189.
36. Peralta V and Cuesta MJ. How many and which are the psychopathological dimensions in schizophrenia? Issues influencing their ascertainment. *Schizophrenia Res* 2001; 49: 269–285.
37. Fiore M, Jaén C, Baker T, et al. *Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline*. Rockville: US Department of Health and Human Services, 2008.
38. Parrott AC. Cigarette-derived nicotine is not a medicine. *World J Biol Psychiatry* 2003; 4: 49–55.
39. Mino Y, Shigemi J, Otsu T, et al. Does smoking cessation improve mental health? *Psychiatry Clin Neurosci* 2000; 54: 169–172.
40. Siahpush M, Borland R and Scollo M. Smoking and financial stress. *Tobacco Control* 2003; 12: 60–66.