Smoking is not only a comorbid condition for schizophrenia; it may also have an effect on other psychiatric conditions.

**Major Depression**

In patients with major depression, smoking prevalence rates are 50% to 70% (Figure) (George and Krystal, 2000; Hughes et al., 1986). Glassman et al. (1988) found that 61% of smokers presenting to a smoking cessation program had a past history of major depression. Anda et al. (1990) found that 39% of individuals with a moderate degree of depressive symptoms were smokers. Smokers with depressive symptoms have a much harder time quitting and require more attempts to quit (Glassman, 1993; Glassman et al., 1990). Smoking cessation is also associated with negative affective states (Hall et al., 1993). In patients with a history of major depression, smoking cessation may lead to re-emergence of major depressive symptoms (Covey et al., 1997; Glassman et al., 1990), although a recent study has questioned this phenomenon (Tsoh et al., 2000). Furthermore, open-label nicotine patch administration rapidly improves depressive symptoms in non-smokers with major depression (Salin-Pascual et al., 1996).

Nonetheless, there are few controlled studies of pharmacological treatments for nicotine dependence in patients with major depression (Covey et al., 2000), although behavioral treatments such as cognitive-behavioral therapy are promising (Hall et al., 1994).

**Bipolar Disorder**

Hughes et al. (1986) reported smoking-prevalence rates of 70% in bipolar outpatients, while Gonzalez-Pinto et al. (1998) reported that 63% of Spanish patients with bipolar disorder had lifetime histories of smoking and that 51% were current smokers. Glassman and colleagues (1993) found that bipolar patients were at risk for depressive recurrence during smoking cessation. A recent study (Johnson et al., 2000) found that heavy smoking (>1 pack/day) in adolescence, controlling for confounding variables such as age, educational status and parental smoking, was associated with a higher risk of panic disorder, generalized anxiety disorder and agoraphobia. Thus, the relationship between smoking and panic attacks requires further study using prospective designs. **Panic Disorder**

Smoking has been found to be a risk factor for the onset of panic disorder. Amering et al. (1999) found that smoking rates were elevated (56%) in patients with panic disorder as compared to controls. A study by Pohl et al. (1992) also found higher rates of current smoking among such patients than among controls. Breslau and Klein (1999) found that smoking can lead to panic attacks, but the reverse relationship was not supported. Furthermore, smoking cessation reduced the risk of panic attacks. Amering et al. (1999), however, found that individuals who quit smoking reported little reduction in panic symptoms. A recent study (Johnson et al., 2000) found that heavy smoking (>1 pack/day) in adolescence, controlling for confounding variables such as age, educational status and parental smoking, was associated with a higher risk of panic disorder, generalized anxiety disorder and agoraphobia. Thus, the relationship between smoking and panic attacks requires further study using prospective designs. **Posttraumatic Stress Disorder**

Beckham et al. (1995) found that the smoking rate in posttraumatic stress disorder (PTSD) patients was 60% and that women with PTSD had higher rates of smoking than controls (Acierno et al., 1996). Beckham et al. (1997) also found that combat veterans with PTSD had higher rates of smoking (53%) than controls (45%). PTSD veterans reported higher rates of heavy smoking (>25 cigs/day) than non-PTSD veterans (48% versus 28%). In heavy smokers, there were more total PTSD symptoms and Cluster C (avoidance and numbing) and Cluster D (hyper-arousal) symptoms. **Neuropsychiatric Disorders**

There is increasing evidence that nicotine can reduce neurological impairment associated with Parkinson's disease (PD), Alzheimer's disease (AD) and Tourette's syndrome (TS) (Piasecki and Newhouse, 2000). In PD, this may relate to stimulation of nicotinic acetylcholine receptors (nAChRs) on nigrostriatal dopamine (DA) neurons and stimulation of nAChRs on subcortical cholinergic neurons in AD. Subcortical nAChRs are reduced in both PD and AD (Piasecki and Newhouse, 2000).
The incidence of both PD and AD is lower in smokers than in non-smokers (Lee, 1994; Morens et al., 1995), suggesting that nicotine may have neuroprotective effects. Nicotine administration in rats improves cognitive tasks related to working memory function (Levin and Simon, 1998) and attention and concentration in non-smoking controls and in patients with Alzheimer's disease (Newhouse et al., 1988). Nicotine gum and patch can reduce tic severity and potentiate therapeutic effects of neuroleptics in TS (Shytle et al., 1996). Cognitive-enhancing effects of nicotine are difficult to interpret in smokers, since nicotine may simply be reversing tobacco abstinence, which itself may impair cognitive function. Thus, further studies of nicotine effects on mood and cognition are needed, in both smokers and non-smokers.

**Substance Abuse Disorders**

While a discussion of the association between nicotine addiction and other substance abuse disorders is beyond the scope of this article, there are high rates of cigarette smoking in patients with alcohol, cocaine and opioid dependence (Bobo et al., 1995). Nicotine may act as a conditioned cue for alcohol and illicit substance use, and the nAChR antagonist mecamylamine may reduce cocaine cue-reactivity (Reid et al., 1999). Thus, attempts to treat nicotine dependence in psychiatric patients must involve treatment of the non-nicotine substance abuse disorder.

**References:**

3. Anda RF, Williamson DF, Escobedo LG et al. (1990), Depression and the dynamics of smoking. A national perspective. JAMA 264(12):1541-1545 [see comment].
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