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# Smoking and mental health

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## Smoking trends

There is a strong association between smoking and mental health disorders. Overall smoking prevalence among psychiatric patients is two to three times higher than among the general population, ranging from 40-50% among people with depressive and anxiety disorders to 70% or higher among patients with schizophrenia.<sup>1</sup> Studies in the USA suggest the figure may be even higher with up to 90% of individuals with mental illness being nicotine dependent.<sup>2</sup> People with mental health problems smoke significantly more, have increased levels of nicotine dependency and are therefore at even greater risk of smoking-related harm than the general population. Smoking also increases the risk of developing a mental health problem and is associated with an increased prevalence of all mental health illnesses and higher suicide rates.<sup>3</sup> It is not clear whether smoking is the cause or effect of mental illness. However, some researchers believe that smoking could act as a trigger for mental ill-health.<sup>4</sup>

## Why people smoke

Nicotine stimulates the brain to release dopamine, which is associated with pleasurable feelings, and smokers quickly develop regular smoking patterns. Eventually, smokers need increasing levels of nicotine to feel 'normal'. As the nicotine content in their blood drops below a certain level, they begin to crave a cigarette. This craving makes the smoker feel 'stressed' until the craving is relieved. The relief felt when this craving is finally satisfied is the feeling that smokers commonly mistake as 'relaxing'.

See also [ASH Essential Information on: Nicotine and Addiction](#).

Among people with mental health disorders possible explanations for the particularly high rates of smoking include an increased genetic vulnerability, a greater susceptibility to addiction because of a greater subjective experience of reward or pleasure, or that tobacco helps relieve some of the symptoms related to a behavioural disorder. For example, cigarette smoking may be an attempt to self-medicate symptoms of depression, anxiety, boredom or loneliness. Other possible explanations for continuing to smoke include increased withdrawal symptoms and reduced side effects from psychiatric medication.<sup>2</sup>

## Consequences of tobacco use

Dependence on nicotine contributes significantly to the main causes of ill-health and mortality in people with mental health disorders. For example, the rates of cancer, heart disease and respiratory diseases among individuals with schizophrenia, who have the highest rates of smoking of any group, are up to double those of age-matched controls.<sup>2</sup> Tobacco interacts with some psychiatric medication making it less effective, resulting in increased dosages and increased costs.

## Smoking and stress

Smokers often report that smoking tobacco helps to relieve feelings of anxiety and stress. The high smoking prevalence among people facing social and economic deprivation suggests that smoking may be used as a stress coping mechanism.<sup>5</sup> However, instead of helping people relax, smoking increases anxiety and tension. The feeling of relaxation is temporary and soon gives way to withdrawal symptoms and increased cravings. So, although smoking reduces withdrawal symptoms, which are similar to the feelings of anxiety, it does not reduce anxiety or deal with the underlying causes.

## Attention Deficit Hyperactivity Disorder

Both children and adults with Attention Deficit Hyperactivity Disorder (ADHD) are significantly more likely to smoke than people without ADHD. Studies suggest that people with ADHD use smoking to improve attention and cognitive performance. Laboratory studies have shown that nicotine reduces the symptoms of ADHD, an effect seen in both smokers and non-smokers.<sup>2</sup>

## Depression

In the UK, smoking rates among adults with depression are about twice as high as among adults without depression.<sup>6</sup> Cigarette smoking is linked to a wide range of psychiatric diagnoses including anxiety, agoraphobia and panic disorder but especially with depression.<sup>7</sup> Levels of dopamine are often low in people with depression, who may then use cigarettes as a way of temporarily increasing their dopamine supply (to increase pleasurable feelings). However, smoking adversely affects the brain's own mechanism for making dopamine so that in the long term, the supply decreases, which in turn prompts people to smoke more.

Most people start to smoke before they show signs of depression so it is unclear whether smoking leads to depression or depression encourages people to start smoking. One longitudinal study found that a history of daily smoking increased significantly the risk of major depression.<sup>8</sup> This was consistent with earlier reports which suggested that previous smoking history increased the risk of depressive symptoms and increased the risk of attacks of major depression.

Another study suggested that the relationship between smoking and major depression results solely from genes that predispose to both conditions.<sup>9</sup> Other potential shared causes are factors in the social environment, personality (for example, low self-esteem), and coping styles. Nicotine may act as an anti-depressant in some smokers and could therefore be viewed as a form of self-medication.

When individuals with a history of depression stop smoking, depressive symptoms and, in some cases, serious major depression may ensue.<sup>10</sup> This accounts for the lower smoking cessation rates in depressed individuals as compared with smokers who do not have depressive symptoms. One study showed that only 37% of the depressed smokers in a sample population were able to abstain for one week, whereas 56% of non-depressed were able to do so.<sup>11</sup>

## Bipolar disorder

Bipolar disorder, previously known as 'manic depression' is characterised by shifts in a person's mood, energy and ability to function. An association between smoking and bipolar disorder has been established and prevalence rates for lifetime and current smoking have been shown to be as high as 82.5% and 68.8% respectively.<sup>12</sup> One study found that among patients treated for bipolar disorder, smokers were more likely to have an earlier onset of the disorder, greater severity of symptoms, a history of suicide attempt, and co-morbid anxiety or substance use disorder.<sup>13</sup>

## Schizophrenia

Smoking rates among people with schizophrenia are significantly higher than the general population, with estimates ranging from 58% to 88%.<sup>14</sup> The reason for this is unknown but one explanation is that people with schizophrenia use smoking to manage some of the symptoms associated with their illness and to reduce some of the side effects of their medication. However, smoking interacts with neuroleptic treatment (drug treatment for schizophrenics), reducing neuroleptic plasma levels and possibly causing higher doses of neuroleptics to be prescribed.<sup>15</sup> One study has also shown that patients smoke more when treated with the neuroleptic Haloperidol than during a medication-free state.<sup>16</sup> Other research has shown that smoking may

improve attention and short-term memory in people with schizophrenia by stimulating nicotine receptors in the brain. No effects from stopping or resuming smoking were observed in smokers without mental illness.<sup>14</sup>

## Alzheimer's Disease and Dementia

Alzheimer's Disease (AD) is a common form of senile dementia, the other being vascular dementia. Loss of neurons (brain cells) that use acetylcholine as their neurotransmitter, and loss of memory are prominent features of AD.

Studies conducted in the early 1990s suggested that smoking had a protective effect against AD.<sup>17</sup> Although research on this subject has failed to be conclusive, it was thought that nicotine could delay the onset of familial AD. Acetylcholine binds to receptors, known as nicotinic receptors, to exert its effect. A loss of neurons leads to a loss of these receptors and this is associated with the aetiology of AD. It was hypothesised that nicotine from cigarettes may compensate for the loss of nicotinic receptors in AD and therefore postpone the onset of the disease.

Scientists at the Scripps Research Institute, California, have discovered that nornicotine, a by-product of nicotine, appears to prevent the abnormal build-up of amyloid protein plaques associated with Alzheimer's disease. However, the research did not demonstrate that smoking had any protective effect for AD. Other research has shown that smoking increases the risk of AD and vascular dementia by increasing the amount of free radicals in the body, which impair brain and body cell functions and undermine immunity.<sup>18</sup>

Scientists are now beginning to challenge the hypothesis of the protective role of smoking.<sup>19 20</sup> They point out that earlier studies assumed that the genetic susceptibilities of a population of older surviving smokers were the same as that of the age matched non-smokers. However, it has been suggested that older surviving smokers must have relatively more effective DNA repair mechanisms than comparable non-smokers. Therefore, if AD is related to the accumulation of ageing-associated defects in DNA and DNA repair, older surviving smokers may be less susceptible to AD. This could explain the apparent inverse relationship found by many studies in the past.

Other research has found that nicotine use appears to worsen the effects of a brain protein called tau, which is responsible for the fibrous tangles that are an indicator of the disease.<sup>21</sup> Furthermore this study found that nicotine administration had no effect on inhibiting the build up of amyloid plaque.

A study involving 17, 600 people aged 65 and over, screened the participants for dementia. The survey, conducted in Britain, Denmark, France and the Netherlands looked at the effect of smoking on cognition in non-demented elderly. It concluded that smoking may indeed accelerate cognitive decline in non-demented elderly.<sup>22</sup>

## Parkinson's Disease

Parkinson's Disease (PD) is characterised by the symptoms of tremor, rigidity, bradykinesia (slowness of movement) and a lack of facial expression. Many studies have shown that smoking is protective against PD.<sup>23 24</sup> PD occurs because there is a loss of dopaminergic neurons in the brain. These are neurons that release dopamine as their neurotransmitter and they are important in ensuring accurate movements of muscles as commanded by certain areas of the brain. It is thought that nicotine may have its effect by restoring dopamine to normal levels in the brain.<sup>25</sup> The researchers emphasise that the possible benefits of smoking on PD risk would be small (the incidence rate of PD is only about 1-2%), and the health hazards associated with smoking would far outweigh any conceivable protection against PD. However, the findings should be viewed as potentially advancing the current understanding of the underlying pathology of PD.

## Impact of smokefree policies

Since July 2008 mental health premises in England have been subject to the smokefree measures of the Health Act 2006 (which banned smoking in other indoor public places from July 2007 in England). However, the effectiveness of such policies depends partly on the attitudes and behaviour of staff. A large survey of 2574 NHS

staff in 2006 found that psychiatric staff expressed significantly less favourable attitudes than general staff to smokefree environments: around 1 in 10 staff in the general NHS disagreed with a smoking ban but nearly 1 in 3 psychiatric staff said they were opposed to a ban.<sup>26</sup>

A survey of mental health units in England in January 2007 found that most (91%) believed mental health premises faced particular challenges due to the high smoking prevalence among patients, associated safety risks, and potential interactions with anti-psychotic medication.<sup>27</sup> However, despite the challenges, the smokefree policy was rated positive overall. Advantages cited include: reduced exposure of patients and staff to secondhand smoke, an enhancement in patients' motivation to stop smoking, better sleeping patterns among patients, and the conversion of former smoking rooms into new recreational spaces.<sup>27</sup>

## Smoking cessation

Because of the common perception that people with mental illness use cigarette smoking to self-medicate and the fact that smoking has historically been associated with mental health settings, it is widely believed that psychiatric patients are less able or less willing to quit smoking. However, it has been shown that patients with mental illness are frequently motivated and generally able to quit provided they are given evidence-based support,<sup>28</sup> although relapse rates are higher.<sup>29</sup> Treatments to help smokers with mental illnesses are effective but they are not being offered routinely. A lack of knowledge among staff about tobacco dependence, treatment and its interaction with psychotic medication may limit the support given to patients to quit smoking. A survey of clinical staff in one NHS mental health trust found that 41% of doctors were unaware that smoking can decrease blood levels of antipsychotic drugs, and 36% were unaware that stopping smoking could reduce the dose needed. Staff who smoked were more likely to have reservations about the importance of the smokefree policy and the treatment of nicotine dependence among patients.<sup>30</sup>

A review of smoking cessation treatments for people with mental illness concluded that pharmacological aids that are given to the general population can be equally effective in helping people with mental illness to stop smoking. However, care must be taken to avoid adverse medication interactions and to monitor anti-psychotic medication in particular as cigarette consumption declines.<sup>31</sup> A Cochrane review of smoking cessation for people with schizophrenia reported evidence that Bupropion increases smoking abstinence without jeopardising mental state. The review did not find evidence to support any other interventions in this population group.<sup>32</sup>

Lower quit rates may occur if treatments are not adapted to the needs of patients with mental health problems.<sup>33</sup> A review of the Stop Smoking Services in London found that only a minority of services routinely check the mental health status or mental health service use of their clients and few implement checks or measures when mental health problems are revealed.<sup>34</sup> An example of a service that does conduct these tests is Islington Stop Smoking Service which requests information about which Community Mental Health Team or other mental health service the patient is registered with and the medication they are taking so that staff can be alerted to the fact that their patient is stopping smoking. The PCT is also offering training to mental health staff on the effects of stopping smoking on anti-psychotic medication.<sup>35</sup>

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