2.3

Smoking & Mental Health
Does Smoking Influence Mental Health?

Direction of Influence

In the previous section (Section 2.2) a discussion was presented of some ways in which the existence of mental health problems, or being a mental health service user, may make smoking more likely. Influences include self-medication issues, the culture of mental healthcare and perceptions of a 'void' in mental health service users daily activity and coping strategies.

However, it may not be that the relationship between smoking and mental health problems is a one-way street. There is also evidence that smoking may determine mental health, even to the point of making the onset or worsening of mental health problems more likely.

This section will go on to consider the effects of smoking on various aspects of mental health. Both the short term and long term effects are considered, as well as the implications for mental healthcare practice.

Does Smoking Benefit Mental Health?

In Section 2.2, reference was made to the 'Self-Medication' explanation of why higher smoking rates are observed among mental health service users. The theory is that mental health service users smoke because they experience improvements in their mental health as a result.

There is some validity in this argument. For example, nicotine stimulates the subcortical reward system and the prefrontal cortex, which both often function poorly in people with schizophrenia (Chambers *et al*, 2001). In addition, the potential of nicotine to trigger dopamine release in mesolimbic reward centres might make smoking an effective way to overcome the inability to experience pleasure that can be a feature of both schizophrenia and depression. Finally, the medicating effects of smoking may go beyond 'negative' symptoms such as low mood and even serve to ease problems such as auditory sensory-gating deficit (Adler et al., 1993).

There is contradictory evidence relating to the self-medicating theory of smoking and mental health however. Despite the evidence above that smoking may have an effect on relevant physiological systems, other studies have indicated that smoking, as a medication against mental illness, is fairly ineffective.

First, any positive effects are likely to be very short-lived (Kumari & Postma, 2005). Second, and possibly as a result of the short-term nature of the self-medication effects, there is unlikely to be any sustainable gains. For example, in a studies of people with schizophrenia, both Barnes et al (2006) and Levander et al. (2007) found that smoking was not associated with better outcomes in relation to positive, negative, cognitive and mood symptoms.

Therefore, while smoking has the potential to have rewarding psychological effects, these effects are likely to be very transient and be unlikely to produce improvements that can be said to benefit mental health or increase an individual's quality of life.

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Adverse Effects of Smoking on Depression

One may argue that even if the psychological effects of smoking are very transient, they still have some value for mental health service users.. However, this argument would lack validity if these short-term rewards came with a 'cost' in relation to longer-term, adverse effects on mental health.

There is evidence to suggest that smoking increases the risk of depression. In a recent study by Pasco et al (2008), 671 women with no history of major depressive disorder at baseline were studied across a period of 10 years. At follow up, it was found that smokers had a 93% higher risk of having developed a major depressive disorder.

Similarly, in a one-year follow-up on data from the National Longitudinal Study of Adolescent Health, Goodman. & Capitman (2000) found that, among participants with no depression at baseline, smokers were significantly at higher risk of being depressed at follow up. Notably, however, among participants who were not smoking at baseline, the level of depression was not predictive of smoking. The authors conclude that while depression does not seem to be an antecedent to cigarette use, cigarette use is a powerful determinant of developing high depressive symptoms**.** Prospective data from Pedersen & von Soest (2009) subsequently supported this conclusion, with the added finding that the association between depression and smoking was greater for nicotine dependent smokers.

Adverse Effects of Smoking on Anxiety

The risk of developing anxiety-related problems also seems to be related to smoking. For example, in research with over 5000 people, daily smoking was found to be associated with an increased risk of the first occurrence of panic attack (Breslau & Klein, 1999). Subsequently, Breslau et al (2004) found the onset of panic disorder and agoraphobia were twice and four times more likely respectively in cases of pre-existing daily smoking, even after controlling for potentially confounding factors. Finally, Johnson et al. (2000) followed young people from the age of 16 to age 22 and revealed that smoking during adolescence was associated with higher risk of agoraphobia, generalized anxiety disorder and panic disorder during early adulthood. This finding remained true after accounting for age, sex, difficult childhood temperament; alcohol and drug use, anxiety / depressive disorders during adolescence, parental smoking and educational level. As with the findings on depression, the smoking & mental health relationship did not seem to be bi-directional in that anxiety disorders during adolescence were not significantly associated with chronic cigarette smoking during early adulthood.

Other Adverse Effects

In relation to schizophrenia, the evidence is less conclusive. While some studies have suggested that smoking lowers the risk (Zammit *et al*, 2003) others have found being a smoker makes the onset of schizophrenia more likely (Kelly & McCreadie, 1999). In relation to the latter hypothesis, Weiser et al (2004) studied 14,248 adolescents without any initial psychiatric illness over a period of up to 16 years. Over a quarter (28%) reported being a smoker at baseline. Follow up analyses revealed that the smokers where significantly more likely to be subsequently hospitalised for schizophrenia, with heavier smokers at over double the risk of non-smokers.

In addition to predicting the onset of mental health problems, smoking may also have adverse effects on the course of existing conditions. For example, a study by Oquendo et al (2007) suggest that smoking among mental health service users increases the risk of suicide. In this study, over 314 patients with DSM-III-R major depression or bipolar disorder seeking treatment for a major depressive episode were followed for 2 years. After controlling for a range of other factors (including substance misuse and family background) smoking remained one of the two most robust predictors of suicide (along with previous suicide attempts).

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Adverse Effects of Smoking on Mental Health: Conclusion

In conclusion, this area is difficult to research. Aside from problems of assessment and sample selection, there are also likely to factors that pre-dispose people to both smoking and poor mental health which serve to complicate the issue. These include genetic factors (Lyons et al. 2008) and the misuse of other substances (although smoking has still been associated with the onset of mental illness even where the latter has been controlled for, such as in Pasco et al 2008).

Despite the difficulties, however, there is now sufficient evidence to identify smoking as a significant risk factor for the onset and worsening of mental health problems, particularly in the case of depression and anxiety. The next question must therefore be how this happens, and what the underlying mechanism is behind the effect of smoking on mental health.

How Does Smoking Effect Mental Health?

From the evidence above, while the effects of smoking on schizophrenia are still not fully established, it seems likely that smoking can lead to the onset and worsening of 'affective' problems such as depression and anxiety. However, what is less clear is the mechanism behind these adverse effects.

One explanation makes reference to the brain's biochemistry, and specifically implicates the relationship between nicotine and serotonin (a monoamine neurotransmitter). Data suggesting that the effect of smoking on mental health is greater among nicotine dependent than non-dependent smokers has already been referenced (Pedersen & von Soest, 2008). While acute nicotine administration has been shown to promote serotonin release, chronic administration results in serotonin depletion in brain areas such as the hippocampal formation and reduces firing of serotonergic neurons. These effects may trigger depression and increase the predisposition to suicidal behavior (Malone et al., 2003).

Another explanation, possibly related more to anxiety disorders, implicates the tendency of smoking to impair respiratory functioning. In Johnson et al.'s (2000) prospective study, smoking during adolescence was associated with increased risk for agoraphobia, generalised anxiety disorder (GAD) and panic disorder, but not with obsessive-compulsive disorder (OCD) or social anxiety disorder. The authors draw a link to the fact that previous research has also found a link between impaired respiration and agoraphobia, GAD and panic disorder, but not OCD or social anxiety disorder.

The Implications for Mental Healthcare

As discussed in Section 2.2, smoking has been central to the culture of mental healthcare, even to the point that it has been utilized as a 'clinical tool'. The assumptions behind this practice are likely to be a) that smoking is damaging to physical health but not mental health, and b) that physical health is not a major concern of mental healthcare professionals.

The latter of these assumptions is now largely outdated, and the mental healthcare professions are increasingly becoming aware of their responsibility and potential to improve the physical health of their patients (Connolly & Kelly, 2005). However, the assumption that smoking has no adverse effect on mental health is still widely held and this needs to be addressed through education and training.

The message is clear. Not only is it unethical to attempt to maintain a person's mental health by facilitating smoking (given the impact of smoking on health and financial resources), but it is also likely to be ineffective and to do more psychological harm than good in the long-term. Indeed, given the evidence presented in this section, it may be that a more fruitful approach to maintaining or improving and individual's mental health is to encourage them to stop smoking. Surveys have indicated, however, that clinicians in mental health settings are significantly less positive about taking a role in helping their patients quit than their colleagues in general healthcare settings (McNally et al. 2006).

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This lack of a positive attitude towards stop smoking support may result from both a fear of the effects of smoking cessation on mental health, and a skepticism about the extent to which stop smoking support programmes can succeed in a mental health setting. Accordingly, the effects on mental health of smoking cessation and stop smoking treatments are considered in the next section (Section 2.4), while the potential for stop smoking support in mental health settings to deliver successful quit attempts and long-term smoking abstinence is considered in Section 2.5.

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