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Smoking cessation and serious mental illness: a service evaluation of a drop-in stop smoking clinic on an acute in-patient unit

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Abstract

Aims and objectives. To evaluate the effect of a stop smoking clinic on the quit rates of patients admitted to an acute in-patient unit.

Background. The relationship between poor physical health and severe mental illness is well established. High rates of smoking appear to play an important causal role in the excess morbidity and mortality in this population. Stop smoking interventions for the general population are clinically effective and cost-effective. There is a small but promising evidence base for effective interventions to help people with a mental illness who wish to stop smoking but these have mostly been tested with community patients rather than acute in-patients.

Methods. A service evaluation of a drop-in stop smoking clinic on an acute mental health in-patient unit was conducted. Patients' smoking status was measured at baseline and four weeks after their quit date using patient self-report and an expired breath carbon monoxide reading.

Results. Over a six-month evaluation period, 46 patients set a quit date and 13 (28.3%) were abstinent at the four-week follow-up stage, verified by a carbon monoxide reading ($\chi^2 = 33$, $df = 1$, $P < 0.0001$).

Conclusions. This small-scale evaluation has shown a drop-in stop smoking intervention to be feasible, acceptable and associated with positive outcomes; further research with larger, more representative samples is required.

Relevance to clinical practice. Enforcing smoke-free legislation is a contentious issue on mental health in-patient units, and there is a paucity of research to guide nursing practice in this area. An admission period in a smoke-free environment provides a crucial opportunity to offer smoking cessation treatment. With appropriate resources, expertise and support, it appears possible to apply smoking cessation interventions that are successful

Introduction

The relationship between poor physical health and severe mental illness (SMI) such as schizophrenia and bipolar disorder is well established. People with SMI frequently have coexisting long-term medical conditions, such as chronic respiratory disease, cardiovascular disease and type 2 diabetes (Osborn et al. 2007, 2008), and it has been estimated that the life expectancy of people with SMI is reduced by 10–25 years (Newman & Bland 1991, Parks et al. 2006, Chang et al. 2011). High rates of smoking appear to play an important causal role in the excess morbidity and mortality in people with SMI (Brown et al. 2000). The risk of many diseases, in particular respiratory, cardiovascular disease and some cancers in people with SMI could therefore be reduced by providing appropriate smoking cessation support (Campion et al. 2008).

Background

Despite a steady reduction in the prevalence of smoking over the past 50 years in the United Kingdom (UK) and other industrialised nations, tobacco use remains the single greatest cause of preventable illness and premature death in the world (WHO 2009). Approximately 21% of the UK population are current smokers (Health and Social Care Information Centre, 2010), which is similar to the current rates in the USA and Australia (Centres for Disease Control and Prevention 2009, McCarthy et al. 2010). The prevalence of daily smoking for patients with major depression, bipolar disorder and schizophrenia is estimated to be 57, 66 and 74%, respectively (Diaz et al. 2009). The highest levels of smoking occur within psychiatric in-patient settings. In a meta-analysis of 42 studies investigating the prevalence of smoking in people with schizophrenia, 68% of in-patients were smokers compared to 57% of community patients (de Leon & Diaz 2005). People with SMI are likely to be heavier smokers (Kumari & Postma 2005) and those who smoke are more likely to experience more severe psychotic symptoms and have poorer outcomes compared to non-smokers (Aguila et al. 2005). National epidemiological survey findings indicate that approximately 43% of cigarette smoking is by people with a mental illness (Lasser et al. 2000, McManus et al. 2010). Unlike in the general population, smoking prevalence is not declining in the SMI population, exposing people with SMI who smoke to additional health inequalities and social exclusion.

Reducing rates of smoking in the general population has been a longstanding public health goal, and there is consistent evidence that providing dedicated services to help smokers quit is both clinically effective and cost-effective (Raw et al. 2005). Primary Care Trusts (PCTs) in England are responsible for providing smoking cessation services for people who want to quit. Standard National Health Service (NHS) care includes approximately 6 sessions of behavioural support and pharmacotherapy based on a withdrawal orientated model and emphasises the importance of complete abstinence (West et al. 2000, McEwen et al. 2006a). The choices of medication available to people attending NHS stop smoking services who are motivated to stop smoking are usually based on patient preference and include nicotine replacement therapy (NRT), Bupropion and Varenicline. The effectiveness of pharmacotherapy and/or behavioural support for people in the general population to stop smoking has been evaluated in over 200 randomised controlled trials (RCTs) including over 70,000 patients and has been shown to increase the chance of quitting 2- to 4-fold, compared to placebo (Hughes et al. 2007, Stead et al. 2008, Cahill et al. 2012). NRT aims to reduce withdrawal symptoms associated with stopping smoking by replacing the nicotine from cigarettes; it is widely used and has few side effects. Bupropion is an antidepressant and a nicotine antagonist. Recent systematic reviews have found it to be effective in helping people with schizophrenia to stop smoking (Banham & Gilbody 2010, Tsoi et al. 2010), but is also known to lower the seizure threshold, induce mania and interacts with a number of psychotropic medications (NICE 2008). Varenicline is a nicotine acetylcholine receptor partial agonist. Case reports indicate significant risks of exacerbation of depression, bipolar disorder and suicidal ideation whilst taking Varenicline and have led the Medicines and Healthcare Products Regulatory Agency (2008) to recommend that Varenicline should be used with care with patients who have a history of psychiatric illness.

The National Institute for Health and Clinical Excellence (NICE) recommends that NHS Stop Smoking Services in the UK should aim to treat a minimum of 5% of their local population of smokers in the course of a year and at least 35% of treated smokers who set a quit date should be abstinent four weeks after their quit date (National Institute for Health and Clinical Excellence 2008). Four-week quit smoking rates are a mandatory monitoring requirement for English NHS Stop Smoking Services and a means of tracking service performance (Department of Health 2009). These data are collected on a quarterly basis by patient self-report, validated by an expired breath carbon monoxide (CO) reading of <10 ppm. From April 2009 to March 2010, 757,537 people set a quit date with NHS Stop Smoking Services in England and 49% had successfully stopped smoking at the four-week follow-up stage (The Health and Social Care Information Centre 2010).

In 2006, smoke-free legislation was introduced to ban smoking in enclosed public areas or workplaces in England (Health Act, 2006). Following an initial exemption, mental health units in England and Northern Ireland have had to comply with smoke-free legislation since July 2008. Implementation has been contentious and surveys since the ban suggest that it is only being partially implemented, and that mental health staff and patients remain ambivalent about its utility and feasibility (Mental Health Foundation 2009).

Retrospective service evaluations of the impact of the smoking ban in in-patient forensic settings in the UK have been carried out (Cormac et al. 2010, Shetty et al. 2010), but these do not report quit rates. An emerging evidence base suggests that when smoking cessation interventions are tailored to address the neurobiological, cognitive, affective and social effects of SMI, a modest number of patients are motivated and successful in stopping smoking. Uncontrolled and controlled studies evaluating the efficacy of NRT or Bupropion, in addition to psychosocial support, report quit rates of between 6–18% at six-month follow-up amongst community patients with psychosis (George et al. 2000, 2002, 2008, Evins et al. 2001, 2005, 2007, Baker et al. 2006, Ashton et al. 2010). However, amongst UK acute in-patients with SMI, we were unable to identify any published studies prospectively evaluating a smoking cessation intervention.

The Department of Health (DH) in the UK recommends that commissioners and providers should work together to improve access to evidence-based smoking cessation treatment for smokers from high-risk groups such as people with mental illness. The DH also proposes that new, non-evidence-based delivery models (such as drop-ins) should be piloted on a small scale and be carefully evaluated before being adopted as a significant part of the service (DH 2009).

This article reports the results of a prospective service evaluation of a drop-in stop smoking clinic jointly developed by a PCT and a Mental Health Trust in the UK, designed to help patients on an acute mental health in-patient unit to stop smoking. The aim of the study was to evaluate the effect of the drop-in stop smoking clinic on the smoking status of patients four weeks after their quit day.

Method

Setting and participants

The service evaluation took place on an acute in-patient unit of a NHS Mental Health Foundation Trust in the south of England between July 2008 and March 2009. This unit was comprised of two 18-bedded acute admission wards and a seven-bedded Psychiatric Intensive Care Unit, which serves a population of approximately 395,000 people from four districts (NHS Surrey 2008). White British ethnicity makes up the largest percentage of the resident population (84.4%), compared to the national average of 83.6% for the whole of England, whereas people from an Asian background are the largest minority non-white group in this area (NHS Surrey 2008). The PCT where the research was conducted is the least deprived PCT and the third most affluent county in England (NHS Surrey 2008). However, there are pockets of relative deprivation and the in-patient site reported in this study admits patients from two of the most deprived districts in the county. All patients aged 18 and above who were resident on the in-patient unit and who smoked during the evaluation period were eligible to access the drop-in clinic on a voluntary basis, either by self-referring or by referral from a member of staff.

Description of the service

A steering group was established to oversee the development, management and evaluation of the drop-in clinic. Members included the PCT tobacco control lead for mental health, two Trust managers, a ward manager, a staff nurse, a pharmacist and an honorary nurse consultant. The drop-in clinic was held one day a week for six hours, over a six-month period. The first three months of the drop-in clinic were staffed by a specialist stop smoking advisor employed on a freelance basis by the PCT. She had 10 years' experience working in the field of smoking cessation and a background in mental health nursing and social work. The rationale for using an experienced specialist stop smoking advisor employed by the PCT to set-up the clinic was to try and have a positive impact on the culture and practice of the unit staff. We wanted a confident practitioner who had a proven track record of success in helping patients with SMI to stop smoking and who would hopefully inspire patients to use the service and demonstrate to the unit staff that this was a worthwhile and achievable task. The steering group also considered it important that the stop smoking advisor should be external to the in-patient unit to prevent conflict with competing ward priorities and untoward incidents.

After the initial three months, the drop-in clinic was staffed by three mental health in-patient workers, a staff nurse, an occupational therapy technician and a health care assistant, who worked in turn to staff the drop-in clinic on a rota basis. Their time working in the drop-in clinic was ring-fenced and funded by the Mental Health Trust. Prior to taking over the running of the drop-in clinic (i.e. during the first three months of the clinic), these three mental health workers attended a Level 2 smoking cessation training course for mental health professionals, run by the local PCT. They received 14 hours of training delivered over two and a half consecutive days by tobacco control specialists. The course is designed to provide mental health professionals with knowledge, confidence and skills to deliver smoking cessation advice on a one-to-one basis and is compliant with the standards for training in smoking cessation treatments recommended by the Health Development Agency (HDA 2003) in the UK.

Staff running the drop-in aimed to deliver 6–8 sessions of smoking cessation support based on the work developed and described by Hajek (1989) and McEwen et al. (2006a) for use in the general population and by McNally (2006) for mental health patients. It was decided by the steering group that because of the potential interactions of Bupropion with some psychotropic medication and the lack of current empirical evidence and potential risks of Varenicline in a mental health population, patients would only be offered NRT (patch, inhalator or lozenge). In addition to NRT, other interventions used in the drop-in included engaging patients in setting a flexible and collaborative quit date; monitoring nicotine withdrawal symptoms, coping with physical, psychological, social and behavioural aspects of stopping smoking and relapse prevention. If a patient was discharged before the intervention was completed, they had the option of returning to the unit or being followed up by the PCT stop smoking service.

Outcomes

Smoking status

The primary outcome for the study was smoking status four weeks after the patient's quit day. This was obtained by patient self-report and validated by an expired carbon monoxide (CO) reading taken each week by the drop-in staff, over this four-week period. Expired breath CO reading is the most commonly used biological marker of smoking status in both research studies and clinical practice (Jarvors et al. 2005). CO is a colourless, odourless gas inhaled by smokers from cigarettes. CO is eliminated from the body within 24 hours of stopping smoking; therefore, if a patient reports they have not smoked in the previous 24 hours, an exhaled breath test can confirm this (American Lung Association 1990). The proportion of CO-verified patients was calculated by dividing the number of treated smokers who reported continuous abstinence from smoking from quit day to the four-week follow-up point and who had a CO reading of <10 ppm, by the total of treated smokers (DH 2009).

Clinical and smoking characteristics

Demographic and clinical characteristics were collected from case notes, and smoking characteristics were collected at baseline by the drop-in staff using the Smoker's Clinic Questionnaire, a data collection tool used routinely by the local PCT NHS Stop Smoking Service. This tool was used at the first smoking cessation session to assess the patients' level of nicotine dependence and their motivation to smoke and stop smoking. The Fagerstrom Test for Nicotine Dependence (FTND) is the most widely used instrument to quantify dependence (Heatherton et al. 1991) and been used to assess dependency in studies of smoking cessation interventions in mentally ill samples (George et al. 2000, Evins et al. 2005, 2007, Baker et al. 2006). Two of the items in the FTND (the number of cigarettes smoked and time to first cigarette of the day) are included in the Smoker's Clinic Questionnaire. These two questions have been identified to be valid and the most predictive values of nicotine dependence and can be combined to give a Heaviness of Smoking Index (HSI) score (Heatherton et al. 1989, John et al. 2004). In mental health samples, the scores derived from the HSI and FTND have high agreement (kappa 0.60) (de Leon et al. 2003). Using the HSI, dependence can be categorised into one of three groups: low (0–1), medium (2–4) and high dependence (5–6).

Reasons for smoking are also elicited in the Smoker's Clinic Questionnaire, using some of the questions from The Smoking Motives Questionnaire (SMQ) (West 2006). Patients are asked to rate how often they use smoking to help cope with stress, to socialise, to help with concentration, because they will feel uncomfortable if they do not smoke, to keep weight down and because they enjoy it (1 = *not at all* and 5 = *very much*). The SMQ is used in the Smoking Toolkit study (West 2006), a series of monthly surveys designed to provide information on smoking and cessation patterns amongst smokers in England. Its test–retest reliability has been found to be generally high (McEwen et al. 2008) and smoking motives elicited using the questionnaire have been found to be correlated with a number of sociodemographic variables (Fidler & West 2009).

The types of data used in this study are routinely collected by the local PCT Stop Smoking Service and the Mental Health Trust. Data were collated and analysed by a member of the steering group who was independent to the drop-in clinic staff. Ethical approval for service evaluations is not required (McEwen et al. 2006b, NHS National Patient Safety Agency 2008), although audit approval was obtained from the Mental Health Trust's Research & Development department.

Analysis

Data were entered and analysed using spss version 15 (SPSS, Chicago, IL, USA) and stata version 9 (Stata Corporation, College Station, TX, USA). Demographic, clinical and smoking characteristics are described using means and standard deviations for continuous variables and percentages for categorical variables. The McNemar test (a paired version of the chi-square test) was used to test if the number of patients who stopped smoking was significantly different between baseline and the four-week follow-up stage (McNemar 1947).

Results

During the six-month evaluation period, 46 in-patients used the drop-in clinic and set a quit date. The demographic and clinical characteristics are reported in *Table 1*.

Table 1: Demographic and clinical characteristics

Variable	N = 46
Gender	
Female	28 (61%)
Age	36.6 (SD 12.8)
Ethnicity	
White UK	37 (80.4%)
Diagnosis	
Schizophrenia	18 (39.1%)
Personality disorder	11 (23.9%)
Depression	10 (21.9%)
Bipolar	7 (15.2%)
Legal status detained under Mental Health Act	20 (43.4%)
Mean length of admission	63 days

Smoking characteristics

Participants smoked an average of 28 (SD 15.4) cigarettes a day (range, 4–80) and their HSI score was 3.8 (SD 1.47). Sixty-three per cent had previously tried to stop smoking on at least one occasion, and the mean length of time for previous abstinence was 48.7 days (SD 83.1). The highest rated motive for smoking was to help cope with stress (mean, 4.2, SD 1.2): 79% of patients stated they did this ‘very much’ or ‘quite a bit’. The next highest rated motive reported was the enjoyment of smoking (mean, 4.1, SD 1.2), followed by to help with socialising (mean, 3.3, SD 1.4), and because they would feel uncomfortable if they did not smoke (mean, 3, SD 1.5). Thirty-eight per cent of participants stated they were either very or extremely determined to stop smoking, and 34.4% thought it was very or extremely important to stop smoking. The most common reason given for wanting to stop smoking was for health reasons: 70.4% gave this reason, followed by cost (11.1%), pressure from others (11.1%), not liking being addicted (3.7%) and that it was a bad example to their children (3.7%).

Smoking status

Over the six-month evaluation period, 46 patients were treated in the drop-in clinic and set a quit date. Thirteen (28.3%) patients were abstinent at the four-week follow-up stage, verified by a CO reading ($\chi^2 = 33$, $df = 1$, $P < 0.0001$); this was a statistically significant proportion of those treated. Five of the ten patients with a diagnosis of depression successfully quit, whereas 5 of 18 patients with a diagnosis of schizophrenia, 2 of 11 patients with a personality disorder and one of seven patients with a bipolar disorder successfully stopped smoking.

The specialist smoking cessation advisor employed by the PCT treated 27 patients in the first three months of the drop-in and 10 (37%) patients quit at four-week follow-up. The ward staff, new to smoking cessation work, treated 19 patients in the second three months of the evaluation and 3 (15.7%) patients quit. This difference was not statistically significant ($\chi^2 = 2.48$, $df = 1$, $P = 0.11$).

Discussion

This study is to our knowledge the first published UK evaluation of a smoking cessation intervention, exclusively for an acute mental health in-patient population. This evaluation shows that these patients are motivated to stop smoking and that a significant proportion find this achievable. The participants in this evaluation were heavy smokers [defined as smoking more than 25 cigarettes a day (Kelly & McCreadie 1999)] and had a moderate level of tobacco dependence. They were motivated to smoke for reasons similar to those of smokers in the general population: data collected from more than 2700 clients of London Stop Smoking Services rated stress relief, boredom and enjoyment highest (McEwen et al. 2008). The average length of stay on the in-patient unit for our participants was similar to the UK national average length of an in-patient stay, currently reported as 78 days for men and 68 for women, as was the proportion of those who were compulsorily detained (Health and Social Care Information Centre 2011).

An in-patient stay in a smoke-free environment may be an opportune time for initiating smoking cessation treatment because of the intensity of exposure to nursing and medical staff and the removal from usual environmental cues to smoke (American Psychiatric Association 2006). Rigotti et al. (2008) reported that delivering smoking cessation services to in-patients with physical health conditions, such as cardiovascular disease has a positive impact. Pooling data from 17 RCTs, they found that cessation programmes initiated during a hospital stay, and which included follow-up support for at least one month after discharge, increased the odds of stopping smoking by 65% at 6–12 months after hospital discharge. Published studies of similar programmes in people with SMI do not currently exist.

Despite recommendations to integrate smoking cessation interventions into mental health services (Campion et al. 2008, DH 2009), there is lack of clarity about the role that in-patient staff should adopt. The current evidence base for effective interventions to help people with a SMI who wish to stop smoking is derived from community patients rather than acute in-patients. Also, the majority of studies to assess the efficacy of smoking cessation interventions have been conducted in research settings where the intervention is usually delivered by a research nurse or trained smoking cessation counsellor, not by a health care professional responsible for other aspects of the patients’ clinical care (Rigotti et al. 2008). It has been established that nurses who combine smoking cessation work with other duties are less effective than nurses who have a health promotion or an exclusive smoking cessation role (Rice & Stead 2008). Our drop-in clinic was a dedicated on-site service, staffed initially by a specialist smoking cessation advisor and then by ward staff following brief training. The specialist stop smoking advisor treated more patients and achieved higher quit rates than the ward staff; however, it is uncertain if this was as a result of greater experience and specialist skills or her exclusive role in concentrating on smoking behaviour. Nevertheless, the in-patient staff were able to motivate patients to make a quit attempt and this was successful for a small number, suggesting that in-patient mental health staff whose role is varied

and challenging are able to integrate smoking cessation work into their clinical practice when their time is protected.

Lawn and Campion (2010) surveyed 99 adult mental health in-patient units across Australia to evaluate the implementation of smoke-free legislation. They reported that the factors associated with greater success of implementing smoke-free initiatives in mental health in-patient settings are clear, consistent and visible leadership, cohesive teamwork, extensive training for clinical staff, fewer staff smokers, effective use of nicotine replacement therapies and consistent enforcement of a smoke-free policy. In the current study, it appeared that the consistent and visible leadership from the ward manager, the cohesive teamwork of the three mental health workers who ran the drop-in and the collaborative support from the local PCT were integral to the success of the drop-in service.

Current guidelines recommend that general population services should aim to achieve a CO-validated abstinence rate of at least 35% four weeks after the person stops smoking (National Institute for Health and Clinical Excellence 2008). The local PCT NHS Stop Smoking Service responsible for providing support to smokers in the general population achieved a quit rate of 41% during the same time period as our service evaluation (Health and Social Care Information Centre 2009). The rate of 28% achieved in this service is clearly lower than these general population targets and results. But although mental health services should aim for comparable quit rates between mental health service users who smoke and smokers in the general population, there is a paucity of evidence to guide our practice about what is an achievable and realistic target. It is likely that smokers who have mental illness will have more severe nicotine dependence and greater ambivalence about stopping compared to smokers in the general population (Tsoi et al. 2010), which may be expected to limit the effectiveness of standard care interventions.

The findings of this study need to be cautiously interpreted because of its methodological limitations: this was uncontrolled study and hence vulnerable to subjectivity and bias. The sample size was small and recruited from a single site; therefore, it may not be representative or generalisable to similar populations. The Mental Health Trust where the study was conducted did not routinely record patient's smoking status at the time, so we are unable to report what proportion of the in-patients were smokers and therefore what proportion of smokers were interested in making a quit attempt during their stay. We also did not collect any routine data regarding the severity of symptoms of this sample of patients and how this may have affected their desire to use the drop-in clinic or influenced their ability to quit. Follow-up data were only collected for four weeks after the patients quit date, in line with national monitoring standards; therefore, we do not know whether these quit attempts were sustained beyond this time period. However, this study has generated new knowledge at a local level and was conducted in a real world as opposed to a research setting. The most robust design for the evaluation of a new intervention or service is a well conducted randomised controlled trial; however, a series of studies may be required to progressively refine an intervention before one embarks on a full-scale evaluation (Craig et al. 2008). Compared to the large, robust evidence base for smoking cessation interventions for smokers in the general population, interventions to help people with SMI have a smaller evidence base, and to date published studies have focused on patients in community mental health settings. Clinical interventions evaluated in the general population provide an essential starting point on which to build approaches specific to the needs of this particular population. The challenge of taking evidence-based interventions that are effective in smokers in the general population and adapting them for mental health patients who smoke is an important public health priority and the basis of this study.

Conclusion

This service evaluation of a stop smoking drop-in clinic highlights that patients in an acute in-patient unit are interested in stopping smoking and that a significant proportion find this achievable. Enforcing smoke-free legislation has become a time-consuming and contentious issue on in-patient units, particularly in the UK. However, an admission period in a smoke-free environment provides a crucial opportunity to offer smoking cessation treatment, although this will only be viable with appropriate resources expertise and support. This small-scale evaluation has shown a drop-in intervention to be feasible, acceptable and associated with positive outcomes; further research with larger, more representative samples to guide our practice is required.

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