

Smoking Cessation Research Review™

Making Education Easy

Issue 9 – 2013

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Abbreviations used in this issue

- NHS = National Health Service
NRT = nicotine replacement therapy

Welcome to the ninth issue of Smoking Cessation Research Review.

Promising findings are discussed from research evaluating mobile phone-based smoking cessation interventions.

A UK review of research into smoking and absenteeism in working adults reports that smokers are more likely than non-smokers to take time off. Moreover, when they take time off, smokers are likely to be absent from work for longer than non-smokers. Introducing smoking cessation programmes into the workplace is potentially cost-saving for the employer; this research notes that the total cost of absenteeism due to smoking cost the UK economy about £1.4 billion in 2011.

We hope you find this edition stimulating reading, and we welcome any comments or feedback.

Kind Regards,

Dr Hayden McRobbie

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Past major depression and smoking cessation outcome

Authors: Hitsman B et al

Summary: This meta-analysis updates one conducted by the same researchers in 2003 showing no association between a lifetime history of major depression and smoking cessation outcome. Fourteen trials were included from the original review, with a further 28 identified through an updated systematic review (2000–2009), and coded for assessment of past major depression, exclusion for recent major depressive episode (≤ 6 months versus no exclusion), duration/modality of cognitive behavioural treatment (face-to-face versus self-help) and other factors. To minimise influence of experimental treatments that may selectively benefit smokers with past major depression, only the placebo/lowest intensity control arms were analysed. After excluding the sole study of varenicline because of its antidepressant properties, it was found that having a past history of major depression lowered the odds of both short-term (≤ 3 months) abstinence by 17% ($n=35$; $p=0.009$) and long-term (≥ 6 months) abstinence by 19% ($n=38$; $p=0.023$) compared with smokers without any such history.

Comment: People with a history of depression are more likely to smoke than those without. For decades, smoking has been part of the 'culture' of mental health institutions with cigarettes being used as a coping mechanism and for rewarding good behaviour. It is often said that having a history of major depression (MD) is related to a lower chance of quitting smoking. A previous systematic review showed, however, that this was not the case and that smokers with a history of MD were just as likely to be able to quit as those without.

This updated systematic review confirms that a past history of MD is associated with slightly, but significantly, lower chances of quitting smoking both short- and long-term compared with smokers without a history of MD.

It is likely that smoking cessation interventions that take into account a history of mental illness and offer a treatment programme that addresses the needs of these people may reverse the disparities seen in treatment outcomes.

Reference: *Addiction* 2013;108(2):294-306

<http://onlinelibrary.wiley.com/doi/10.1111/add.12009/abstract>



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Mobile phone-based interventions for smoking cessation

Authors: Whittaker R et al

Summary: This Cochrane systematic review included 5 studies investigating the efficacy of mobile phone-based smoking cessation interventions in over 9000 smokers who were followed-up for ≥ 6 months after quitting. Three studies involved a purely text messaging intervention (providing motivation, support and tips for quitting) and one was a multi-arm study of a text messaging intervention and an internet QuitCoach separately and in combination. The final study involved a video messaging intervention delivered via mobile phone. Pooled analysis revealed that mobile phone interventions increased the long-term quit rates compared with control programmes, using a definition of abstinence or no smoking at 6 months since quit day but allowing up to 3 lapses or up to 5 cigarettes. Results were heterogeneous, with findings from 3 of the studies crossing the line of no effect.

Comment: There remains a lot of interest in mobile phone-based interventions for behaviour change. The advantages of these types of interventions are that they are cheap to deliver and have a wide reach. The penetration of mobile phones these days is large, with most people (even those from lower socio-economic groups) owning a mobile phone.

This systematic review combined the results of five studies, involving more than 9000 participants, which followed people up for at least 6 months after their quit date. The results show that mobile phone-based interventions almost double long-term quit rates compared to control interventions (9.4% vs 5.5%). Whilst these absolute quit rates may appear low, mobile phone interventions have the potential to have a large impact, given the reach and low cost.

What is now needed, however, are data on cost-effectiveness. In addition, a number of smart phone apps are being promoted for smoking cessation but none have yet been examined to see if they can increase quit rates. The use of mobile phone interventions in preventing relapse also need to be examined.

Reference: *Cochrane Database Syst Rev* 2012;11:CD006611

<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006611.pub3/abstract>

Pilot RCT results of Stop My Smoking USA: a text messaging-based smoking cessation program for young adults

Authors: Ybarra ML et al

Summary: Outcomes are reported from a pilot evaluation of Stop My Smoking (SMS) USA, a text messaging-based smoking cessation programme designed for young adults. A total of 164 18- to 25-year-old daily smokers who were seriously thinking about quitting in the next 30 days were randomised to either (a) the 6-week SMS USA intervention (n=101) or (b) an attention-matched control group aimed at improving sleep and physical activity (n=63). According to intent-to-treat analyses, intervention participants were significantly more likely than controls to have quit at 4 weeks postquit (39% vs 21%). Although these results were not sustained at 3 months postquit, quit rates still favoured the intervention group (40% vs 30%).

Comment: As already noted above, the Cochrane Review concluded that mobile phone-based interventions are effective for smoking cessation. Adding to this are the results from this pilot study investigating the use of text messages in young adults who smoke.

Participants were randomised to receive a specific smoking cessation text message service, or text messages that focussed on improving sleep and physical activity (control group). The treatment programme messages were broken down into pre-quit messages (which focussed on reasons for quitting, understanding their smoking patterns, and preparing for quitting), and post-quit messages (which focussed on coping with withdrawal discomfort and difficult situations). Messages were frequent, with up to 4 messages per day sent during the pre-quit period and 9–1 (decreasing frequency over time) messages per day post quit. There were also interactive messages (e.g. Txt Crave) and participants were encouraged to text a buddy to help them quit.

The 3-month continuous abstinence rates were higher in the intervention compared to the control group (40% vs 30%), although this did not reach statistical significance. In line with previous research on enhancing social support, people who found their 'Text Buddy' helpful and supportive had higher quit rates than participants who did not.

Reference: *Nicotine Tob Res* 2013 Jan 24. [Epub ahead of print]

<http://ntr.oxfordjournals.org/content/early/2013/01/19/ntr.nts339.abstract>

Using text messaging to prevent relapse to smoking: intervention development, practicability and client reactions

Authors: Snuggs S et al

Summary: A total of 202 smokers attending National Health Service Stop Smoking Services who had been abstinent for 4 weeks after their quit date participated in a 6-month short message service (SMS) text-based relapse prevention intervention. This paper describes the development, implementation and subsequent evaluation, in terms of practicability and client response, of this intervention.

Comment: This paper reports on a text-based relapse prevention service intervention implemented within an NHS Stop Smoking Service, which was aimed specifically at service users from the routine and manual occupational groups.

Text messages were aimed at maintaining motivation to remain abstinent, preventing absent-minded and indulgent lapses, and not stopping medication prematurely. Messages were sent weekly for 12 weeks post-treatment and fortnightly for up to 6 months and clients were encouraged to contact the local service for further help if they experienced a lapse. Interactive messages were used to report current smoking status and make an offer of additional support.

As there was no control, it is difficult to know if this intervention reduced relapse. Thirty-two per cent of clients reported being continuously abstinent since their quit date. Clients, however, rated the intervention highly in terms of helpfulness and were highly satisfied with the messages received. Clients commented that 'It was nice to know someone was there and I wasn't just abandoned' and 'It was supportive to know there's still someone who cares if you smoke – such a nice touch!' People also appeared to appreciate the messages as a method of support: 'It was good to have continuing support – you knew that if there was a problem, you could get back in touch.'

Another encouraging finding was that this intervention helped at least 10 clients who had lapsed get back on track and be abstinent at the 6-month follow-up. It also prompted 41 people to have another go at quitting.

This type of intervention could be easily integrated into smoking cessation services, but first it needs testing to see if it can increase long-term quit rates.

Reference: *Addiction* 2012;107 Suppl 2:39-44

<http://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2012.04084.x/abstract>

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Comparison of the cost-effectiveness of a high- and a low-intensity smoking cessation intervention in Sweden

Authors: Nohlert E et al

Summary: These researchers performed a societal and health care perspective economic evaluation to assess the relative cost-effectiveness of a high-intensity intervention (HII) and a low-intensity intervention (LII) for smoking cessation, based on the reported number of quitters at 12-month follow-up from a randomised controlled trial of 2 smoking cessation programmes in Sweden.

Comment: There is some evidence to show that higher intensity smoking cessation interventions are associated with higher quit rates. However, high-intensity interventions are often more costly to implement, and in many situations there is often a trade-off between cost and effectiveness.

This Swedish study compares the cost-effectiveness of a high- and a low-intensity smoking cessation intervention delivered by dental hygienists. The high-intensity intervention (HII) consisted of eight individual sessions (totaling 3.5hr) over 4 months. The low-intensity intervention (LII) consisted of one counselling session (up to 45min) and a self-help programme.

One-year quit rates (not a single puff in the last 6 months) were greater in the HII (18% vs 9% in LII), but the cost per quitter was also greater in the HII compared with the LII (NZ\$4,877 vs NZ\$1,700).

The HII was associated with a greater number of quality-adjusted life years (QALY) gained (10.65 vs 5.39). When this difference is taken into account, the incremental cost/QALY of HII compared with LII was around SEK 50,000 (NZ\$9,345). This is considered cost-effective for a healthcare intervention in most developed countries. The authors conclude that HII should be the preferred choice for treatment if decision makers are willing to commit resources to increase tobacco cessation.

Reference: *Nicotine Tob Res* 2013 Feb 12. [Epub ahead of print]

<http://ntr.oxfordjournals.org/content/early/2013/02/07/ntr.ntt009.abstract>

Evaluation of a refined, nationally disseminated self-help intervention for smoking cessation ("Quit Kit-2")

Authors: Murray RL et al

Summary: In this assessment of the impact of a nationally disseminated self-help intervention (Quit Kit-2) on smoking behaviours and attitudes toward the intervention, telephone and online interviews were conducted with 2679 individuals who had received and used Quit Kit-2.

Comment: The UK Department of Health developed a self-help 'Quit Kit' to assist smokers in quitting. Earlier research showed that these kits had a high uptake and triggered a quit attempt in approximately 50% of people requesting them.

These kits contained leaflets on stop smoking medicines, stress management guides that people could listen to, a "tangle" stress reliever, quit journey wall chart and stickers, willpower assessment quiz, health and wealth wheel, and details of NHS quitting support. Feedback from users led to the revision of these kits to include a voucher for 1 week's free NRT, a quit planner/workbook, and graphic health warning cards.

The evaluation of this new version of the Quit Kit showed that users generally found them helpful, with around 75% of respondents saying that they would recommend it. Almost 75% of people reported making a quit attempt, with 36% of them reporting abstinence for at least one month. People could order these kits online or collect them from a pharmacy. Interestingly, those collecting the kit from a pharmacy were more likely to make a quit attempt and had quit at one month than those who ordered the kit online.

These results suggest a benefit of these types of self-help interventions. Such kits may be a helpful resource for pharmacy staff in particular. However, as always, to really understand the impact of these simple interventions, data are needed from a randomised controlled trial.

Reference: *Nicotine Tob Res* 2013 Jan 4. [Epub ahead of print]

<http://ntr.oxfordjournals.org/content/early/2013/01/04/ntr.nts286.abstract>

Smoking and absence from work: systematic review and meta-analysis of occupational studies

Authors: Weng SF et al

Summary: This review of research into smoking and absenteeism in working adults reports that smokers are about a third more likely than non-smokers to take work absence. On average, smokers were absent from work for an extra 3 days per year compared with non-smokers. Ex-smokers were also more likely than never-smokers to take time off work. The total cost of absenteeism due to smoking cost the UK economy about £1.4 billion in 2011.

Comment: Workplaces offer a unique and valuable opportunity to help employees who smoke quit. Most adults spend a third of their day in a workplace environment. The workplace therefore is a setting through which large groups of smokers can potentially be reached and, importantly, it offers access to a younger population who don't routinely visit healthcare facilities.

For employers, productivity costs arise from disability and unplanned absenteeism, both of which are associated with smoking. In this review, data from 17 studies were combined to show that current smokers were 33% more likely to take work absence than non-smokers. In terms of duration, smokers were absent from work, on average, almost 3 days/year more than non-smokers. When taking into consideration the number of employed people who smoke, this 3 days off work/year is associated with a substantial cost.

The authors also looked at absenteeism in ex-smokers, compared to current smokers, and found that current smokers were 19% more likely to be away from work, which suggests that quitting smoking has a positive impact on workplace absenteeism.

Reference: *Addiction* 2013;108(2):307-19

<http://onlinelibrary.wiley.com/doi/10.1111/add.12015/abstract>

Nicotine metabolism and addiction among adolescent smokers

Authors: Rubinstein ML et al

Summary: This paper reports an inverse relationship between nicotine metabolism and addiction severity in adolescent smokers. The study involved 164 adolescent smokers aged 13–17 years. Multivariate analyses adjusted for age, race/ethnicity, gender and duration of smoking indicated that slower metabolisers smoked more cigarettes per day than faster metabolisers. Slower metabolisers also showed greater nicotine dependence, as determined by higher scores on the modified Fagerström Tolerance Questionnaire.

Comment: Adults who have a faster rate of nicotine metabolism have generally been found to smoke more than those with a slower metabolism. This is presumably as they need to replenish their nicotine levels more frequently. It is also suggested that slower metabolisers are less likely to become addicted to tobacco and more likely to quit than people who are fast nicotine metabolisers. This study looked at the association between nicotine metabolism and addiction in a sample of 164 adolescents who smoked 1–4 cigarettes per day. It was found that Whites and Hispanics had faster rates of nicotine metabolism than Blacks/African Americans and Asians. Contrary to what is seen in other studies, faster metabolisers smoked fewer cigarettes per day and had lower addiction scores than slower metabolisers (adjusting for gender and duration of smoking). The authors suggest that this contrary finding is probably explained by the fact that adolescents who are fast metabolisers but are 'early in their smoking career' have not yet started to compensate for their faster rate of nicotine metabolism. This, however, is likely to change as they get older and smoke more.

Perhaps more worrying is the situation in slow nicotine metabolisers who are exposed to higher levels of nicotine for longer and so may develop dependence on tobacco sooner in their smoking career than the faster metabolisers.

Reference: *Addiction* 2013;108(2):406-12

<http://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2012.04026.x/abstract>

ESCAPE: a randomised controlled trial of computer-tailored smoking cessation advice in primary care

Authors: Gilbert HM et al

Summary: One hundred and twenty-three general practices located throughout the UK participated in this evaluation into the effectiveness of tailored cessation advice reports, including levels of reading ability, compared with a generic self-help booklet. Questionnaires were mailed to 58,660 current cigarette smokers aged 18–65 years, identified from general practitioner records. A total of 6697 respondents were included in the analysis. Follow-up was by postal questionnaire sent 6 months after randomisation, or by telephone interview for participants failing to return the questionnaire. Quit rates on the primary outcome (self-reported prolonged abstinence for ≥ 3 months at the 6-month follow-up) did not differ significantly between the intervention and control groups (3.2% vs 2.7%). A significantly higher proportion of intervention group participants made a quit attempt during the follow-up period (32.3% vs 29.6%; $p=0.026$).

Comment: There is evidence that tailored self-help materials can have a small but significant effect on long-term quit rates. This study aimed to investigate the effect of adding written advice endorsed by the GP and tailored to relevant patient characteristics, including motivation to quit and levels of reading ability that were drawn from a baseline questionnaire, to a generic NHS stop smoking self-help booklet, on smoking abstinence at 6 months.

The intervention did not significantly increase 3-month prolonged abstinence at the 6-month follow-up compared to the control (3.2% vs 2.7%, respectively). An offer of treatment from a GP or practice nurse is likely to have a larger effect and is easier to deliver. However, this written intervention could reach a population that has little contact with primary care, although the cost-effectiveness of this approach remains to be determined.

Reference: *Addiction* 2012 Oct 16. [Epub ahead of print]

<http://onlinelibrary.wiley.com/doi/10.1111/add.12005/abstract>

Impact of an electronic cigarette on smoking reduction and cessation in schizophrenic smokers

Authors: Caponnetto P et al

Summary: This study enrolled 14 smokers (not intending to quit) with schizophrenia experimenting with the “Categoria” e-Cigarette. They were invited to attend 6 study visits: at baseline, week 4, week 8, week 12, week 24 and week 52. Product use, number of cigarettes smoked, carbon monoxide in exhaled breath and positive and negative symptoms of schizophrenia levels were measured at each visit. The use of the e-cigarette substantially decreased cigarette consumption without causing significant side effects in this patient population and without negative impacts on the symptoms of schizophrenia as assessed by Andreasen’s Schedule for the Assessment of Positive Symptoms and Schedule for the Assessment of Negative Symptoms.

Comment: I am often asked about whether we should be recommending electronic cigarettes (ECs) for smoking cessation. The problem for health and medicine authorities at the moment is the lack of data from good-quality trials. There is, however, an increasing amount of literature on these devices. This small prospective cohort study from Italy showed the effect of providing ECs to 14 people with schizophrenia who had no intention of quitting smoking. All were followed-up for a year and it was found that half managed to halve their cigarette consumption (from 30 to 15 cigarettes per day) and sustain this reduction. Two smokers managed to quit smoking their normal cigarettes altogether. These results reflect the findings of other cohort studies, suggesting that ECs might have a role to play in helping smokers cease tobacco use.

Reference: *Int J Environ Res Public Health* 2013;10(2):446-61

www.mdpi.com/1660-4601/10/2/446/pdf

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Smoking Cessation Research Review



Independent commentary

by Dr Hayden McRobbie,

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Research Review publications are intended for New Zealand health professionals.

Reviewer Conflict of Interest Statement

In the past 10 years, Hayden McRobbie has received honoraria for speaking at research symposia and received benefits in kind and travel support from, and has provided consultancy to, the manufacturers of smoking cessation medications (specifically Pfizer, Johnson & Johnson, and GlaxoSmithKline).

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