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Effectiveness of a cognitive behaviour therapy self-help programme for smokers in London, UK

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SUMMARY

One of the key goals of health promotion strategies in the UK and other developed countries is to reduce the prevalence of cigarette consumption. While overall smoking rates in the UK have fallen over the last few decades, they have barely fallen for the least advantaged adults (Department of Health, 1998a). There is a need for interventions that are suitable for lower socio-economic status (SES) smokers that have undergone rigorous evaluation. This study describes a randomized controlled trial of cognitive behaviour therapy (CBT) with smokers from a deprived area of London. At 6 months follow-up, 21 (17.2%) of 122 participants receiving therapy were abstinent and 14 (11.5%) had reduced cigarette consumption by at least 25% of pre-treatment level. Six (5.6%) of 107 participants in the control group were abstinent and none had reduced consumption. These results suggest that this self-help CBT intervention has the potential to reduce the prevalence of smoking among lower SES smokers.

Key words: randomized controlled trial; smoking cessation; socio-economic status

INTRODUCTION

It is predicted that by the year 2020, the annual death rate will be 10 million and about half of today's world population will be killed by tobacco (Peto, 1994). In the UK, the annual mortality caused by smoking is ~120 000, the cost to the hospital system is at least £400 million and industry loses >50 million working days every year (Health Education Authority, 1991).

The WHO's targets for 2015 aim for the proportion of non-smokers in all 51 countries of the European region of the WHO to be at least 80% in people >15 years of age and close to 100% in those <15 years.

A number of studies have reported that some two-thirds of current smokers report that they would like to quit (WHO, 1999). Nearly 80% of current smokers have made at least one attempt to do so. However, the majority of attempts are unsuccessful. Seventy-five per cent of current smokers in the UK who have tried to quit have started again within 6 months (Graham and Derr, 1999).

With the aim of persuading smokers to continue to try to quit smoking, the National Health Service in the UK launched the 'Don't Give Up Giving Up' campaign at the beginning of the year 2000. This campaign tries to persuade smokers to call a telephone help-line for information. The information provided to smokers is based on the *Stopping Smoking Made Easier* leaflet published in 1992 by the Health Education Authority (HEA; for more details see METHODS). The 'Don't Give Up Giving Up' campaign was widely publicized on billboards, television, radio and the Internet. Information was available in braille, on audio cassette and in several languages. This campaign was one of many methods that are used to tackle smoking

in the UK. The efficacy of smoking cessation programmes is still questionable and needs more research (Kaneko, 1999).

It has been pointed out that interventions are needed that target heavy smokers for whom addiction, need and reinforcement play a key role in maintaining their long-term dependence on cigarettes (Graham and Derr, 1999). Cognitive behaviour therapy (CBT) enables addictive behaviours to be changed by facilitating the control of the psychological processes associated with the acquisition and maintenance of the habit, e.g. conditioning, reinforcement, arousal, attention to cues, moods, feelings, suggestion and imagery (Marks, 1993).

The usefulness of CBT in smoking cessation is not new. The authors are aware of one study that is similar to the present study. Hospital-based outpatients received 2 h of CBT over 5 weeks with either nicotine replacement therapy (NRT) or a placebo (Richmond *et al*., 1997). A significant difference was reported in point prevalence abstinence rates between the two groups, with 28% of the CBT + NRT recipients and 12% of the CBT + placebo patch recipients abstaining at 12 months. The provision of CBT free of any charge in a community setting is a new area of study in the field of smoking cessation.

The purpose of this study is to use the rigorous evaluation method of a randomized controlled trial (RCT) to test the efficacy of a self-help CBT programme for smokers, the 'Quit For Life' (QFL) programme (Marks, 1993), in comparison with a control treatment. The control treatment consisted of a health promotion intervention called 'Stopping Smoking Made Easier' (SSME) (Health Education Authority, 1992), which is commonly available in surgeries and health centres in Britain. This paper presents analyses of efficacy of self-help CBT for smokers in a community setting.

METHODS

Participants

The 260 participants in this study were adult smokers living in a deprived area of North London, UK. The smokers rang a smoking cessation clinic and booked to attend a smoking cessation trial. The clinic was based in the heart of this community. Colourful posters and pamphlets advertising free quit smoking assistance were displayed in GP waiting rooms, pharmacies and on a library noticeboard. The poster included a cigarette pack with the slogan 'Quitting seriously improves your health'. The national Quitline was also informed about the trial. A local newspaper ran stories about successful quitters and included the contact details for the clinic. Dates and times of the 1 h introductory sessions were given to a receptionist. When smokers telephoned the centre to volunteer for the free trial the receptionist gave the smokers a choice of dates and times, and booked them into the first convenient introductory group session. We randomly allocated an intervention to each date. The receptionist was unaware of which intervention (SSME or CBT) each group of participants would receive. All smokers who applied were admitted to the trial subject only with their informed consent. The primary outcome measure was the participants' point prevalence of smoking, validated by breath carbon monoxide readings 6 months after the intervention.

Materials

Description of the QFL programme

The QFL programme is an eclectic combination of 30 CBT and other relevant methods in a self-help package consisting of a handbook, reduction cards, a progress chart and other necessary materials. It recognizes that smoking is a psychological addiction and stresses to participants that they do not require a huge amount of will-power to quit. QFL aims to empower smokers to quit by offering a choice of psychological methods. Smokers choose which methods they would like to use. A cassette tape summarizing the handbook is also given to participants. This is useful for participants who are illiterate or do not like reading. Relaxation music and positive suggestions about quitting are included on side two of the tape. The self-help format requires attendance at one introductory group session a few days before the participants initiate a programme of systematic reduction. The methods are listed in Table 1.

QFL aims at a gradual reduction of cigarette consumption over a period of 7–10 days. A set of targets guides the smoker towards a daily reduction of 50%. QFL encourages smokers to be constantly vigilant concerning the process of

Table 1: List of procedures included in the QFL programme

Method
Rubber band around cigarette pack
Record all smoking on card
Programme 1: NURD **N**o satisfaction, **U**npleasant experience, **R**otten, losing the **D**esire to smoke. This is written as a poem on a card that participants place in their cigarette packs.
Enter daily total on chart
Programme 2: WESTD **W**hat is the trigger? **E**very time I feel like smoking, **S**top, **T**hink, and **D**eprogramme. This helps participants become aware of triggers that make them smoke.
Keep list of triggers
Programme 3: EASY **E**ach day it is becoming easy **A**nd my mind is becoming calm **S**o there are no good reasons to smoke **Y**esterday's craving is gone This is used to counteract rationalizations.
Meditation
Imagery rehearsal
Programme 4: NOGO **N**o matter what you say There is **O**nly one way To play the argument **G**ame There are **NO GO**od reasons to smoke
The eight steps and sensitization
Relaxation music
Win the argument game
List personal benefits of quitting
Plan your D-day
Try different ways of relaxing
Rehearse positive programmes
Increase activity
Distraction
Help-line
Will-power
Learn fail-safe procedure
Develop eating control programme
Rules for snacking
Develop exercise programme
Relapse prevention
Assert non-smokers' rights
Deconstruct tobacco advertising
Develop time management skills
Prevent stress and strain

rationalizations that may persuade them to carry on smoking. Cessation occurs on 'D-day', a planned 24-h period when smoking is discontinued at the end of the 7–10 day reduction period. The programme also trains participants to employ mental imagery, suggestion, meditation and relaxation.

QFL is in two stages: reduction and relapse-prevention. It is further subdivided into 10 sections spaced over a period of 3 months. The reduction stage begins on a Tuesday and finishes the following week with D-day. Relapse prevention, which includes advice on how to deal with other smokers, starts on D-day and continues thereafter. It is emphasized that will-power is not needed in QFL. NRT is an optional adjunct during the initial period of 10–30 days immediately following D-day, but patches or gum are not provided. It is recommended that smokers use only the lowest dosage level gum or patch for this purpose. In practice, NRT is used by only a small minority of QFL participants.

Description of the SSME programme

SSME is a colourful pocket-size leaflet that recommends a staged approach to quitting smoking. Several facts and figures about smoking and stopping smoking are also presented in the leaflet. These stages are 'Preparing to Stop', 'Stopping' and 'Staying Stopped'. The preparation stage consists of clarifying reasons for stopping and becoming ready to stop. A handy checklist is included for this stage. There is a section that deals with excuses not to stop smoking by offering typical excuses followed by arguments against these excuses. Smokers are then advised to make an action plan. Smokers are recommended to stop suddenly, using their will-power. Smokers are advised to choose a day, obtain support from family and friends, review the action plan the day before, plan a suitably healthy reward for the end of the first day, another for the end of the first week and then for the end of the first month, plan ahead, and to telephone the national 'Quitline', GP or health centre for further help. Then, once smokers have stopped, they are advised to think positively, take care, not to play games, keep busy, avoid alcohol, refuse or break up cigarettes offered by friends, learn to relax, and to ring the national 'Quitline'. Normally the SSME does not include a group introductory session. Smokers are usually handed the SSME or sent it through the post.

Procedure

One-hundred-and-thirty-one individuals were randomly allocated to the CBT programme and 129 to the control condition. The 1 h session was arranged by dividing smokers into mixed groups of three to 12. Upon arrival at the centre, participants were given an explanation about the trial and a consent form, which informed them that two interventions were being evaluated and that they had been allocated to one of them by random selection. None refused to give informed consent.

Participants received a 60 min introduction to either the CBT programme or to SSME, which was run by one of the two authors. A research assistant was present at the session who ensured the two interventions were delivered with similar amounts of energy and enthusiasm. Each session was run interactively, inviting questions and comments, and urging the smokers to comply with the instructions in the booklets provided. Every effort was made to motivate the smokers to follow the procedures recommended in the booklets provided. A breath CO reading was taken during the session using a Bedfont Smokerlyzer. At the conclusion of the session, the smokers were invited to call the centre's helpline if they had any further questions or problems. Finally, a 3-month follow-up meeting was arranged to monitor the participants' progress and take CO readings.

At the 6-month follow-up we ascertained each participant's smoking status. If any smoker failed to attend the follow up meeting, if possible his/her smoking status was ascertained by telephone or letter, and in cases where reduced smoking or abstinence was reported, arrangements were made to take a CO reading. All participants were asked if they had used NRT in addition to CBT or the SSME treatment. Twenty of the 260 participants left the trial during the 6 months as they had become non-contactable.

RESULTS

The attendance rates for this trial were low; approximately one in four people who telephoned did not book into a session and one in two who booked into a session failed to appear.

The SES distributions for the QFL and control groups were highly similar (Table 2). The sample contained a significant proportion of smokers on lower incomes, including smokers from manual occupations (73/260 = 28%) and unemployed smokers (37/260 = 14%). The QFL sample contained 45 males and 86 females. The control sample contained 49 males and 80 females. The QFL group reported an average cigarette consumption of 24.5 (SD 6.18) cigarettes per day at baseline and the SSME reported an average cigarette consumption of 25.5 (SD 6.42) cigarettes per day at baseline.

Table 2: Socio-economic status of the participants

SES	QFL	SSME
I	0	0
II	20	23
IIIN	21	19
IIIM	14	14
IV	20	15
V	6	4
Unemployed	21	16
Retired	9	11
Students	10	7
Unknown	13	17

A few participants reported using NRT as a complement to CBT (three) or SSME (eight). There were insufficient numbers to perform separate statistical analyses on these CBT + NRT and SSME + NRT groups. The results were analysed in two ways, with and without the NRT participants. The inclusion of participants who used NRT in fact made little difference to the overall results reported below, which are for CBT and SSME participants. Two of the three CBT + NRT and three of the eight SSME + NRT participants were abstinent at 6 months. Smoking status at follow-up was classified into three categories: abstinence (zero cigarette consumption for at least 1 week), reduction (cigarette consumption at least 25% lower than baseline for at least 4 weeks), or no change. In the majority of cases (77/78 or 98.7%), participants' verbal reports of their smoking status were consistent with their breath CO readings (Table 3). One participant (in the QFL condition) reported a smoking status (abstinence) inconsistent with her breath CO reading. This participant reported using NRT and so her data were removed from the analysis.

The observed frequencies of abstinence and reduction for the two groups are presented in Table 4. Twenty-one of 122 QFL participants were abstinent compared with six of the 107 SSME participants [χ^2 (2) = 22.339, $p < 0.0001$]. Approximately one in four of CBT participants were abstinent or had a significantly reduced

Table 3: Breath carbon monoxide readings (parts per million) for participants reporting abstinence, reduced cigarette consumption, or no change (percentages)

CO level totals (p.p.m.)	Participant's reported smoking status		
	Abstinence	Reduced consumption	No change
<4	74	17	0
5–9	0	34	0
⩾10	2	17	67
Unavailable	23	31	33

Table 4: Percentages of participants reporting abstinence, reduction of at least 25%, or no change 6 months after the intervention

Smoking status	QFL [n = 122 (95% CI)]	SSME [n = 107 (95% CI)]
Abstinent	17.2 (11.0–25.1)	5.6 (2.1–11.8)
Reduction	11.5 (6.4–18.5)	0.0
No change	71.3 (62.4–79.1)	94.4 (88.2–97.9)

cigarette consumption 6 months after the intervention in comparison to one in 18 of the controls [χ^2 (1) = 20.76, $p < 0.0001$].

The data were analysed to investigate whether outcomes were related to socio-economic status as indexed by occupation. Participants in SES categories I, II and IIIN, and students were combined to form a high SES group; participants in categories IIIM, IV and V or who were unemployed were combined to form a low SES group. The abstinence and reduction rates for these two subgroups were analysed for each treatment condition but no statistically significant differences were obtained. The outcomes for the high and low SES groups were within three percentage points of each other for abstinence and reduction in the QFL group and within two points for abstinence in the SSME group. Comparisons between male and female participants also revealed no significant differences in outcomes, which were highly similar for the two groups.

DISCUSSION

We have shown that CBT has high efficacy among smokers, who included a high proportion of low income adults, a key group whose smoking prevalence rates have increased in spite of multiple health education campaigns and price increases (Marsh and McKay, 1994; Department of Health, 1998b; Marks, 1998). The study found that approximately one in four smokers in the CBT group were fully abstinent or significantly reduced at 6 months follow-up. CBT was found to be five times more efficacious than health education advice. Additionally, Stead and Lancaster systematically reviewed group programmes (with a minimum of two group meetings) for smoking cessation and found that there was an increase in cessation with the use of a group programme (Stead and Lancaster, 1998). This suggests that the efficacy of health education advice in this study was probably increased by adding the group introductory session to the advice.

It is interesting that a significant difference between the two interventions was found despite the interventions having equivalent levels of contact. This suggests that the differences in the interventions are due to the strategies adopted. A key part of QFL is the objective of increasing the smokers' self-efficacy, a belief that they can and will be able to make the change from smoker to non-smoker.

Gillies looked at factors associated with smoking and smoking cessation in disadvantaged smokers (Gillies, 1999). She identified a discourse of addiction and points out that smoking is often located within a disease model, perceiving it as a physical problem in need of treatment. Gillies states that this dominant construction of cigarette smoking as a physiological addiction is disempowering. QFL provides the means to tackle issues such as powerlessness and social pressures. It is made explicit from the start of the programme that smoking is as much a psychological addiction as a physical addiction. Participants are not required to use will-power, they can choose from a range of techniques to suit their needs, and a progress chart is provided to increase motivation and a sense of control. Examples of social pressure are presented in QFL. The smokers are trained in techniques for re-thinking these social pressures.

In contrast, SSME offers no techniques to implement its advice. It simply informs smokers of the smoking cessation process. Many smokers are already aware of this process. They know what they should do to stop smoking but they do not have the skills to implement this knowledge.

Smokers need more than information; they need the skills and techniques to enable them to control the psychological processes underlying smoking. SSME is based on DiClemente and Prochaska's model of stages of change (DiClemente and Prochaska, 1982). This model has attracted criticism; for example, Bandura argued that the stages are artificial and do not reflect the constant process of change (Bandura, 1997).

A limitation of the study is the low attendance rate. Approximately 250 smokers telephoned the clinic and expressed a desire to participate in the trial but did not attend the session. Therefore this sample, as with all samples of smokers in cessation trials, is representative of only those smokers who are ready to take action to quit. This programme alone can therefore only have a limited impact on overall cessation rates. However, if used in combination with a campaign to increase smokers' motivation to quit, this programme has considerable potential. The 'Don't Give Up Giving Up' campaign increased calls for smoking cessation information by 250% (Foulds, 2000). Eighty-two per cent of these callers were sent information similar to SSME.

This study suggests that further investigations are warranted to test the efficacy of free CBT in combination with free NRT in a community setting. The study has important policy implications. The Health Education Authority materials were much less effective than CBT. If we are to make a significant impact on the current prevalence of smoking and reach the targets for 2015 set by the WHO (WHO, 1999) then more emphasis will need to be placed on the psychological nature of smoking and on the usefulness of psychological interventions.

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