

**Smoking cessation and smoking patterns in the general population: a
one year follow-up**

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Summary

Objective: to assess the prevalence of motivation and behaviours relating to smoking cessation and attempts at harm minimisation and the stability of these over a one year period; to identify demographic, social, behavioural and psychological predictors of attempts to stop smoking and the success of these attempts.

Design: Face to face interviews were carried out with a national sample of UK smokers in April/May 1996 with follow-up one year later.

Subjects: 1911 adult smokers of whom 1012 were followed up one year later (68% of those who were contactable).

Results: Thirty-one percent of smokers reported making at least one quit attempt during the follow-up period and 17% made a quit attempt in the first 9 months of that period. Of these 29% were still not smoking at least 3 months later. Fifty-one percent of smokers had tried to cut down in the year leading up to the first survey. There was a fair degree of consistency over time in individual smokers' desires and intentions to stop smoking across both surveys and in the incidence of quit attempts and attempts to cut down. Beliefs about the effects of smoking on future health and having a partner who disliked their smoking were positively associated with making a quit attempt at follow-up while reporting enjoying smoking at baseline was negatively associated with making a quit attempt at follow-up. Time to first cigarette and age of starting smoking were positively associated with success of quit attempts.

Conclusions: Motivation and behaviours relating to smoking cessation are prevalent and fairly stable over time. Different factors appear to be related to attempts to stop and the success of those attempts. Interventions to increase smoking cessation in the population should take account of this.

The health benefits of smoking cessation are well established^{1,2}. It is also known that a majority of smokers would like to stop and indeed attempt to stop many times^{3,4}. The large majority of quit attempts take place without professional support, for example from a smokers clinic⁴. Our understanding of self-quitting is far from complete. This report describes analyses from a longitudinal study examining factors that predispose towards making quit attempts and factors that affect the chances of success of quit attempts. Recently, interest has also increased in smoking reduction and switching to low tar cigarettes in the attempt to mitigate the harm done by smoking⁵. The study examined the prevalence of attempted harm minimisation strategies and the relationships between these and subsequent cessation.

The present study involved measurement of a range of variables that may be expected to influence smoking cessation. A distinction may be made between factors that influence attempts to stop smoking and those that influence the chances of success of quit attempts. Cessation rates are lower in more deprived socio-economic groups⁶⁻⁸ and lower educational levels⁸⁻¹⁰ and this appears to reflect both attempts to stop and the success of those attempts. The chances of success of quit attempts are lower in those who live with smokers versus non-smokers, and those who live alone versus with a partner¹¹⁻¹³. There is some evidence that younger age of starting smoking is associated with a reduced probability of cessation¹⁴. In general social support has been shown in some studies to be linked with success of attempts to stop⁹. Conversely, spending more time in the company of smokers appears to be related to lower success rates in quit attempts^{7,15,16}. There is some evidence that women find it harder to stop than men^{11, 15,17} but other studies have failed to find this effect^{4,18}. Some studies have

found that younger smokers are more likely to make a quit attempt¹⁰ but older smokers may be more likely to be successful in attempts to stop smoking^{7,10}. Having managed to go a long time without smoking in recent years has been shown in some studies to be related to success of attempts to stop¹⁹. It has also been suggested that having children at home may affect desire to stop and success at stopping²⁰. As one would expect, stated intentions to stop and desire to stop are related to subsequent quit attempt⁹. The concept of 'readiness to change' behaviours has been formalised in the stages/cycle of change model²¹ and there is consistent, though unsurprising, evidence to indicate that smokers who are at a stage that is closer to the actual behaviour of stopping smoking are more likely to be ex-smokers at follow up²². As one would expect, attempts to stop smoking are a function of the perceived adverse effects of smoking and smoking cessation as well as the perceived benefits^{6,8,23,16,24}. There is some evidence that confidence in success may affect attempts to stop or the success of those attempts^{9,25,26}. Amount smoked has consistently been shown to predict failure of attempts to stop smoking¹⁹ as have questionnaire measures of dependence^{16,7,22}.

Most of the above research has examined cessation in the context of specific interventions. These range from work-site smoking bans to trials of nicotine replacement therapies. Clearly the special characteristics of the samples may influence the results. Surprisingly little data are available from population surveys. The present study examined the variables concerned in a general population sample.

With increased interest in smokers' attempts at harm minimisation, there has been some research into whether cutting down may affect subsequent quitting behaviour⁴. One may argue that cutting down could reduce the chances of a quit attempt because

the imperative to stop is reduced; or it may increase the chances because it demonstrates that control can be gained over the behaviour. With regard to success at stopping, cutting down may reduce the chances because each cigarette becomes more rewarding or it may increase the chances if it is associated with reduced nicotine intake²⁷. One may also find an association between cutting down and subsequent stopping smoking because both reflect a continuing desire to improve one's health.

Relatively little information is available on the stability of motivations and intentions about stopping smoking and smoking behaviours themselves. There is evidence that past quit attempts predict future ones⁹. Some studies have examined how far smokers remain in or move between 'stages of change' in relation to smoking behaviour but the definitions of these stages make it difficult to interpret the results in terms that can be readily understood in everyday terms. The present study provided an opportunity to examine the stability of desire to stop smoking, intention to stop, attempts to cut down and attempts to stop.

Thus the present study reports findings relating to:

1. Prevalence of motives and behaviours relating to cessation and attempts at harm reduction
2. The stability of these behaviours over a 12 month period
3. Demographic, social, behavioural and psychological predictors of attempts to stop smoking
4. Demographic, social, behavioural and psychological predictors of success of attempts to stop smoking

Methods

Sample and procedures

Out of a sample of 1911 smokers identified in a survey in April/May 1996, a total of 1012 smokers at the time of the first survey were followed up one year later.

In the first survey, 1911 smokers were interviewed face-to-face in their homes during Spring and early Summer of 1996. The sample was selected to be representative of the adult population. A random probability sampling technique was employed using postcodes in England and Wales as the basic sampling frame. Three hundred postcode sectors were selected with a probability proportional to population after stratification by local authority and social class indicators. Within each postcode sector one address was selected at random and then every 15th address subsequently with a total of 38 addresses being selected in each postcode sector (giving a total of 11400 households).

At least four attempts were made to contact a responsible adult (16+) at each address. Where contact was made (successful contact was made with 81% of all valid addresses) demographic details, and details of smoking habits were collected for each adult in the household.

In households where it was established that one current smoker or recent ex-smoker (given up in the past 6 months) existed (N=3133), a further interview was attempted. Where there was two or more, the one with the most recent birthday was selected and the interview attempted. The response rate was 61% among households where there was a smoker or recent ex-smoker present.

One year after the initial interview an attempt was made to re-contact the sample for a follow-up interview. A total of 301 respondents had moved or died. No contact was achieved in 132 cases. A total of 1012 usable interviews were conducted (68% of the contactable cases).

The fieldwork was carried out by BMRB International.

Appendix A describes the measures used in this report.

Table 1 shows the demographic characteristics and smoking behaviour of the sample followed up and those not followed up. Those followed up were older, more likely to be married, less likely to be unemployed and less likely to be from manual social classes. They were more likely to have partners that objected to their smoking. However, there were no differences in terms of smoking behaviour or intentions about stopping smoking.

Table 1 here

Results

The results are presented in terms of answers to key research questions posed at the start of the study.

Prevalence of motives and desires relating to smoking cessation

1. What proportion of smokers make an attempt to stop smoking over a one

year period?

31% (309) of the 1012 smokers contacted at follow up reported making a failed quit attempt or were ex-smokers by the second survey. This was made up of 10% (104) who had made a failed quit attempt, 11% (106) who reported that they were currently trying to quit and 10% (99) who reported that they were not current smokers.

2. What is the medium term quit rate?

A total of 167 (17%) of the smokers at baseline made a quit attempt 3 to 12 months before the follow-up survey. Of these, 54 (5% of all the original smokers and 29% of those made a quit attempt 3 to 12 months ago) were not smoking at the time of the second survey.

3. How much variation is there in daily cigarette consumption among smokers over a one-year period?

This analysis was limited to smokers of manufactured cigarettes at both time points. A large number of smokers smoked hand rolled cigarettes at one or both time points and these were excluded because of the difficulty of determining equivalence between amount of tobacco used and manufactured cigarettes per day. Among 661 smokers of manufactured cigarettes at both time points the mean cigarette consumption in this group was 16.1 per day in both surveys. The mean absolute variation between the two periods was 4.1 cigarettes per day and the Pearson correlation between cigarettes per day in the two time periods was 0.66 ($p < .001$).

4. Are smokers who make an attempt to stop smoking in one year more likely to make another attempt the following year?

This analysis was restricted to smokers who were not currently making a quit attempt

at the time of the first survey. This was to avoid the possibility of a tautological relationship between measures of quit attempts in the two time periods (because the baseline quit attempt may have extended into the follow-up period). There were 865 smokers not currently making an attempt to stop at the time of first survey of which 23% had made an attempt in the previous 12 months. Those who had made a quit attempt prior to the first survey were 2 times more likely to make another quit attempt in the following 12 months than those who had not (40.7% vs 16.5%), $\chi^2=55.3$, $p<.001$.

5. What is the prevalence of switching to low-yield brands over a one-year period?

Of 661 smokers who were smokers of manufactured cigarettes at both surveys, 7% said they had switched to a low tar brand in the second survey.

6. What proportion of smokers make a deliberate attempt to cut down in a one year period?

Of the 1012 smokers at baseline, 51% (518) said at follow-up they had attempted to cut down in the preceding year. Of the 683 respondents who were smoking manufactured cigarettes at follow-up (some of whom had been smoking hand-rolled cigarettes at baseline), those who said that they had tried to cut down reported a daily consumption of 14.9 cigarettes per day ($SD=7.2$) compared with 16.9 cigarettes per day ($SD=9.8$) among those who did not say they had cut down, $F=9.2$, $p<.005$.

7. In what proportion of cases is cutting down seen as a prelude to cessation?

Of the 518 smokers who attempted to cut down in the 12 months prior to the first survey, 43% ($N=222$) said this was as a prelude to cessation. Note that any smokers

who cut down then managed to stop altogether were not included because the question was only asked of continuing smokers.

8. Are smokers who make an attempt to cut down in one year more likely to make an attempt to cut down in the next?

Of the 913 respondents who were smokers in both surveys, cutting down in the first survey was predictive of cutting down in the second survey (53% vs 31%, $\chi^2=48.4$, $p<.001$).

9. What is the stability of desire to stop, intentions to stop?

Of the 913 respondents who were smokers in both surveys, those who wanted to stop in the first survey were 3 times more likely to say they wanted to stop in the second than those who did not, $\chi^2=206.3$, $p<.001$. Thus 70% of those who wanted to stop in the first survey also wanted to stop at follow-up compared; while only 24% of those who did not want to stop in the first survey wanted to stop at follow-up. Note that this analysis excludes smokers who managed to stop by the time of the second survey.

Of those who were smokers in both surveys, those who intended to stop within the next 12 months were nearly 4 times more likely to intend to stop in the next 12 months at the follow-up survey, (54% vs 15%, $\chi^2=155.1$, $p<.001$). Again, it should be noted that smokers who stopped by the second survey were necessarily excluded.

10. What factors measured in the baseline survey are associated with making an attempt to stop smoking in the following year?

Table 2 shows bivariate associations of predictor variables and attempt to stop smoking in those who were smoking at baseline and not currently making a quit attempt. The analyses were limited to the 865 smokers not currently making an attempt to stop at the time of the baseline survey. This was to avoid contamination of the dependent variable by that quit attempt. Of the 865, 221 reported having made at least one quit attempt in the previous 12 months when asked at the follow-up survey. It is apparent that previous quit attempts and attempts to cut down as a prelude to cessation predicted future quit attempts, as did desire to quit and beliefs about the damaging health effects of smoking. Interestingly, cutting down for its own sake was not associated with subsequent quit attempts. Enjoyment of smoking was negatively associated with subsequent quit attempts.

Table 2 here

11. What is the best model of this process?

These analyses were limited to 865 smokers who were not in the process of making an attempt to stop smoking at the time of the first survey of whom 221 subsequently made a quit attempt in the following 12 months.

To gain a better understanding of the process that may be involved in making a quit attempt, we undertook a forward stepwise regression in which variables representing three kinds of factor were included as potential predictors of attempts to stop smoking at follow-up: beliefs about health risks, enjoyment of smoking and social pressure.

Beliefs about health risks were represented by the ratings of current health effects, future health effects and that there are worse things than smoking (see Table 2). Enjoyment was represented by the rating of endorsement of the statement about enjoying smoking too much to stop. Social pressure was represented by the rated endorsement of the statement that the respondent's partner would prefer them not to smoke. Note that behavioural indices of motivation to stop such as past quit attempts, cutting down as a prelude to cessation and intention to stop were not included because the aim was to obtain an understanding of the beliefs and influences behind quit attempts.

Tables 3

A forward stepwise multiple regression revealed that enjoyment of smoking and beliefs about the future health effects of smoking and perception that their partner wanted them to stop independently predicted quit attempts at follow-up (Table 3). A similar result was obtained when a backwards stepwise regression was used.

12. What factors in the baseline survey are associated with success of attempts to stop smoking (defined as lasting three or more months)?

Table 4 shows the bivariate associations between baseline factors and success of attempts to stop. This involved a series of logistic regressions using only the 167 respondents who had made a quit attempt at least three months ago. It included those who were smokers but were making a quit attempt at the time of the first survey. Successes were those that were still not smoking (N=54). Success at quitting was lower in heavier smokers, who started smoking at an earlier age, who had their first

cigarette of the day soon after waking and who believed that withdrawal symptoms were a problem for them.

Table 4 here

13. What is the best model of this process?

A forward stepwise logistic regression involving all the variables that had shown a bivariate relationship with success at stopping smoking (see Table 4) revealed two which were independently associated with success at stopping: time to first cigarette of the day and age of starting smoking (Table 5). A similar result was obtained with a backwards stepwise regression.

Table 5 here

Discussion

The results indicate that attempts to stop smoking and reduce the harm from smoking are remarkably common. These behaviours are also quite stable from one year to the next as is motivation to stop smoking. Daily cigarette consumption is relatively stable but perhaps not as stable as might be thought. Attempts to stop smoking come under the control of different factors than those that influence the success of those attempts. Beliefs about the health effects of smoking, enjoyment of smoking and pressure from one's partner appear to be important in attempts to stop while behavioural markers of dependence are related to success of those attempts. We did not find that confidence in success was independently related to attempts to stop or success of attempts. Gender was not associated with stopping smoking.

The percentage of smokers achieving cessation for at least 3 months (29% of those making a quit attempt) is in line with some previous surveys but not others. Gritz et al²⁸ found a 6 month abstinence rate of 27% in a cohort of smokers attempting to stop whereas Hughes et al²⁹ found 11% reporting abstinence for 3 months after the quit date. Differences may be accounted for by differences in what counts as a quit attempt and exactly how abstinence is defined. The issue of population quit rates and deriving consistent indices of these requires further research.

These findings are unusual in enabling a distinction to be made between attempts to stop and success of those attempts and they indicate the need to distinguish between these two aspects of the process. They suggest that efforts to induce more quit attempts should continue to communicate about the health effects of smoking, and perhaps address issues of enjoyment and social support. To improve the success of attempts to stop, attention needs to be paid to dependence issues. It should be noted, however, that this study did not examine all the possible factors that might come into play.

This study was limited in several respects. First of all, 32% of those contactable did not respond to the follow-up survey. However, those that responded did not differ from non-respondents in terms of smoking-related variables and where they did differ (e.g. in social class) this would result in a restricted range of values that would militate against showing associations. Nevertheless, the issue of representativeness of the sample as a whole must be considered. It is reasonable to assume that in general smokers who are more interested in cessation may be more likely to respond. Thus the survey may well overestimate motivation and behaviour relating to smoking cessation.

It is noteworthy that females were over-represented in the sample. This would arise out of the fact that women would be more available for interview. A second issue is that there is no agreed-upon definition of what constitutes a quit attempt and it is likely that respondents construed this in various ways. This would have added noise to the data and would not undermine the validity of positive associations that were found. Thirdly, there was no biochemical verification of smoking status. However, in surveys of this kind (as opposed to intervention trials) there is very little deception³⁰. The definition of success at stopping was to some extent arbitrary including people who would subsequently have resumed smoking and those that would become permanent ex-smokers. However, a cut-off had to be drawn at some point and it had to include enough people who had made a quit attempt sufficiently long ago that their data could be used. At present there are no data to suggest that different factors are linked to relapse to smoking after three months than in the early part of the quit attempt.

A further issue concerns the ability of respondents to recall their quit attempts. It is likely that the longer ago these were the less likely they were to be recalled, particularly if they only lasted a short period. This would lead to an underestimate of the number of quit attempts and an overestimate of the success rates from quit attempts. In fact this seems likely to have been the case because a success rate of more than 30% for 3 months or more is more than three times what has been found in prospective studies of self-quitting³¹. Figure 2 shows the proportions of smokers at each survey who said their most recent quit attempt was in each of the 12 months leading up to the survey. There is evidence of a large peak 4 months prior to the surveys which would correspond to the new year. There was another peak 2 months

before that in November of both years. This coincides with the budget at which tax increases on cigarettes are announced. There were also peaks at 0 and 12 months ago which probably reflect quantising error (in the same way that cigarettes per day typically clusters around multiples of 5). Apart from that there is evidence of a trend towards fewer quit attempts the further back one goes and this suggests a forgetting effect. It is also possible, however, that this is a genuine phenomenon in which less quitting goes on in the summer months.

Figure 1 here

If quit attempts are being forgotten then their actual frequency must be remarkably high, the more so given that some smokers try to stop several times in a given year.

Surveys of this kind are essential in tracking changes in cessation patterns and can in principle be used to provide indicators enabling the effects of national or regional policies to be assessed. However, further thought needs to be given to ways of collecting the necessary data. For this study, certain simplifications and assumptions had to be made and the results, while useful for examining correlates of quitting behaviours, are weak in terms of estimating the prevalence of those behaviours.

To obtain reliable indicators of incidence of attempts to stop smoking a rolling programme of surveys on a month by month basis could be mounted asking only about attempts to stop in that month. This should minimise any forgetting bias. To assess the success rates of quit attempts it will be important to include current and ex-smokers in the sampling. A criterion of duration of abstinence necessary to count as

an ex-smoker will need to be decided upon; 12 months' continuous abstinence would seem sensible. Thus the survey could identify each month a sample of people who were smokers 12 months ago and establish what proportion stopped in that month the previous year and have not smoked since. Thus for each month one would have the incidence of quit attempts in that month and the incidence of successful quitting for the corresponding month one year ago. After one year of surveying, it would be possible to match the quitting figures with the attempt to stop figures to establish the success rate.

Conclusion

This study found that there was a fair amount of consistency in smokers' motivation and behaviour relating to stopping smoking and attempts at harm reduction over a 12 month period. Different factors appeared to come into play in generating quit attempts versus the success of those attempts. Continuing to communicate the health effects of smoking may be a useful strategy in generating quit attempts. In addition, it may be important to address smokers' perceived enjoyment of smoking and to utilise social pressures. However, tackling the problem of dependence is important in converting quit attempts into lasting abstinence.

References

1. Doll, R., Peto, R., Wheatley, K., Gray, R. & Sutherland, I. Mortality in relation to smoking: 40 years' observation on male British doctors. *British Medical Journal*, 1994; **309**: 901 - 911.

2. US Department of Health and Human Services. *The health consequences of smoking cessation: a report of the US Surgeon General*. Rockville (MD): Public Health Service, Office on Smoking and Health, 1990.
3. Office for National Statistics. *Living in Britain: Results from the 1996 General Household Survey*. London, The Stationary Office, 1997.
4. West, R., McEwen, A. & Bates, C. *Sex & Smoking: Comparisons between male & female smokers*. London: No Smoking Day, 1999.
5. Hughes, J. Reduced Smoking: An Introduction and Review of the Evidence. *Addiction*, in press, 1999.
6. Hymowitz, N., Cummings, K., Hyland, A., Pechacelk, T. & Hartwell, T. Predictors of smoking cessation in a cohort of adult smokers followed for five years. *Tobacco Control*, 1997; 6 (Suppl.), S57 - S62.
7. Richmond, R., Kehoe, L. & Webster, I. Multivariate models for predicting abstinence following intervention to stop smoking by general practitioners. *Addiction*, 1993; **88**: 1127-1135.
8. Wilcox, N., Prochaska, J., Velicer, W. & DiClemente, C. Subject characteristics as predictors of self-change in smoking. *Addictive behaviors*, 1985; **10**: 407-412.
9. Borland, R., Owen, N., Hill, D. & Schofield, P. Predicting attempts and sustained

- cessation of smoking after the introduction of workplace smoking bans. *Health Psychology*, 1991; **10**: 336-342.
10. Hatziafreu, E., Pierce, J., Lefkopoulou, M. et al Quitting smoking in the United States in 1986. *Journal of the National Cancer Institute*, 1990; **82** (17): 1402 - 6.
11. Gourlay, S., Forbes, A., Marriner, T., Pethica, D. & McNeil, J. Prospective study of factors predicting outcome of transdermal nicotine treatment in smoking cessation. *British Medical Journal*, 1994; **309**: 842-846.
12. Office for National Statistics *Living in Britain: Results from the 1994 General Household Survey*. London, The Stationary Office, 1996.
13. Senore, C., Battista, R., Shapiro, S., Segnan, N., Ponti, A., Rosso, S. & Aimar, D. Predictors of Smoking Cessation Following Physicians' Counselling. *Preventive Medicine*, 1998; **27**: 412 - 421.
14. Chen, J. & Millar, W. Age of smoking initiation: implications for quitting. *Health Reports*, 1998; **9**: 39-46.
15. Hebert, J., Kristeller, J., Ockene, J., Landon, J., Luippold, R., Goldberg, R. & Kalan, K. Patient characteristics and the effect of three physician-delivered smoking interventions. *Preventive Medicine*, 1992; **21**: 557-573.
16. Richmond, R., Austin, A. & Webster, I. Predicting abstainers in a smoking

cessation programme administered by general practitioners. *International journal of Epidemiology*, 1988; **17**: 530-534.

17. Jacobsen, B. *The Ladykillers: Why Smoking is a Feminist Issue*. London, Pluto Press, 1981.
18. Jarvis, M. Gender and Smoking: Do Women Really Find it Harder to Give Up? *British Journal of Addiction*, 1984; **79**:383 - 387.
19. Farkas, A., Pierce, J., Zhu, S., Rosbrook, B., Gilpin, E., Berry, C. & Kaplan, R. Addiction versus stages of change models in predicting smoking cessation. *Addiction*, 1996; **91**: 1281-1292.
20. Hibbard, H. Social roles as predictors of cessation in a cohort of women smokers. *Women and Health*, 1993; **20**: 71 - 79.
21. DiClemente, C., Prochaska, J., Fairhurst, S., Velicer, W., Velasquez, M. & Rossi, J. The process of smoking cessation: an analysis of precontemplation, contemplation and preparation stages of change. *Journal of Consulting and Clinical Psychology*, 1991; **59**: 294-304.
22. Rohren, C., Croghan, I., Hurt, R., Offord, K., Marusic, Z. & McClain, F. Predicting smoking cessation outcome in a medical centre from readiness: contemplation versus action. *Preventive Medicine*, 1994; **23**: 335-344.

23. Hu, S. & Lanese, R. The applicability of the theory of planned behavior to the intention to quit smoking across workplaces in southern Taiwan. *Addictive Behaviors*, 1994; **23**: 225-237.
24. Velicer, W., DiClemente, C., Prochaska, J. & Brandenburg, N. Decisional balance measure for assessing and predicting smoking status. *Journal of Personality and Social Psychology*, 1985; **48**: 1279-1289.
25. Gulliver, S., Hughes, J., Solomon, L. & Dey, A. An investigation of self-efficacy, partner support and daily stress as predictors of relapse to smoking in self-quitters. *Addiction*, 1995; **90**: 767 - 772.
26. Haaga, D. Issues in relating self-efficacy to smoking relapse: importance of an 'Achilles' heel' situation and prior quitting experience. *Journal of Substance Abuse*, 1990; **2**: 191-200.
27. Benowitz, N., Jacob, P., Kozlowski, L. & Yu, L. Influence of smoking fewer cigarettes on exposure to tar, nicotine, and carbon monoxide. *New England Journal of Medicine*, 1986; **315**: 1310 - 3.
28. Gritz, E., Carr, C., & Marcus, A. (1988). Unaided smoking cessation: Great American Smokeout and New Year's Day Quitters. *Journal of Psychosocial Oncology*, **6**, 217-234.
29. Hughes, J. R., Gulliver, S. B., Fenwick, J. W., Valliere, W. A., Cruser, K., Pepper,

S., Shea, P., Solomon, L. J., & Flynn, B. S. (1992). Smoking cessation among self-quitters. *Health Psychology*, **11**, 331-4.

30. Prescott-Clarke P, Primatesta P, eds. Health Survey for England 1996. London: The Stationery Office, 1998

31. Hughes, J., Gulliver, S., Fenwick, J. et al. Smoking cessation among self-quitters. *Health Psychology*, 1992; **11**: 331 - 334.

Table 1: Comparison of sample followed up and not followed up

	Followed up	Not followed up
	N=1012	N=899
Percent manual occupational group*	58	64
Percent male	44	45
Mean (SD) age (yrs)*	44 (15.6)	41 (16.2)
Percent married or living with partner*	60	53
Percent unemployed*	7	11
Mean (SD) age completing education (yrs)	16.0 (1.7)	16.1 (1.7)
Percent with children under 16 living at home	37	35
Percent who smoke within 30 minutes of waking	59	56
Mean (SD) cigarettes per day	15.7 (8.7)	15.4 (8.8)
Mean (SD) age when started smoking	16.7 (5.2)	16.6 (4.9)
Percent who tried to stop smoking in past 12 months (but not currently trying)	25	23
Percent managed more than 4 weeks without a cigarette in past 5 years	27	31
Percent who cut down in past 12 months	51	50
Percent who intend to stop smoking in next 12 months	46	46
Mean (SD) desire to stop smoking (1-5)	1.6 (1.7)	2.7 (1.7)
Percent whose partner objects to their smoking*	35	28
Mean (SD) confidence of success in stopping (1-4)	2.4 (0.9)	2.5 (0.9)
Mean (SD) rating of effect of smoking on current health (1-4)	3.5 (1.0)	3.5 (1.0)
Mean (SD) rating of effect of smoking on future health (1-4)	3.7 (1.4)	3.8 (1.4)
Mean (SD) rating that there are worse things than smoking (1-5)	3.0 (1.6)	2.9 (1.6)
Mean (SD) rating that enjoy smoking too much to stop (1-5)	3.5 (1.4)	3.4 (1.4)
Mean (SD) rating that could not stop smoking because of withdrawal symptoms (1-5)	3.0 (1.5)	2.9 (1.4)
Mean (SD) rating that cigarettes give confidence in social situations (1-5)	2.9 (1.5)	2.9 (1.5)
Mean (SD) rating that giving up smoking would lead to unacceptable weight gain (1-5)	3.2 (1.5)	3.1 (1.5)
Mean (SD) rating that could not cope without cigarettes (1-5)	2.8 (1.5)	2.7 (1.4)
Mean (SD) rating that smoking is main source of pleasure (1-5)	2.7 (1.5)	2.8 (1.5)

*difference between those followed up and not followed up by chisquared (percents) or t-test (means), p<.05 2-tailed.

Table 2: Prediction of attempts to stop smoking measured at 12-month follow up: bivariate associations (N=865)

Predictor (Measured at baseline)	Odds ratio	Signif
Social class	1.07	ns
Sex	0.79	ns
Age	1.00	ns
Marital status or living with partner	1.22	ns
Unemployed	0.99	ns
Age completing education	1.02	ns
One or more children under 16 living at home	0.91	ns
Time to first cigarette of the day	1.08	ns
Cigarettes per day	0.99	ns
Age when started smoking	1.02	ns
Whether tried to stop smoking in past 12 months	3.49	P<.001
Longest time gone without smoking in past 5 years	1.20	P<.001
Whether cut down in past 12 months	1.62	P<.005
Whether cut down in the past 12 months 'as a first step to cessation' vs not cutting down	3.30	P<.001
Whether cut down in the past 12 months for its own sake vs not cutting down	1.09	ns
Whether intend to stop in next 12 months	2.26	P<.001
How much want to stop smoking	1.44	P<.001
Whether partner objects to smoking (vs with no partner or partner does not mind)	1.58	P<.005
Confidence of success in stopping	0.93	ns
Belief about effect of smoking on current health	1.20	P<.05
Belief about effect of smoking on future health	1.15	P<.05
Belief that there are far worse things for self than smoking	0.87	P<.05
Belief that enjoy smoking too much to stop	0.74	P<.001
Belief that could not stop smoking because of withdrawal symptoms	0.94	ns
Belief that cigarettes give confidence in social situations	0.99	ns
Belief that giving up smoking would lead to unacceptable weight gain	0.97	ns
Belief that could not cope without cigarettes	0.92	ns
Belief that smoking is main source of pleasure	0.93	ns

Note: Odds ratios (OR) are chances in odds of making a quit attempt for each unit increment in the predictor variable from logistic regressions (e.g. for the belief that enjoy smoking too much to stop, the OR is change in odds for each one point difference on the 5-point belief scale).

Table 3: Final model from forward stepwise regression of predictors of attempts to stop smoking (N=865)

Variable	Odds ratio	Signif
Belief about effect of smoking on future health	1.20	P<.05
Belief that enjoy smoking too much to stop	0.73	P<.001
Whether partner objects to smoking	1.53	P<.05

Note: Other variables excluded from the model were: belief that there are far worse things for self than smoking and belief about effect of smoking on current health

Table 4: Prediction of success of attempts to stop smoking: bivariate associations (N=167)

Predictor	Odds ratio	Signif
Social class	0.77	p<.05
Sex	0.79	ns
Age	1.02	ns
Marital status	1.90	ns
Employment status	0.98	ns
Age completing education	1.04	ns
Children under 16 living at home	0.98	ns
Time to first cigarette of the day	1.38	p<.005
Cigarettes per day	0.95	p=.05
Age when started smoking	1.08	p<.01
Whether tried to stop smoking in past 12 months	0.38	p<.02
Longest time gone without smoking in past 5 years	1.08	ns
Whether cut down in past 12 months	0.90	ns
Whether cut down in the past 12 months 'as a first step to cessation' vs not cutting down	0.59	ns
Whether cut down in the past 12 months for its own sake vs not cutting down	1.30	ns
Whether intend to stop in next 12 months	0.73	ns
Whether wants to stop smoking	0.77	ns
How much want to stop smoking	0.93	ns
Whether partner objects to smoking	1.84	ns
Confidence of success in stopping	0.84	ns
Belief about effect of smoking on current health	0.74	ns
Belief about effect of smoking on future health	0.95	ns
Belief that there are far worse things for self than smoking	1.16	ns
Belief that enjoy smoking too much to stop	0.84	ns
Belief that could not stop smoking because of withdrawal symptoms	0.76	p<.05
Belief that cigarettes give confidence in social situations	0.88	ns
Belief that giving up smoking would lead to unacceptable weight gain	1.07	ns
Belief that could not cope without cigarettes	0.86	ns
Belief that smoking is main source of pleasure	1.00	ns

Table 4: Final model from forward stepwise logistic regression predicting success of attempts to stop smoking (N=167)

Predictor	Odds ratio	Signif
Time to first cigarette of the day	1.36	p<.005
Age when started smoking	1.07	p<.02

Figure 1: Percentage of reported quit attempts in each of 12 months preceding the baseline and follow-up surveys

Appendix A: Measures Used

Variable	Measure
Social class	Based on occupation of chief income earner, I professional, II managerial, III clerical, IV skilled manual, V semi-skilled manual, VI unskilled manual
Sex	Male=2, Female=1
Age	Years
Marital status	Married or living with partner=2, single, divorced or widowed=0
Unemployed	Currently unemployed and seeking work=1, other=0
Age completing education	Responses in categories: 14 or less, 15, 16, 17-19 (coded as 18), 20+ (coded as 21)
Children under 16 living at home	Are there any children under 16 living in the household? Yes=1, No=0
Time to first cigarette of the day*	How soon after waking do you normally smoke your first cigarette of the day? 1=within five minutes, 2=within 15 minutes, 3=within 30 minutes, 4=within 1 hr, 5=within 2 hrs, 6=more than 2 hrs
Cigarettes per day*	(Usual daily consumption on weekdays*5+usual daily consumption at weekends*2)/7 (manufactured cigarettes only)
Age when started smoking regularly?	How old were you when you first started to smoke cigarettes regularly? Years
Whether tried to stop smoking in past 12 months	In the last 12 months have you tried to give up smoking altogether? Yes=1, No=0
Longest time gone without smoking in past 5 years	Not counting any times when you have been ill or in hospital, what is the longest time you have ever gone without smoking over the past 5 years? 1=have not stopped, 2=less than a day, 3=a day, 4=up to a week, 5=up to 4 weeks, 6=up to 3 months, 7=up to 6 months, 8=up to 12 months, 9=longer
Whether cut down in past 12 months*	Within the last 12 months, have you ever cut down on the amount you smoke? Yes=1, No=0
Whether cut down as a prelude to cessation	Were you cutting down as a first step towards stopping smoking or were you just cutting down? First step to stopping=1, Just cutting down=0
Whether switched to lower tar brand in past 12 months	Have you tried to change to a lower tar cigarette in the last 12 months? Yes=1, No=0
Whether intend to stop in next 12 months*	Shown card and endorsed statement 'I intend to give up smoking within the next (period up to 12 months)'. Yes=1, No=0

How much want to stop smoking*	Do you want to give up smoking altogether? No=1. If Yes, How much do you want to give up smoking altogether? 2=a little, 3=a fair amount, 4=quite a lot, 5=very much indeed.
Whether partner objects to smoking	As far as you can say which if any of the statements on this card would your partner agree with regarding your smoking? 'Would prefer it if I didn't smoke' or 'hates me smoking and wants me to stop'=1, otherwise=0
Confidence of success in stopping	If you decided to give up smoking altogether in the next few months, how likely do you think you would be to succeed? 1=very unlikely, 2=fairly unlikely, 3=fairly likely, 4=very likely
Beliefs about effect of smoking on current health	How much if at all do you think the amount you smoke affects your health now? 1=Not at all, 2=just a little, 3=a fair amount, 4=a great deal
Beliefs about effect of smoking on future health	How much if at all do you think the amount you smoke will affect your health in the future? 1=Not at all, 2=just a little, 3=a fair amount, 4=a great deal
Belief that there are far worse things for self than smoking	'There are things which are far worse for me than smoking', 1=Strongly disagree to 5=strongly agree.
Belief that enjoy smoking too much to stop	'I enjoy smoking too much to give it up', 1=Strongly disagree to 5=strongly agree.
Belief that could not stop smoking because of withdrawal symptoms	'I don't think I could give up smoking because I would suffer too much from withdrawal symptoms', 1=Strongly disagree to 5=strongly agree.
Belief that cigarettes give confidence in social situations	'I feel more confident in social situations if I have a cigarette', 1=Strongly disagree to 5=strongly agree.
Belief that giving up smoking would lead to unacceptable weight gain	'If I tried to give up smoking I would probably put on too much weight', 1=Strongly disagree to 5=strongly agree.
Belief that could not cope without cigarettes	'I couldn't cope without cigarettes', 1=Strongly disagree to 5=strongly agree.
Belief that smoking is main source of pleasure	'Smoking is my main source of pleasure', 1=Strongly disagree to 5=strongly agree.
Attempt to stop smoking at follow-up	Code 1 if Yes to: 'Are you currently trying to give up smoking altogether?' or 'In the last 12 months have you tried to give up smoking altogether?' or No to 'Do you smoke cigarettes nowadays?'. Otherwise code 0.
Attempt to stop smoking in first 9 months of follow-up	

Code 1 if attempted to stop (see above) and reported that attempt was at least 3 months before follow-up interview. Code 0 otherwise.

Succeeded in attempt to stop smoking

In those that attempted to stop smoking in first 9 months of follow-up, code 1 if not currently smoking and not smoked for at least three months and 0 otherwise.

* Data used from baseline and follow-up surveys