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Usage of an Internet smoking cessation resource: the Australian QuitCoach

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Abstract

Introduction and Aims—The QuitCoach (www.quitcoach.org.au) is a tailored, Internet-delivered smoking cessation advice program. This paper compares QuitCoach users both with smokers in general, and with callers to a telephone-based smoking cessation service (the Victorian Quitline). It also explores patterns of QuitCoach usage by time of year and day of the week.

Design and Methods—Data are from responses to the QuitCoach online assessment collected between 2003–2007 ($n=28,247$). Comparison data are from the Victorian Quitline service, from the first five waves of the International Tobacco Control Four Country Survey, the 2004–05 National Health Survey, and from anti-smoking TARPS for Australia.

Results—QuitCoach users were more likely to be female and younger than both smokers in general, and Quitline users. They were intermediate in nicotine dependence. QuitCoach users are less likely to have just quit than Quitline callers. Half of QuitCoach users first use after setting a quit date. Usage is related to anti-smoking advertising and to day of week, being highest earlier in the week.

Conclusions—The QuitCoach successfully targets the moderately addicted. Use is sensitive to anti-smoking campaigns. There is a need for greater promotion of the QuitCoach as a resource with the capacity to meet the needs of those already quit and those still uncertain as to whether to try.

Keywords

Smoking cessation; expert systems; Quitlines; automated cessation assistance

Encouraging and supporting smokers to quit is a major public health priority as tobacco prematurely kills around half of those who smoke regularly.¹ There exist a range of effective strategies for facilitating smoking cessation from pharmaceutical aids, intensive cognitive-behavioural treatment programs, to self-help resources.^{2,3} A combination of pharmaceutical and cognitive-behavioural interventions provides the best outcomes for dependent smokers.² However, most smokers still try to quit unaided and have little interest in attending face to

face services.⁴ One solution to this has been the proliferation of Quitlines, telephone based services that provide cognitive-behavioural advice over the phone. The most effective such services are those that arrange a series of sessions where the advisor calls the smoker rather than relying on the smoker to call in.^{5,6} However, these services are only used by a small minority of smokers.⁷ Alternative ways of reaching smokers who might benefit from assistance are needed.

New communication and computing technologies have facilitated the development of smoking cessation programs that can provide automated, personally tailored information and monitor progress over time. These programs are a form of expert system, in that they automate and codify the knowledge of experienced smoking cessation expertise. Automated personalised advice programs have been shown to be effective.³ Delivered on the Internet, automated personalised advice programs can be readily accessed by large numbers of smokers in developed countries, provide immediate feedback, are anonymous (if desired), and can be delivered, cost-effectively, over the often extended period of time smokers may need help with making and sustaining behaviour change. In principle, they are likely to have a role in supporting smokers who need a little less help than can be provided by a trained advisor, but who can potentially benefit from structured advice. Such services may also be attractive to those who are diffident about talking to a counsellor/advisor. However, little is known about the characteristics of smokers who use such sites, including whether they are broadly representative of smokers in general.

The QuitCoach (www.quitcoach.org.au) is a tailored, Internet-delivered smoking cessation advice program, designed to replicate many of the core features of in-person multi-session cessation counselling. It provides detailed cognitive-behavioural support and advice on use of pharmacotherapy, tailored to answers users provide in an online assessment. It is designed to be used on multiple occasions, guiding the user through the process of smoking cessation in the manner of a life coach. An early non-Internet prototype of the QuitCoach, in which participants were telephoned for each assessment and mailed their tailored advice, was shown to be effective in a randomised trial.⁸

The QuitCoach has been available to the public as an Internet-based resource since early 2003, with the level of promotion increasing gradually. It has not been extensively promoted because of concerns about its capacity to cope with high levels of traffic, a problem resolved with a rebuilt system that went live in mid 2007. It is currently primarily promoted through Quit Victoria's website (www.quit.org.au) and the Australian government site (www.quitnow.info.au), which has been promoted on cigarette packs (as part of mandated health warning information on packs) since mid 2006.

The first aim of this paper was to characterise QuitCoach users both with respect to smokers in general and with respect to users of Quitline services, the main form of personalised advice available in Australia. Smokers who seek cessation assistance on the Internet may differ from those who seek assistance from alternative forms of help (e.g., Quitlines). Stoddard and Augustson⁹ found that American smokers using the Internet to search for smoking cessation assistance tended to be younger, more educated and more affluent than smokers not using the Internet. Those seeking assistance may also differ from those who do

not seek help. For example, Zhu et al.¹⁰ found that female smokers are more likely than men to use cessation assistance, that use of assistance increases with age, and that heavier smokers are more likely to use assistance than lighter smokers. Others have also found women more likely to use telephone quitlines.^{11,12}

A secondary aim was to explore how and when the QuitCoach is used. We hypothesized that usage would not be uniform throughout the year, but would increase in periods in which mass media campaigns encouraging quitting were broadcast. High levels of anti-smoking mass media advertising have been shown to be associated with an increase in calls to Quitlines¹³ however it is not known whether users of Internet sites are similarly responsive to the mass media.

Method

Measures

The QuitCoach—The information used in this paper comes from the standard QuitCoach smoking assessment database. The questions are answered by all users, and the answers used to tailor the advice provided. The eligible sample consisted of 28,247 users who completed at least part of the assessment. Data were collected from early 2003 when the site first went public, to June 2007, when it was replaced by a new version. The sample excluded those using the site for reasons other than smoking cessation (e.g., health professionals or those seeking information to help others quit), and those quit for greater than 6 months at first assessment. Over the last 5 months of use (Jan-May 2007), new users were coming at an average rate of almost 900 per month.

Data collected include gender and age; smoking status (with smokers defined as those smoking at least weekly); perspective on quitting (not planning, planning without a set date, having set a quit date and recently quit); recent quitting history; and dependence as measured by daily cigarette consumption and time to first cigarette of the day.

Comparison data set—For characterisation of smokers in general over the period in which the QuitCoach was available, we used weighted data (age and gender adjusted) from the Australian arm of the International Tobacco Control Four Country Survey (ITC-4). Weighting was to the age and gender distribution of the 2001 National Health Survey. Smokers were defined as those who had smoked more than 100 cigarettes in their life and smoked at least weekly at the time of the survey. We combined data from wave 1 (2002) to wave 5 (2006), resulting in a sample of 4143 smokers. In Australia, 79% of those found to be eligible after an initial screening agreed to complete the recruitment survey.¹⁴ At each subsequent wave, follow-up rates of approximately 70% were achieved. More details on the data collection methods and on the survey instrument can be found in Thompson et al.¹⁴

Quitline: The Victorian Quitline is a dedicated confidential telephone based service designed to help smokers quit smoking, and to provide information and assistance to people who want to support family members or friends to quit. Calls to the Quitline are answered by call centre operators, who offer the option of a ‘quit pack’, containing a stage-based self-help manual and information on other forms of available help, or a transfer to an advisor. Around

half of callers request to speak to an advisor. We used combined data from Quitline annual summary reports for the years 2005–2007 ($n=11,016$), restricted to callers who received at least one counselling call. Quitline data was available on gender, smoking status (with smokers defined as smoking at least weekly), cigarettes per day, current use of pharmacotherapy and whether ever tried to quit.

Health TARPs: Monthly anti-smoking Target Audience Rating Points (TARPs) from January 2004 to December 2006 for the five major Australian cities (Sydney, Melbourne, Adelaide, Brisbane and Perth), weighted by population distribution, were obtained from a media monitoring company. TARPs are a standard measure of the volume of television advertising weight scheduled to reach the target audience over a specified period of time. Estimates of advertising exposure are assessed using both television set monitoring devices and self-completion viewing diaries, providing an estimate of the percentage of households with televisions watching a program or advertisement in a media market over a specified time interval. Relevant tobacco control advertising included all government and NGO-sponsored anti-smoking advertising broadcast on free-to-air television (advertising of nicotine replacement therapy by pharmaceutical companies was not included).

Statistical analysis

Descriptive statistics were used to characterise each sample. Differences were determined using the Pearson's chi-square test for categorical variables and the independent sample t test for continuous variables. All effects reported were significant at the $p<.01$ level.

Results

Comparisons with smokers in general

Table 1 shows that a greater proportion of QuitCoach users were female than among smokers in general. Users were also somewhat younger, particularly being less likely to be over 55, but somewhat less likely to be less than 25. Not surprisingly, QuitCoach users were more likely to be daily smokers. Restricting the sample to daily smokers, QuitCoach users remained more likely to be female and younger. They were also more likely to be higher daily consumers and to smoke their first cigarette earlier in the day, indicating that they are somewhat more addicted than average. In addition, they were more likely to have previously tried to quit.

Comparison with Quitline users

Table 2 shows that a greater proportion of QuitCoach users than Quitline users were female. QuitCoach users were typically younger than the Quitline users, however, a smaller percentage of QuitCoach users were under 20 years of age.

Recent quitters were considerably more likely to contact the Quitline than use the QuitCoach. Approximately one-fifth (20.2%) of Quitline callers had already quit, compared with only 4.2% of QuitCoach users. Among current smokers, a similar proportion in both samples smoked daily.

Almost three-quarters (72.9%) of QuitCoach users were moderately addicted, smoking between 10 and 29 cigarettes per day, compared with 65.6% of the Quitline sample. Higher consumption smokers were more likely to use the Quitline, while the reverse was true for those smoking less than 10 per day. Consistent with this, Quitline callers were more likely to be using pharmacotherapy than users of the QuitCoach.

QuitCoach users were more likely to have previously tried to quit than Quitline callers.

When is the QuitCoach used in relation to quitting?

We next explored progress toward quitting reported at the initial QuitCoach visit. This analysis was restricted to current daily smokers (and those who were before they quit). Just over half (53.9%) had actually set a quit date, a further 41.5% were planning to quit in the next month, and only 4.6% were not planning to quit within the next month. Progress toward quitting varied somewhat as a function of user characteristics (see Table 3). Males were even less likely to use the site once they had set a date (or actually quit). Younger smokers (<25) were proportionately most likely to use when not actively planning to quit, as were those with no recent (or any) quitting experience. Light smokers were more likely than heavier smokers to use once quit.

Patterns of QuitCoach usage

Usage of the QuitCoach increased over the first 2 years it was available. There was considerable month-to-month variability (see Figure 1). This figure also graphs the monthly estimates of volume of anti-smoking advertisements on TV in Australia. This clearly shows that QuitCoach use was responsive to this indicator of external efforts to stimulate interest in quitting. Figure 2, also limited to the full years 2004–2006, shows that usage had peaked in January, May and June, months when high levels of advertising were common. Figure 2 also shows a drop-off in use at the end of the year, especially in December.

The only notable relationship between user characteristics and time of year was that females were marginally more likely to use in the first half of the year ($p<.001$). Overall, 62.4% of users in the first half of the year were women, compared with 60.9% in the second half, with some indication that females were particularly more likely to use the site during the peak periods of use in January (63.6%) and May (64.2%), and relatively less likely to visit the site in December (59.1%), when overall use was lower.

We found no evidence that those who used the site in peak usage periods were more likely to return to the QuitCoach, nor more likely to be quit when they returned (data not shown).

We also explored usage by day of the week and found a strong relationship (see Figure 3). Usage was highest earlier in the week (on Monday and Tuesday), and decreased to a third of that level by Saturday.

Finally, we explored use of other help, which was low, with only 1.5% using Quitline services concurrently at first visit, although this increased to 3.7% of those who sought a second assessment.

Discussion

The QuitCoach is typically used by current smokers of higher than average levels of nicotine dependence, although less addicted than those who seek help from a Quitline service. This is what we would expect and reflects appropriate targeting of the program. Also as expected, given the age of the Internet, younger smokers are more likely to use it, particularly those aged 25–44. The somewhat lower level of use by even younger smokers is notable and we speculate on possible reasons below.

Other findings were less expected. Female smokers are more likely to use the QuitCoach than the Quitline, and QuitCoach users were more likely to report previous quit attempts than smokers in general. The pattern of use may be partly explained by the fact that the QuitCoach is far less prominently promoted than the Quitline, meaning that those who use it have had to make a more active search for help. Thus the site is attracting those who are more likely to seek help: females and those with greater need.

There is evidence in the data that the patterns of use are partly driven by specific perceived needs of the users. Low consumption and very young smokers were overall less likely to use, perhaps because they are less likely to have had experiences that lead them to believe they need help. However, both of these groups were relatively more likely to first use the site after they had quit, suggesting that they tend to only begin to seek help once they experience difficulties. Further, smokers with no recent quitting experience were relatively more likely to seek out the site before actively planning to quit, presumably to help them make a decision as to whether to try and to find out what they might expect.

Some caution is required in interpreting the comparisons with other samples. The comparison groups are not from exactly the same population as QuitCoach users. Being a website, QuitCoach users can come from anywhere in the world. We now ask about place of residence, but did not do so until recently, so have no country of origin data. While data collected since the question was added suggest most users are from Australia, there are bound to be some from elsewhere. Similarly, Quitline data was from Victoria, a state with around a quarter of Australia's population. QuitCoach users may be more likely to come from Victoria as the site is promoted on Quit Victoria's site and not, at least at the time, on those of other state quit organisations. Further, the definitions of smoking status, although similar, were not identical. Thus it remains possible that some of the differences found are at least partly due to differences in the underlying populations, although these are unlikely to be of substance.

External activity that stimulates quitting activity increased the volume of users even though much of that advertising did not promote any website that linked to the program, and none directly promoted the program. We are reassured that those using in peak periods appear as committed to quitting as those using at other times. Usage peaked in January, May and June, coinciding with higher anti-smoking mass media advertising. It is possible that there is also a New Year effect. Related to this there is a clear day of week effect, with most use early in the week. This suggests that quitting activity may be associated with new starts: a new year, or more regularly, the start of a new week. Alternatively, it may be a function of the end of a

period of increased recreational indulgence. Both mechanisms are consistent with the drop off in use in December, which is a period of partying and celebrations in Australia, and an upsurge on Mondays. We do not know whether these patterns could be reversed with more promotional activity at the end of the week or year, but suspect a better strategy might be to focus encouragement to quit at the start of the week and particularly in the early part of the year, at least to avoid the lead-in to periods when interest may be lower.

QuitCoach users overwhelmingly start using the program while they are still smoking, with half of new users having already set a quit date. The percentage with a quit date is surprisingly high. West and Sohal¹⁵ recently reported that over half of all quit attempts in a UK population sample occurred spontaneously. Such smokers presumably would have no time to seek help from the QuitCoach before quitting, so spontaneous quitting must be underrepresented among users. The pattern of use suggests a primary motivation for an initial visit is a firm decision to quit and a need for some guidance in following through. This is in contrast to the Quitline, which attracts more smokers who have not yet committed themselves to a quit attempt, as well as a relatively high proportion who are already quit when they first use the service.¹⁶ This pattern of use is consistent with the QuitCoach not being as psychologically available as the Quitline as a resource to use both for planning attempts and for troubleshooting once quit. As continuing users of the QuitCoach (i.e., those with experience of what the site offers) mainly return after they have quit¹⁷, the problem appears related more to a lack of understanding of the ability of the QuitCoach to tailor its assistance to the needs of each individual, than to the incapacity of the QuitCoach to respond appropriately to the needs of those who have quit. Strategies to increase use of the QuitCoach, and indeed internet-based tailored advice programs in general, should promote the ability of these programs to provide useful advice for all, and their capacity to modify that advice in response to changing needs as the person progresses through the process of quitting.

Programs like the QuitCoach can complement other forms of assistance, particularly use of medication¹⁷ as this increases quit success.² They also have potential to complement other forms of coaching assistance. Currently only a very small percentage of QuitCoach users concurrently use quitlines (or other services).¹⁷ This may be desirable as the program is not currently integrated with the Quitline to provide consistent advice. However, if the demand was there, an integrated program of both personal counselling and automated advice could be developed.

Monitoring the usage of programs like the QuitCoach can be a useful indicator of population level impacts of programs and policy initiatives, something Quitline data is already used for.^{13,18} The patterns of usage suggest that to some degree users are choosing when to use based on their particular needs, but some forms of potential use, especially in making decisions to quit and in assistance once quit, are not currently drawing users to the program. There is a need to better educate smokers about the potential of interactive personalised programs like the QuitCoach to provide help throughout the quitting process.

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Figure 1.
Relationship between monthly QuitCoach usage and monthly anti-smoking TARPs, January 2004–December 2006.

Figure 2.
Frequency of QuitCoach use by month of the year, January 2004–December 2006.

Figure 3.
Average frequency of QuitCoach use by day of the week, January 2004–December 2006.

Table 1

Comparison of the QuitCoach sample and smoker population on demographic and smoking-related characteristics.

	Quitcoach	ITC-4
<i>All smokers</i>	<i>n</i> =27048	<i>n</i> =4143
Gender (% female)	61.8	45.0
Age group		
18–24	13.1 [#]	16.4
25–34	37.0	24.8
35–44	28.1	23.0
45–54	14.8	20.1
55+	7.0	15.7
% Daily smoker	97.0	89.8
<i>Daily smokers only</i>	<i>n</i> =26643	<i>n</i> =3722
Gender (% female)	61.4	45.0
Age		
18–24	13.2 [#]	15.7
25–34	36.9	24.1
35–44	28.0	23.4
45–54	15.0	20.5
55+	7.0	16.3
Cigarettes per day		
<10	10.5	12.1
10–19	35.9	36.0
20–29	38.1	34.6
30+	15.5	17.4
Time to first cigarette		
<5 minutes	24.0	20.5
6–30 minutes	46.4	47.1
31–60 minutes	17.2	17.5
>60 minutes	12.4	14.8
Ever tried to quit	87.8	82.7
Recency of previous quit attempt		
Today	2.7	0.1
Within a week	9.0	0.7
1 week – 1 month	7.5	3.9
1 month – 1 year	30.2	38.5
1–5 years	27.0	27.2
Never quit, or not in the last 5 years	23.5	29.8

	Quitcoach	ITC-4
Total ban on smoking inside the home	65.5	36.9

<25 years of age.

Table 2

Comparison of users of the QuitCoach and Quitline on demographic and smoking-related characteristics.

	QuitCoach	Quitline
Total sample	<i>n</i> =28247	<i>n</i> =11016
Gender (% female)	61.8	54.8
Age group		
<20	2.3	3.9
20 to 49	84.8	69.6
50+	12.9	26.5
Smoking status		
Smoker	95.8	79.8
Recently quit	4.2	20.2
Current smokers only	<i>n</i> =27048	<i>n</i> =8792
Daily smoker	98.5	98.1
Intention to quit		
Set a quit date	53.9	NA
Planning in the next 30 days (no quit date)	41.5	
Not planning in the next 30 days	4.6	
Cigarettes per day		
<10	11.8	9.7
10 to 29	72.9	65.6
30+	15.3	24.7
Current use of pharmacotherapy	22.2	27.2
Ever tried to quit	87.8	84.4

Note: NA = Not available

Table 3

Factors influencing the position in the quitting process for QuitCoach users at first visit.

	n	Not planning (n=1258)	Planning (n=11697)	Date set (n=14083)	Recently quit (n=1194)
Gender					
Male	10,797	4.9	44.4	47.2	3.5
Female	17,435	4.2	39.6	51.6	4.7
Age					
18–24	3702	7.2	49.3	40.1	3.4
25–34	10,434	3.6	39.2	53.2	4.0
35–44	7937	3.6	38.8	52.8	4.9
45–54	4188	5.1	42.7	48.1	4.1
55+	1971	5.9	46.4	42.8	4.9
Cigarettes per day					
<10	3508	5.0	43.8	42.4	8.8
10–19	9911	4.3	41.8	50.3	3.5
20–29	10,497	4.3	40.0	52.4	3.3
30+	4308	4.8	42.4	48.9	3.9
Recency of previous quit attempt					
In the last month	5201	2.2	42.2	55.6	NA
1–12 months	8132	3.6	42.2	54.2	NA
1–5 years	7208	4.7	41.1	54.2	NA
Not in the last 5 years	2992	6.4	49.3	44.3	NA
Never	3311	9.1	46.8	44.1	NA

Note: Percentages sum to 100% in each row.

NA = Not applicable.