



Smoking status of Australian general practice patients and their attempts to quit

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Abstract

This paper seeks to report on smoking rates, quit attempt methods and success rates among adult patients attending Australian general practice. A cluster cross-sectional survey was used to survey adult patients (18+), who attended Australian GPs in during 2002 and 2003. Over a quarter of patients (27.3%; 95% CI: 26.0–28.7) were former smokers and one in five (21.5%; 95% CI: 20.1–22.9) were current smokers. Ninety-two percent of former and 80% of current smokers used only one method in their last quit attempt with cold turkey the most common method used by both former (88%) and current (62%) smokers. Overall, success rates varied from 77% for cold turkey to 23% for bupropion. Success rates were re-analysed to consider quit attempts post-bupropion listing, with success rate for cold turkey reduced to 40% while bupropion remained reasonably constant at 21%. By tailoring smoking cessation interventions to a smokers' preparedness to quit, scope exists to increase the pool of smokers offered strategies that are more effective in achieving abstinence and avoiding relapse rather than relying on less effective self-quitting behaviours such as cold turkey.

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1. Introduction

Smoking remains one of Australia's largest health problems with over one-fifth of the population aged over 14 years smoking daily (Australian Institute of Health and Welfare, 2002). The health, social and economic consequences of smoking are significant. Tobacco smoking is the leading cause of drug related death and hospital separations in Australia; estimated in 1998 at 19,019 and 142,525 per annum respectively (Ridolfo & Stevenson, 2001). Tobacco accounts for around 10% of the burden of disease within Australia (Mathers, Vos, Stevenson, & Begg, 2001), and results in an economic cost to society of \$AUD21 billion (Collins & Lapsley, 2002). As a consequence of the harm caused by smoking, a key strategy goal of government agencies is to improve the health of all Australian's by eliminating or reducing their exposure to tobacco in all its forms (Commonwealth Department of Health and Care, 1999). To facilitate this objective, a number of strategies have been designed, implemented and evaluated including: strengthening community action for tobacco control, promoting cessation of tobacco use, reducing the availability and supply of tobacco, regulating tobacco and reducing exposure to environmental tobacco smoke (Commonwealth Department of Health and Care, 1999).

Evidence from the Cochrane Tobacco Addition Review group has demonstrated that, in order of effectiveness, antidepressants, in particular bupropion (OR=2.73) (Hughes, Stead, & Lancaster, 2001), nicotine replacement therapies (OR=1.73) (Silagy, Lancaster, Stead, Mant, & Fowler, 2001), individual behavioural counselling provided by a physician (OR=1.69) (Silagy & Stead, 2001), (Stead & Lancaster, 2001), individual behavioural counselling provided by a specialist counsellor (OR=1.55) (Lancaster & Stead, 2001) and self-help materials such as written materials (OR=1.23) are significantly more effective than placebo in achieving continued abstinence. The review by Hughes et al. also found that combined bupropion and nicotine patch appeared to be more efficacious than nicotine patch alone (OR=2.65) but no more efficacious than bupropion alone (Hughes et al., 2001).

Despite evidence on the effectiveness of various tobacco control strategies, research has demonstrated that smokers differ in their readiness and ability to quit smoking (US Department of Health and Human Services, 1989). For a smoker, the process of quitting is often long and arduous. Prochaska and DiClemente have developed a stage of change model describing the stages a smoker passes through to achieve smoking cessation. These stages are pre-contemplation, contemplation, action, maintenance and termination of smoking behaviour or relapse (Prochaska & DiClemente, 1983). A quitting smoker may cycle through each stage a number of times before successfully quitting. While most smokers would like to quit (COMMIT Research Group, 1995), only a minority (10%) achieve permanent abstinence in an initial quit attempt, with the majority continuing to smoke for many years and typically cycle through multiple periods of relapse and remission (The Tobacco Use and Dependence Clinical Practice Guidelines Panel, 2000). Evidence suggests that the cycle of repeated quit attempts and relapse is an important skill building process for successful long-term abstinence (Gritz, Thompson, Emmons, Ockene, et al., 1998).

The vast majority of former smokers attribute their success to quitting on their own (i.e. cold turkey) (Fiore, Novotny, Pierce, Giovoni, et al., 1990). In a study by Fiore et al. (1990) up to 88% of successful quitters had used cold turkey during their last quit attempt while only 8% used some form of assisted strategy (i.e. some type of program, hypnosis, acupuncture or gum) (Fiore et al., 1990). However, as indicated above, successful quitters make numerous prior quit attempts and may have already tried a

variety of methods to help them stop smoking (Prochazka, 2000). In general, when smokers try to quit on their own, their long-term success rate is about 5% (Fiore et al., 1990). When smokers engage in other strategies such as counselling, nicotine replacement therapies or other pharmacological aids, success rates can be as high as 33% (Lancaster, Stead, Silagy & Sowden, 2000).

Despite empirical evidence on clinical efficacy of smoking cessation strategies, it is important that population health and health improvements resulting from such strategies are monitored. Given that 85% of the population visit a GP in any given year (Britt, Miller, Know, Charles, et al., 2003), general practice provides a suitable basis to monitor many aspects of population health. The aim of this paper is to describe smoking rates, quit attempts made by smokers, methods used and success-rates among adult patients attending Australian general practice. The findings are considered in the context of the smoking cessation literature.

2. Method

This study was based on data from the “Bettering the Evaluation and Care of Health” (BEACH) program, a national study of general practice in Australia; in particular, a sub-set of BEACH data called SAND (Supplementary Analysis of Nominated Data) focusing on smoking rates of adult patients and their quit attempts collected during February and March 2002 and March 2003. The method is described fully elsewhere (Britt et al., 2003). Briefly, BEACH is an ongoing cross-sectional survey of general practice activity in Australia, enrolling about 1000 randomly selected GPs each year. These GPs each provide details on 100 general practice encounters including patient characteristics, problems managed and treatments recommended. SAND collects additional data on other aspects of patient health or health care delivery not covered in the consultation-based information.

2.1. Smoking cessation SAND

Adult patients attending general practice were asked to indicate which of five statements describes their smoking status (Fig. 1). A list of 12 quit methods was provided (Fig. 1), including cold turkey, nicotine patches and bupropion. These analyses define current smokers as all patients who were current daily or current occasional smokers, and former smokers as all patients who were former daily or former occasional smokers. Former smokers were asked how long since they last smoked, and which of the twelve-method/s they had used to successfully quit. Current smokers were asked to indicate if they had attempted to quit during the last 5 years, and if so how long ago and the quit method/s used at their last attempt. Both current and former smokers were asked to indicate all methods used at their last/final-quit attempt.

2.2. Statistical methods

Proportion of sample and 95% CIs (adjusted for the design effect of the cluster (GP) sample) is reported. SAS v8.2 software was used for analysis (SAS Proprietary Software Release 8.00, 1999). A success-rate was calculated for each quit method by dividing number of successful patients (former smokers) by total number of patients attempting to quit (former plus current) using that method. A

CURRENT SMOKING STATUS

Please describe your smoking status

- Current smoker - daily.
- Current smoker - occasional.
- Former smoker - daily
- Former smoker - occasional.
- Never smoked

QUIT SMOKING KEY LIST

Listed below are methods available to assist smokers to stop smoking. In this study, 'smoking' includes all tobacco products.

1. 'Cold Turkey' i.e. immediate cessation with no method of assistance
2. Nicotine patches
3. Nicotine gum
4. Nicotine inhaler
5. Hypnotherapy
6. Herbal preparations
7. Support / counselling eg 'SmokeStop', 'Quitline'
8. Zyban (Bupropion)
9. Other medication
10. Self-help material e.g. quit smoking manual
11. GP assistance other than above eg counselling
12. Other methods not listed above

Fig. 1. Quit smoking key list.

current smoker who tried to quit during the past five years was not successful as they were still current smokers, but a former smoker was successful at their final quit attempt.

2.3. Ethics

Ethics committees of the University of Sydney and Australian Institute of Health and Welfare approved the study.

3. Results

Characteristics of the sample are provided in Table 1. The patient age and sex distributions of this SAND sample were not significantly different to the age sex distribution for all BEACH encounters with patients aged 18 or more for the time period under study (Table 1).

The smoking status/cessation questions were asked at 8435 general practice encounters with adult (18+) patients. Smoking status was given at 8333 (98.8%) encounters with 328 GPs. Approximately one in five (21.5%; 95% CI: 20.1–22.9) adult general practice patients were current smokers, and over a quarter (27.3%; 95% CI: 26.0–28.7) were former smokers. The majority of patients (51.1%) however had never smoked (Table 2). As indicated in Table 2, the overall profile of smoking status in this study is comparable to that of adult Australians reported by the 2001 National Drug Strategy Household survey (Australian Institute of Health and Welfare, 2002). Further, these estimates are consistent with the total BEACH 2002–2003 sub-sample ($n = 32,651$) where the results were: current smoker 21.3%, former 27.2% and never smoked 51.4% (Britt et al., 2003).

The average time since last smoking for all former smokers ($N=2247$) was 180 months. For younger smokers (patients aged 18–24 years) mean quitting time was 16 months ago compared with 290 months for the older smokers (aged 75+). One in two current smokers (53.9%; 95% CI: 50.7–57.0) had attempted to quit during the past 5 years with the mean time since last quit attempt at 13 months. The mean time since last quit attempt by current smoker varied by age group; the shortest time since quitting in the 18–24 year age group (9 months) and the longest in the 65 or older age-group (16 months).

Table 3 provides detail on the main smoking cessation method/s used at the last quit attempt. Of the 2207 former smokers indicating the quit method/s used, 92% used only one method, and a further 6% used two methods. A lower proportion of current smokers (80%) had tried only one quit method at their last quit attempt with 11% using two methods. Cold turkey was the most common method used by both former (88%) and current (62%) smokers at their last quit attempt, followed by nicotine patches used by 7% of former and 28% of current smokers.

Table 1
Patient characteristics

	Sample under analysis			Sample drawn from		
	SAND Feb–Mar02 and Mar03			BEACH: Jan–Mar02 and Jan–Mar03		
	$N=8333$	Percentage (%)	95% CI	$N=43,380$	Percentage (%)	95% CI
<i>Patient age-group</i>						
18–24 years	712	8.6	(7.6–9.6)	3753	8.7	(8.0–9.3)
25–44 years	2532	30.5	(28.9–32.2)	12,921	29.8	(28.6–30.9)
45–64 years	2559	30.5	(29.6–32.1)	13,487	31.1	(30.4–31.8)
65–74 years	1185	14.3	(13.2–15.4)	6207	14.3	(13.7–15.0)
75+ years	1304	15.7	(14.2–17.3)	7012	16.2	(15.0–17.3)
Missing	41	–		–	–	
<i>Patient sex</i>						
Male	3008	36.4	(34.6–38.1)	15,879	36.9	(35.5–38.2)
Female	5267	63.6	(61.9–65.4)	27,186	63.1	(61.8–64.8)
Missing	58	–		315	–	

Table 2
Smoking profile of adult general practice patients compared to 2001 National Drug Strategy Household survey

Status	BEACH (SAND): 2002–03			2001 National Drug Strategy Household survey (%)
	N=8333	Percentage (%)	95% CI	
Current smoker	1794	21.5	(20.1–22.9)	23.1
Former smoker	2278	27.3	(26.0–28.7)	26.2
Never smoked	4261	51.1	(49.4–52.9)	50.6

Presented in Table 3 are the relative success rates for each smoking cessation method. In order of effectiveness, general practice patients had most success in smoking cessation attempts with cold turkey (77%), other medications (70%) and “other (unspecified) methods” (70%). Bupropion was the least successful strategy with 23% of patients using this method to successfully quitting.

These success rates are not, however, directly comparable across all smoking cessation methods. February 2001 saw the introduction of government-subsidised bupropion, previously available only by private prescription at full cost since November 2000. Given the average time since last smoking for former smokers was 180 months, the majority of former smokers were therefore not exposed to bupropion. These data are comparable if success rates are limited to quit attempts from February 2001 onwards (Table 3 column 5). The implication of this modification is a change in the ranking of methods by success rate, in order of effectiveness, “other methods” (41%), followed by cold turkey (40%) and GP support (39%). The success rate for bupropion remained reasonably constant at 21%. Six of the success rates (those shaded in Table 3) are unreliable due to small sample size (and high relative standard error), and should not be used.

The re-analysis limited to quit attempts from February 2001 onwards shows a dramatic reduction in success rates for the majority of methods. The success rate for cold turkey fell from 77% to 40% while “other methods” fell from 70% to 41%. Bupropion was the only method that remained relatively stable (23% to 21%). Success rates limited to quit attempts from February 2001 onwards are more appropriate if comparisons with bupropion are made.

4. Conclusion

Before consideration is given to the primary findings and policy recommendations a number of caveats require attention. First, although the BEACH sample may be representative of patients encountered in general practice, it may not be representative of the population as a whole or for that matter the population of smokers attending general practice. Second, the specific nature of the SAND smoking analysis imposes constraints on the number and type of questions asked. For example, the SAND smoking questions, while providing a useful indication of smoking status among general practice patients’ do not adequately capture the process of smoking cessation or the numerous quit attempts usually made by smokers. Further, the particular focus on methods used in the most recent quit attempt may not be an adequate representation of all possible smoking cessation methods used by that smoker. Third, the reliability of the success rate used in this analysis is contentious. The magnitude of former smokers in the denominator may bias the results towards self-help methods such as cold turkey. Such a bias may also be reinforced by a smoker’s recollection of the last quit method used given that, for former smokers, the average time since last quit attempt was 180 months and over 7% of former smokers and

Table 3
Smoking cessation method used at last attempt and success rate

Quit method	All data						February 2001 onwards ^a					
	Former smokers N=2207		Current smokers ^b N=928		Success rate		Former smokers N=358		Current smokers ^b N=672		Success rate	
	n	% ^c	n	% ^c	%	95% CI	n	% ^c	n	% ^c	%	95% CI
Cold turkey	1942	88.0	575	62.0	77.2	75.0–79.3	269	75.1	400	59.5	40.2	36.3–44.1
Nicotine patches	145	6.6	259	27.9	35.9	30.9–40.9	52	14.5	190	28.3	21.5	16.2–26.8
Nicotine gum	52	2.4	93	10.0	35.9	27.2–44.6	8	2.2	62	9.2	11.4	3.0–19.9
Nicotine inhaler	12	0.5	22	2.4	35.3	16.6–54.0	4	1.1	14	2.1	22.2	1.0–43.5
Hypnotherapy	31	1.4	27	2.9	53.5	38.7–68.2	5	1.4	23	3.4	17.9	2.3–33.5
Herbal preparations	12	0.5	7	0.8	63.2	44.2–82.2	2	0.6	6	0.9	25.0	0.0–67.01
Smokestop/quitline	19	0.9	24	2.6	44.2	29.0–59.4	5	1.4	21	3.1	19.2	3.6–34.9
Bupropion	36	1.6	122	13.2	22.8	16.5–29.1	30	8.4	114	17.0	20.8	14.4–27.3
Other medications	7	0.3	3	0.3	70.0	33.1–100.0	1	0.3	3	0.5	25.0	0–100
Quit smoking manual	48	2.2	34	3.7	58.5	45.4–71.7	13	3.6	26	3.9	33.3	18.0–48.7
GP support	71	3.2	47	5.1	60.2	50.4–69.9	23	6.4	36	5.4	39.0	25.4–52.6
Other methods	81	3.7	35	3.8	69.8	60.1–79.5	21	5.9	30	4.5	41.2	24.9–57.5
Nicotine replacement therapy ^d	190	8.6	322	34.7	37.1	32.6–41.6	58	16.2	228	33.9	20.3	15.5–25.1

Shading means that RSE>33 therefore unreliable estimate (due to small sample size).

^aPost bupropion listing.

^bIncludes only current smokers that have attempted to quit during the previous 5 years.

^cPercentages do not add to 100 as multiple responses allowed.

20.3% current smokers who indicated using cold turkey as a quit method also indicated using another method/s. To a certain extent, this bias is minimized when success rates are limited to quit attempts from February 2001 onwards but the degree of variability in all but one of these methods (bupropion) as a consequence of the re-analysis is evidence that the success rate measure may not be stable.

In spite of potential limitations, these data provide a useful indication of smoking rates, quit attempt methods and success rates among adult Australian patients seen in general practice. Rates of smoking (21.5% current smokers) were consistent with the prevalence of smoking in the general population (23.1% current smokers). In their last quit attempt, 92% of former smokers and 80% of current smokers used only one method to aid cessation with cold turkey the most common method used by both former (88%) and current (62%) smokers. Success rates of strategies varied from 77% for cold turkey to 23% for bupropion. To improve the reliability and comparability of success rates these data were re-analysed to take into account the bupropion listing in February 2001. As a consequence of this re-analysis the success rates for cold turkey was reduced to 40% while bupropion remained reasonably constant at 21%.

While not capturing the true extent of the natural history of smoking cessation and the fact those smokers generally engages in multiple strategies to assist cessation over numerous attempts, the finding that the majority of smokers used cold turkey in their last quit attempt is consistent with previous research (Fiore et al., 1990), (Baillie, Mattick & Hall, 1995). A finding not consistent with the literature is the effectiveness of strategies used to aid cessation. Research from the Cochrane library has demonstrated that bupropion is the most effective cessation therapy available in Australia (OR=2.73) (Hughes et al., 2001) and significantly more effective than placebo in achieving continued abstinence.

The results of these analyses can provide useful policy guidance for improving the treatment of nicotine dependence in a clinical environment. Recent guidelines for preventive activities in general practice suggest that practitioners should take every opportunity to ask about smoking status in their patients, ascertain the preparedness of smokers to quit and suggest an appropriate smoking cessation strategy (National Preventive and Community Medicine Committee of The Royal Australian College of General Practitioners, 2002). Tailoring the smoking cessation strategy to a smokers' preparedness to quit, may result in a larger pool of smokers being offered smoking cessation interventions that are more effective in achieving abstinence and avoiding relapse.

References

- Australian Institute of Health and Welfare. (2002). National Drug Strategy Household Survey 2001: First results. *Drug Statistics Series, vol. 9*. Canberra: AIHW AIHW Cat. No. PHE 35.
- Baillie, A. J., Mattick, R. P., & Hall, W. (1995). Quitting smoking: Estimation by meta-analysis of the rate of unaided smoking cessation. *Australian Journal of Public Health, 19*(2), 129–131.
- Britt, H., Miller, G. C., Know, S., Charles, J., Valenti, L., Henderson, J., et al. (2003). General practice activity in Australia 2002–2003. *General Practice Series, vol. 14*. Canberra: Australian Institute of Health and Welfare AIHW Cat. No. GEP.
- Collins, D., & Lapsley, H. (2002). Counting the cost: Estimates of the social costs of drug abuse in Australia in 1998–99. *National Drug Strategy Monograph Series, Vol. 49*. Canberra: Commonwealth of Australia.
- COMMIT Research Group. (1995). Community intervention trial for smoking cessation (COMMIT): (1995). Cohort results from a four-year community intervention. *American Journal of Public Health, 85*, 183–192.
- Commonwealth Department of Health and Aged Care (1999). *National tobacco strategy 1999 to 2002–03: A framework for action*. Canberra: Commonwealth of Australia.
- Fiore, M. C., Novotny, T., Pierce, J. P., Giovino, G. A., Hatziandreu, E. J., & Newcomb, P. A. (1990). Methods used to quit smoking in the United States. *Journal of the American Medical Association, 263*, 2760–2765.

- Gritz, E. R., Thompson, B., Emmons, K., Ockene, J. K., M'Lerran, D. F., & Nielsen, I. R. (1998). Gender differences among smokers and quitters in the working well trial. *Preventive Medicine, 27*, 553–561.
- Hughes, J. R., Stead, L. F., & Lancaster, T. (2001). Antidepressants for smoking cessation. *Cochrane Database Systematic Review, 2*.
- Lancaster, T., & Stead, L. (2001). Individual behavioural counselling for smoking cessation. *Cochrane Database Systematic Review, 3*.
- Lancaster, T., Stead, L., Silagy, C., & Sowden, A. (2000). Effectiveness of interventions to help people stop smoking: Findings from the Cochrane Library. *British Medical Journal, 321*, 355–357.
- Mathers, C., Vos, E., Stevenson, C., & Begg, S. (2001). The burden of disease and injury in Australia. *Bulletin of World Health Organisation, 79*(11), 1076–1084.
- National Preventive and Community Medicine Committee of the Royal Australian College of General Practitioners. (2002). *Australian Family Physician, 31*(S1), 27–28.
- Prochaska, J., & DiClemente, C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting Clinical Psychology, 51*(3), 390–395.
- Prochazka, A. (2000). New developments in smoking cessation. *CHEST, 117*, 169S–175S.
- Ridolfo, B., & Stevenson, C. (2001). The quantification of drug-caused mortality and morbidity in Australia, 1998. *Drug Statistics Series, vol. 7*. Canberra: AIHW AIHW Cat. No. PHE 29.
- S.A.S. Proprietary Software Release 8.00 (1999). S.A.S Proprietary Software Release 8.00. Cary: SAS Institute Inc.
- Silagy, C., Lancaster, T., Stead, L., Mant, D., & Fowler, G. (2001). Nicotine replacement therapy for smoking cessation. *Cochrane Database Systematic Review, 3*.
- Silagy, C., & Stead, L. F. (2001). Physician advice for smoking cessation. *Cochrane Database Systematic Review, 3*.
- Stead, L. F., & Lancaster, T. (2001). Telephone counselling for smoking cessation. *Cochrane Database Systematic Review, 3*.
- The Tobacco Use and Dependence Clinical Practice Guidelines Panel (2000). Clinical practice guideline for treating tobacco use and dependence: A US Public Health Service Report. *Journal of the American Medical Association, 283*(24), 3244–3254.
- US Department of Health and Human Services (1989). Reducing the Health Consequences of Smoking: 25 Years of Progress: A report of the Surgeon General, 1989. *Centers for Disease Control, Office on Smoking and Health*, DHHS Publication No (CDC) 89-8411 Maryland: Rockville DHHS Publication No (CDC) 89-8411.