

A new smokefree law increased quitline calls for a six month period

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Abstract

Background: A law for smokefree bars and restaurants became operational in New Zealand in December 2004. This law appears to be well accepted by the public. New Zealand has a national free-phone Quitline Service and calls to it are stimulated by campaigns and other events.

Methods: Data were collected on: (i) Quitline caller registrations and the issuing of nicotine replacement therapy (NRT) exchange cards (vouchers) by the Quitline Service for six month periods between December 2002 and November 2005; (ii) Spending on Quitline-related television advertising for the same periods.

Results: There was an increase in the number of Quitline callers registering to make a quit attempt in the six months before and six months after the law change (relative to the directly preceding and subsequent six-month periods). Similarly, there were elevated rates of issuing NRT exchange cards for the six-month period after the law change. However, these increases were not maintained after May 2005.

These patterns were much stronger when adjusted by television advertising expenditure on promoting the Quitline, with an expenditure-adjusted rate ratio of 3.9 for caller registrations in the six-months after the law change (compared to the baseline period). The respective result for the issuing of NRT exchange cards was 5.3.

Conclusions: For a six-month period after the new smokefree law there were increased quitting-related behaviours (especially when adjusting for television advertising expenditure). These findings are consistent with other reported changes after this new law in New Zealand and with other international experience on smokefree environments. They also highlight the extent to which smoking cessation

advertising is probably far more cost-effective at such times along with the need for a more intensive tobacco control strategy in the context of such law changes.

Introduction

Since the Smoke-free Environments Act passed in 1990, there have been many legally smokefree settings in New Zealand, including: shops, most offices and some other workplaces (along with partial restrictions on smoking in cafés and restaurants). In December 2004, nearly all the provisions of the new *Smokefree Environments Amendment Act* of 2003 became operational. This Act had the effect of making all bars and restaurants completely smokefree, along with nearly all other workplaces and associated facilities (eg, warehouses, factories and lunchrooms). The available evidence indicates that this new law has been well accepted by the public and has effectively improved air quality in settings such as bars and restaurants.^{1 2}

New Zealand has a national free-phone Quitline Service that is combined with the provision of nicotine replacement therapy (NRT).³ Calls to the Quitline are known to be strongly influenced by the level of advertising promoting smoking cessation and the Quitline telephone number.^{4 5}

A previous study has reported that there was a statistically significant increase in the number of new callers registering with the Quitline to make a quit attempt in the period after the new law was implemented.⁶ There was also a statistically significant increase in the dispensing of exchange cards for NRT (these are vouchers for obtaining heavily subsidised nicotine patches or gum from a pharmacy). Week-by-week analyses also showed significantly increased caller registration rates in the week of the law change and in the subsequent week (even though it was the week before Christmas). However, these analyses only considered data over a two-month period (December-January) compared with the same period a year prior to the introduction of the new law. In this article we examine a longer time period and take into consideration expenditure on smoking cessation television advertising.

Methods

The Quitline routinely collects data on caller registrations and on the issuing of NRT exchange cards. These data were collated and analysed by six-month periods (four before the law change and two after). We adjusted the data by the level of national television advertising expenditure for each time period (Table 1). These data were obtained from the agency that purchases television advertising time for the Quitline (Graham Strategic).

A large majority of advertisements funded by the Quit Group (the non-profit agency which runs the Quitline) contain the Quitline number. We chose not to adjust by other types of smokefree television advertising – given that these were focused on themes other than smoking cessation, and rarely included the Quitline number. For example there was a media campaign on not smoking in homes that was run from April 2004 by the Health Sponsorship Council (HSC),⁷ and a media campaign on the forthcoming smokefree legislation that was run in late 2004 by the HSC.⁸ There was also a modest amount of “World Smokefree Day” television publicity and some relatively low level use of other media promoting smokefree lifestyles and smoking cessation by other agencies (individual District Health Boards, various other non-governmental organisations and the pharmaceutical industry). There was also a large amount of unpaid media coverage around the proposed legislation, and some of this included the Quitline number (but the extent of this has not been quantified).

Results

The data (Figure 1, Table 2) suggest that the usual summer dip in both registrations and issues of NRT exchange cards disappeared in December 2004 / January 2005 when compared to the previous two years (the law change occurred in early December 2004). Indeed, caller registrations per month remained elevated (compared to the preceding year) for *every* month in the post-law change period through to the end of March 2005 and until the end of May 2005 for the issuing of the NRT

exchange cards. This pattern was despite a marked reduction in television advertising expenditure on promoting smoking cessation in early 2005 (see footnote to Table 1).

Analysis by six-month period indicated a general decline in caller registration rates compared to the baseline period (Table 2). This was probably due to advertising expenditure being far higher throughout 2003 compared to subsequent time periods (Table 1) However, the rates did increase in the six months before and six months after the law change (relative to the directly preceding and subsequent six-month periods). Similarly, there were significantly elevated rates of issuing NRT cards for the six-month period after the law change (Table 3). However, this increase was not maintained after May 2005.

The proportion of calls to the Quitline by Māori callers in the six months after the law change was slightly lower than for the other five six-month periods (19.3% versus 20.2%) (Table 2). This lower proportion was just statistically significant (rate ratio (RR) = 0.95; 95%CI = 0.92 – 0.99).

Caller registrations, per dollar of advertising directly linked to smoking cessation, showed even higher increases of around four times in the six months after the law change, relative to the baseline period – see Table 4. The same pattern was apparent for the issuing of NRT exchange cards, with over five times higher levels per advertising dollar compared to the baseline period.

Discussion

The results suggest that there was a statistically significant increase in both caller registrations and the issuing of NRT exchange cards in the six-month period following the law change after adjusting for television advertising expenditure promoting smoking cessation and the Quitline number. Such a result indicates that smokers increase quitting behaviour when smokefree environments policies are introduced. This finding also suggests that the implementation period for such policies provides a time for more cost-effective advertising of Quitlines.

The findings for Quitline calls and NRT use are consistent with the previous New Zealand work that examined such calls in the weeks and a two-month period after the new law.⁶ They are also consistent with other data that suggests that call rates to the New Zealand Quitline are influenced by a range of factors that would be expected to promote quitting. These include television-based media campaigns,^{4 5} improved access to NRT,³ and media publicity around smoking hazards.⁹ Conversely the call rate drops significantly when major international events distract smokers from quitting¹⁰ and also seasonally over the summer holiday period (Figure 1).

The results in this study for the Quitline Service are also consistent with the other data that may be associated with the impact of this smokefree law on smoker behaviour in New Zealand. These include:

- A statistically significant decline¹ in youth smoking rates between 2004 and 2005 (though this could be part of a pre-existing long-term trend).¹¹
- A statistically significant decline¹ in “parental smoking” between 2004 and 2005 (though these data need to be treated with caution given the source is school student reports of parental behaviour).¹¹
- Survey data from the Health Sponsorship Council indicating that the proportion of smokers who reported that they smoked “more than normal” at bars, nightclubs, casinos and cafés declined substantially between 2004 and 2005 (a much steeper decline than between 2003 and 2004).¹²

These findings for New Zealand are also consistent with the available international literature. Smokefree workplace policies elsewhere have been shown to reduce social cues for smoking, decrease tobacco consumption, and increase quit rates. For example, one analysis of 19 studies of smokefree workplaces found that 18 reported declines in daily smoking rates and 17 reported declines in smoking prevalence.¹³ A systematic review also concluded that “smoke-free workplaces not only protect non-smokers from the dangers of passive smoking, they also encourage smokers to quit or to reduce consumption”.¹⁴ Another review concluded that “smokers who are employed in workplaces with smoking bans are likely to consume fewer cigarettes per day, are more likely to be considering quitting, and quit at an increased rate compared with smokers employed in workplaces with no or weaker policies”.¹⁵ More recently

published studies are consistent with the findings in these reviews.^{16 17} There is also evidence from tobacco industry internal documents that reveal that this industry views smoking restrictions in public places as being one of the most important threats to cigarette consumption – as detailed by Siegel et al.¹⁸

With regard to recent national level law changes, there is evidence relating to Ireland that approximately 46% of Irish smokers reported that the new smokefree law had made them more likely to quit smoking.¹⁹ Furthermore, among Irish smokers who had quit at post-legislation, “80% reported that the law helped them to quit, 88% said it helped them stay quit”. The Irish data also indicated self-reported increased use of NRT by smokers and smokers who subsequently quit.¹⁹ Data from Italy also indicates that the smokefree law there has been associated with declining tobacco sales and increased nicotine replacement therapy sales.²⁰

Limitations: This analysis did not include other data relating to quitting behaviour eg, requests to health professionals for support and usage rates of pharmacotherapies from other sources (eg, over-the-counter NRT sales and prescriptions for nortriptyline and bupropion). Nor did it include any data on unassisted “cold turkey” attempts by smokers. Furthermore, the New Zealand Quitline Service services a minority of the population of smokers who are making quit attempts, and so the results may not reflect total population quitting behaviour in the time periods studied.

The adjustment for advertising expenditure was also somewhat suboptimal. It did not adjust for the fact that different smoking cessation advertisements used in New Zealand have different effects on calls to the Quitline^{4 5} and that there was variable use of such advertisements over the time periods. Furthermore, some of the television advertising by the Quit Group was occasionally used for general public awareness raising purposes – as opposed to maximising calls to the Quitline at all times. Again, we did not attempt to adjust for other (non-cessation orientated) tobacco control television spending, such as the HSC campaigns.^{7,8} Expenditure data on tobacco control promotional activities undertaken at the local level by District Health Boards (albeit considered to be relatively modest) was also not analysed.

Implications for future tobacco control policies: The quitting-related changes associated with this new law suggest opportunities for maximising the cost-effectiveness of smoking cessation advertising and use of unpaid media at such times. However, to ensure that this benefit is equitable across all ethnic and socioeconomic groups, there is a need for campaigns and services to be orientated towards population groups with the highest needs. Increased resourcing for the smoking cessation services would be needed at these times so that smokers' needs could be adequately met.

These findings also suggest that there could be major increases in quitting behaviour if the introduction of such laws were part of an overall “intense impact” strategy. That is, there could be simultaneous tobacco price changes, large increases in smoking cessation support capacity, improved access to all proven smoking cessation technologies (eg, subsidised access to other forms of NRT, bupropion and nortriptyline), and accompanying novel approaches to smoking cessation (eg, quit and win contests).

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Competing Interests: Two of the authors (MG and JL) work for the Quit Group (a not-for-profit organisation that runs the Quitline). NW has previously undertaken contract work for the Quit Group (in 2004).

Authors' contributions: The first three authors were involved in designing the project (as part of a large study on the impact of the new law). MG and JL organised the data extraction. NW analysed the data and wrote the first draft of the manuscript. All the authors were involved re-drafting of the manuscript and have given final approval of the version to be published.

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Table 1: Television advertising expenditure for smoking cessation by the agency running the Quitline – the Quit Group (by six-month period in thousands of dollars)

Six-month time period*	Advertising expenditure (\$000s)
December 2002 to May 2003	1852
June 2003 to November 2003	1762
December 2003 to May 2004	863
June 2004 to November 2004	958
December 2004 to May 2005	391**
June 2005 to November 2005	943

* These time periods are structured by these months since the new law came into force in early December 2004.

** The relatively low level of spending at this time was when the Quit Group were preparing to re-configure the Quitline Service (which started in early May 2005). This meant that there was a transitional period when the Quitline number was not included on advertising as staff were being trained in operational aspects of the new service. The re-configured Quitline Service involved discontinuing the use of an external call centre and having all incoming calls answered directly by the Quitline Advisors. In addition, follow-up support and advice (including mailed out information) became more customised to the caller's level of motivation for quitting smoking (based on a stage of change assessment).

Table 2: Trends in callers registered with the Quitline in the six six-month periods studied

Six-month time period	Number of registered callers	Call rate per 100,000 smokers**	Rate ratio (95% CI)	% of callers who were Māori
December 2002 to May 2003	19,398	2955	1.0 (Reference)	20.7
June 2003 to November 2003	17,396	2650	0.90 (0.88 – 0.92)	22.3
December 2003 to May 2004	15,072	2296	0.78 (0.76 – 0.79)	19.1
June 2004 to November 2004	16,614	2531	0.86 (0.84 – 0.87)	19.4
December 2004* to May 2005	16,119	2455	0.83 (0.81 – 0.84)	19.3
June 2005 to November 2005	12,424	1892	0.64 (0.63 – 0.65)	19.6

* Month that the new law came into force.

** Rates are based on an estimated total population of smokers in New Zealand aged 18 years and over of 656,489 (based on rates from the 2002/2003 NZ Health Survey and 2004 population data estimates).

Table 3: Trends in the issuing of the first NRT exchange card from the Quitline in the six six-month periods studied

Six-month time period	First NRT exchange cards issued from the Quitline*	Issue rate per 100,000 smokers#	Rate ratio (95% CI)**
December 2002 to May 2003	8968	1366	1.0 (Reference)
June 2003 to November 2003	8656	1319	0.97 (0.94 – 0.99)
December 2003 to May 2004	6619	1008	0.74 (0.72 – 0.76)
June 2004 to November 2004	8174	1245	0.91 (0.88 – 0.94)
December 2004 to May 2005	9937	1514	1.11 (1.08 – 1.14)
June 2005 to November 2005	7101	1082	0.79 (0.77 – 0.82)

* A small proportion of these exchange cards would have been issued to people who had actually first registered with the Quitline in the preceding six-month period.

** Statistically significant results for elevated rates are in bold. The month that the new law came into force is also in bold.

See footnote in Table 2.

Table 4: Rates of caller registrations and first NRT exchange cards issued – adjusted by television advertising expenditure by the Quit Group (which runs the Quitline)

Six-month time period	Caller registrations		First NRT exchange cards issued	
	Per \$1000 expenditure*	Expenditure-adjusted rate ratio**	Per \$1000 expenditure*	Expenditure-adjusted rate ratio**
December 2002 to May 2003	10.5	1.0 (Reference)	4.8	1.0 (Reference)
June 2003 to November 2003	9.9	0.94 (0.92 – 0.96)	4.9	1.02 (0.99 – 1.05)
December 2003 to May 2004	17.5	1.67 (1.63 – 1.70)	7.7	1.58 (1.54 – 1.64)
June 2004 to November 2004	17.3	1.66 (1.62 – 1.69)	8.5	1.76 (1.71 – 1.82)
December 2004 to May 2005	41.2	3.94 (3.86 – 4.02)	25.4	5.25 (5.10 – 5.40)
June 2005 to November 2005	13.2	1.26 (1.23 – 1.29)	7.5	1.56 (1.51 – 1.60)

* Based on the data in Table 1 for the Quit Group expenditure on television advertising.

** Statistically significant results for elevated rates are in bold. The month that the new law came into force is also in bold.

Figure 1: Monthly number of caller registrations with the Quitline and nicotine replacement therapy (NRT) exchange cards issued by the Quitline (in the six six-month periods studied)

