Under-18 year old callers to New Zealand’s Quitline

Maria Poynter, Chris Bullen, Robyn Whittaker, Michele Grigg

**Aim** To investigate the characteristics of under-18 year old callers to New Zealand’s Quitline (smoking-cessation telephone counselling service).

**Methods** Analysis of routinely collected demographic and smoking history characteristics of under-18 year old Quitline callers in 2004 and 2005.

**Results** In the 24 months of 2004–2005, 2371 under-18s called Quitline (for the first time) seeking smoking cessation support. Females (58.9%) and teens in their older teen years called most often. Compared with adult callers, there were significantly higher proportions of Māori (32.9% vs 19.6%) and Pacific (5% vs 3.6%) under-18 callers, and fewer European (64.0% vs 74.6%) and ‘Other’ (6.0% vs 7.1%) callers. Despite similar levels of nicotine dependence in under-18 and adult callers (70.1% vs 71.4% reported smoking within 30 minutes of waking), under-18s were issued nicotine replacement therapy (NRT) half as often (RR=0.51). Under-18s were more likely than adults to register a mobile phone number (48.9% vs 44.4%).

**Conclusions** Under-18 year old smokers are under-represented in the Quitline calling population. Māori and Pacific under-18s require further cessation support to avoid exacerbating existing disparities in smoking. Awareness that under-18 nicotine dependence is equivalent to that of adults should lead to improved provision of NRT for adolescents. Initiatives involving mobile phone technology are particularly appropriate for improving access to information and treatment for under-18s. Adolescent tobacco cessation should be accorded greater priority in tobacco control policy, practice, and research.

Tobacco smoking continues to be a major public health problem in New Zealand (NZ); almost a quarter of adults (15–64 years) are smokers, and half of those who smoke will die prematurely from smoking-related conditions. Preventing tobacco smoking initiation at an early age is a key strategy in addressing tobacco use because over 80% of smokers begin smoking before the age of 18 years. Between one-third and one-half of those who experiment with tobacco become regular smokers. Currently 26.8% of 15–19 year old NZers smoke and most want to quit: over half report making a cessation attempt in the past year. If they could start their lives again, 72.3% of young NZ smokers surveyed would not smoke. However, young people’s quit attempts are frequently unsuccessful, with the few experimental trials published yielding unassisted 3- to 6-month quit rates of around 0–11%. Cessation interventions specific to young people were largely overlooked in the literature until the mid-1990s due to a focus on preventing smoking initiation in this age demographic, and a recent Cochrane review concluded that evidence around tobacco cessation interventions for young people is still lacking.
Cessation initiatives require better information about the characteristics of adolescents who seek help, so that appropriate interventions can be developed and adolescents not accessing cessation services identified. In this study we analysed the demographic and smoking characteristics of Quitline callers under the age of 18 years. Quitline is New Zealand’s largest smoking cessation service, providing free and comprehensive information and advice on smoking cessation 6 days a week to over 30,000 callers each year, with a call-back service where Quit advisors provide ongoing support. In addition, Quit advisors send out exchange cards to eligible callers that enable heavily subsidised nicotine replacement therapy (NRT) patches and/or gum to be purchased.

**Methods**

Quitline routinely collects demographic and basic smoking data from all registered callers. We extracted data from Quitline for all first-time under-18 callers in 2004 and 2005 as part of a larger study analysing the effect on Quitline of the Smokefree Environments Amendment Act which came into force in December 2004. To enable comparative analysis, a population of 2000 randomly-selected 18-and-over (adult) first-time callers to Quitline was generated using a computerised random number list from the total of 61,387 18-and-over callers in the same time period.

The variables used for analysis were identified by examining the Quitline database fields for personal or programme factors that have been shown in the literature to affect cessation. Anonymity was maintained by excluding variables with identifying information. Three fields relating to previous cessation attempts were not in an extractable format for the time period chosen, and therefore could not be used.

Final variables analysed for this paper were: age, sex, ethnicity, type of contact phone number, time from waking to first tobacco (an indication of nicotine dependence$^{10}$), and whether a NRT exchange card was issued.

Ethnicity total response coding$^{11}$ was used, with a combined variable ‘Others’ for Asian, Latin American, Middle Eastern, African, Other and Refused/Don’t know responses, due to the small number of individuals in these categories.

Data were analysed using Intercooled Stata (version 9) software.$^{12}$ Measures of precision were not calculable for the under-18 observations because the dataset represents the full population of under-18 Quitline callers in the time period. Where possible, 95% confidence intervals (CIs) were calculated for adult callers and assessment of statistically significant differences between under-18 and adult callers determined by comparing the under-18 figure with the 95% CI for the adult population. Chi-squared results are noted as a test of independence, where applicable. Where there were missing values, the observation was excluded from analyses involving that variable, and this accounts for small differences in denominators between variables.

**Results**

**Demographic characteristics**—From 1 January 2004 to 31 December 2005, 2371 under-18s called Quitline. Callers ranged in age from 10 to 17 years, with more callers with each additional year of age (Figure 1).

More females than males called Quitline in both under-18 and adult populations although there were proportionately more female callers among under-18s (58.9%) than adult (52.6%) callers (Chi-squared 17.37, p<0.001) (Table 1).
Table 1. Callers to Quitline, by age group and gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Under 18s (%)</th>
<th>Adults (%; 95% CI)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>969 (40.2)</td>
<td>941 (47.5; 45.2–49.7)</td>
<td>1910 (44.0)</td>
</tr>
<tr>
<td>Female</td>
<td>1386 (58.9)</td>
<td>1042 (52.6; 50.3–54.7)</td>
<td>2428 (56.0)</td>
</tr>
<tr>
<td>Total</td>
<td>2355</td>
<td>1983</td>
<td>4338</td>
</tr>
</tbody>
</table>

Compared to adult callers, under-18 callers were more likely to be of Māori or Pacific ethnicity (Table 2). Within the under-18 calling population, male and female European callers increased with each year of age. This trend attenuated with age among Māori callers, even though the absolute number of Māori male and female callers increased with each year of age, and began a lot earlier for Māori males than females (Figure 1).

Figure 1. Under-18 Quitline callers 2004–2005 by age, gender, and ethnic group

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Table 2 Callers to Quitline, by age group and ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Under-18s (%)</th>
<th>Adults (%) ; 95% CI</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>European</td>
<td>1518 (64.0)</td>
<td>1491 (74.6; 72.6-76.4)</td>
<td>3009 (68.8)</td>
</tr>
<tr>
<td>Māori</td>
<td>781 (32.9)</td>
<td>392 (19.6; 17.9-21.5)</td>
<td>1173 (26.8)</td>
</tr>
<tr>
<td>Pacific*</td>
<td>119 (5.0)</td>
<td>72 (3.6; 2.8-4.5)</td>
<td>191 (4.4)</td>
</tr>
<tr>
<td>Other</td>
<td>143 (6.0)</td>
<td>141 (7.1; 6.0-8.3)</td>
<td>284 (6.5)</td>
</tr>
<tr>
<td>Total</td>
<td>2371</td>
<td>2000</td>
<td>4371</td>
</tr>
</tbody>
</table>

*Mostly of Samoan, Tongan, Niuean, or Cook Islands origin.

Dependence—The proportion of under-18 callers who smoked tobacco within 30 minutes of waking was similar to that of adult callers (Chi-squared 0.59, p=0.44) (Table 3).

Table 3. Callers to Quitline, by age group and nicotine dependence

<table>
<thead>
<tr>
<th>Time from waking to first cigarette</th>
<th>Under-18s (%)</th>
<th>Adults (%) ; 95% CI</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30 minutes</td>
<td>975 (70.1)</td>
<td>1110 (71.4; 69.1-73.7)</td>
<td>2085 (70.8)</td>
</tr>
<tr>
<td>&gt;30 minutes</td>
<td>415 (29.9)</td>
<td>444 (28.6; 26.3–30.9)</td>
<td>859 (29.2)</td>
</tr>
<tr>
<td>Total</td>
<td>1390</td>
<td>1554</td>
<td>2944</td>
</tr>
</tbody>
</table>

NRT exchange cards issued—Under-18s were half as likely to be issued an exchange card for NRT (RR=0.51). Under-18s who were issued NRT cards were significantly less likely to be issued a second card than adults (RR=0.27) (Table 4).

Table 4. NRT exchange cards issued, by age group

<table>
<thead>
<tr>
<th>Number of NRT exchange cards issued</th>
<th>Under-18s (%)</th>
<th>Adults (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1710 (72.1)</td>
<td>520 (26.0)</td>
<td>2230 (51.0)</td>
</tr>
<tr>
<td>One</td>
<td>364 (15.4)</td>
<td>559 (30.0)</td>
<td>923 (21.1)</td>
</tr>
<tr>
<td>Two</td>
<td>297 (12.5)</td>
<td>921 (46.1)</td>
<td>1218 (27.9)</td>
</tr>
<tr>
<td>Total</td>
<td>2371</td>
<td>2000</td>
<td>4371</td>
</tr>
</tbody>
</table>

Mobile phone use—Nearly 49% of under-18 callers gave a mobile phone number as a contact number, compared to 44.4% of adult callers (Chi-squared=8.95, p=0.003).

Discussion

This is the first New Zealand study to focus on young smokers who want to quit. A comprehensive literature review did not identify any international studies that have researched the teenage subset of smokers who call quit lines.
Several findings were as expected: that older teens called Quitline more frequently than younger teens mirrors the increasing smoking rate with increasing age in teenagers, and our finding that females called more than males reflects the trend seen in adult quit lines.

Contrary to expectations, we found that Māori and Pacific callers comprised a greater proportion of the under-18 calling population than the proportions seen in the adult calling population. This is partly explained by the fact that Māori and Pacific people comprise greater proportions of the youth population (19.5% and 9.2% of 15–19 year olds respectively) than the total population (14.0% and 6.6% respectively). However, we had hypothesised that under-18 Māori and Pacific callers would be under-represented compared to their adult counterparts because Quitline’s Maori/Pacific-focused advertising campaigns are targeted at adults only (25–44 year olds).

Māori and Pacific under-18 callers were still under-represented compared to their proportions in the adolescent smoking population: recent Action on Smoking and Health (ASH) surveys of 14–15 year olds, show that 37.8% of respondents who smoked at least weekly were Māori, and 12.8% were of Pacific ethnic origin. The 2371 under-18s who called Quitline in 2004 and 2005 represent 3.9% of the total of 61,387 Quitline callers in this period, a not insignificant increase on the 1.6% of callers who were under 18 in an analysis of 2001–2004 calls.

Li and Grigg’s study of Quitline callers over a longer period shows a 67% increase in the proportion of callers under 25 years between 2001–2005. There are several possible explanations for this increase.

Firstly, under-18s may have become more aware of Quitline through advertising and word-of-mouth since its launch in 1999. Although no advertising is targeted specifically at the teen age group, there is evidence from elsewhere that adult-focused anti-tobacco advertising has some impact on adolescents.

Secondly, some evidence suggests that under-18s have experienced increasing difficulty with tobacco purchasing in more recent years.

Thirdly, legislative change prevented smoking in most workplaces in 2004 (the New Zealand school leaving age is 16 years and more than half of school students aged 16 years have part-time jobs). These latter factors may have contributed to an increasing number of young smokers wishing to quit.

While it is encouraging from a public health viewpoint that young smokers are increasingly calling Quitline, they are under-represented among first-time Quitline callers compared to the proportion of adult smokers who want to quit. Using 2006 Census and Tobacco Use Survey data we estimate that there are around 80,450 adolescent smokers in NZ (26.8% of the 300,198 15–19 year olds) and 742,680 adult smokers (23.5% of 3,160,371 adults).

Quitline recorded a yearly average of 1185 under-18 and 30,694 total first-time callers in 2004 and 2005, suggesting that only about 1.5% of adolescent smokers called Quitline in that period, compared to 4.1% of adult smokers.
The fact that young smokers are less likely to call Quitline than their adult counterparts partly reflects a lack of attention to the promotion of quitting in adolescents in policy, practice, and research. Tobacco control policies concerning adolescents almost exclusively pertain to preventing tobacco initiation. Regarding practice, one US survey reported that only a third of young people were counselled about the dangers of tobacco use when visiting a doctor, and just 16.4% of young smokers were given advice to quit.23

Brief advice from a physician is an effective cessation strategy in adults,24 and combined with support, such as referral to Quitline or provision of NRT, may prompt a serious quit attempt in a young person.

Our research suggests that young smokers wanting to quit were not receiving equitable access to treatment such as NRT, despite having levels of nicotine dependence equivalent to that of adults. The reason for this may be licensing and national guideline restrictions that have, until recently, discouraged NRT-use in under-18s.

Accordingly Quitline policy required parental consent for exchange card issues to under-18s. Revised cessation guidelines support the consideration of NRT-use in 12–18 year old smokers25 without parental consent, and training providers about this new guidance may go some way to overcoming the treatment gap. A further possible explanation of the difference in NRT provision between adults and under-18s may be a mistrust of young callers’ reports of their dependence; or conversely, mistrust by young callers of the efficacy of NRT.

Publicity highlighting the efficacy of NRT26 and the early onset of nicotine addiction27 may help overcome this. Scragg et al’s recent analysis of NZ ASH Year 10 Survey data28 suggests that diminished autonomy can occur as early as after one cigarette.

Focus group research with adolescent smokers in North America has concluded that teen smokers are often not aware of cessation programmes, and that those who are aware have generally negative and false perceptions about them.29

To increase the number of young people successfully quitting smoking, priority should be given to increasing the number accessing cessation services for help with quit attempts.30 Adolescents want cessation programmes to be voluntary, free of charge, confidential, and of proven efficacy31 all characteristics of the Quitline that could be promoted specifically to teens to encourage them to make contact.

Imparting information about the early progression to nicotine dependence may help to increase the urgency32 of tobacco cessation efforts, so that young people prioritise quit attempts. Recent research points to using TV and cigarette packets as the primary marketing methods for such messages.17 The use of online marketing, through YouTube33 or advertising space on other websites popular with young people, might also be effective although this remains understudied.

In addition to novel marketing ideas, innovative cessation initiatives show particular promise for young people. Groundbreaking New Zealand research showed that a mobile phone-based text message service improved quit rates.34
Young people are high users of mobile phones (over 90% of 15–24 year olds according to the 2006 Census\(^35\)) and our research shows under-18s are more likely than adults to register a mobile phone number with Quitline. The reach and scope of any adolescent-specific cessation programmes based on mobile or web technology could be much broader, and alternatives to any face-to-face interventions warrant further research.

This study was limited in a number of ways. First, we used data collected for another purpose, thus some factors, such as socioeconomic position and quit rates, could not be studied. Second, missing observations prevented analysis of some variables. Finally, the generalisability of our findings to all young smokers may not be appropriate as those calling Quitline may differ in some way to other young smokers who want to quit.\(^36,37\)

In summary, the adolescent smoking rate may be decreasing\(^1\) but young adults have the highest smoking rate of any age group. Unless cessation treatments become more accessible and effective for young people, the current adolescent smoking population may become yet another generation of adult smokers. A focus on preventing tobacco initiation to the neglect of cessation interventions has indirectly marginalised those teens who are already smokers. To correct this imbalance, and prevent widening disparities arising as the population smoking rate decreases, adolescent tobacco cessation should be accorded greater priority in tobacco control policy, practice, and research.

**Competing interests:** None known.

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**References:**


