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# **Increasing the reach of quitlines through active telephone recruitment: do cold-called smokers differ from quitline callers?**

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## **Abstract**

**Introduction:** Only 1-7% of smokers use quitlines annually. Active telephone recruitment ('cold calling') can enrol about 50% of community smokers to quitline services. However, whether cold called smokers' characteristics differ from traditional quitline clients is unknown. To assess whether active telephone recruitment reaches new groups of smokers, New South Wales (NSW) Quitline callers were compared with cold-called smokers who received telephone counselling as part of a randomised controlled trial (RCT).

**Methods:** Data were extracted from the NSW Quitline database from 13 September 2005 to 10 April 2007 to coincide with the trial's recruitment period. Records (n=18,584) of first-time quitline callers, who smoked daily, resided in NSW, Australia, and received telephone counselling were included. Cold-called participants who received telephone counselling (n=695) were recruited by telephone from the electronic NSW telephone directory. Eligibility requirements were daily tobacco use; aged 18 years or older; NSW resident, and English-speaking. Smokers were eligible regardless of their quitting intention.

**Results:** Male smokers, older age groups, those living in non-metropolitan areas, smokers who took longer to smoke their first cigarette after waking, consumed fewer cigarettes per day and were less motivated to quit had greater odds of being referred to the quitline through cold calling.

**Conclusions:** Active telephone recruitment enrolls new groups of smokers to quitlines. The reach of quitlines could be improved if quitlines incorporated cold calling into their recruitment strategies.

## **Introduction**

Quitlines provide population-wide support including reactive telephone counselling (i.e., immediate counselling to smoker-initiated calls) or proactive telephone counselling (i.e., quitline-initiated calls to smokers) (Zhu, Anderson, Johnson, Tedeschi, & Roeseler, 2000). Although most smokers quit unassisted (Chapman, 2009), systematic reviews demonstrate that proactive telephone counselling increases smoking cessation rates (Stead, Perera, & Lancaster, 2009; Tzelepis, Paul, Walsh, McElduff, & Knight, 2011). Quitlines commonly use passive recruitment, such as mass media, that requires smokers to initiate contact with the quitline (Farrelly, Hussin, & Bauer, 2007). However, quitlines reach only 1-7% of smokers each year (Cummins, Bailey, Campbell, Koon-Kirby, & Zhu, 2007; Swartz Woods & Haskins, 2007).

Active telephone recruitment (or 'cold calling') involves recruiter-initiated contact with smokers and could greatly increase quitline utilisation (Tzelepis, Paul, Walsh, Wiggers, Knight, et al., 2009; Van Deusen, et al., 2007). Such recruitment enrolled almost 45 times more smokers into cessation services than media (McDonald, 1999). The value of media campaigns should not be underestimated given its ability to facilitate cessation (Wakefield, et al., 2008). The purpose of media is broader than increasing quitline utilisation and only a small portion of smokers viewing media respond by calling the quitline. Active telephone recruitment can enrol between 41% (Van Deusen, et al., 2007) to 52% (Tzelepis, Paul, Walsh, Wiggers, Knight, et al., 2009) of smokers from the general population into quitlines. This is considerably higher than the 1-7% of adult smokers using quitlines annually (Cummins, et al., 2007; Swartz Woods & Haskins, 2007).

Quitline callers are a relatively select group of smokers. Compared to the general smoking population, quitline callers are more likely to be women (Abdullah, Lam, Chan, & Hedley, 2004; Prout, et al., 2002), younger (Abdullah, et al., 2004; Prout, et al., 2002), unemployed (Abdullah, et al., 2004), higher educated (Abdullah, et al., 2004; Prout, et al., 2002), more addicted (Abdullah, et

al., 2004; Prout, et al., 2002), to have previously quit (Abdullah, et al., 2004) and be ready to quit within 30 days (Prout, et al., 2002).

It is unknown whether active telephone recruitment enrolls groups of smokers who are under-represented among quitline callers. This study investigates whether active telephone recruitment reaches new groups of smokers for quitline counselling compared to current passive recruitment methods.

## **Methods**

### **Design**

Characteristics of cold-called smokers who received proactive telephone counselling as part of an RCT were compared with smokers who called the NSW Quitline themselves for telephone counselling.

### **Procedure**

#### *NSW Quitline callers*

The NSW Quitline records the basic socio-demographic characteristics and smoking history of each smoker who receives telephone support. With permission from the Cancer Institute NSW (funds the NSW Quitline), the authors were provided with de-identified records of smokers who received NSW Quitline telephone support between 13 September 2005 and 10 April 2007 to coincide with the RCT's recruitment period. Records were included if the smoker used tobacco daily, was a first-time quitline caller, resided in NSW, Australia and received telephone counselling. The NSW Quitline provides continued telephone support only to smokers willing to set a quit date during the initial call.

#### *Cold-called smokers recruited into an RCT*

Over 19-months (13 September 2005-10 April 2007), smokers were recruited by telephone into the parent RCT that examined the effectiveness of proactive telephone counselling on cessation rates (Tzelepis, Paul, Wiggers, et al., 2011). Eligibility requirements were: daily tobacco use; aged 18 years or older; NSW resident; and English-speaking.

Overall, 48,014 telephone numbers were randomly selected from the NSW Electronic White Pages telephone directory. Households were mailed an information letter and trained interviewers, independent of the NSW Quitline, telephoned 48,014 households. Of 43,710 households reached, 3,008 contained at least one eligible smoker. If two or more eligible smokers were residents, a computerised age grid randomly selected one smoker. This smoker regardless of quitting intention was invited to join an RCT offering NSW Quitline proactive telephone support or written self-help materials. The script used to recruit smokers is available on the journal's website. Of the 3,008 eligible smokers, 1,562 (51.9%) gave verbal consent to be referred to quitline support and completed a baseline computer-assisted telephone interview (CATI). Subsequently, the CATI used a random number generator to allocate the smoker to proactive telephone counselling (n=769) or mailed self-help materials (n=793). Figure 1 illustrates the recruitment and group allocation process.

The University of Newcastle Human Research Ethics Committee and the Hunter New England Human Research Ethics Committee granted ethics approval for the trial.

## **Measures**

Information available for both NSW Quitline callers (recorded during the counselling call) and cold-called smokers (recorded during the baseline survey) was included.

*Demographic information:* gender (*female, male*), age (*18-29, 30-39, 40-49, 50-59, 60-69, 70+*) and area of residence (*metropolitan, non-metropolitan*).

*Nicotine dependence:* time to first cigarette after waking (*within 5 mins, 6-30 mins, 31-60 mins, 61+ mins*) and cigarettes per day (*10 or less, 11-20, 21-30, 31+*).

*Quitting intention:* motivation to quit (*preparation, contemplation, pre-contemplation*). Preparation was defined as ready to quit within 30 days, contemplation as ready to quit within 6 months and pre-contemplation as not ready to quit within 6 months (DiClemente, et al., 1991).

### **Statistical analysis**

Statistical analysis was completed using SAS software version 9.1. Logistic regression tested whether the sample enrolled by active telephone recruitment differed from quitline callers in relation to gender, age, residence, time to first cigarette, cigarettes per day and motivation to quit. Interaction effects examined whether the impact of gender, age, residence, time to first cigarette and cigarettes per day respectively depended on motivation to quit. Logistic regressions were then undertaken for each motivation to quit sub-group. Tests of significance were performed at  $\alpha=0.05$ .

## **Results**

### **NSW Quitline callers**

There were 18,584 eligible NSW Quitline callers who telephoned the service as a result of media advertisements, cigarette packet warnings, publications, healthcare professional advice or word of mouth.

### **Cold-called smokers recruited into an RCT**

Of 3,008 eligible households, 1,562 (51.9%) smokers contacted by telephone were recruited (Tzelepis, Paul, Walsh, Wiggers, Knight, et al., 2009). Of these, 769 were allocated to proactive telephone counselling and 695 (90%) received telephone counselling (Tzelepis, Paul, Walsh, Wiggers, Duncan, et al., 2009).

## **Comparison of cold-called smokers with NSW Quitline callers**

Table 1 outlines the characteristics of cold-called smokers who received proactive telephone counselling (n=695) and NSW Quitline callers (n=18,584). Men had greater odds (OR=1.21, 95% CI: (1.01-1.45)) than women of being referred to the quitline through cold calling. Compared to smokers aged 18-29 years, the older groups had higher odds of cold calling referral. Non-metropolitan residents had 1.60 (1.33-1.91) times the odds of cold calling recruitment to quitline support compared to metropolitan residents. Smokers who waited more than 5 minutes to smoke their first cigarette after waking and those who consumed fewer cigarettes per day had greater odds of cold calling referral to the quitline. Less motivated smokers in the contemplation or pre-contemplation stage had larger odds of cold calling recruitment than smokers in the preparation stage.

Interaction effects between motivation to quit and age (p=0.003) and gender (0.04) were statistically significant, were borderline significant for cigarettes per day (p=0.06) and residence (p=0.08), but non-significant for time to first cigarette (p=0.4).

Table 1 reports the findings for each motivation to quit sub-group. In general, the effect of gender was more prominent among smokers in the preparation stage than less motivated smokers. The effects of age appeared more pronounced among those in the pre-contemplation stage than smokers in the contemplation or preparation stage.

## **Discussion**

This is the first study to compare the characteristics of smokers actively recruited by telephone with usual quitline callers. The results highlight that active telephone recruitment enrolls smokers currently under-represented among quitline callers. Men, older smokers, non-metropolitan residents, less addicted and less motivated smokers had greater odds of quitline recruitment through

cold calling. Given the large NSW Quitline sample, it should be noted that although a significant difference was found for gender the differences between the samples were small. Recruiting a greater proportion of older and non-metropolitan residents to quitlines may be worthwhile because such groups may have difficulty accessing other cessation services due to transportation issues or geographical remoteness. The findings demonstrate that more addicted smokers are more likely to seek quitline support themselves but the proportion of less addicted smokers using quitlines could be increased if such support were proactively offered to them. Lower levels of nicotine addiction are associated with successful quitting (Farkas, et al., 1996), thus recruiting less addicted smokers to quitlines may increase cessation rates. Cold calling may recruit some lighter smokers who may have quit on their own, however less addicted smokers are likely to benefit from quitline support, given that only 3-5% of self-quitters achieve lasting abstinence (Hughes, Keely, & Naud, 2004), and proactive telephone counselling increases successful quitting (Stead, et al., 2009; Tzelepis, Paul, Walsh, et al., 2011).

Given the NSW Quitline provides continued support only to smokers who set a quit date, it is important to examine the benefits of offering support to all smokers irrespective of quitting intention. Firstly, only 4-20% of smokers in the population are interested in quitting within 30 days (Etter, Perneger, & Ronchi, 1997; Velicer, et al., 1995; Walsh, Paul, Tzelepis, & Stojanovski, 2006), highlighting the importance of engaging potentially less motivated smokers with quitlines. Secondly, less motivated smokers make successful quit attempts, as demonstrated by the 7-day point prevalence abstinence rates of cold-called smokers in the pre-contemplation stage who received telephone support (n=178): 14.6% at 4-months, 12.9% at 7-months and 12.9% at 13-months. These cessation rates are similar to those achieved by the overall participants (Tzelepis, Paul, Wiggers, et al., 2011).

Active telephone recruitment can recruit new groups of smokers that differ from the quitline's traditional clients. Consequently, the reach of quitlines could be improved if quitlines included a complementary active telephone recruitment approach to supplement current recruitment strategies. Proactive telephone counselling significantly increased cold-called smokers' cessation rates up to 7-months (Tzelepis, Paul, Wiggers, et al., 2011). The cost-per-smoker recruited of AU\$71 (US\$59) (i.e, total recruitment cost of AU\$110,952 divided by 1562 participants) (Tzelepis, Paul, Walsh, Wiggers, Knight, et al., 2009) compared favourably to various television (US\$70-\$1,629 per call) and radio (US\$332-\$1,053 per call) advertisements in generating quitline calls (Mosbaek, Austin, Stark, & Lambert, 2007). The costs of telephone recruitment into cessation support could be further reduced, by contacting smokers via existing population-based telephone surveys.

The RCT's shortcomings include that the reach of active telephone recruitment to households with an adult daily smoker was restricted because the NSW electronic telephone directory did not contain unlisted or mobile phone numbers. However, 87% of Australian households have a landline (Australian Communications and Media Authority, 2011), suggesting the exclusion of mobile phone numbers had a minor impact on findings. Limitations of the logistic regression analysis include the level of missing data from the NSW Quitline records for motivation to quit (15%), cigarettes per day (25%), age (28%), residence (37%) and time to first cigarette (49%). Another shortcoming of the NSW Quitline data includes that the motivation to quit information had some inconsistencies in the way it was coded. However the NSW Quitline's primary purpose is to provide cessation support to smokers, and so data collection for research purposes must be balanced against the need to establish rapport and provide counselling. Information on whether a smoker consumed tobacco 'daily' was often not available in the quitline records. Therefore, it was assumed that quitline callers were daily smokers, which appears reasonable, because 98% of smokers who called a quitline were daily smokers (Prout et al., 2002) and more addicted smokers call quitlines (Abdullah, et al., 2004; Prout, et al., 2002). The NSW Quitline had a 19 years or younger age

category which did not correspond to the RCT's minimum age of 18 years. However, given the small proportion of smokers in these groups, this limitation is likely to have a minimal impact on the results.

Active telephone recruitment enrolls new groups of smokers to quitlines by attracting a different segment of the smoking community. Given its reach, quitlines should consider including a cold calling approach into their recruitment strategy.

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### **Declaration of interests**

The authors have no competing interests.

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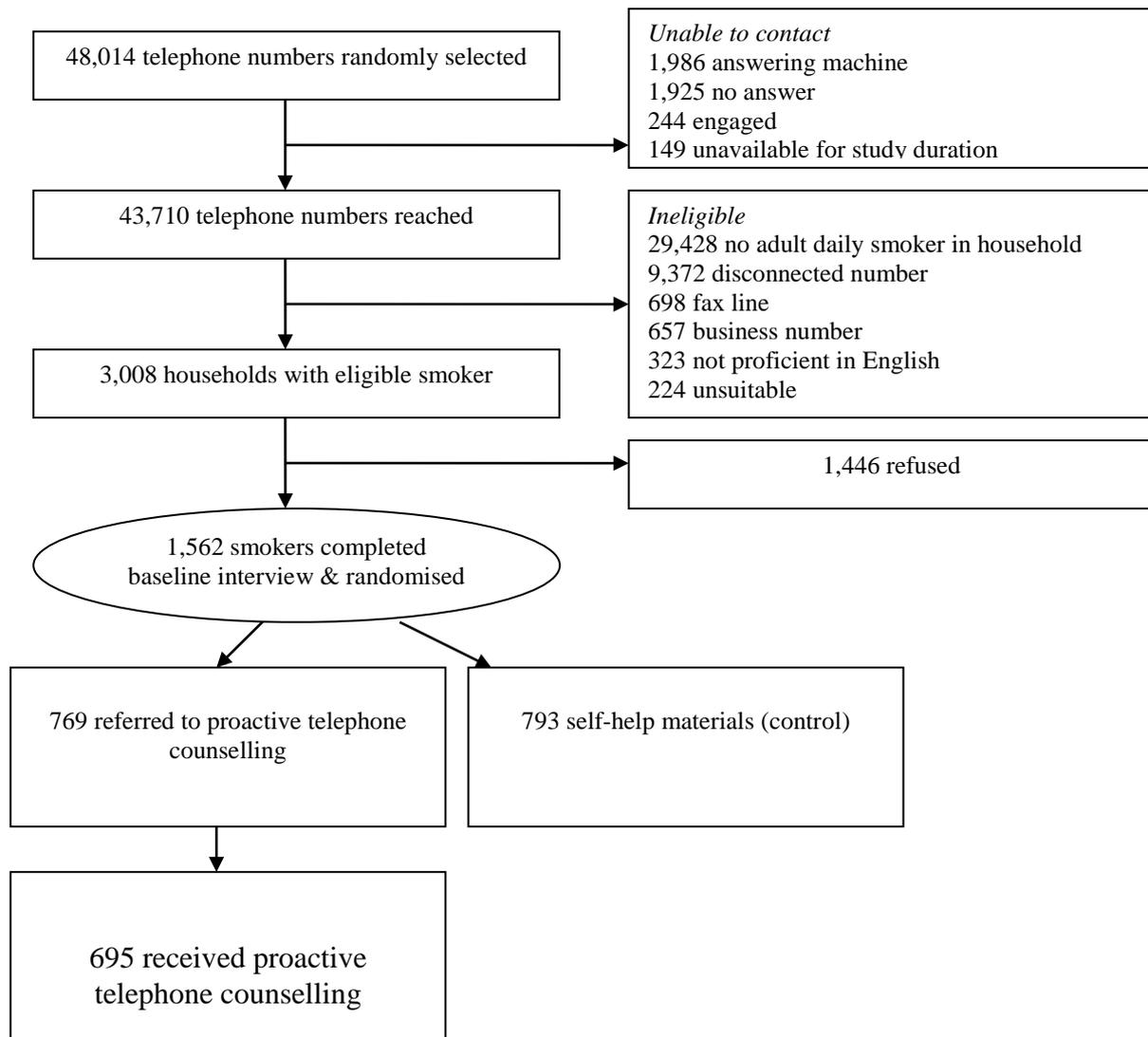


Figure 1: Recruitment and allocation to smoking cessation support

Table 1: Characteristics of Cold Called Smokers who received telephone counselling and NSW Quitline Callers and predictors of cold calling recruitment to quitline services

Characteristic	Overall Results			Motivation to Quit Sub-groups		
	Cold Called Smokers (n=695) <sup>a</sup>	NSW Quitline Callers (n=18584) <sup>b</sup>	Adjusted Odds Ratio (95% CI)	Preparation Adjusted Odds Ratio (95% CI)	Contemplation Adjusted Odds Ratio (95% CI)	Pre-contemplation Adjusted Odds Ratio (95% CI)
Gender						
Female	346 (49.8%)	9,624 (52.1%)	Referent	Referent	Referent	Referent
Male	349 (50.2%)	8,858 (47.9%)	1.21(1.01-1.45)*	1.61(1.20-2.16)*	1.00(0.77-1.29)	1.19(0.68-2.07)
Age (years)						
18-29	74 (10.6%)	3,858 (28.8%)	Referent	Referent	Referent	Referent
30-39	171 (24.6%)	3,797 (28.3%)	2.65(1.95-3.59)*	2.64(1.57-4.47)*	2.67(1.73-4.10)*	2.87(1.27-6.48)*
40-49	195 (28.1%)	2,740 (20.4%)	4.61(3.39-6.25)*	3.28(1.89-5.68)*	4.91(3.22-7.50)*	13.99(5.45-35.90)*
50-59	155 (22.3%)	1,744 (13.0%)	5.85(4.23-8.09)*	6.42(3.73-11.05)*	4.76(2.97-7.62)*	13.69(5.17-36.21)*
60-69	78 (11.2%)	935 (7.0%)	4.52(3.09-6.61)*	6.28(3.36-11.71)*	3.58(2.06-6.24)*	5.14(1.84-14.38)*
70+	22 (3.2%)	327 (2.4%)	3.83(2.17-6.76)*	9.79(4.56-21.04)*	1.05(0.31-3.55)	2.39(0.51-11.14)
Area of residence						
Metropolitan	307 (44.2%)	6,457 (55.3%)	Referent	Referent	Referent	Referent
Non-metropolitan	387 (55.8%)	5,210 (44.7%)	1.60(1.33-1.91)*	1.20(0.89-1.61)	1.86(1.43-2.41)*	2.21(1.26-3.88)*
Time to first cigarette						
Within 5 minutes	179 (25.8%)	4,518 (47.1%)	Referent	Referent	Referent	Referent
6 to 30 minutes	311 (44.9%)	2,885 (30.1%)	2.67(2.13-3.33)*	2.16(1.51-3.09)*	3.04(2.19-4.23)*	3.60(1.92-6.78)*
31 to 60 minutes	110 (15.9%)	915 (9.5%)	3.06(2.28-4.12)*	2.38(1.47-3.84)*	3.54(2.30-5.43)*	4.76(1.76-12.84)*
61 or more minutes	93 (13.4%)	1,265 (13.2%)	1.67(1.20-2.33)*	1.08(0.61-1.90)	2.36(1.48-3.76)*	1.01(0.34-2.96)
Cigarettes per day						
10 or less	140 (20.2%)	2,244 (16.1%)	3.69(2.49-5.47)*	2.94(1.60-5.43)*	2.99(1.68-5.32)*	26.51(7.03-99.92)*
11 to 20	293 (42.3%)	4,978 (35.7%)	2.54(1.81-3.56)*	2.37(1.40-3.99)*	1.90(1.15-3.14)*	10.52(4.02-27.58)*
21 to 30	201 (29.0%)	4,639 (33.3%)	1.67(1.19-2.36)*	1.37(0.80-2.34)	1.66(1.003-2.73)*	3.01(1.25-7.23)*
31 or more	59 (8.5%)	2,090 (15.0%)	Referent	Referent	Referent	Referent
Motivation to quit						
Preparation	207 (31.1%)	8069 (51.1%)	Referent			
Contemplation	280 (42.1%)	7316 (46.4%)	1.51(1.25-1.83)*	-	-	-
Pre-contemplation	178 (26.8%)	391 (2.5%)	23.36(17.46-31.25)*			

<sup>a</sup> Cold calling trial missing data: Area of residence:  $n=1$  (0.1%); Time to first cigarette:  $n=2$  (0.3%); Cigarettes per day:  $n=2$  (0.3%); Motivation to quit:  $n=30$  (4.3%)

<sup>b</sup> NSW Quitline missing data: Gender:  $n=102$  (0.5%); Age:  $n=5,183$  (27.9%); Area of residence:  $n=6,917$  (37.2%); Time to first cigarette:  $n=9,001$  (48.4%); Cigarettes per day:  $n=4,633$  (24.9%); Motivation to quit:  $n=2808$  (15.1%)

\* $p<0.05$