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Improving the continuity of smoking cessation care delivered by quitline services

Flora Tzelepis,^{a,b} Christine L Paul,^a Jenny Knight,^{a,b} Sarah L Duncan,^a Patrick McElduff,^a John Wiggers^{a,b}

^a School of Medicine and Public Health, University of Newcastle & Hunter Medical Research Institute, University Drive, Callaghan, New South Wales 2308 Australia

^b Hunter New England Population Health, Hunter New England Local Health District, Locked Mail Bag 10, Wallsend, New South Wales 2287 Australia

Corresponding author at:

Dr Flora Tzelepis (PhD)
School of Medicine and Public Health
University of Newcastle
University Drive
Callaghan NSW 2308 Australia
Phone: +61 2 4924 6275
Fax: +61 2 4924 6490
E-mail: Flora.Tzelepis@newcastle.edu.au

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Abstract

Objectives: This study identified smokers intended use of new quitline features aimed at improving smoking cessation such as having the same quitline advisor for each call, longer-term telephone counseling and provision of additional cessation treatments.

Methods: Smokers who had previously used quitline counseling completed a computer-assisted telephone interview examining intended use of potential quitline enhancements.

Results: The majority of smokers (61.1%) thought their chances of quitting would have increased a lot/moderately if they had the same quitline advisor for each call. Most smokers reported likely use of longer-term quitline telephone support after a failed (58.3%) or successful (60%) quit attempt. Smokers were likely to use quitline support long-term (mean=9.9 months). Most smokers would be likely to use free or subsidised nicotine replacement therapy (NRT) (74.9%) if offered by quitlines. Younger smokers had greater odds of being likely to use text messages, whereas less educated smokers had greater odds of being likely to use free or subsidised NRT.

Conclusions: Smokers appear interested in quitlines offering longer-term telephone support, increased continuity of care and additional effective quitting strategies.

Practice Implications: Quitlines could adopt a stepped care model that involves increasingly intensive treatments and extended telephone counseling delivered by the same quitline advisor.

1. Introduction

Telephone tobacco cessation services, commonly known as quitlines are cost effective [1] and generally offer reactive and proactive telephone counseling, self-help materials and in some countries free nicotine replacement therapy (NRT) [2]. Proactive telephone counseling involves quitline-initiated calls to smokers and increases smoking cessation rates [3]. However, only a minority of quitline callers achieve prolonged abstinence [4-6]. Providing NRT to quitline callers significantly increases abstinence rates long-term [7]. Given a minority of smokers use effective quitting aids [8, 9], a potential enhancement to quitline services could include offering smokers additional effective quitting strategies (e.g. group support).

Longer-term support and increased continuity of care may also enhance quitline service delivery and encourage new quit attempts, reduce relapse and increase long-term cessation rates. For instance, smokers offered telephone counseling and pharmacotherapies for 12 months were significantly more likely to achieve long-term abstinence than smokers who received standard 8-week treatment [10]. Furthermore, systematic reviews have demonstrated that continuity of health care is associated with improved patient outcomes [11, 12] which include increased patient satisfaction [11, 12] and receipt of preventive services [11]. In relation to continuity of quitline care, no studies have examined whether proactive telephone counseling delivered by the same quitline advisor increases cessation rates compared to telephone support from several quitline advisors. However research has found that individual quitline counselor differences had an impact on their client's quit rates [13]. Therefore it is important to examine whether smokers perceive that having the same quitline advisor would increase their chances of quitting successfully.

Systematic reviews have demonstrated that self-help materials [14], web-based interventions [15], proactive telephone counselling [16], health care professional advice [17], NRT [18], bupropion [19], varenicline [20] and group therapy [21] are effective quitting aids for smoking cessation. However only a minority of smokers use these quitting strategies during a quit attempt [8, 9]. Users

of cessation aids are more likely to be women [22-24], older [24], higher educated [22, 24] and more addicted smokers [8, 22, 24]. Given effective quitting aids are under-utilized [8, 9], there is potential for quitlines to increase their client's use of various quitting strategies in an effort to encourage repeated quit attempts, increase quitting success and reduce relapse. Understanding the characteristics of smokers who are more likely to use each type of quitting strategy could inform recruitment strategies for quitlines and other smoking cessation programs.

Modifications to quitline services that may be of benefit to smokers may therefore include longer-term quitline support, increased continuity of care and provision of additional effective quitting aids. Smokers who have used the quitline in the past are well-positioned to determine whether such modifications would be worthwhile. This study investigated whether smokers who had previously used the quitline believed modifications to quitlines that included increase continuity of care would have increased their quitting success. To examine, the feasibility and likely use of additional quitline modifications (i.e. longer-term support, additional quitting aids), we also explored among current smokers who had used the quitline: 1) their likely use of continued quitline telephone contact after a failed or successful quit attempt; 2) duration of quitline support would intend to use; 3) likely use of additional cessation treatments if offered by quitline; and 4) characteristics associated with likelihood of using each cessation intervention.

2. Methods

2.1 Study design and sample

This study involved a cross-sectional computer assisted telephone interview (CATI) of current smokers who had previously participated in a smoking cessation randomised controlled trial (RCT) [25]. Adults from the general population who used tobacco daily and resided in New South Wales (NSW), Australia were eligible to take part in the RCT. The trial's recruitment procedure involved telephoning households that were randomly selected from the NSW Electronic White Pages telephone directory and inviting one randomly selected smoker to participate. The current study's

sample comprised of smokers randomly allocated to the RCT's experimental condition that involved proactive telephone counseling from the NSW Quitline. During the RCT, participants ready to quit within a month were offered an initial quitline call and an additional five proactive telephone counseling calls: on the quit date; and at 3, 7, 14, and 30 days after the quit date. Participants not ready to quit within a month were offered an additional three proactive telephone counseling calls: 1-, 3- and 5-months after the initial counseling call. The content of the quitline counseling calls included smoking status assessment, identifying and coping with triggers, providing information on effective quitting aids, setting tasks to assist with quitting, relapse prevention strategies and promotion of self-efficacy. RCT participants completed baseline, 4-month, 7-month and 13-month CATIs. Of the 769 participants in the proactive telephone counseling group, 606 completed the trial's 13-month assessment (78.8%) [25].

In the present study, the 606 participants were re-contacted and invited to participate in a cross-sectional CATI. Of 606 potential participants, 16 were ineligible (10 deceased, 3 physically or mentally unable to participate, 3 had moved overseas) and 239 could not be contacted (124 not reached after maximum call attempts, 109 disconnected/wrong number, 6 had moved). Of the 351 remaining potential participants, 297 respondents completed the cross-sectional CATI (consent rate=84.6%; response rate=50.3%). Compared to trial participants in the proactive telephone counseling condition who did not complete the cross-sectional CATI, participants who completed this CATI were more likely to be aged 40-49 years ($p=0.02$) and less likely to have never been married ($p=0.02$) at the RCT's baseline survey. However there were no differences between the cross-sectional CATI participants and non-participants in terms of gender, time to first cigarette, cigarettes smoked per day, age started smoking, country of birth, education and employment status at the RCT's baseline survey. Overall, 175 (58.9%) current smokers and 122 (41.1%) ex-smokers completed the cross-sectional CATI. Only current smokers are included here as the topic explored in this paper did not relate to ex-smokers.

2.2 Procedure

In December 2011-February 2012, potential participants who had received quitline counselling as part of an RCT [25] were sent an information letter. Within two weeks potential participants were telephoned and invited to complete a cross-sectional CATI. If verbal consent was provided an interviewer administered the CATI.

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

2.3 Measures

The measures used to examine the feasibility of modifications to quitlines assessed smokers' perceptions of: 1) increased continuity of care; 2) longer-term quitline support; and 3) provision of additional effective quitting strategies by the quitline.

2.3.1 *Perceptions towards modifications to quitline*

Current smokers indicated whether they thought the following strategies would have increased their chances of quitting successfully: having the same telephone advisor for each call; subsidised NRT; and subsidised medications (e.g. Zyban, Champix). Response options were *not at all*, *a little*, *a moderate amount*, *a lot*, and *don't know*.

2.3.2 *Likelihood of using continued quitline telephone support after a failed or successful quit attempt*

Current smokers nominated how likely they would be to accept follow-up quitline calls after: 1) a failed quit attempt; and 2) a successful quit attempt. Respondents who were very likely/likely to accept such calls indicated best timing for calls.

2.3.3 Duration of quitline telephone support

Smokers reported the length of time they would be likely to use quitline support to assist them to quit.

2.3.4 Intended use of additional quitting strategies if offered by quitline

Current smokers indicated whether they would be likely to use the following strategies if offered by the quitline: online support; text messages; free or subsidised NRT; letter to take to doctor with suggestions on how the doctor could help with quitting; and quit smoking groups (face-to-face or internet). Response options were *very likely*, *likely*, *unsure*, *unlikely*, and *very unlikely*.

2.3.5 Smoking behaviours

Respondents were asked “*Do you currently smoke any tobacco products?*” and response options were *Daily*, *At least once a week*, *Less often than once a week*, *Not at all*. Those who reported current smoking (i.e. daily, weekly, or less than weekly) reported age first started smoking regularly, time to first cigarette after waking, cigarettes smoked per day and quit attempts in past 12 months.

2.3.6 Demographic characteristics

Age, gender, country of birth, education, employment and marital status were collected.

2.4 Statistical analysis

Statistical analysis was completed using SAS software version 9.3 (SAS Institute Inc, Cary, NC).

Categorical data were described using percentages and continuous data by means, standard deviations and medians. Logistic regressions were undertaken for each quitting strategy to identify characteristics significantly associated with likely use of: a) internet-based or online support; b) text messages to mobile phone; c) free or subsidised NRT; d) a letter to take to the doctor with suggestions on how the doctor could help with quitting; and e) quit smoking groups (face-to-face or

internet). The independent variables included and adjusted for in the logistic regressions were: age, gender, country of birth, education, marital status, employment, age started smoking regularly, time to first cigarette after waking, number of cigarettes smoked per day and quit attempt in the past 12 months. Odds ratios and 95% confidence intervals were calculated. The Hosmer and Lemeshow Goodness-of-Fit test examined whether the model fitted the data well.

3. Results

3.1 Participant characteristics

Table 1 outlines respondents' characteristics. Approximately half (52%) were male, the mean age was 52.7 years and 54.3% were married or living in a defacto relationship. Most participants were born in Australia (84%), 22.9% had a university or tertiary education and 45.7% were employed full-time.

3.2 Smoking behaviours

Most smokers used tobacco daily (93.7%), 3.4% at least weekly and 2.9% less than weekly. Daily smokers consumed a mean of 17.7 (median=20) cigarettes per day and mean time to first cigarette after waking was 64 minutes (median=30). Most daily smokers (57.9%) made a quit attempt in the past 12 months.

3.3 Perceptions towards modifications to quitlines

The majority of smokers thought their chances of quitting successfully would have increased moderately or a lot if they had: subsidised NRT (62.9%); the same quitline advisor for each call (61.1%); or subsidised medications (52.0%).

3.4 Likelihood of using continued quitline telephone support after a failed or successful quit attempt

Most smokers (58.3%) indicated they were very likely or likely to accept quitline follow-up calls after a failed quit attempt. Of these smokers (n=102), 12.7% preferred calls at least weekly, 39.2% every few weeks and 24.5% monthly. The majority of current smokers (60%) also reported being very likely or likely to accept additional quitline calls after a successful quit attempt. Of these smokers (n=105), 6.7% preferred calls at least weekly, 32.7% every few weeks and 30.8% monthly.

3.5 Duration of quitline telephone support

Among smokers who nominated a preferred duration (n=143), the mean length of time they were likely to use the quitline to provide quitting assistance was 9.9 months (median=6 months).

3.6 Intended use of additional quitting strategies if offered by quitline

Current smokers most commonly nominated free or subsidised NRT (74.9%) as the quitting strategy they would be very likely or likely to use if offered by the quitline. Most smokers (56.0%) indicated they would be very likely/likely to accept a letter to take to the doctor with suggestions on how the doctor could help with quitting and 42.3% to accept quit smoking groups (face-to-face or internet). About one-third of smokers indicated they were very likely/likely to use text messages (34.5%) or online support (33.1%).

3.7 Characteristics associated with likelihood of using additional quitting strategies

There were no characteristics associated with likely use of: 1) internet-based or online support; 2) a letter to take to the doctor with suggestions on how doctor could help with quitting; or 3) quit smoking groups (face-to-face or internet). Table 2 outlines the characteristics associated with likelihood of using: free or subsidised NRT; or text messages to mobile phone. The Hosmer and Lemeshow Goodness-of-Fit test indicated that each logistic regression model fitted the data well.

3.7.1 Free or subsidised NRT

Smokers who completed Year 10 or less (OR=3.22(1.04-9.96)) or who finished their Higher School Certificate (Year 12) or Technical and Further Education (TAFE) qualifications (OR=4.04 (1.43-11.40)) had larger odds of being likely to use free of subsidised NRT than their university or tertiary educated counterparts.

3.7.2 Text messages to mobile phone

Smokers aged 31 to 50 years (OR=2.45(1.07-5.60)) had larger odds of being likely to use text messages sent to their mobile phone than those aged 51 years or older. Compared to smokers who started smoking regularly at 15 years or younger, those aged 16 to 20 years (OR=5.75(2.04-16.20)) when they started smoking regularly had greater odds of likely use of text messages.

4. Discussion and Conclusion

4.1 Discussion

Quitlines offering improved continuity of care, longer-term calls and various effective quitting strategies appears acceptable to smokers. The modification to the quitline perceived most commonly by current smokers to increase their chances of quitting successfully was having free or subsidised NRT (63%). Although our Australian participants did not receive free or subsidised NRT via the quitline, some international quitlines offer NRT as part of their service [26]. Past studies have reported that a high proportion of quitline callers who were eligible for NRT obtained it (83%-99%) [27-29] and used the NRT (78-89%) [27, 30]. Quitline users offered NRT have also been found to accept significantly more quitline counselling calls than quitline users not offered NRT [31-33]. Additionally, most smokers (61%) perceived that having the same quitline advisor for each counseling call would have increased their chances of quitting successfully. If quitlines were to schedule the same advisor for each call to the smoker this could improve the continuity of smoking care. Future research should investigate whether proactive telephone counseling delivered by the same quitline advisor increases smoking cessation compared to support from several advisors.

The study also found that most smokers intended to use quitline follow-up calls long-term. Most smokers indicated they would be likely to accept quitline follow-up telephone calls after a failed quit attempt (58%) or a successful quit attempt (60%). Frequent quitline contact of at least weekly or every few weeks was preferred by 52% of smokers after a failed quit attempt and 39% after a successful quit attempt. Smokers were also likely to use quitline telephone support for a mean duration of 9.9 months, which is much longer than is typically offered by quitline services. A randomised controlled trial demonstrated that it is feasible for smokers to be offered telephone counseling for 12 months, and that smokers who receive such smoking cessation care were more likely to achieve abstinence than those who received standard treatment [10].

The study results also suggested that it is feasible for quitlines to offer smokers additional effective quitting strategies. Although Australian quitlines do not provide NRT, most smokers appear interested in receiving free or subsidised NRT (75%) from quitlines. International research has shown that more than three-quarters of smokers will use NRT (78-89%) supplied by quitline services [27, 30]. NRT has also been shown to significantly increase abstinence rates among international quitline callers [31]. Furthermore, less than half of smokers who visit a general practitioner receive quitting advice [34]. Therefore the quitline providing smokers with a letter to take to their doctor with quitting suggestions (56% of smokers intended to use) may prompt doctors to provide smoking cessation advice, medications and follow-up care.

Characteristics were associated with intended use of text messaging and subsidised NRT if offered by the quitline. Younger smokers and those who started smoking at a younger age had greater odds of intending to use text messages. This is supported by evidence that younger adults are more likely than their older counterparts to be willing to use text-messages as part of smoking cessation programs [35, 36]. Given that older age has been associated with using cessation treatments among smokers in the general population [23], offering text-message based quitting strategies to quitline

users may be a promising approach for increasing cessation treatment use among younger smokers. Furthermore, less education was associated with smokers being more likely to use free or subsidised NRT if offered by the quitline. This is consistent with international research that showed that quitline callers who had attained a high school education or less were more likely to use free NRT supplied by the quitline [28]. Particular subgroups of smokers may therefore be more likely to use some of the additional forms of support if provided by the quitline.

The study limitations included that participants were selected from those offered quitline counseling during a cessation trial, which may limit the generalizability of results. However, because we examined modifications to quitlines it was necessary to include former quitline users. Nonetheless, random sampling of NSW telephone numbers was used to recruit smokers into the RCT and minimised selection bias. Additionally comparison between those in the proactive telephone counseling condition who completed the cross-sectional CATI and CATI non-respondents found no significant difference between gender, time to first cigarette, cigarettes smoked per day, age started smoking, country of birth, education and employment status at the RCT's baseline survey. However statistical differences between the cross-sectional CATI participants and non-participants were found in relation to age and marital status, which may limit the generalizability of the findings. Furthermore, given that smokers had used the quitline previously (for up to 5 months), the mean duration of quitline treatment preferred (9.9 months) may reflect that smokers who have been unable to quit recognise that they require longer-term quitline support to achieve abstinence. Another limitation of this study is that it measured intended use rather than behaviour. However our previous work found that when smokers were proactively offered quitline support, uptake (52%) [37] exceeded prior reports of intended use (46%) [38]. Furthermore, reported use of NRT (78-89%) when provided via international quitline services [27, 30] although similar, exceeded the intended use of subsidised NRT reported by smokers (75%) in the current study. Therefore measuring intended use to inform the feasibility of modifications to quitline services appears reasonable.

4.2 Conclusion

This is the first study to examine whether smokers who had used the quitline previously, intended to use quitline modifications such as longer-term telephone support, increased continuity of smoking care and various effective quitting strategies. The findings provide support for the feasibility of incorporating these features, which aim to increase the cessation rates of quitline users, into routine quitline practice. Such enhancements may improve smokers' long-term abstinence rates and should be considered by quitline providers.

4.3 Practice Implications

Quitline modifications that increase duration and continuity of care and offer additional effective quitting strategies could be implemented into routine quitline practice. Australian quitlines offer self-help materials (includes online intervention websites), reactive and proactive telephone counseling. A stepped care quitline model could be adopted where increasingly intensive treatments are offered such as health care professional advice [17], NRT [18], bupropion [19], varenicline [20] and group therapy [21]. Extended quitline support and telephone counseling from the same quitline advisor could also be considered by quitline services. The findings that smokers are likely to use longer-term support, increased continuity of care and additional quitting aids if offered by the quitline, may be generalizable to and has practical implications for other smoking cessation programs. For instance, these components of smoking cessation care could also be applied to other smoking cessation programs such as individual counseling, group counseling, and health care provider support.

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Author statement

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

Conflict of interest

All authors declare that they have no conflicts of interest.

Contributors

F Tzelepis, CL Paul, J Knight, P McElduff and J Wiggers obtained funding for the study. All authors were involved in study design and survey development. F Tzelepis managed the project and supervised data collection. F Tzelepis undertook the statistical analysis and drafted the manuscript. All authors provided critical comment on the manuscript and approved the final manuscript.

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Table 1: Participant characteristics

Characteristic	Current Smokers (n=175)
Gender (%)	
Male	52.0
Female	48.0
Age (years)	
Mean (SD)	52.7 (12.4)
Country of birth (%)	
Australia	84.0
Other	16.0
Education (%)	
Primary only	0.6
Year 7-10	28.6
HSC or TAFE ^a	46.3
University or tertiary	22.9
Other	1.7
Marital status (%)	
Married/defacto	54.3
Divorced/separated	28.0
Widowed	5.1
Never married	12.6
Employment status (%)	
Employed full time	45.7
Employed part time/casual	18.3
Unemployed	5.7
Student	2.3
Retired	17.7
Permanently unable to work	4.6
Home duties	4.0
Other	1.7

^a HSC=Higher School Certificate (Year 12); TAFE=Technical and Further Education

Table 2: Characteristics associated with willingness to use additional quitting strategies

Characteristic	Very likely / likely n (%)	Very unlikely/ unlikely / unsure n (%)	Odds ratio (95% CIs) ^a
Free or subsidised NRT			
Education			
Year 10 or less	40 (78.4%)	11 (21.6%)	3.22 (1.04-9.96)*
HSC or TAFE ^b	65 (80.3%)	16 (19.8%)	4.04 (1.43-11.40)*
University or tertiary	24 (60.0%)	16 (40.0%)	Referent
Text messages to mobile phone			
Age (years)			
18-30	5 (50.0%)	5 (50.0%)	4.94 (0.74-32.87)
31-50	29 (46.0%)	34 (54.0%)	2.45 (1.07-5.60)*
51 or more	26 (25.7%)	75 (74.3%)	Referent
Age started smoking			
15 or younger	10 (20.4%)	39 (79.6%)	Referent
16-20	41 (42.7%)	55 (57.3%)	5.75 (2.04-16.20)*
21 or older	9 (33.3%)	18 (66.7%)	2.82 (0.72-11.10)

^a Logistic regressions included and adjusted for current age, gender, country of birth, education, marital

status, employment, age started smoking, time to first cigarette, cigarettes per day and quit in last 12 months

^b HSC=Higher School Certificate (Year 12); TAFE=Technical and Further Education

* $p < 0.05$