Impact of a brief telephone referral on quitline use, quit attempts and abstinence

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Abstract

Quitline use can prompt quit attempts and promote abstinence among smokers, but rates of use are low and outcomes of brief quitline referrals unclear. In this study, a brief intervention was delivered to smokers who expressed motivation to quit in the next 30 days (N = 221) to encourage use of their state quitline. Correlates of quitline use were examined, and quitline callers versus non-callers were compared on the following outcomes at 2-month follow-up: cessation medication use, quit attempts and abstinence. Of the 221 smokers given a quitline referral, 34% called the quitline. Baseline motivation alone distinguished quitline callers from non-callers. Quitline use was positively associated with use of cessation medication, an association that remained robust even after adjusting for baseline motivation to quit. A trend was observed in which callers were marginally more likely than non-callers to report both a 24-h quit attempt and 7-day point prevalence abstinence. Relative to non-callers, callers also endorsed greater confidence to quit and increased self-efficacy to resist smoking temptations at follow-up. This study demonstrates a minimal intervention can promote acceptance of quitlines and favorable cessation outcomes among smokers motivated to quit.

Introduction

The efficacy of telephone quitlines for smoking cessation is well established [1]. Quitlines have the unique advantage of being free, anonymous and easily accessible from home or work. Despite these benefits, only a small proportion of smokers use quitlines [2] and many view them negatively [3]. Thus, a major challenge in tobacco control is how to increase their use, particularly since referrals to quitlines are recommended as a routine part of primary care. For example, clinical practice guidelines [1] promote use of the five As: Ask, Advise, Assess, Assist and Arrange. Within busy and often fast-paced primary care settings, this is often abbreviated, and a common approach that is promoted by numerous physician groups is to Ask, Advise and Refer. Physicians are generally receptive to referring their patients to quitlines [4], but the outcome of such referrals are not entirely clear. To better characterize the outcomes of quitline referrals, it is important to know the likelihood that referred smokers initiate quitline contact, as well as the outcomes for those who do versus do not engage in such behavior.

Though many studies report outcomes of established quitline callers, few have examined naturalistic outcomes from reactive quitline referrals (i.e. those in which the smoker initiates contact with the
quitline service). One study within a pre-surgical setting [5] found that 20% of smokers given a quitline referral initiated contact within 90 days; cessation outcomes were not reported among those who did versus did not call. Two other studies, one in medical settings [6] and the other in dental settings [7], report aggregate outcomes of smokers referred to quitlines, but do not report separate outcomes for quitline callers versus non-callers. However, in a study of 60 smokers, 47% of those referred through dental practices reported at least one call to the quitline and abstinence rates were higher among quitline users [8]. Building upon this prior evidence, our purpose herein was to examine acceptance of a brief telephone referral among smokers motivated to quit and to assess cessation outcomes among those who did versus did not accept the referral.

### Methods

#### Procedures

This study was part of a large, national trial of cessation induction among adult smokers, the methods of which have been reported elsewhere [9]. The parent study was exclusively focused on smokers who were unmotivated to quit in the near future; thus, it screened for and excluded smokers who were interested in quitting (smokers who form the sample for this analysis). Eligibility criteria for this study were: (i) age 18+ years, (ii) current smoker of ≥10 cigarettes/day, (iii) no use of non-cigarette tobacco, (iv) accessible by phone throughout the study period, (v) no FDA contraindications for NRT, (vi) no previous NRT use, (vii) no quit attempt >1 week in the past year and (viii) indication of interest in quitting smoking within the next 30 days.

With coordination from a national market research firm, potential participants were emailed a study invitation and completed a brief online survey to establish eligibility. Eligible smokers indicated either ‘I am interested in the study for people who intend to quit smoking in the next 30 days’ (cessation arm) or ‘I am interested in the study for people who intend to quit smoking at some later date, just not in the next 30 days’ (non-cessation arm). Those who opted for the non-cessation arm were enrolled into the clinical trial of cessation induction [10] and are not included here. Only those who opted for the cessation arm were included in this study. Within a week of eligibility screening, potential participants were mailed an informed consent, with instructions to return it and a baseline questionnaire in a pre-addressed, stamped envelope. Research staff contacted participants for the baseline call as soon as possible after receipt of signed informed consent and baseline questionnaire, generally within two weeks. The Medical University of South Carolina Internal Review Board approved the protocol.

The intervention consisted of a brief, telephone referral to the smoker’s state quitline. At the baseline call, research staff spent <15 min with each participant. These calls included (i) discussion of previous quit attempt history (i.e. longest time you were successfully quit, difficulties encountered in previous quit attempts), (ii) review and reinforcement of motivation to quit, (iii) discussion of benefits of quitlines and (iv) provision of state-specific quitline details based on information provided by the North American Quitline Consortium (www.naquitline.org/). Follow-up calls were made 1 and 2 months later to assess interim cessation outcomes. At each of these calls, a brief assessment was administered, and callers were again offered information on their state’s quitline if they were interested.

#### Measures

The baseline questionnaire assessed demographic and smoking-related information. Participants were asked to rate motivation to quit smoking (i) in the next month and (ii) in the next 6 months, using a Contemplation Ladder scale [11, 12]. Scores ranged from 0 = Very Definitely No to 10 = Very Definitely Yes. The Self-Efficacy/Temptation Scale-short form [13] was used to assess quitting self-efficacy, with nine items assessing temptation to smoke across different situations on a scale from 1 = Not At All Tempted to 5 = Extremely Tempted. These items were reverse-coded such that higher scores indicated greater self-efficacy to resist situational temptations.
to smoke. Confidence to quit smoking and remain quit was assessed on a scale from 0 = Not At All Confident to 10 = Extremely Confident.

The primary outcome was self-reported quitline use, and outcomes compared between quitline callers and non-callers were: (i) any self-defined quit attempt, (ii) any 24-h quit attempt, (iii) use of cessation medications and (iv) self-reported 7-day point prevalence abstinence. Biological verification of abstinence was not imposed because experts indicate it is unnecessary in minimal intervention studies [14] and quitline studies generally do not include it [15].

Statistical analyses

We ran analyses to examine differences between callers and non-callers on demographic and smoking-related variables using one-way analyses of variance (for continuous variables) and chi-squared tests (for categorical variables). We next used logistic regression models to examine caller status as a predictor of (i) any quit attempt, (ii) any 24-h quit attempt, (iii) use of cessation medications and (iv) self-reported 7-day point prevalence abstinence. These models were run before and after adjusting for baseline motivation to quit. Lastly, t-test models examined differences between callers and non-callers on motivation, self-efficacy and confidence to quit at 2-month follow-up.

Results

Quitline callers versus non-callers

Of 2596 smokers who expressed interest in study participation (either arm above), 726 (28%) chose the cessation arm, of whom 679 provided valid contact information for mailing the informed consent and baseline questionnaire. Of these 679 smokers, 283 (42%) returned the consent and questionnaire and were enrolled in the study. The final sample was restricted to the 221 participants (78% of enrolled sample) who completed the 2-month follow-up assessment; there were no baseline differences among those who were retained versus not. After the brief telephone referral, 76 participants (34%) called their state quitline within 2 months. Callers and non-callers were similar with respect to demographics, smoking history and prior quit history (Table I). Comparisons between those who did and did not call their state quitline yielded a single distinguishing factor: motivation to quit was significantly higher among callers than non-callers. However, callers versus non-callers endorsed marginally higher confidence in ability to quit.

Smoking outcomes by caller status

Outcomes of quitline callers versus non-callers at 2-month follow-up are presented in Table II. Quitline callers were much more likely than non-callers to use medications to quit (45% versus 16%; OR = 4.3; 95% CI: 2.3–8.1; P < 0.001). This association remained even after adjusting for baseline motivation to quit smoking in the next month (OR = 3.7; 95%
CI: 1.9–7.1; \( P < 0.001 \), suggesting that effects cannot be accounted for by differences in motivation alone. Relative to non-callers, quitline callers were marginally more likely to report making any quit attempt (43% versus 34%), making a 24-h quit attempt (43% versus 31%), and being 7-day point prevalent abstinent (21% versus 12%).

At 2-month follow-up, callers versus non-callers remained more motivated to quit in the next 6 months (9.7 versus 9.1; \( P = 0.003 \) and marginally more motivated to quit in the next month (8.4 versus 7.6; \( P = 0.07 \)). Quitline callers versus non-callers were more confident in their ability to quit (7.6 versus 6.6; \( P = 0.02 \)), but the groups did not differ significantly in self-efficacy to quit. Relative to callers, non-callers reported greater increases in motivation to quit in the next month from baseline to 2-month follow up (change score of 1.8 versus 0.9; \( P = 0.04 \)). Callers versus non-callers reported greater increases in self-efficacy to quit from baseline to 2-month follow-up (change score of 8.1 versus 4.6; \( P = 0.002 \). Changes in motivation to quit in the next 6 months and confidence to quit from baseline to 2-month follow-up did not differ by caller group.

### Discussion

After a brief telephone prompt, approximately one-third of smokers called their state quitline. How we are to interpret this rate of uptake remains unclear. All smokers said they were motivated to quit in the next month, yet uptake of this free, anonymous and easily accessible service was modest. Higher rates of uptake have been reported following proactive referral in which smokers were offered direct transfer to a quitline service (41%) [16] or quitline counselor-initiated support (52%) [17]. However, the rate of uptake in the current study is similar to that reported following reactive quitline referral in clinical settings [5, 7]. Further, the 34% quitline uptake rate in this study compares favorably to uptake among unmotivated smokers given a brief prompt to quit (9%) [10] or smokers in the general population (1–7%) [18, 19].

As few individual differences other than motivation to quit predicted quitline use, it is difficult to understand what barriers to quitline use are pertinent among the fairly small group of smokers who intend to quit in the near future. Based on other work [20, 21], it is possible that systemic factors such as distrust of quitline providers, concerns about the efficacy of quitline services and wariness about the protection of one’s privacy negatively impacted smokers’ interest in quitline use. Greater knowledge of barriers to quitline uptake is important, especially since cessation outcomes in this study were consistently more favorable among quitline callers than non-callers.

Though callers and non-callers alike endorsed motivation to quit, quitline use was positively associated with use of cessation medications above and beyond motivation alone. In addition, quitline use yielded trended toward improvements in both quit attempts and abstinence and was associated with greater confidence to quit and increased self-efficacy to resist smoking temptations at 2-month follow-up. Results of our study are consistent with a large body of research literature on the efficacy of quitlines for smoking cessation [1]. Thus, it is important to consider ways to increase quitline use.

This study determined that baseline motivation was associated with quitline uptake; however, our group and others suggest that motivation not be considered a precondition to receiving treatment. On the contrary, interventions that focus on fostering...
motivation to quit smoking among unmotivated smokers, such as motivational interviewing (MI) [22], have significant public health impact [23]. Brief interventions incorporating principles of MI have demonstrated feasibility either by phone or online [24] to smokers across a range of motivation to quit. Sampling of nicotine replacement therapy represents another promising clinical strategy that can aid in cessation induction and quitline use even among unmotivated smokers [10, 25]. Since quitlines that offer free cessation medication have a larger volume of callers [26, 27] and produce larger quit rates [28] than those without this option, the availability of free cessation medication represents another promising avenue for increasing quitline uptake, even among unmotivated smokers.

This study took place in a setting where quitline referrals were provided to smokers drawn from a national panel of respondents. Therefore, this design shares some commonalities with a ‘cold call’ approach of proactively offering quitline services to smokers. ‘Cold calling’ is shown to be a useful strategy to extend the use of quitline services, as it can effectively prompt a sizeable increase in quitline utilization and increase smoking cessation rates [29]. Alternatively, individual-level interventions in the clinical setting are another promising approach, as personal contact with health care providers has strong influence [30, 31] and smokers can be efficiently connected to quitlines via faxed referrals [32]. Taken together, brief introductions and referrals to quitlines can come from multiple sources, both within and outside of established professional relationships.

Even if proactive quitline referrals are adopted, study results suggest innovative strategies are still needed to increase quitline use. The Community Preventive Services Task Force (http://www.thecommunityguide.org/tobacco/quitlines.html) has identified three specific interventions effective at increasing use of quitlines: (i) mass-reach health communication interventions that combine cessation messages with a quitline number, (ii) provision of free evidence-based tobacco cessation medications and (iii) quitline referral interventions for health care systems and providers. A recent development in policy-level interventions is the inclusion of a quitline number on cigarette packs along with graphic warning labels [33], which is shown to increase quitline call volume in countries that have implemented the program [34–36]. It remains to be seen whether this intervention can increase uptake of quitline resources in the US.

Aside from limits to generalizability due to the parent study’s eligibility criteria, limitations of this study include lack of a control group, limited sample size and relatively short-term follow-up. Nonetheless, these hypothesis-generating findings suggest even brief telephone contact with individuals not personally known to smokers could result in a substantial yield of quitline callers, with concomitant benefits for cessation medication use, quit attempts and abstinence. Consequently, proactive quitline referrals should be considered further and rigorously tested, with more intensive interventions expected to result in an even better outcomes.

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Conflict of interest statement

Dr. Cummings provides expert testimony in litigation against cigarette manufacturers, provides consulting advice and has received grants from Pfizer, and previously served as a co-investigator on a multi-center trial evaluating a nicotine vaccine from Nabi Biopharmaceuticals. No other conflicts of interest declared.
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