

# TO TEXT OR NOT TO TEXT? TECHNOLOGY-BASED CESSATION COMMUNICATION PREFERENCES AMONG URBAN, SOCIOECONOMICALLY DISADVANTAGED SMOKERS

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**Objective:** Effective smoking cessation interventions are needed to reduce tobacco-related disparities. Communication technology-based interventions are increasingly being employed to help smokers quit, with controlled research demonstrating efficacy of text messaging and email in increasing abstinence. Understanding preferences for such strategies among socioeconomically disadvantaged smokers can inform targeted intervention planning. The aims of this study were to: 1) examine socioeconomically disadvantaged smokers' use of and access to communication technology; and 2) elucidate preferences for receiving quitting information and support via email and text message.

**Design:** This cross-sectional, mixed-methods study collected data from a self-administered survey and focus groups in September 2017.

**Participants:** A community-based, sample of 15 predominantly African American, socioeconomically disadvantaged smokers aged 21-64 years.

**Results:** Smartphone ownership was high, although use of communication-based cessation resources such as web sites and smartphone apps was low. Four themes emerged relevant to preferences for receiving quitting information and support via email and text message: access, appropriateness, intended use, and satisfaction. Although initially participants were mixed in their preferences for receiving emails vs texts, 80% preferred emails over texts when presented with sample emails and text messages containing cessation information.

**Conclusions:** In this sample of socioeconomically disadvantaged smokers, emails were preferred over text messages for smoking cessation assistance. Although

## INTRODUCTION

As tobacco use is increasingly concentrated among socioeconomically disadvantaged populations,<sup>1,2</sup> effective targeted cessation strategies are urgently needed to eliminate tobacco-related health disparities and reduce smoking prevalence in the United States. Evidence-based strategies can help smokers quit,<sup>3</sup> with communication technology-based interventions becoming ubiquitous.<sup>4,5</sup> However, a recent systematic literature review concluded that the current level of methodologically rigorous intervention research with socioeconomically disadvantaged smokers is inadequate to reduce tobacco-related health inequalities and decrease smoking rates.<sup>6</sup> Research is needed to ensure evidence-based approaches provide

equitable benefit across populations.

Currently, certain groups of smokers receive less benefit from prevailing evidence-based approaches than others. For example, research indicates the effects of cessation interventions among low-income and African American smokers are smaller than those observed among other groups of smokers.<sup>7, 8</sup> Evidence is needed to identify strategies that are more appropriate and effective for these, and other, smoker populations who disproportionately suffer the negative health consequences of smoking.<sup>9,10</sup> Eliminating tobacco-related disparities requires more focused research to understand the unique intervention needs and preferences of socioeconomically disadvantaged smokers.

Given the increasing use of communication technology-based ces-

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both email and text message strategies may be acceptable to socioeconomically disadvantaged smokers generally, issues such as access and intended use should be considered to inform specific disparity-reducing intervention approaches. *Ethn Dis.* 2018;28(3):161-168; doi:10.18865/ed.28.3.161.

**Keywords:** Smoking Cessation; African American; Email; Text Messaging; Qualitative Research; Poverty

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sation approaches, and the smoking-related disparities suffered by socioeconomically disadvantaged groups, we sought to understand cessation-related experiences and preferences in a sample of predominantly African American, socioeconomically disadvantaged smokers. Randomized controlled trials have demonstrated that text messages and emails providing information, support and motivation for cessation are effective.<sup>5,11,12</sup> Our study aimed to: 1) examine socioeconomically disadvantaged smokers' use of and access to communication technology; and 2) elucidate preferences for receiving quitting information and support via email and text message. Findings can provide useful insights to inform the development, translation, and dissemination of cessation communication strategies to help eliminate tobacco-related health disparities.

## METHODS

### Setting, Recruitment, and Participants

A community-based sample was recruited from United Way 2-1-1 of Greater Atlanta (hereafter, referred to as 2-1-1), part of a nationwide information and referral system that connects individuals with social services and resources to meet their basic needs (eg, food, shelter). Callers to 2-1-1 are disproportionately female, socioeconomically disadvantaged, unemployed, racial/ethnic minorities, and smoke at disproportionately high rates.<sup>13-16</sup> After providing standard service, individuals interacting with four selected 2-1-1 staff were

screened for interest and eligibility for the study. Eligibility criteria included: 1) contacting 2-1-1 for referral assistance via phone or text message in September 2017; 2) contacting 2-1-1 from the center's 13-county primary service area; 3) aged  $\geq 18$  years; 4) able to speak and read English; 5) not experiencing an acute crisis (eg, eviction); 6) have an email address that is checked at least weekly; 7) willing to share opinions about quitting

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smoking; and 8) currently smoking cigarettes every day or some days. Of 46 eligible individuals invited to participate, 31 (67.4%) indicated interest in participating. After accounting for individuals who could not attend a session or did not show up for a session once scheduled, a total of 15 individuals participated in the study.

This research was approved by the Morehouse School of Medicine Institutional Review Board and all procedures followed were in accordance with the ethical standards of

the IRB and the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants included in the study. Each participant read and signed a written informed consent document prior to engaging in study activities.

### Session Protocol

This concurrent mixed-methods study comprised a written survey and four separate, 90-minute focus group sessions led by trained research staff. A different set of participants attended each session. At each session, after written informed consent was obtained, a brief survey of demographics and smoking- and quitting-related behavior was administered to participants via tablet computer. Next, participants were asked a series of open-ended questions about their access to and use of communication technology and preferences for receiving quitting information and support via email and text message. Questions solicited information about: participants' email usage; smartphone access; data plans; methods for accessing the Internet; use of apps and websites for cessation assistance or information; willingness to receive cessation information and support via email and text message; and preferences for email and text message cessation communication. During focus group sessions, sample texts and emails containing cessation messages were displayed via tablet computer, and participants were asked to select the resource they would most like to receive to help them quit smoking.

Discussion was encouraged until saturation<sup>17</sup> was achieved for a given topic. Session procedures were based on a written guide developed by the

investigative team. Discussion was facilitated by an experienced moderator, and each session employed semi-structured focus group methodology. Each session was attended by the same two note takers and at least one observer. Note takers created session field notes of key points and broad themes. All sessions were audio-recorded, and audio recordings were transcribed. At the end of each session, participants were provided with a list of free or low-cost smoking cessation resources and a \$50 gift card. Participants were reimbursed for transportation expenses.

## Survey Measures

### *Smoking-related Measures*

Standard questions from national and international surveys of tobacco use assessed smoking- and cessation-related behavior. Participants reported whether they smoked every day, some days, or not at all. Daily smokers reported their average number of cigarettes per day, and someday smokers reported the number of days they smoked in the past 30 days and their average number of cigarettes on those days. Additional items asked participants: if, during the last 30 days, the cigarettes usually smoked were menthol (yes/no); their age when they smoked a whole cigarette for the first time; and whether anyone else in the household currently smokes cigarettes (yes, someone does/no, no one does/not sure).

### *Cessation-related Measures*

Participants were asked “have you ever made a serious attempt to stop smoking because you were trying to quit—even if you stopped for less

**Table 1. Study participant demographics, N=15**

|                                     | n (%)     |
|-------------------------------------|-----------|
| Age (years)                         |           |
| 18-29                               | 5 (33.3)  |
| 30-44                               | 4 (26.7)  |
| 45-59                               | 5 (33.3)  |
| ≥60                                 | 1 (6.7)   |
| Sex                                 |           |
| Female                              | 11 (73.3) |
| Male                                | 4 (26.7)  |
| Educational attainment              |           |
| ≤High school                        | 7 (46.7)  |
| Some college                        | 7 (46.7)  |
| ≥College                            | 1 (6.7)   |
| Annual household income             |           |
| <\$5,000                            | 6 (40.0)  |
| \$5,000 to \$9,999                  | 2 (13.3)  |
| \$10,000 to \$19,999                | 3 (20.0)  |
| \$20,000 to \$34,999                | 4 (26.7)  |
| Race/ethnicity                      |           |
| Non-Hispanic Black/African American | 13 (86.7) |
| Non-Hispanic White/Caucasian        | 1 (6.7)   |
| Other                               | 1 (6.7)   |

than a day?” (yes/no). Motivation to quit was assessed by asking “how much do you want to quit smoking?” (very much/somewhat/not at all). Participants were also asked to select from a list the methods they used if they had tried quitting in the past, or methods they *would* use if they had not tried to quit in the past. The list of methods included: self-help materials such as booklets or videos; class or program; a telephone hotline; medications such as nicotine patches, gum, nasal sprays or inhalers; electronic cigarettes(s) (with or without nicotine); just quit or cut back on my own; face-to-face counseling; Internet web site(s); an app on my smartphone; advice from someone (eg, friend, doctor, etc.); other.

### *Demographic Measures*

Participants reported their sex, age category, level of educa-

tional attainment, annual household income, and race/ethnicity.

## Analyses

Univariate analyses of survey data were conducted using SAS 9.4 to report means, standard deviations, frequencies, and percentages. The moderator and note takers reviewed focus group transcripts and field notes to identify recurrent unifying concepts and emergent themes based on prevalence of responses. Identified themes were discussed for consensus with two additional study team members (observers), who also reviewed focus group transcripts. Triangulation was employed to integrate quantitative cessation-related data and qualitative data on preferences for receiving quitting assistance, seeking to elucidate how survey and focus group responses converged or diverged.

**Table 2. Smoking- and quitting related characteristics of participants, N=15**

|  | <u>n (%) or Mean (SD)</u> |
|--|---------------------------|
| <b>Smoking Characteristics</b>                                     |                           |
| Age at smoking initiation (years)                                  | 18.00 (3.85)              |
| Everyday smoker  | 15 (100.0)                |
| Mean number of cigarettes smoked per day                           | 10.47 (9.05)              |
| Usually smoked menthol cigarettes in last 30 days                  |                           |
| No   | 3 (20.0)                  |
| Yes  | 12 (80.0)                 |
| Household member currently smokes                                  |                           |
| No   | 6 (40.0)                  |
| Yes  | 9 (60.0)                  |
| <b>Quitting Characteristics</b>                                    |                           |
| Motivation to quit smoking   |                           |
| Very much  | 12 (80.0)                 |
| Somewhat   | 3 (20.0)                  |
| Not at all   | 0 (0.0)                   |
| Previous quit attempt  |                           |
| No   | 3 (20.0)                  |
| Yes  | 12 (80.0)                 |
| <b>Quitting Methods Used During Past Quit Attempts<sup>a</sup></b> |                           |
| Just quit or cut back on my own                                    | 9 (75.0)                  |
| Medications (e.g., nicotine patches, gum, nasal sprays, inhalers)  | 7 (58.3)                  |
| Electronic cigarette (with or without nicotine)                    | 5 (41.7)                  |
| Self-help materials  | 4 (33.3)                  |
| Advice from someone (e.g., friend, doctor)                         | 3 (25.0)                  |
| Internet web site(s)   | 3 (25.0)                  |
| Class or program   | 2 (16.7)                  |
| Telephone hotline  | 2 (16.7)                  |
| Face-to-face counseling  | 2 (16.7)                  |
| App on my smartphone   | 0 (0.0)                   |
| Other  | 0 (0.0)                   |

a. Among smokers who made a previous quit attempt; participants could select more than one response

## RESULTS

### Study Participant Characteristics and Cessation Experiences/Needs

The study group was predominantly female (73%) and African American (87%), 47% of participants had a high school education or less, and 73% had a household income below \$20,000/year (Table 1). As shown in Table 2, all participants reported smoking every day, 80% reported usually smoking menthol cigarettes in the last 30 days, and 60% reported

living with another smoker. All participants indicated wanting to quit, and 80% had tried quitting previously.

Most participants (75%) previously tried cutting back on smoking on their own. Although many participants reiterated wanting to quit on their own (eg, “I just try to do it myself”), several also desired support (eg, “with a little assistance and maybe some guidance and some directions and some advice”). Several indicated a desire to obtain cessation support interpersonally such as via “a smoke sponsor,” “quit buddy,” “discussion

group,” “encouragement messages,” or “personal stories.” However, only 25% of participants reported obtaining advice from someone during past quit attempts, and only 17% reported receiving face-to-face counseling.

Overall, 58% of participants reported using medications to help quit, yet qualitative data revealed barriers to this approach (eg, “it’s just expensive,” “it gave me real bad headaches”). Also, 42% had used e-cigarettes to help them quit. However, general dissatisfaction with e-cigarettes was reported (eg, “the urge was way past that”; “it didn’t kill that urge”; “it’s not strong enough... I was smoking it constantly”).

Relatively few participants reported using communication-based resources such as Internet sites (25%) or a telephone hotline (17%), and none used a smartphone app. Lack of awareness or satisfaction was apparent (eg, “I use a lot of apps, but it hadn’t occurred to me that there was something for quitting”; “I’m not sure what they’re like”; “it got boring”; “I was on a couple of websites that had good information, but the reasons of me needing to quit kind of overwhelmed me, and I started back [smoking]”).

### Use of and Access to Communication Technology

All but one participant had a smartphone, and all smartphone owners had unlimited text messaging plans. Most participants reported checking their email accounts daily. All participants reported checking email and using the Internet primarily through their smartphones. Participants generally reported no barriers to accessing the Internet.

**Table 3. Thematic considerations for receiving cessation messages via email vs text among socioeconomically disadvantaged smokers**

| Theme           | Consideration  | Exemplar Narratives   |
|-----------------|--|---|
| Access          | Recognize that emails can be accessed via phone or computer while texts can be accessed via phone only   | "I go through it on my phone, so I get notifications of any email and I kind of screen it there."<br>"Maybe just an email because maybe sometimes my phone might be off for like a week or two"   |
| Appropriateness | Balance preferences for providing cessation support vs communicating the negative consequences of smoking  | "It should be something uplifting."<br>"I like the [motivational] email because I already know that cigarettes kill."<br>"[Supportive communication] makes them feel like, okay, I've really got somebody behind me. I have two other smokers in my house. And the day that I'm always quitting, I'm constantly buying cigarettes because their stuff has done stressed me out."  |
| Intended Use    | Appreciate that text messages may be ideally suited for capturing immediate attention but emails may be ideally suited for providing visual richness and informational depth | "The email is going to visually capture you first and foremost because you have the visual aesthetics. The text because you're going to read it because it comes through your phone and there's that notification like you want to read it. But that's more captivating, in terms of visually."<br>"You'll be quicker to look at your text messages before your emails."<br>"But you can click on [an embedded link] and it would take you somewhere else where you could actually get more information. That's what I like about the emails" |
| Satisfaction    | Acknowledge variation in preferences for the optimal number of messages  | "They can call me seven days a week, all through the day. I've been smoking cigarettes for 32 years...I'm ready to nip it in the bud."<br>"Having all these different [notifications] coming in through my computer and my phones, I'm like put it down, put it down. It's just going to piss me off. And I'm going to want to smoke."<br>"What I would recommend is...you have them check boxes of how often they would like to get the emails so you can adjust it to the recipient's preference."  |

### Preferences for Receiving Cessation Assistance via Email and Text Message

Qualitative analyses identified four dominant themes related to preferences for receiving quitting information and support via email and text message: access, appropriateness, intended use, and satisfaction. Thematic considerations and exemplar quotes are presented in Table 3.

Access was discussed in terms of participants' experiences with smartphones and computers. All but one participant were receptive to receiving information about quitting smoking via email or text message. An important access issue identified was intermittent text message ac-

cess due to service plan interruptions (ie, resulting from payment difficulties), which could delay or prevent delivery of intervention messages via text. Intermittent access, however, was not a reported barrier to receiving emails. Participants noted multiple ways to access emails other than on a smartphone, including "Wi-Fi," "Goodwill," "wireless at home and at work", and "my laptop."

Appropriateness pertained to the framing of cessation messages. Participants overwhelmingly preferred "encouraging" and "inspirational" messages rather than fear-based messages or those otherwise emphasizing tobacco harms. The majority of participants expressed awareness that smok-

ing was a "bad habit" associated with severe negative health consequences such as heart attack, stroke, and lung cancer. Nevertheless, they asserted that continually receiving this type of information would not be motivating for them in a cessation program. One participant reflected on previous exposure to a graphic, fear-based message about smoking: "I was able to say oh, this is gross. They're bullies; let me leave it alone for a while. But then I picked it [smoking] back up as soon as I was stressed out."

Intended use was reflected in dialogue indicating that text messages stimulate a more immediate response than emails, but emails are more useful for providing detailed information

and engagement. A seemingly attractive aspect of emails for participants was that emails can contain more comprehensive messages than texts. Additionally, several participants indicated they would not click a link embedded in a text message although they would click links embedded in an email. One participant discussed why links

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*Although text-based cessation messaging is an evidence-based approach,<sup>5</sup> findings suggest features of emails make them more appealing, and may be more suitable, for some socioeconomically disadvantaged smokers given their life circumstances (eg, intermittent phone service).*

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in text messages were problematic: "I wouldn't because a lot of these websites, you're sending viruses and stuff to your phone. And my phone would accept that, so I don't do links at all. I just automatically delete those."

Satisfaction pertained to preferences for the frequency of cessation messaging. All but one participant stated it would be acceptable to re-

ceive multiple messages over a period of several weeks. However, participants widely varied in their receptivity to receiving a larger number of messages, with some indicating too much communication would cause them to disengage from cessation efforts. One participant commented on receiving excessive messages: "I get quite a few from different sources and they get annoying after a while, especially when I'm working and I'm getting 10,000 from them and then I come home and now my phone is blowing up. It gets to be too much."

Initially, participants were mixed in their overall preferences for receiving emails vs texts, with some preferring texts, some preferring emails, and some having no preference. However, when shown sample emails and text messages containing cessation information, 80% indicated a preference for emails over texts. One reason for this preference was greater visual appeal. One participant noted, "It looked like something I'd pay attention to." Another commented: "Both of them would catch my eye because I always have my phone in my hand... but I like that email." Also, participants liked that more comprehensive information was available in emails: "...the more information I get to quit these crazy cigarettes [the better]"; "more detailed...I like how that one is detailed"; "I like that...because it gives you options"; "I think it's all condensed in there for you, so it's easier to look at. All the research is done for you already." Several participants stated a preference for emails containing short or bulleted text, eg, "I prefer that email to that long paragraph. The bold and the breaking it up, I like that

one." In addition, participants indicated the embedded links in emails (eg, to quitline) would be useful.

## DISCUSSION

This study identified preferences and considerations to inform the development of cessation interventions for socioeconomically disadvantaged smokers. Preferences related to the framing, delivery, and utility of cessation messages were observed. To our knowledge, this study is the first to examine and report preferences for email vs text messages for smoking cessation among socioeconomically disadvantaged smokers.

Most participants preferred emails over text messages for cessation messaging. Although text-based cessation messaging is an evidence-based approach,<sup>5</sup> findings suggest features of emails make them more appealing, and may be more suitable, for some socioeconomically disadvantaged smokers given their life circumstances (eg, intermittent phone service). Developing, translating, and disseminating interventions for socioeconomically disadvantaged smokers requires consideration of this group's unique preferences and needs. Neglecting these, or other, contextual considerations is likely to reduce the utility of a given disparity-reducing intervention approach.<sup>18</sup>

Failure to consider unique intervention needs may hinder implementation and dissemination feasibility. Bowen et al<sup>19</sup> propose eight areas of focus for assessing the feasibility of intervention approaches, and the thematic considerations identified in

our current study align with three of these: acceptability (eg, our identified themes of appropriateness and satisfaction); demand (eg, our identified theme of intended use); and practicality (eg, our identified theme of access). The thematic considerations identified in our study can help assess the feasibility of utilizing email-based cessation strategies with socioeconomically disadvantaged smokers.

Email-based cessation approaches require further study. Numerous studies have employed emails as adjuncts to remind smokers to access a webpage or Internet program for cessation, yet only two published studies employed email (specifically, tailored emails) as the actual intervention.<sup>12, 20</sup>

Both interventions produced promising results, but neither included sizeable numbers of socioeconomically disadvantaged smokers. Research is needed to establish the efficacy of this approach among socioeconomically disadvantaged smokers. Still, channels other than emails (eg, web pages that similarly have adequate space to provide visually rich, tailored information) may also be acceptable or feasible for use in this smoker population.

Findings can inform targeted communication-based cessation strategies. Participants preferred to quit (largely) on their own while receiving information and support. As smokers with limited socioeconomic resources are less likely than others to have social networks that support cessation,<sup>21, 22</sup> technology-based cessation interventions that incorporate personal interaction (eg, peer mentoring, personal stories) may be beneficial. Additionally, efforts are needed to increase aware-

ness of evidence-based cessation resources, as awareness, use, and/or satisfaction of these was low among participants. Indeed, low awareness about the availability of, or how to access, free cessation resources (eg, quitlines, nicotine patches) are persistent barriers to socioeconomically disadvantaged smokers' success in quitting.<sup>23, 24</sup> Thus, connecting smokers to resources that provide free cessation assistance and medication seems promising. Lastly, interventions should be customized for this population, eg, taking into consideration the prevalence of menthol cigarette use and/or preferences for message frequency.

Potential limitations of the study pertain to sampling, methodology, and generalizability. First, the study's small sample size and lack of homogeneity in focus group composition precluded examination of potentially important group differences. Future research should incorporate stratification by participants' age, sex, or other factors to identify smoker characteristics associated with specific preferences. Nevertheless, findings can be used to generate hypotheses for future research (eg, about message frequency or delivery channel). Second, smokers not motivated to quit may not have been interested in discussing cessation preferences, contributing to possible selection bias. Still, smokers wanting to quit are an important group to target for interventions. Third, some participants might have contributed to focus group discussions more than others, potentially biasing qualitative findings. However, attempts were made to elicit input from all partici-

pants equally. Finally, this predominantly African American sample of smokers recruited through a 2-1-1 center in an urban metropolitan area may not be generalizable to other smokers. Also, smokers who did not check email weekly were ineligible, potentially reducing generalizability as well, although only five otherwise eligible participants were excluded for this reason. Despite these limitations, findings support the utility of understanding the experiences and preferences of socioeconomically disadvantaged smokers.

## CONCLUSION

Our study found that socioeconomically disadvantaged smokers prefer emails over text messages for cessation communication. Intermittent access to text messaging and email message depth appeared to be key issues driving this preference. Incorporating socioeconomically disadvantaged smokers' unique experiences and preferences can help optimize the reach to, and retention of, these smokers in cessation programs to help eliminate tobacco-related health disparities.

### CONFLICT OF INTEREST

No conflicts of interest to report.

### AUTHOR CONTRIBUTIONS

Research concept and design: Alcaraz, Riehman, Westmaas; Acquisition of data: Alcaraz, Riehman, Vereen, Bontemps-Jones; Data analysis and interpretation: Alcaraz, Riehman, Vereen, Bontemps-Jones, Westmaas; Manuscript draft: Alcaraz, Riehman, Vereen, Bontemps-Jones; Statistical expertise: Riehman, Vereen; Acquisition of funding: Alcaraz; Administrative: Vereen, Bontemps-Jones, Westmaas; Supervision: Alcaraz

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