Study Evaluates Mobile Telephone Interventions for Socioeconomically Disadvantaged Smokers

Socioeconomically disadvantaged (SED) smokers who receive text message support in addition to nicotine replacement therapy (NRT) are no more likely to abstain from smoking than those given NRT alone, according to the results of a group randomized clinical trial. However, the researchers concluded that adding telephone-delivered counseling for smokers who also receive NRT and text messages can double the percentage who quit smoking.

According to study author Damon J. Vidrine, DrPH, director of intervention research at the Oklahoma Tobacco Research Center in Oklahoma City, the SED demographic is far more likely to smoke than other groups. “Therefore, effective cessation treatments for these individuals are especially needed,” he says. Moreover, Dr. Vidrine adds, there has been a major proliferation of mobile health apps and interventions, including text messaging, within the past few years, despite surprisingly limited evidence of efficacy. “Our study helps to fill these gaps,” he says.

J. Lee Westmaas, PhD, the scientific director of tobacco control research at the American Cancer Society, says that to his knowledge, the study is the first to specifically target SED smokers to see whether text messaging and/or telephone counseling increases abstinence when paired with NRT. “It’s unique in that regard,” he says.

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**Study Details**

The randomized clinical trial took place in Houston, Texas, and included current cigarette smokers aged 18 years or older who were enrolled locally between August 13, 2011, and December 12, 2014. The English-speaking and Spanish-speaking subjects were recruited from 9 churches, 14 public housing complexes, and 23 community centers located throughout the area. Randomization was performed at the site level after stratification based on the type of institution and racial/ethnic composition.

Participants received a $20 gift card after completing an in-person baseline assessment. They also received a mobile telephone with active voice and text messaging services for the 6-month study and follow-up period. In addition, a $10 gift card was provided after subjects completed follow-up using their mobile telephones.

To participate, subjects had to have smoked at least 100 cigarettes in their lifetime and at least 5 cigarettes per day. They also had to be willing to schedule a quit date within 1 week of enrollment in the study.

A total of 624 participants completed a baseline demographic survey and were randomized into the following 3 groups.

- **NRT alone group.** A total of 223 participants received a 10-week supply of NRT transdermal patches. They also listened to a brief talk concerning how to quit smoking and received written self-help materials and a referral card with a telephone number for the Texas Tobacco Quitline, a smoking cessation hotline run by the Texas Department of State Health Services.

- **NRT plus text messaging group.** A total of 213 participants received tailored text messages in addition to the same items and resources as the NRT group. Message delivery began several days before the subjects’ scheduled quit dates and continued for a 12-week period. Message frequency peaked at 5 texts per day around the quit date, but gradually was reduced to 1 text per day. Message content consisted of the participant’s name, smoking status, and cognitive behavioral and motivational enhancement.
principles designed to increase the possibility of quitting.

- **NRT plus text plus telephone call group.** A total of 188 participants received the same items as the NRT plus text group as well as 11 proactive telephone counseling sessions. Topics included coping with withdrawal, maintaining a commitment to continued abstinence, and preventing relapse. The counselors had completed training in tobacco cessation counseling and motivational interviewing, and each session lasted between 10 and 12 minutes.

### Study Results

The mean age of the participants at the time of study enrollment was 45.8 years and slightly greater than one-half (50.6%) were female. The majority of participants (70.0%) had an educational level of no higher than high school or its equivalency, 58.6% were not employed, and 55.3% had an annual household income of less than $10,000.

All randomized participants were included in an intent-to-treat analysis of self-reported abstinence. In addition, 377 participants were eligible for biochemical verification of abstinence, and the 127 subjects who reported 30-day abstinence from smoking were asked to provide saliva samples. Only 98 samples were returned; those who did not return a sample were categorized as active smokers.

The results for biochemically verified abstinence were even more striking. Abstinence rates were similar between the NRT group (12.0%) and the NRT plus text group (12.0%), but were higher (25.5%) among participants in the NRT plus text plus telephone call group. Participants in the NRT plus text group were found to be no more likely to be abstinent than participants in the NRT group (relative risk [RR], 0.99; 95% confidence interval [95% CI], 0.43-2.27). On a more positive note, researchers found that participants in the NRT plus text plus telephone call group were twice as likely to be abstinent compared with the NRT group (RR, 2.11; 95% CI, 1.00-4.48).

After 6 months, 30-day abstinence was self-reported by 64 participants (28.7%) in the NRT group, 70 participants (32.9%) in the NRT plus text group, and 80 participants (42.5%) in the NRT plus text plus telephone call group. In comparison with the group receiving NRT only, the abstinence rate for the NRT plus text plus telephone call group was significantly higher (RR, 1.48; 95% CI, 1.06-2.06).

### Study Implications

Although acknowledging that the most intensive intervention proved to be the most effective, Dr. Westmaas says he also is encouraged by the quit rate of 12% among smokers in the control group who received NRT alone. “Even though the study didn’t include a control group that did not get NRT, the quit rate for their control group suggests that making free NRT available to SED smokers may be a beneficial strategy, considering the very low rates of quitting when one does it without any medication or behavioral help,” he says.

However, he adds, the study is less clear regarding whether text messaging alone would be beneficial for this group, because there was no way to compare the text message–only groups with the groups receiving no text messages. “We do know that text messaging can increase quit rates in the general population, but for this SED population, text messaging might have to take into account the unique stresses they face, and provide them with strategies for coping to be effective,” he says. “There really hasn’t been any research on this yet but hopefully [there will be] in the near future.”

Nevertheless, he says, “the results indicate that telephone counseling and NRT can have a substantial effect on abstinence in this population, which ordinarily has low success in quitting. A takeaway is that all smokers, especially SED smokers, should be encouraged to get or be provided with free NRT, and use of telephone counseling should also be encouraged.” NRT is available at no cost to Medicaid recipients, and many state quit lines offer free NRT, Dr. Westmaas says, although a number of SED smokers may not be aware of that.

Dr. Vidrine says a big takeaway from the study is that simply referring a smoker—specifically, an SED smoker—to an existing text messaging treatment is likely to be inadequate for bringing about successful cessation. “Similarly, from a policy standpoint, I hope the message is that we need better cessation treatments. Phone counseling plus NRT, as provided by most, if not all, state quit lines may be somewhat effective, but this treatment approach has limited appeal, reach, and questionable long-term efficacy,” he says. “Mobile health interventions are appealing due to their low cost, ease of implementation, and potential reach and acceptability. However, our findings suggest that their efficacy needs to be improved before they can be considered a stand-alone option [for SED smokers].”

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