

# Efficacy of Self-Help Behavior Modification Materials in Smoking Cessation

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We evaluated the efficacy of the Stanford Quit Kit, an eight-page self-administered smoking cessation program. Subjects were randomly assigned to receive the Quit Kit (n = 142) or a delayed intervention (n = 65). Confirmed abstinence ( $p < .05$ ) and reduced smoking among continuing smokers ( $p < .002$ ) were greater in the Quit Kit group than in the control group at the two-month follow-up. At the six-month follow-up 10.6 percent of the Quit Kit subjects were confirmed as abstinent. From these results we conclude that well-designed, self-administered behavior change materials can assist chronic smokers in quitting. [Am J Prev Med 1986;2:342-4]

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The large majority of cigarette smokers who desire to quit appear interested in self-administered, minimal contact treatment formats.<sup>1</sup> Print-based materials have been developed by a variety of public and private health agencies to disseminate useful cessation techniques to those smokers who are unwilling to attend group sessions. These materials are generally based on methods validated in clinical studies, but little controlled research on self-administered smoking cessation approaches is available. Nevertheless, several studies suggest that brief, print-based programs can be effective in helping smokers quit.

In one study, an American Cancer Society booklet produced as much cessation as a longer treatment manual.<sup>2</sup> A smoking cessation correspondence course also yielded promising results,<sup>3</sup> and an uncontrolled evaluation of the Stanford Quit Kit produced a relatively high cessation rate.<sup>4</sup> While the results so far are encouraging, the efficacy of printed smoking cessation materials has not been demonstrated since subjects self-selected exposure to the materials. Specifically, in a randomized controlled study minimal interventions have not been shown to be superior to no treatment. Such documentation is needed to determine whether the use of self-help materials on a large scale is justified. While evidence of a modest but measurable treat-

ment effect might be sufficient to warrant the use of a low-cost intervention on a large scale, research to date has not conclusively demonstrated any effect at all.

The present study was designed to evaluate self-help materials for smoking reduction and cessation developed for use in a community-based risk reduction program.<sup>5</sup> Subjects were randomly assigned to receive the Stanford Quit Kit or a delayed intervention. Of those subjects receiving the Quit Kit half also received an aversive smoking procedure to be self-administered using an audio cassette.

## METHOD

Two hundred seven adult cigarette smokers (91 men, 116 women) were recruited from the San Francisco Bay area by newspaper advertisements. They averaged 44.6 years of age, had a mean of 14.3 years of education, had smoked for an average of 26.3 years, had a mean of 3.6 previous quit attempts, scored a mean of 5.0 on the Fagerstrom<sup>6</sup> inventory, reported smoking a mean of 27.0 cigarettes per day, and had a mean exhaled carbon monoxide level of 29.6 ppm. Subjects were randomly assigned to one of three groups: Quit Kit only, Quit Kit plus audio tape, or delayed intervention. During an initial phone contact, potential subjects were randomly assigned to one of three evening meetings, encouraged to bring someone who could help them quit, and told they would need to make a \$20 deposit. Since unequal numbers of potential subjects actually attended their assigned group-orientation

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session, there are variations in group size.

Since the intent of the study was to approximate as much as possible totally self-administered conditions, contact with the subjects was kept to a minimum. At the one-hour orientation meeting, consent forms were signed, questions were answered, group assignments were made, and carbon monoxide was measured. A brief rationale was delivered stating that 30 million Americans have quit smoking and most of them did it on their own. According to which group they had been assigned subjects were told either that the materials could help them quit more easily or that we wanted to see how well people could quit by themselves. For the Quit Kit groups, subjects were told that the Quit Kit was self-explanatory, and no instructions were given. All subjects were told they would have to return to Stanford University for follow-ups in order to have their deposits refunded.

Subjects in both Quit Kit groups received an envelope containing four attractive instructional sheets, an introductory page, and a magnet. The sheets contained behavioral suggestions for preparing to quit, coping with withdrawal, and staying off cigarettes. Specific tips included self-monitoring behavior, setting a "quit date," walking or relaxing as substitutes for smoking, using stimulus control techniques, using social support, planning to cope with high-risk situations, and selecting rewards for abstinence. The magnet was used to display the sheets sequentially on the refrigerator over about one month's time.

Subjects in the audio tape group also received an audiocassette that included instructions and guidance in the focused smoking procedure.<sup>7</sup> Subjects were to smoke at a normal rate, concentrating on negative sensations related to smoking. Subjects were instructed to smoke only with the focused smoking tape for a few days before their target quit date. Audio cassettes have been used in the self-administration of aversive smoking procedures,<sup>8</sup> but their effectiveness has not been determined. This subgroup was designed to test the effects of adding aversive procedures to the print materials. Subjects in all groups were told that most people quit smoking on their own. In the delayed treatment group, subjects were encouraged to quit on their own, but they were informed that if they needed additional help, materials would be given to them in two months.

Subjects were followed up at two months and Quit Kit subjects were also assessed at six months. Dependent measures included self-reported smoking behavior and expired carbon monoxide

levels. A measure of partner reward<sup>9</sup> was collected to assess the impact of social support.

## RESULTS

There were no significant differences among the groups at baseline on any of the demographic or smoking variables listed above. Ninety-eight percent of the subjects were contacted at two months, and 100 percent of the Quit Kit subjects were contacted at the six-month follow-up. Since it was determined at follow-up that 69 percent of those in the audiotape group did not listen to the tape or listened only once, the results of the two Quit Kit groups were combined for all analyses. There were no differences between the two Quit Kit subgroups in abstinence at two months ( $\chi^2 = 1.2$ ;  $df = 1$ ;  $p < .30$ ). There were 142 subjects in the combined Quit Kit group and 65 in the delayed intervention group. Only the two-month results of the delayed intervention group are presented, because this group was used to pretest a draft of a new intervention.

At the two-month follow-up 13.4 percent ( $n = 19$ ) of the Quit Kit group and 4.6 percent ( $n = 3$ ) of the delayed intervention group were verified as abstinent (carbon monoxide  $\leq 8$  ppm; for one subject abstinence was confirmed by an informant). Fisher's Exact Test reveals that there was significantly more abstinence in the Quit Kit group ( $p < .05$ ). Reported decreases in daily smoking rates from baseline levels among continuing smokers were greater in the Quit Kit group ( $\bar{x} = 5.8$ ) than in the delayed intervention group ( $\bar{x} = 0.95$ ;  $p < .001$ ).

At the six-month follow-up of the Quit Kit subjects, ten of the original quitters were still abstinent, and nine had resumed smoking. Thus, the Quit Kit produced a long-term quit rate of 7.0 percent. Five subjects who were smoking at two months were verified as abstinent at the six month follow-up. Thus, 10.6 percent of Quit Kit subjects were verified as abstinent at the six month follow-up.

The average smoker in the Quit Kit group read more than 7 of the 8 pages, and 96 percent reported using at least one of the behavioral tips. No differences were found between long-term quitters and those who did not quit on education, baseline smoking rate, number of previous quit attempts, years smoked, Fagerstrom score, or number of behavioral recommendations used. However, long-term quitters ( $n = 10$ ) were significantly younger ( $p < .03$ ) than nonquitters and had significantly higher scores on the reward subscale of the spouse support scale at two-month follow-up ( $t = 11.7$ ,  $df = 124$ ,  $p < .001$ ).<sup>9</sup>

## DISCUSSION

This controlled study demonstrates that motivated smokers can quit or reduce cigarette consumption by following the simple behavioral guidelines provided by an extremely brief print intervention. Since the Quit Kit costs only about \$1.75 for printing and mailing, it can be distributed inexpensively on a mass basis.

The motivated subjects in the delayed intervention condition were unsuccessful in quitting without assistance. Thus, the Quit Kit was shown to be an effective intervention, even though the carbon monoxide-verified abstinence rate was well below the usual rates of therapist-led interventions. The relapse rate after six months was nearly 50 percent, but a substantial number of new quitters also emerged. This may suggest that smokers continue to use printed materials for a period of time after receiving them. However, the delayed cessation may not be attributable to the Quit Kit. Use of the Quit Kit, as measured by pages read and tips followed, was very high. Those who continued smoking reduced their daily rate by a reported 21 percent.

The appropriateness of self-administered aversion procedures for smoking cessation must be questioned, because most subjects in the present study did not use the focused smoking cassette. Most of those who did listen to the tape did not follow the instructions. Thus, these subjects were generally unwilling to self-administer a mildly aversive procedure.

The benefits of low-intensity interventions must be weighed against possible disadvantages. About two thirds of the Quit Kit subjects reported some reduction in cigarette use as opposed to about one third in the wait-list group, so the benefits of the intervention appeared to be widely distributed. However, subjects in both groups who did not report reductions had small but significant decreases in smoking self-efficacy, or rated confidence in their ability to resist urges to smoke.<sup>10</sup> While this failure experience could temporarily inhibit additional help-seeking, all subjects had tried unsuccessfully to quit at least once before.

It must be noted that the intervention was more intensive than it would be if delivered by mail or picked up in the community. Subjects attended a brief orientation session and expected follow-up carbon monoxide determinations. However, since contact time and expectations for follow-up were similar for Quit Kit and nontreatment groups, ef-

fects at the two-month assessment can be reasonably attributed to the Quit Kit.

The primary purpose of the present study was to evaluate the effectiveness of a self-help intervention for smoking, and the Quit Kit produced significant short-term abstinence and reductions. This is the first study to indicate that the effects of self-administered programs noted in uncontrolled investigations were not due entirely to self-selection of treatment by the subjects. Confidence in the findings is strengthened by the randomized design, large sample size, successful follow-up, and verification of cessation. Thus, further development of mediated smoking cessation programs that can benefit large numbers of people at low cost is recommended.

The assistance of Nathan Maccoby, Elizabeth Adler, and Prudence M. Breitrose is gratefully acknowledged. This work was supported by NIH grant HL 21906, and Drs. Sallis, Killen and Telch were partially supported by NIH training grant HL 07034.

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