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BRIEF REPORT

SMOKING CESSATION IN FAMILY PRACTICE: THE EFFECTS OF ADVICE AND NICOTINE CHEWING GUM PRESCRIPTION

ANDREA R. PAGE
DAVID J. WALTERS
RONALD P. SCHLEGEL
J. ALLAN BEST
University of Waterloo, Ontario, Canada

Abstract—The efficacy of physician anti-smoking intervention with 289 patients in a family practice setting was assessed. The design included two treatment conditions, physician advice and physician advice plus the offer of nicotine chewing gum (NCG) prescription. A no-advice group permitted assessment of the effects of repeated testing. The NCG group had higher rates of abstinence at all follow-up points, but the difference approached statistical significance at 3 months only ($p < .10$). Comparison of those who actually used NCG to all other groups revealed significantly more users were abstinent at 1- and 3-month follow-up. A similar pattern occurred for proportion attempting cessation and smoking reduction. A dose-response relationship of gum use to outcome was identified. Long-term users (>20 days) had 86% abstinence at 3 months versus 18% for short-term users. Thus, NCG does appear to have a role in family practice for promoting short-term cessation.

Nicotine chewing gum (NCG) is a recent modality of intervention for physicians and smokers. NCG presents a physician with the option of introducing a specific pharmaceutical aid along with advice concerning its effective use. Evaluation of this strategy in a family practice setting was identified as a priority research area at the 5th World Congress of Smoking and Health (Best & Ossip-Klein, 1983). Studies examining the effectiveness of NCG have yielded initially encouraging results from clinic populations (Fagerström, 1982; Jarvis, 1983), although there is generally a paucity of studies in the primary care setting (Hughes & Miller, 1984). Russell, Merrimen, and Edwards, (1983) compared an offer of NCG in general practice to an advice condition and a no-treatment control. Twelve-month abstinence rates (8.8% for treatment vs. 3.9% for control group) achieved statistical significance; however, the gum was provided directly to the patients at no cost. These encouraging results need to be replicated under more typical primary care conditions. The purpose of this study was to: (a) assess the effectiveness of physician advice to quit smoking; and (b) evaluate the effectiveness of NCG when prescribed by the physician to smoking patients.

METHODS

Five family practitioners with full-time practices participated in the study. For a 4-week period receptionists asked all patients between the ages of 18 and 65 years who

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Requests for reprints and an extended version should be sent to Ronald P. Schlegel, Department of Health Studies, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1.

entered the office to complete a "health status" questionnaire. Demographic, smoking, exercise and diet information was collected for each subject. An attached letter described the purpose of the study and requested consent for follow-up interviews at 1-, 3- and 6-months. Within blocks of 3 practice days, each day was randomly assigned to one of three groups: physician advice, physician advice plus NCG prescription, or a "no-advice" group. (There was no special arrangement of patient appointments by days and thus no treatment effect attributable to days was expected. A chi-square analysis involving day-of-week and abstinence was completed for each of 1-, 3- and 6-month follow-up. None of these analyses proved significant. This nonsignificance justified using the individual as the unit of analysis for all analyses reported in this research.) Patients entering the physician's office were assigned to the condition for that day. A single blind design was used in which subjects were not aware of their treatment group nor the fact that they were being evaluated against other experimental groups.

The "no-advice" group received no physician intervention and was intended to control for effects of repeated testing and physician attention. The "advice" group received a message from the physician as determined by the patient's situation and individual practitioner's counseling style. A physician compliance card was completed for each patient to record the treatment actually given. The "advice plus NCG" group included the same informational intervention as well as the offer of a prescription script for NCG (2 mg) and the standard manufacturer patient instruction sheets.

At 1, 3 and 6 months a telephone interview was done by interviewers who remained blind to the patient's experimental group until the final section in the interview which required NCG information. If a subject used NCG, an additional eight items were asked. The NCG questions included information about gum usage to determine length of gum usage, number of pieces chewed per day and per week, side effects, and perceived helpfulness of the gum.

RESULTS AND DISCUSSION

A total of 806 patients completed the health status questionnaire. Thirty-nine percent ($n = 312$) identified themselves as daily smokers, of which 289 signed a consent for participation (including follow-up). An analysis of subjects refusing participation did not reveal any baseline variables with significant differences between groups. Attrition reduced this total to 227 after the 6-month follow-up survey.

The original participating sample was 68% female ($n = 196$) with a mean age of 32.5 years. The average self-reported number of cigarettes smoked per day was 18.8 (SD = 10.3) with a mean smoking onset age of 18.2 years.

The three main self-report dependent variables measured in the study included: (a) attempted cessation for more than 24 hours; (b) current abstinence; and (c) reduction in daily smoking rate from baseline levels (for nonabstinent subjects). A chi-square analysis was done with attempts (yes/no) and treatment condition. At 1-month follow-up the NCG group had a significantly ($p < .01$) greater number of subjects attempt stopping smoking than either the control or advice groups. In the NCG group 46.2% of the subjects attempted cessation as compared to 25.0% and 26.3% in the no-advice and advice groups respectively.

It might be expected that a greater number of subjects attempting to quit smoking would result in a greater number who actually succeed. This appears to be the case for the NCG group with an abstinence rate at 1 month of 10.7%, approximately twice as high as rates for the other two groups (Table 1). Chi-square analysis did not show this difference to be significant however, and by 3 months the NCG group abstinence rate

Table 1. A comparison of abstinence rates at 1, 3 and 6 months following physician intervention

Time	Treatment Condition		
	No-advice	Advice	NCG
1 month[a]	5.9 (68)	5.3 (114)	10.7 (93)
3 months[a][1]	8.9 (67)	9.9 (101)	19.2 (78)
6 months[b]	8.1 (62)	8.9 (90)	12.0 (75)

[a]Abstinence defined as at least 14 days without a cigarette
[b]Abstinence defined as at least 90 days without a cigarette
[1]New Years occurred approximately 2½ months after the intervention. This seasonal factor affected all groups equally and is reflected by the upward trend of abstinence rates across groups.

of 19.2% had still not achieved statistical significance ($p < .10$) over the no-advice and advice rates of 8.9% and 9.9%. The abstinence rates for the three groups were more similar 6 months following the intervention.

A third question examined daily changes in cigarette consumption for nonabstinent subjects. An analysis of variance (ANOVA) demonstrated that although the NCG group reduced their mean daily consumption 2.1, 2.5 and 2.9 cigarettes at 1, 3 and 6 months respectively, these rates were not significantly different from the no-advice and advice group rates.

Results of the three smoking behavior measures revealed a trend towards greater effectiveness in the NCG condition, although the differences were not statistically significant. A post hoc division of the NCG group into users and nonusers allowed further examination of subjects who actually complied with the NCG treatment. Only 33.3% (32 subjects) reported using the gum even though all subjects within the group were offered a prescription. Nicotine gum users (varying 1 to 80 days) and nonusers within the NCG group were compared to advice and the no-advice group subjects. It must be recognized that these analyses pertain to a self-selected compliant group of NCG users. The attempted cessation rate in NCG users was 89.3% at 1-month follow-up as compared to 27.7% for nonusers, 25.0% for controls, and 26.3% for the advice group. This represented a highly significant difference ($p < .0001$). Thus for subjects who complied with and received the intended intervention, there was an immediate and substantial effect in terms of attempted cessation. Furthermore, NCG users had higher abstinence rates at all three follow-up points. Differences between NCG users and the other three groups were statistically significant at 1-month (21.4% abstinence, $p < .05$) and 3-month (34.5% abstinence, $p < .01$) follow-up, with a trend (although not significant) persisting at 6 months (17.2% abstinence).

This pattern of effects is demonstrated further by an ANOVA on cigarette reduction. Unsuccessful quitters who used NCG reduced their daily consumption by 7.2 cigarettes ($p < .001$), 6.4 cigarettes ($p < .01$) and 4.6 cigarettes at 1, 3 and 6 months respectively. A Duncan Multiple Range test indicated that the means at 1 and 3 months for NCG users were statistically different from each of the other three groups (i.e., NCG nonusers, advice and no-advice).

An attempt was made to address the possible longer term impact of NCG use in relation to longer term use of the gum. The NCG group was further divided into short- and long-term gum users. Subjects using the gum for less than 20 days ($n = 25$) were defined as short-term users versus those using the gum for greater than 20 days ($n = 7$) classified as long-term users. Chi-square analyses indicated that the 85.7% abstinence rate at 3 months for long-term NCG users was significantly different ($p < .0001$) from short-term users (18.2%) and nonusers (10.2%). The abstinence rate for long-term gum users dropped to 42.9% at 6 months and was not statistically significant ($p < .07$) from other groups.

Further analyses were completed in order to determine the relationship between variables measured at baseline and length of NCG use. Intentions to quit with physician assistance ($r = .32$, $p < .07$), age of smoking onset ($r = .40$, $p < .03$), whether one's spouse was an exsmoker or nonsmoker ($r = .34$, $p < .05$) and frequency of exercise by spouse ($r = .34$, $p < .06$) were all positively related (although some only marginally). Thus persons who are more likely to continue using NCG for a longer period of time can be characterized as starting to smoke later and having a social support environment (e.g., physician and spouse) conducive to smoking cessation in particular and health promotion more generally (i.e., spousal level of physical activity).

Advice and an offer of NCG does show some promise as a valuable intervention strategy for the family physician but the effects of NCG are statistically significant only in the short-term. Future research needs to address compliance of NCG use as well as supplementing the NCG offer with a behavioral intervention pertaining to maintenance.

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