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# A Randomized Controlled Trial of Hypnotherapy for Smoking Cessation

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*A randomized controlled study in a family practice setting was conducted on the use of hypnosis in helping people quit smoking. In the hypnosis group 21 percent of patients quit smoking by the three month follow-up compared with 6 percent in the control group. By six months there were no significant differences between the two groups, and at one year 22 percent in the hypnosis group and 20 percent in the control group had quit. The only significant predictor of success with quitting was having a college education.*

Cigarette smoking is one of the leading preventable causes of serious cardiac and pulmonary disease in the United States. Despite a multiplicity of techniques to help smokers quit, the magnitude of the problem remains enormous. One of the methods that has been widely written about is hypnotherapy, yet the studies in the literature present a bewildering array of techniques and success rates. Reports range from 94 percent of smokers quitting<sup>1</sup> to 20 percent.<sup>2</sup> Most studies have used highly selected subjects and often no control groups, so that the interpretation of results for use in the primary care setting is difficult. In addition, many investigators have failed to provide information on long-term follow-up, despite known high recidivism rates for cigarette smoking.

In 1980 Holroyd<sup>3</sup> summarized the experience with hypnosis and smoking in the 1970s and included several suggestions for future research based on the weaknesses of prior studies. This paper reports a randomized control trial of hypnotherapy that was carried out to help smokers quit in which several of Holroyd's suggestions were included: investigation of individual differences among subjects, such as smoking histories and demographic data to look for relationships with

success of hypnosis; follow-up supportive contact of patients; standardized follow-up of smokers for a significant interval; and use of individualized hypnotic suggestions. An additional major difference between existing studies and the one reported here is that this study was set in a primary care setting, with the hypnosis performed by family physicians. Furthermore, the protocol was one that could be followed easily by primary care physicians having limited training in hypnosis and limited time.

## METHODS

The patient population at the Rochester Family Medicine Program is representative of a cross-section of Monroe County in upstate New York, which has been described in detail elsewhere.<sup>4</sup> All patients aged over 18 years who did not have a psychiatric diagnosis entering the Family Medicine Center for scheduled health care received a screening questionnaire to determine eligibility for the study. Patients were eligible if they wished to quit smoking and were willing to undergo hypnosis. These patients were given a second questionnaire about their health history.

Questions included years of smoking, number of cigarettes smoked, presence of other smokers at home, presence of smokers at work, previous attempts at quitting, perceived stress, and education.

Recruitment was planned to continue until 180 eligible patients could be identified. This number

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was based on a one-tailed alpha error of 0.05 and a beta error of 0.1. It was assumed that the effectiveness of antismoking advice would be 5 percent<sup>5</sup> and that to be clinically useful, smoking would have to be at least 20 percent effective. This number also allowed for a 10 percent dropout rate.<sup>6</sup> After recruitment patients were randomized to hypnosis and control groups using the Zelen design.<sup>7</sup>

All control patients received a letter notifying them that the physicians at the Family Medicine Center hoped they would quit smoking. They also received a copy of the National Institutes of Health booklet *Calling It Quits*. Follow-up began with the date of this letter. A letter was mailed to all patients in the hypnosis group asking them to make their first appointment with one of the hypnotists (C.O. or R.L.). If the patient did not respond, a second letter was mailed. Continued failure to respond then led to a telephone call to encourage participation. If the patient still refused entry, had already quit, or had moved and could not be contacted, follow-up was begun at the time of the telephone call.

The hypnotherapy consisted of two 40-minute sessions, two weeks apart. At the first visit, after obtaining informed consent, the hypnotists followed a standard protocol (available on request from the authors). After the trance was terminated, the method of autohypnosis was explained and a list of instructions given. An evaluation of depth of trance was noted by the hypnotists on a standard form. At the time of the second session, a trance was induced again, and suggestions reinforced. During the trance, the subject was asked to choose a quit date. Follow-up began on the date of the second session.

All patients in the hypnosis and control groups were called three times in the four months after the identified start date of follow-up. These calls were for several purposes: to ascertain the amount of smoking (number of cigarettes per day), to offer encouragement, and to determine whether subjects in the hypnosis group were using self-hypnosis. Subsequent to this contact, all subjects were contacted again by telephone or questionnaire at six and 12 months after intervention to determine the amount of their smoking.

Using the intention-to-treat principle, all patients were included in the analysis according to

their originally assigned groups. Univariate comparisons were made using chi-square tests or *t* tests as appropriate. Outcomes, which were measured at 3, 6, and 12 months, were whether the patient had quit and the number of cigarettes smoked. All patients who could be contacted at each follow-up period were included in each analysis. To enable examination of the independent contribution of hypnotherapy to the outcomes of interest, while controlling for baseline differences between the hypnosis and control groups, stepwise regression analyses were used. Study group and the factors thought to affect smoking (from the second questionnaire) were entered into these analyses as independent variables in the order in which they accounted for most of the change in the outcome variables. Logistic regression was used for the analyses of the dichotomous outcome "quitting," and ordinary linear regression was used for the outcome "number of cigarettes smoked." All analyses were conducted using the SAS computer package.<sup>8</sup>

## RESULTS

Two hundred forty-two patients who were smokers (49 percent of all patients) were contacted, and 180 (74 percent) who were interested in hypnosis as a method of helping them quit were included in the study for randomization. Because the patient population in this study was highly mobile, follow-up was a consistent problem. Several patients were temporarily lost to follow-up because of brief loss of telephone service or delays in obtaining new addresses. Furthermore, three patients were known to have died during the study, two from smoking-related diseases. Table 1 summarizes the number of patients available for follow-up throughout the study. In the hypnosis group, 45 patients underwent at least one hypnosis session, 6 quit before hypnosis, 18 declined hypnosis, and 21 were lost to follow-up.

Baseline comparisons between the two groups are displayed in Table 2. Patients in the hypnosis group tended to be younger, more educated, less likely to have Medicaid, less likely to have other smokers at home, but more likely to have other smokers at work.

At the three-month follow-up contact, hypnosis patients were significantly more successful in re-

**TABLE 1. FOLLOW-UP OF ALL RANDOMIZED PATIENTS**

	Hypnosis	Control
Total randomized	90	90
First telephone call	69	68
Third telephone call (3 months)	57	58
6-month contact	66	64
12-month contact	60	60

ducing their smoking consumption, but by the six-month follow-up the two groups were not significantly different. These results are summarized in Table 3. The results were not significantly changed when only those subjects who actually underwent hypnosis were compared with the control group. Stepwise regression analysis revealed that the only consistent predictor of success for reduction of smoking was having a college education ( $R^2 = 14$  percent,  $F = 19.4$ ,  $P = .0001$  at the 12-month follow-up).

At the first three-month follow-up contact, being in the hypnosis group and being exposed to other smokers at work were also significant, but these variables became nonsignificant with longer follow-up. Variables not related to reduction in smoking behavior were self-assessment of life stress, other smokers at home, age, having Medicaid insurance, years of smoking, prior enrollment in other smoking programs, depth of trance, or use of self-hypnosis.

The results for complete cessation were similar to those for reduction in consumption of cigarettes. At the three-month follow-up contact, the hypnosis group had significantly more quitters than the control group (21 percent vs 6 percent, respectively), but by the six-month and one-year follow-up, the groups were not significantly different (22 percent vs 20 percent, respectively at one year). These results are summarized in Table 4. The results were not significantly changed when only those subjects who actually underwent hypnosis were compared with the control group. Stepwise logistic regression analysis of the 12-month follow-up data showed that college education was the only significant predictor (adjusted

**TABLE 2. BASELINE COMPARISONS BETWEEN HYPNOSIS AND CONTROL GROUPS**

	Hypnosis	Control
Age, years (mean)	32.4	38.8
Female (percent)	69	68
College educated (percent)	36	24
Stress (percent)	62	64
Cigarettes smoked per day (mean)	25.7	26.6
Medicaid (percent)	14	24
Other smokers at home (percent)	55	61
Other smokers at work (percent)	72	57
Previous smoking program (percent)	6	10
Smoking, years (mean)	12.7	11.3

risk ratio = 4.3, 95 percent confidence interval = 2.8–6.8) of successful quitting. The analysis revealed that at the time of the three-month follow-up that smoking fewer cigarettes at entry into the study ( $\beta = -.07$ , standard error = .03), being in the hypnosis group (adjusted risk ratio = 3.6, 95 percent confidence interval = 1.9–6.8), and having a college education (adjusted risk ratio = 7.1, 95 percent confidence interval = 3.8–13.2) were related to quitting. No other variables made a statistically significant contribution to the model.

The probability of a beta error for missing a true difference between the two groups of 15 percent (that is, 20 percent quitting in the control group vs 35 percent quitting in the hypnosis group), with 60 patients in each group, is  $P < .05$ .

## DISCUSSION

These results suggest that while hypnosis may accelerate the rate at which motivated smokers quit, the benefit does not extend to six months. There are several implications to be derived from the data. The extraordinary success rates quoted in the hypnosis literature are probably at least partially due to the selection bias and lack of randomized control groups. This study design has obviated these problems. Furthermore, the control procedure was probably more effective than

**TABLE 3. MEAN NUMBER OF CIGARETTES SMOKED PER DAY BY HYPNOSIS AND CONTROL GROUPS DURING STUDY**

	Baseline	3 months	6 months	12 months
Control	26.6	20.1*	18.3	18.5
Hypnosis	25.7	15.1*	15.9	16.4

*\*Difference between control and hypnosis groups significant (t test, P < .05)*

**TABLE 4. PERCENTAGE OF PEOPLE IN EACH GROUP QUITTING DURING STUDY**

	3 months	6 months	12 months
Control	6*	19	20
Hypnosis	21*	18	22

*\*Difference between control and hypnosis groups significant (chi-square, P < .05)*

control procedures used by other investigators. The 20 percent quit rate in the control group is considerably higher than that reported elsewhere. Possibly the ongoing sympathetic contact from a single person was largely responsible for this success rate. The only consistent predictor of success in cutting down and quitting was having a college education. Mechanisms that might result in a better response to health interventions among more educated patients have been discussed elsewhere.<sup>9</sup>

Several problems were encountered in this study. The major problem was the patients lost to follow-up, in large part a result of the highly mobile patient population of the Family Medicine Center. Many patients moved between the time of entry and time of randomization. In future studies this interval should be minimized. It is conceivable that patients lost to follow-up were less likely to have been successful, as they were also less likely to have higher educations. Baseline differences between the two groups in education and other variables could have affected the results. However, the regression analyses suggested that the

contributions of these variables to the overall success rates were probably not large enough to account for differences between the success rates in the two groups.

Inclusion of subjects who quit without hypnosis improves the success rate of hypnosis, while inclusion of subjects who declined hypnosis probably lowers the success rate. Thus the results were analyzed including and excluding these patients with no apparent difference in outcome. It is of note that many of the patients who quit without hypnosis did so after receiving the letter notifying them of randomization and as a result of the letter. It may be that the idea of having hypnosis rather than hypnosis itself or the depth of the trance is what accelerates quitting. As there was no objective measure of quitting smoking, the early success of the hypnosis group may represent those patients' desire to report success with the intervention, a response that diminished over time to be replaced by the effect of the contact with the health care professional to both groups. It would have been desirable to measure expired carbon

monoxide concentrations as an objective quantification of current smoking.

In conclusion, hypnosis appears to accelerate the rate at which smokers quit but offers no long-term advantage beyond sympathetic contact with a health care professional. Future studies of anti-smoking intervention should examine this more systematically. Furthermore, follow-up should continue for at least one year so as not to miss the gradual trend toward quitting in untreated smokers.

#### References

1. vonDendenroth TEA: The use of hypnosis in 1000 cases of "tobacco-maniacs." *Am J Clin Hypn* 1968; 10:194-197
2. Hershman S: Hypnosis and excessive smoking. *Int J Clin Exp Hypn* 1956; 4:24-29
3. Holroyd J: Hypnosis treatment for smoking: An evaluative review. *Int J Clin Exp Hypn* 1983; 28:341-357
4. Farley ES Jr, Boisseau V, Froom J: An integrated medical record and data system for primary care. Part 5: Implications of filing family folders by area of residents. *J Fam Pract* 1977; 5:427-432
5. Russell MAH, Wilson C, Taylor C, Baker CD: Effect of general practitioner's advice against smoking. *Br Med J* 1979; 2:231-235
6. Feinstein AR: Clinical biostatistics—XXXIV: The other side of statistical significance: Alpha, beta, delta, and the calculation of sample size. *Clin Pharmacol Ther* 1975; 18:491-505
7. Zelen M: A new design for randomized clinical trials. *N Engl Med* 1979; 300:1242-1245
8. SAS User's Guide: Basics, ed 1982. Cary, NC, SAS Institute Inc, 1982
9. Franks P, Boisseau V: Educational status and health. *J Fam Pract* 1980; 10:1029-1034