

Five Year Follow-up of a Smoking Withdrawal Clinic Population

DEE W. WEST, PHD, SAXON GRAHAM, PHD, MYA SWANSON, BA, AND GREGG WILKINSON, PHD

Abstract: Eight hundred volunteers who attended smoking clinics at Roswell Park Memorial Institute from 1964–1965 were followed up five years later to ascertain their current smoking status. From three waves of a mailed questionnaire, plus a telephone campaign, we obtained 559 usable responses. The relationship between smoking status at the five-year follow-up and clinic protocols and selected social and psychological characteristics as determined during the clinics were examined.

Of those individuals contacted five years after the clinic, 17.8 per cent were not smoking. Variations in

clinic protocol in terms of drugs and education methods had no relation to long-term smoking withdrawal. Several social and psychological variables, however, were related to smoking behavior five years after the clinics. Non-smokers were more likely than smokers to be males, to be older, to have smoked less before the clinic, to have started smoking at a later age, to have a milieu that was supportive of their stopping, and to have fewer indices of neurosis and fewer psychosomatic symptoms. (*Am. J. Public Health* 67:536–544, 1977)

In the early 1960s the Surgeon General of the United States became actively involved in evaluating the evidence relating lung cancer to cigarette smoking. From these evaluations, definitive reports evaluating the literature linking lung cancer to smoking were published¹ and measures were sought to deal with this problem. One method which we applied was the smoking withdrawal clinic. We now have had the opportunity to examine the smoking status, and factors related to it, of 559 patients five years after they attended a series of clinics at Roswell Park Memorial Institute.

We were concerned with a number of questions: What proportion of those attending clinics are successful over the long term? Do variations in clinic procedure result in different levels of success? What are the characteristics of those who, five years after attendance, had succeeded or failed in their attempt to withdraw from smoking?

In studying such long-term behavior change, we were guided by the sociological literature dealing with this phenomenon. The most commonly studied behavior changes have been incremental ones: those where new behaviors have replaced old ones. Hypotheses dealing with incremental behavior, however, may also be applicable to the

study of decremental behavior, the elimination of behavioral patterns with no replacement, such as smoking cessation.

The relevant literature suggests that behavior change is more likely when the innovation is compatible with previously held ideas, values, and behavioral patterns; when the function of the new behavior is understood; when the new behavior is seen by the adopter as personally advantageous over old behavior; when the decision to adopt is reversible; when old behavior is feasible to give up, for example, where physiologic dependence is not involved; and when influential individuals in the subject's milieu accept or support the innovation.²

Specifically regarding smoking behavior, we hypothesized that smoking cessation would be negatively associated with the amount of habituation involved and positively associated with possession of a personal psyche which can withstand withdrawal trauma, a knowledge of the ill effects of smoking, a perceived personal threat of lung cancer, and behavior and support from others in the personal milieu which is compatible with withdrawal. Almost all of our hypotheses were confirmed.

Methods

From August 1963 to June 1965, 25 different smoking cessation clinics were held at Roswell Park Memorial Institute. The clinics averaged 60 volunteers, were stratified to contain about an equal number of males and females, and usually met once a week for one month. The first session included a brief medical examination to exclude volunteers for

From the Research Program in Social Epidemiology and Control of Cancer, State University of New York at Buffalo and Roswell Park Memorial Institute. Address reprint requests to Dr. Dee W. West, SUNY at Buffalo, 4224 Ridge Lea Road, Room 39, Amherst, NY 14226. This paper, submitted to the *Journal* June 28, 1976, was revised and accepted for publication January 10, 1977. The original paper was presented at the 103rd Annual Meeting of the American Public Health Association, Chicago 1975.

whom the drugs to be used would be contraindicated. Volunteers were also given questionnaires which requested medical, smoking, sociological, and psychological histories. In addition, they were given report forms to record each day's smoking status, side effects, and medication usage.^{3, 4, 5}

The two main smoking withdrawal measures used at the clinics were drugs and educational programs. Their use varied systematically in the different clinics, and volunteers were randomly assigned a clinic. Some clinics had no educational programs while others had lectures on the hazards of smoking, the treatment of cancer, and methods used to quit. These lectures were supplemented by films, and questions from the participants were encouraged.

Drugs hypothesized to ease the difficulty of smoking withdrawal were prescribed randomly and blindly: lobeline, as a possible substitute for nicotine, and amphetamine, to reduce the possibility of increased appetites and weight gain. Each clinic used different drug combinations: some used only one drug, some both drugs, some a drug and a placebo, and some only placebos.⁶

This paper is concerned with the last 11 clinics, held between September 1964 and June 1965. In 1970-1971, we attempted to reach the 800 participants from these clinics; we were successful with 559. The follow-up involved three waves of mail questionnaires with telephone contacts to those who did not answer the questionnaire. At the follow-up, respondents were asked about their present smoking habits and those of people with whom they associated.

Limitations of Methods

This inquiry suggests in a preliminary fashion some of the longitudinal effects of withdrawal clinics on smoking behavior and the characteristics of clients who were successful in their attempts to stop smoking. Yet, several characteristics of the study limit interpretation of results. First, we were able to locate only 76 per cent of the original clinic volunteers; since 2 per cent of these had died and 4 per cent refused to participate only 70 per cent actually participated in our follow-up. The 24 per cent we were not able to locate were lost to follow-up primarily because of geographic mobility. Based on data obtained at the time of their attendance at the clinics, we compared the 70 per cent followed with those we were not able to contact or interview. We found no difference in their pre-clinic smoking habits or smoking habits at the seventh day after the clinic began. There were statistically significant but small differences on some demographic variables. Compared to the non-respondents, the respondents to our follow-up included: older people (34 per cent age 46 and over compared to 27 per cent), more married people (82.5 per cent compared to 74.3 per cent), and more housewives (33.9 per cent compared to 23.2 per cent). We do not know to what extent this biases our results.

A second limitation is that we do not have a control group of similar patients who did not attend the clinics. Thus we are not able to identify the spontaneous quitting rate for the type of respondent attracted to the clinics. Spontaneous rates for the general population are not applicable since respondents coming to the clinics are those who responded to

radio and television advertisements and therefore may differ from other smokers in the community.

Characteristics of Volunteers

Characteristics of the clinic members were compared with those of a random sample of smokers in Buffalo and suburban Kenmore as studied by Graham and Gibson at about the same period as the subjects.⁷ Clinic volunteers were different in many ways. First of all they were younger; 33 per cent were under 31 years of age while about 16 per cent of the smokers in the general population were in that age group. Only 10 per cent of clinic members were over age 50 as compared to 29 per cent of smokers in Buffalo. Of clinic participants, 13 per cent were single, 80 per cent were married, 2 per cent were widowed, and 5 per cent were separated or divorced. The corresponding figures for the cigarette smokers in the general population are 7 per cent single, 85 per cent married, 5 per cent widowed, and 3 per cent separated or divorced. As can be seen, the differences for marital status are small. Clinic volunteers were more educated: nearly 23 per cent had attended some college and over 17 per cent had graduated from college as compared to only about 5 and 6 per cent, respectively, of the cigarette smokers in the general population.

The clinic members began smoking at an earlier age: almost 32 per cent began before age 16 while 19 per cent of the cigarette smokers in the general population began this early. Eight per cent of the clinic participants as compared to 26 per cent of the cigarette smokers in the community sample started smoking after age 21. The clinic participants were heavier smokers: 68 per cent smoked more than one pack a day and just over 1 per cent smoked less than one-half pack. The cigarette smokers in the general population included only 34 per cent who smoked more than one pack and 24 per cent who smoked less than one-half pack. In addition to smoking more, the clinic volunteers reported inhaling more often and more deeply. Nearly 91 per cent inhaled almost every puff and 46 per cent consciously inhaled the smoke into the chest. Only 66 per cent of the cigarette smokers in the community inhaled almost every puff and only 34 per cent drew the smoke into the chest.

In summary, the clinic volunteers were younger, more educated, began smoking earlier, smoked more, and inhaled more and deeper than the cigarette smokers in the general population. If we may generalize from this comparison, which may not be without hazard, the volunteers for the clinic appear atypical of smokers in Buffalo.⁷ Although we could not determine if they are different from those in the community who want to quit smoking, it seems likely.

Findings

Smoking Withdrawal

Table 1 summarizes the changes in smoking behavior subsequent to entry into the clinics. By the seventh day, 38.4 per cent had quit smoking. Five years later, 17.8 per cent of the respondents contacted were not smoking. This five-year success rate is similar to that discovered in studies measur-

TABLE 1—Change in Amount Smoked as Measured at 7-Day and 5-Year Follow-Ups

Smoking Status	Clinic Entry To 7th Day of Clinic		Clinic Entry to 5-Year Follow-Up	
	No.	%	No.	%
Quit	178	38.4	95	17.8
Smokers (Decreased)	270	58.4	196	36.6
Smokers (Remained the Same)	9	1.9	130	24.3
Smokers (Increased)	6	1.3	114	21.3
Smokers (Don't Know Amount)	15	*	8	*
Don't Know Smoking Status	65	*	0	*
Totals	543	100.0	543	100.0

*Percentages are computed excluding the "Don't Know" category.

ing 12 to 18 month successes of clinic patients. In these studies, smoking withdrawal varied from 13 per cent to 37 per cent.⁸⁻¹⁸

Table 1 also shows that most of those who had not quit at the end of the first week of the clinic had decreased the amount smoked. From a public health point of view, reduction in amount smoked may have a significant effect on the incidence of lung cancer and smoking-related diseases. Characteristics of those who reduced the amount smoked will be considered in another paper.

In Table 2, we can see the relationship between smoking behavior at the seventh-day and at the five-year follow-up. Non-smokers at the five-year follow-up were much more likely than smokers to have also quit by the seventh day of the clinic. Seventy-two per cent of the long-term quitters were not smoking on the seventh day of the clinic, compared to 30 per cent of the long-term smokers.

TABLE 2—Comparison of Smoking Behavior at the 7-Day and 5-Year Follow-Ups

7th Day Smoking Behavior	5-Year Smoking Behavior			
	Not Smoking		Smoking	
	No.	%	No.	%
Quit	60	72.3	118	29.9
Smoking	23	27.7	277	70.1
Don't Know	12	*	53	*
Totals	95	100.0	448	100.0

$\chi^2 = 51.00; 1 \text{ df}; p < .0001$

*Percentages are computed excluding the "Don't Know" category.

Clinic Protocol and Smoking Withdrawal

As described earlier, our smoking clinics utilized a variety of protocols, a few employing only drugs in various combinations and most using these in tandem with educational discussions. In Table 3, we see a comparison of smokers and quitters in terms of the types of drugs given at clinics. There is no significant difference between them in the type of drug provided. This is true for both the seven-day and five-year follow-up. Ross,⁴ in reporting on all 24 clinics (the present

report is only for the last 11), found a lobeline and amphetamine combination to be related with withdrawal initially but medication had no relationship at a follow-up six months after clinic attendance.

Other studies have reported conflicting results regarding the effectiveness of medications on smoking withdrawal. In a review of these, however, Schwartz¹⁹ concludes that most show that drugs such as nicotine substitutes and tranquilizers are "not effective in assisting smokers to give up the habit." Though there may be some associations initially, Schwartz concludes, placebos achieve equal or better long-term results. Our study found no significant difference between placebos and other types of drugs.

Although a somewhat larger proportion of those who stopped smoking over the short-term attended clinics featuring an educational program, there is no difference between quitters and smokers five years later (see Table 3). Because educational techniques and length of programs vary, these results are difficult to compare with those of other studies. In general, however, the one-year findings of most studies compare with our five-year results, regardless of educational methods used.

Characteristics of Quitters

Age As can be seen in Table 3, age at time of entry into clinics has no significant relationship to smoking behavior as measured after the first week of the clinic. Five years later, however, quitters were more likely to be the older participants. The literature on smoking suggests that with or without clinics, as age increases so also does withdrawal from and reduction in smoking.^{7, 10, 20-25} Characteristics associated with aging, then, may be responsible for some of our five-year successes.

Sex Table 3 also points out that more successful quitters than smokers were males at the seventh day of the clinic and five years later. The smaller percentage of females who are successful in attempts to quit smoking in or out of clinics is one of the most consistent findings in the literature.^{8, 10, 23, 26-28}

Habituation We were concerned that variations in levels of habituation to cigarettes could be associated with withdrawal. We have no direct measure of habituation, but it is possible that the more habituated may have started smoking earlier and smoked and inhaled more.

In Table 3, the age at which the respondents started smoking is considered. At the five-year follow-up, quitters were more apt to have begun smoking at an older age. Though not significant at the seventh day of the clinic, the results are in the same direction and approach significance. Guilford²⁰ and Leone, et al.²⁵ also found age associated with quitting as did we in our earlier study of spontaneous quitters in a random sample of males in Buffalo.⁷ Early development of smoking patterns, then, seems to be related to difficulty in giving up this habit.

Since amount smoked may also be a factor in habituation, we looked at the number of cigarettes smoked and smoking cessation. As can be seen in the latter part of Table 3, a greater proportion of quitters were light smokers. This relationship is significant for the long-term follow-up and,

TABLE 3—Smoking Behavior at 7th Day of the Clinic and at 5-Year Follow-Up According to Selected Clinic, Demographic, and Smoking Variables

	7th Day of Clinic				5-Year Follow-Up			
	Not Smoking		Smoking		Not Smoking		Smoking	
	No.	%	No.	%	No.	%	No.	%
Type of Drug Prescribed at Clinic								
Lobeline and Amphetamine	28	15.7	43	14.3	17	17.9	64	14.3
Lobeline	49	27.5	82	27.4	27	28.4	122	27.2
Amphetamine	59	33.2	83	27.7	26	27.4	134	29.9
Placebo	42	23.6	92	30.6	25	26.3	128	28.6
Totals	178	100.0	300	100.0	95	100.0	448	100.0
	$\chi^2 = 3.27; 3df; p = n.s.$				$\chi^2 = 1.04; 3df; p = n.s.$			
Education Received at Clinic								
No Education	27	15.2	82	27.3	19	20.0	107	23.9
Education	151	84.8	218	72.7	76	80.0	341	76.1
Totals	178	100.0	300	100.0	95	100.0	448	100.0
	$\chi^2 = 8.713; 1 df; p < .01$				$\chi^2 = .463; 1 df; p = n.s.$			
Age at Clinic Entry								
15-30	54	30.3	97	32.3	18	18.9	149	33.3
31-40	67	37.6	99	33.0	35	36.9	156	35.0
41-50	43	24.2	74	24.7	28	29.5	107	23.9
51+	14	7.9	30	10.0	14	14.7	35	7.8
Totals	178	100.0	300	100.0	95	100.0	447*	100.0
	$\chi^2 = 1.40; 3 df; p = n.s.$				$\chi^2 = 10.45; 3 df; p < .05$			
Sex								
Male	94	52.8	127	42.3	56	58.9	199	44.4
Female	84	47.2	173	57.7	39	41.1	249	55.6
Totals	178	100.0	300	100.0	95	100.0	448	100.0
	$\chi^2 = 4.52; 1df; p < .05$				$\chi^2 = 6.64; 1 df; p < .01$			
Age Began Smoking								
<16	44	24.7	98	32.7	19	20.0	149	33.4
16, 17	64	35.9	83	27.8	29	30.5	133	29.8
18, 19	30	16.9	63	21.1	20	21.1	87	19.5
>19	40	22.5	55	18.4	27	28.4	77	17.3
Totals	178	100.0	299*	100.0	95	100.0	446*	100.0
	$\chi^2 = 6.81; 3 df; p = n.s.$				$\chi^2 = 9.71; 3 df; p < .05$			
Number of Cigarettes Smoked/Day at Clinic Entry								
0-20	71	40.3	101	34.4	44	46.3	144	32.7
21-30	51	29.0	85	28.9	25	26.3	131	29.8
30+	54	30.7	108	36.7	26	27.4	165	37.5
Totals	176*	100.0	294*	100.0	95	100.0	440*	100.0
	$\chi^2 = 2.25; 2 df; p = n.s.$				$\chi^2 = 6.67; 2 df; p < .05$			
Smoking Habits of Spouse at Clinic Entry								
Smoking	72	45.2	115	44.9	33	38.3	174	45.5
Smoking:								
Tried to Stop	23	14.5	54	21.1	9	10.5	83	21.7
Stopped	24	15.1	35	13.7	17	19.8	51	13.4
Never Smoked	40	25.2	52	20.3	27	31.4	74	19.4
Totals	159*	100.0	256*	100.0	86*	100.0	382*	100.0
	$\chi^2 = 3.50; 3 df; p = n.s.$				$\chi^2 = 12.04; 3 df; p < .01$			

*N's are reduced because complete information was not available.

though not significant for the seventh-day data, it is in the same direction. This finding linking light cigarette smoking with successful withdrawal has also been reported by Eisinger,²³ Leone, et al.,²⁵ McArthur,²⁹ Haenszel, et al.²⁶ and Straits.³⁰ Guilford³¹ and Hepper, et al.¹⁶ on the basis of small numbers found no differences.

Another measure of habituation may be inhalation patterns; therefore, we looked at frequency and depth of inhalation. We found no significant difference between smokers and non-smokers either at the seven-day or long-term follow-ups. This finding must be viewed with caution, however, since, as we have shown, there were few clinic participants who were infrequent inhalers. Delarue¹⁰ using carboxyhemoglobin levels to measure amount of inhalation has found light smokers, those with low carboxyhemoglobin levels, to have a significantly increased success rate of smoking withdrawal.

Support of Spouse

The influence of smoking habits and support of significant others on one's smoking behavior has been documented in previous research.³² Thus, children are more likely to smoke when parents smoke;^{27, 33-37} smoking by siblings is associated with increased smoking;³⁸⁻³⁹ peer groups influence the taking up of smoking;⁴⁰⁻⁴¹ and married smokers tend to have smoking partners.^{7, 42}

At the clinics, we inquired into the current smoking behavior of the subject's father, mother, siblings, work associates, friends, and spouse. Only the spouse's smoking behavior was associated with the respondent's behavior and this was the case only at the five-year follow-up. In Table 3, we see that respondents who were not smoking five years after the clinics were more likely than those who were smoking to have spouses who had never smoked or had quit smoking.

At the five-year follow-up, we again asked the respondents about their spouse's smoking habits at that time. Here, too, quitters were substantially more likely to be married to non-smokers or previous smokers (Table 4). At this follow-up, the respondents were also asked about support from their spouses as they tried to quit. As can be seen in Table 4, two-thirds of the quitters had spouses who "made it easier to quit" while only slightly more than one-third of the smokers received this support.

It is clear, at least in our population, that spouses' smoking behavior and support are significantly associated with long-term success in smoking cessation. This is reminiscent of findings over short periods of time in clinic studies by Schwartz and Dubitzky,¹⁴ Thompson and Wilson,⁴³ and Jacobs, et al.⁴⁴ We also found this to be the case for spontaneous smoking withdrawal in our random sample of Buffalo.⁷

Emotional Status An approximation of emotional status was determined from responses to a set of questions used by Lilienfeld⁴⁵ in his 1959 study of smokers in Buffalo. Lilienfeld had adapted these questions from Stouffer's⁴⁶ scale in *The American Soldier*. Examples are: "How often do people hurt your feelings?" "Do you ever feel like smashing things for no good reason?"; and "How often do you worry about things that might happen to you that you have no control over?" To each of ten questions the respondent answered, "never", "not very much", "quite a bit", or "almost always", weighted from "0-3". Scores shown in Table 5 indicate that, when compared to smokers, quitters had a smaller proportion who were "most unstable" both at the seven-day and five-year follow-ups.

Schwartz and Dubitzky¹³ found similar results in their studies of smoking withdrawal clinics. Studies of smokers and non-smokers in general populations (e.g., Lilienfeld,⁴⁵

TABLE 4—Smoking Habits and Support of Spouse and Respondents' Smoking Behavior 5-Year Follow-Up

Smoking Habit of Spouse	Not Smoking		Smoking	
	No.	%	No.	%
Smoking	9	10.3	77	19.2
Smoking: Tried to Stop	25	28.7	158	39.2
Stopped	20	23.0	79	19.7
Never Smoked	33	38.0	88	21.9
Totals	87*	100.0	402*	100.0

$$\chi^2 = 13.12; 3 \text{ df}; p < .01$$

Support of Spouse in Respondent Smoking Withdrawal

Support of Spouse in Respondent Smoking Withdrawal	No.	%	No.	%
Supportive	56	65.9	139	38.2
Had No Effect	26	30.6	159	43.7
Negative	3	3.5	66	18.1
Totals	85*	100.0	364*	100.0

$$\chi^2 = 24.60; 2 \text{ df}; p < .001$$

*N's are reduced because complete information was not available for smoking habits of spouse at the 5-year follow-up.

TABLE 5—Smoking Behavior at 7th Day and 5-Year Follow-Up According to Emotional Stability and Psychosomatic Symptom Scores

	7th Day of Clinic				5-Year Follow-Up			
	Not Smoking		Smoking		Not Smoking		Smoking	
	No.	%	No.	%	No.	%	No.	%
<i>Emotional Status Score</i>								
1-6 (most stable)	42	23.9	68	23.2	25	27.5	94	21.3
7-8	58	32.9	57	19.5	30	32.9	101	22.9
9-10	38	21.6	64	21.8	19	20.9	98	22.2
11+ (most unstable)	38	21.6	104	35.5	17	18.7	148	33.6
Totals	176*	100.0	293*	100.0	91*	100.0	441*	100.0
	$\chi^2 = 15.22; 3 \text{ df}; p < .01$				$\chi^2 = 9.83; 3 \text{ df}; p < .05$			
<i>Psychosomatic Symptom Scores</i>								
0-5 (Least Symptomatic)	50	29.9	64	23.2	34	38.6	94	22.8
6-10	49	29.3	62	22.5	21	23.9	102	24.8
11-18	39	23.4	67	24.3	22	25.0	97	23.5
19+ (Most Symptomatic)	29	17.4	83	30.0	11	12.5	119	28.9
Totals	167*	100.0	276*	100.0	88*	100.0	412*	100.0
	$\chi^2 = 10.49; 3 \text{ df}; p < .02$				$\chi^2 = 14.66; 3 \text{ df}; p < .01$			

*N's are reduced because complete information was not available for some respondents on some questions used in these scales.

Heath,⁴⁷ Rode, et al.⁴⁸ and Matarazzo and Saslow⁴⁹) also show that smokers have more symptoms of nervousness, tension, and neurosis than non-smokers. Eysenck, et al.,⁵⁰ however, failed to find a significant relationship in their study, while Waters⁵¹ found such a relationship only for females. We were not able to look at the relationship by sex because of the small numbers in our study.

Psychosomatic Symptoms Psychosomatic status was measured by responses to questions based on Stouffer's work⁴⁶ modified in the light of Bradburn's experience.⁵² Respondents were asked how often they recognized 14 different symptoms (i.e., dizziness, trembling hands, cold sweats, upset stomach, shortness of breath, blue feelings, fainting spells, biting fingernails, rapid heart beat, difficulty in sleeping, nervousness, sweating hands, nightmares, and pains or pressures in the head) during the two-week period preceding the clinic. Responses were grouped into six categories and assigned a score, with "never" assigned a "0" and "eight times or more" being weighted a "5". In Table 5, we can see that quitters had significantly lower psychosomatic symptom scores than smokers for both time periods. Lilienfeld⁴⁵ used similar questions in his study of spontaneous withdrawal in a sample of Buffalo, and his findings are comparable to ours.

Attitudes Toward Smoking Horn and Waingrow⁵³ developed a model in which they point out that smoking behavior is most likely to change when, among other things, smoking is seen as a threat to health in general and especially to one's own health. Our data support this model. At the

five-year follow-up, respondents were asked about their feelings regarding smoking and health. Their perception of a non-specific threat was measured by asking, "Do you feel that smoking cigarettes can cause disease?" In Table 6, we see little difference between smokers and non-smokers in their answers to this question. The second question, measuring perceived threat to oneself, asked, "Do you believe that smoking cigarettes affects your own health?" Ninety-two per cent of the quitters answered "yes" as compared to 81 per cent of the smokers. Thus it seems that when one sees cigarette smoking as a personal threat, affecting one's own health, the individual is somewhat more likely to modify his smoking behavior.

Other Variables In addition to the significant findings which we have presented, we looked at many other variables which the literature suggested might be associated with successful withdrawal. A few approached significance ($.05 < p < .20$) at the long-term follow-up: non-smokers participated in more sports, particularly football and bowling; more smokers lived in large cities when young; smokers were more likely to smoke on the job; non-smokers had more organizational affiliation; the mother, father, friends and co-workers of non-smokers were more likely to not be smoking; smokers had more of the following symptoms in the two weeks prior to the clinic: coughing, nervousness, sore throat, fast pulse, dizziness, upset stomach, fatigue, dry mouth, sore mouth or tongue, sputum, lack of taste for food, bad taste in mouth, sinus trouble, and shortness of breath; and smokers at the follow-up were more likely to mention specific health problems as their reason for attending the clinics.

TABLE 6—Beliefs about Health Hazards of Smoking and Smoking Behavior at 5-Year Follow-Up

Response	"Do You Feel that Smoking Cigarettes Can Cause Disease?"				"Do You Feel that Smoking Cigarettes Affects Your Own Health?"			
	Not Smoking		Smoking		Not Smoking		Smoking	
	No.	%	No.	%	No.	%	No.	%
Yes	91	97.8	407	93.6	83	92.2	355	80.9
No	2	2.2	20	4.6	7	7.8	80	18.2
Don't Know	0	0	8	1.8	0	0	4	.9
Totals	93*	100.0	435*	100.0	90*	100.0	439*	100.0
	$\chi^2 = 2.63; 1 \text{ df}; p = \text{n.s.}$				$\chi^2 = 6.76; 1 \text{ df}; p < .01$			

*N's are reduced because complete information was not available for the responses to these questions.

There were no statistical relationships between long-term smoking cessation and marital status, education, religion, race, employment status, political preference, mother or father's birthplace, and favorite time and place of smoking.

Discussion

The literature reports variable smoking withdrawal success rates for those completing smoking withdrawal clinics, and the long-term effects are not established. Most clinics have not followed their clients but those that have done so for 12–18 months report success rates of 13 per cent to 37 per cent. In a four-year study of 17 clients, Lawton¹² found 19 per cent of the original participants to have withdrawn. Our five-year study, based on much larger numbers, found 17.8 per cent to have quit.

The five-year results of our inquiry, then, are similar to the one to one and one-half year findings of other investigators and the four-year results of Lawton.¹² The reason for these similarities may be deduced from findings of Hunt and his associates^{54, 55} who have measured recidivism over time. They found that two-thirds resumed smoking three months subsequent to clinic attendance and three-fourths resumed within six months. Hunt's work implies that the recidivism occurs fairly rapidly throughout the first six months following the clinics and then levels off.

In one sense, an 18 per cent success rate would indicate that our smoking withdrawal clinics were not successful. Yet, for almost one-fifth of our clinic participants, the risk of cardiovascular and pulmonary pathology was reduced. Furthermore, although only 18 per cent quit smoking entirely, nearly one-half of those who continued to smoke had decreased. Also, as noted earlier, our clinic participants differed from cigarette smokers in the general population since they were younger, heavier smokers, and began smoking earlier. As we have also shown, these same characteristics were found among the less successful clinic participants. Thus our clinic participants could have been smokers who have unusual difficulty quitting. If this is true, an 18 per cent success rate may actually represent a substantial achievement.

Though we do not know how many of our volunteers would have quit had they not attended the clinics, several other studies^{10, 12, 13, 56} using controls have found clinic participants to have significantly higher withdrawal rates. In these studies, quitting rates for controls ranged from 5 per cent to 11 per cent as against 18 per cent to 58 per cent for clinic participants. The time periods were different in all these studies but the success rate for clinic participants were 2 to 5 times that of the non-participants.

How the spontaneous quitting rate for the general Buffalo population of smokers compares to our clinic rates is impossible to determine. We do not have good data on this general population from the periods when the clinics were held until the follow-up five years later. Future studies should use control populations consisting of a random sample of the general population and of smokers with the same traits as those attending the clinics.

The type of clinic protocol had no distinguishable long-term effect on withdrawal. Those receiving placebo and no education quit at about the same rate as those receiving different types of drugs and educational programs. Hunt and Bespalec⁵⁴ and Weir, et al.⁵⁷ have suggested that the type of treatment may be minor compared to individual motivation. Clients entering treatment desire to quit and are motivated enough to come to the clinics. Not all complete treatment, but motivation may be a factor in those who did. For some, this motivation may have been reinforced and even intensified at the clinics. Thus, group identification, social support, and informal discussions may be more important than formal presentations and drugs used. This is an area needing more study by testing these factors in different types of clinic protocols.

We also compared characteristics of those who quit with those who did not. Females, younger respondents, heavy smokers, those who felt stopping could not help them personally, the emotionally less stable, those with more psychosomatic complaints, and those lacking support from their spouses all had more difficulty in quitting. It is possible that clinics with protocols designed in light of these findings might be more effective than those in the past. Education might emphasize the personal cogency of the health hazards of smoking. It would appear that efforts could be made to en-

hance the supportive effects of spouse behavior both in the home and possibly by attending therapy sessions together.¹⁴

Most clinics use group sessions but some people may not benefit from such an approach. Schwartz and Dubitzky¹⁴ point out that groups may stimulate competition with accompanying anxiety. This anxiety when combined with previous anxiety and withdrawal anxiety may be counter-productive. For these people an individualized program may be more effective,⁵⁵ such as psychotherapy or individual motivation techniques.

Thus it seems that clinic applicants should be screened as to characteristics associated with success. If resources are limited, treatment of applicants with traits associated with failure may be postponed. The screening information may also indicate treatment to best meet individual needs. We need more reports from such individualized attempts, however, before definite conclusions can be drawn.

Our inquiry has raised other questions which need to be studied further. First, the relationship between education and smoking withdrawal is not clear. Neither amount of schooling nor education at the clinics were associated with smoking cessation at our long-term follow-up. Yet, we have seen that when smoking is viewed as a threat to one's health, patients were more likely to quit smoking. The conviction that smoking may affect one's health usually requires knowledge from some source and these findings, then, seem contradictory. We need studies of sources and kinds of information relating smoking to illness and the relative association of each source with smoking cessation.

Next, we need to consider the issue of habituation to cigarettes. Though our numbers in some cases were small, the age when one began smoking and amount smoked were associated with withdrawal but reported amount and depth of inhalation were not. We need more studies of habituation, both psychosocial and physiological, as related to cigarette smoking and withdrawal. If cigarette smoking is habituating and perhaps even addictive, we need to understand these processes in order to more successfully conduct withdrawal clinics.

Though there has been some speculation as to why females find it more difficult to quit than males,⁵⁸ this needs to be studied further. Once these variables are known, clinic protocols may be tailored to each sex.

In conclusion, it appears that we need studies of ways of presenting information, of the kinds of information to impart, and of means of involving people in group interaction in smoking withdrawal, especially spouses and possibly other family members. We also need to discover how to increase the proportion of the population who feels that not smoking is cogent to their own continued good health. Lastly, we need to understand whether clinics of optimum design have any greater long-term success and cost-effectiveness than can be achieved by using mass media, health guides, or other approaches.

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Living Wisely

*T*oward off disease or recover health, men as a rule find it easier to depend on healers than to attempt the more difficult task of living wisely.

René Dubos: *Mirage of Health*, Garden City, New York, Anchor Books, 1961, p.114.