CALIFORNIA STATE UNIVERSITY, NORTHridge

A CANCER EDUCATION:
STOP SMOKING CLINIC

A thesis submitted in partial satisfaction of the requirement for the degree of
Master of Public Health
by
Tho Tang Nguyen

June, 1976
The thesis of Tho Tang Nguyen is approved:

Ann Braatz

G. B. Krishnamurty

John T. Fodor

California State University, Northridge
DEDICATION

TO

MY MOTHER

AND

MY FATHER
ACKNOWLEDGEMENTS

The author wishes to express his appreciation to all the people who contributed to this study in thought and deed.

My deepest appreciation and gratitude to Dr. G. B. Krishnamurty and Dr. John T. Fodor for their critical guidance and suggestions, to Ann Braatz, for providing to me the opportunity to conduct this study in addition to coordinating my field activities.

Acknowledgement must be given to Eva Wong, Kathy Smith, Pamela Martindale, and Mary Krishnamurty for their invaluable assistance and cooperation.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>viii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>3</td>
</tr>
<tr>
<td>Limitation of the Study</td>
<td>4</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>5</td>
</tr>
<tr>
<td>A Brief History of Tobacco and Smoking</td>
<td>5</td>
</tr>
<tr>
<td>Smoking and Health</td>
<td>7</td>
</tr>
<tr>
<td>Cancer Education</td>
<td>9</td>
</tr>
<tr>
<td>III. METHODS</td>
<td>10</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>10</td>
</tr>
<tr>
<td>Population Studied</td>
<td>10</td>
</tr>
<tr>
<td>Educational Method</td>
<td>11</td>
</tr>
<tr>
<td>Research Design</td>
<td>12</td>
</tr>
<tr>
<td>Construction of the questionnaire</td>
<td>12</td>
</tr>
<tr>
<td>Collection of data</td>
<td>12</td>
</tr>
<tr>
<td>Method of evaluation</td>
<td>13</td>
</tr>
<tr>
<td>IV. RESULTS</td>
<td>14</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Comparison Between the Number of Cigarettes Smoked Before and After the Program</td>
<td>14</td>
</tr>
<tr>
<td>Smoking Behavior: Demographic Data and Educational Level</td>
<td>15</td>
</tr>
<tr>
<td>Use of the Multiple Regression Equation in the Prediction of the Success of the Program</td>
<td>25</td>
</tr>
<tr>
<td>V. DISCUSSION AND CONCLUSION</td>
<td>30</td>
</tr>
<tr>
<td>Conclusion</td>
<td>32</td>
</tr>
<tr>
<td>Recommendations</td>
<td>32</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>34</td>
</tr>
<tr>
<td>APPENDIX I. FOLLOW-UP QUESTIONNAIRE</td>
<td>38</td>
</tr>
<tr>
<td>APPENDIX II. SMOKER'S PROFILE I</td>
<td>42</td>
</tr>
<tr>
<td>APPENDIX III. SMOKER'S PROFILE II</td>
<td>45</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Comparison between the number of cigarettes smoked before and after the program</td>
<td>15</td>
</tr>
<tr>
<td>II. Smoking behavior change by age</td>
<td>16</td>
</tr>
<tr>
<td>III. Smoking behavior change by sex</td>
<td>16</td>
</tr>
<tr>
<td>IV. Smoking behavior change by marital status</td>
<td>17</td>
</tr>
<tr>
<td>V. Smoking behavior change by educational status</td>
<td>17</td>
</tr>
<tr>
<td>VI. Smoking behavior change by household size</td>
<td>18</td>
</tr>
<tr>
<td>VII. Smoking behavior change by the number of smoker(s) in the household</td>
<td>19</td>
</tr>
<tr>
<td>VIII. Smoking behavior change and number of years smoked</td>
<td>19</td>
</tr>
<tr>
<td>IX. Smoking behavior change and the time lapse between program participation and survey</td>
<td>20</td>
</tr>
<tr>
<td>X. Smoking behavior change and health condition</td>
<td>21</td>
</tr>
<tr>
<td>XI. Smoking behavior change and number of sessions attended</td>
<td>21</td>
</tr>
<tr>
<td>XII. Smoking behavior change and previous attempts to quit</td>
<td>22</td>
</tr>
<tr>
<td>XIII. Smoking behavior change and program pertinence rating</td>
<td>23</td>
</tr>
<tr>
<td>XIV. Smoking behavior change and program content rating</td>
<td>23</td>
</tr>
<tr>
<td>XV. Smoking behavior change and program length rating</td>
<td>24</td>
</tr>
<tr>
<td>XVI. Smoking behavior change and leader rating</td>
<td>25</td>
</tr>
<tr>
<td>XVII. Result of the computer output</td>
<td>27</td>
</tr>
</tbody>
</table>
ABSTRACT

A CANCER EDUCATION: STOP SMOKING CLINIC

by

Tho Tang Nguyen

Master of Public Health

June, 1976

The purpose of this study was to evaluate the effectiveness of the Stop Smoking Program conducted by the American Cancer Society, San Fernando Valley Unit during a period covering October 1973 to October 1975.

The sample employed in this study consisted of 394 smokers who attended from three to eight sessions of the Stop Smoking Program conducted by the American Cancer Society.

Forty-four per cent of the respondents (55) quit smoking. The reduction of the number of cigarettes smoked by participants after their participation in the program was significant.

Results of the multiple regression analysis showed that the following factors were statistically
correlated with the cessation of smoking: pertinence of the program, content of the program, length of the program, and number of sessions attended.

It was concluded that the program was effective in assisting smokers to abstain from smoking.
CHAPTER I

INTRODUCTION

Cigarette smoking has been identified to be one of the causes of lung cancer since World War II (1:23) by official commissions and scientific studies in many countries (Austria, France, U.S.A.). Additionally, there has been a rise in the number of deaths due to lung cancer (1:23).

In 1916, death rates from lung cancer were near zero in the United States and in Great Britain. In 1967 the number of deaths in the U.S. from lung cancer was 54,407, reaching 27.5 per 100,000. During the same year in Great Britain, the death rate nearly reached 58.5 per 100,000, and the number of deaths rose to 28,252 (1:23).

The relationship between cigarette smoking and lung cancer has been studied in more than 1,000,000 people over periods ranging from 4 to 15 years. Results have shown a direct relationship between the number of cigarettes smoked and the death rate from lung cancer (1:24).

In the above studies the death rates from lung cancer among smokers ranged from 7 to 14 times higher than that of non-smokers (1:24).
Cigarette smoking also is associated with cancer of the larynx, mouth, esophagus (45:537-8), urinary bladder (1:32), heart attacks (3:1799), cardiovascular diseases (6:822), and strokes (1:35).

Other studies have shown that cigarette smoking is linked with emphysema (7:437), chronic bronchitis (20:262), peptic ulcer (26:200), and non cancerous mouth diseases (1:44).

Moreover cigarette smoking has an effect on pregnancy outcome (12:572; 15), on the birth weight (1:43; 46:24), the first months of life, the growth and development of children of smoking mothers (18:610).

Since most lung cancer is caused by cigarette and cigar smoking, it is largely a preventable disease (2:3; 41:543-6). Although the incidence of smoking has increased during the past 25 years (30:233), there were a number of years (1965-1971) during which there was a sharp decline due to anti-smoking campaigns (13:19).

In 1962 and 1963, the American Cancer Society had written to college presidents raising the question of permitting promotion of cigarettes on campus. In June, 1963, most of the major cigarette manufacturers agreed to stop advertising in college publications (1:12).

In 1965 the law required all cigarette packages sold domestically to bear the warning: "Caution: Cigarette smoking may be hazardous to your health." (1:13).
In the same year the American Cancer Society released the film: "Who, Me?", with a related pamphlet, designed to personalize the danger of smoking. The film has been seen by more than two million people, and four million related pamphlets have been distributed (1:12).

In 1967 a new warning label was adopted by Congress: "Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous To Your Health." In the same year broadcasters who carried cigarette commercials were required to give an equal amount of time to warnings of the risks of smoking (1:14).

Between June 1967 and December 1971 the American Cancer Society distributed 22,526 prints of anti-smoking TV spots and countless anti-smoking radio messages (1:15).

During the past 10 years the American Cancer Society has sponsored more than 1,500,000 meetings, film showings, workshops and related activities with information on smoking and health (1:12-3).

Purpose of the Study

The purpose of this study was to evaluate the effectiveness of the Stop Smoking Program carried out by the San Fernando Valley Unit of the American Cancer Society.
The specific purpose was to assess the change in smoking behavior of smokers attending the Stop Smoking Educational Program. The evaluation was based on two questionnaires, one given prior to the attendance of the program, the profile I (appendix II), and the second, the survey questionnaire (appendix I) mailed several months later.

Limitation of the Study

This study was limited to people who attended the four week period Smoking Cessation Program organized by the San Fernando Valley Unit of the American Cancer Society. Therefore the results of this study cannot be extrapolated to people attending other American Cancer Society programs.
CHAPTER II

REVIEW OF THE LITERATURE

In this chapter a survey of the literature relating to smoking and health is given.

A Brief History of Tobacco and Smoking

Tobacco is a native of America. Its discovery occurred almost at the same time as the discovery of the New Continent. The use of tobacco was first noticed by the sailors of Columbus when they explored the island of Cuba in November 1492 (10:18-32).

The Indians believed that tobacco had some medicinal value. It is primarily for that reason that Columbus took it back to Spain. The name "tobacco" was given to the plant because it was sometimes smoked in an Y-shaped pipe called "tobaco" (19:5-6).

Later the plant was botanically named "nicotiana" after Jean Nicot, the French ambassador, who, it was believed, sent the seed of the plant to the Queen of France, Catherine De Medicis (19:6).

In the mid sixteen century, small cigars or cigarettes, which were paper-wrapped tobacco, were first made in Brazil and were introduced from there to Spain.
From Spain they spread to Turkey, Russia, France, and England (38:10).

The distribution and the use of cigarettes gradually became worldwide, and reached countries such as Asia and Africa (19:7).

The smoking of cigarettes was not frequent before World War I. The increase in cigarette smoking is believed to be due to the free distribution of cigarettes to soldiers. Women began to smoke during and after World War I. This change was due to the social acceptance of cigarette smoking by women, and their increasing independence and freedom (19:10-3).

In the United States of America cigarette smoking reached its maximum in 1964, the year in which the Surgeon General published his first report on Smoking and Health (38:14). The consumption of cigarettes showed a sharp decline during 1965-1971 due to the educational anti-smoking campaigns (13:19). One in every three men and one in every four women who were smoking in 1966 had stopped by July 1970 (38:15). In 1965, nearly 43 per cent of the adult population were smoking. By 1971 the percentage of smokers dropped to 36 per cent, and there were 29 million ex-smokers (13:18).

In 1968 the percentage of teenage girls who smoked was 8.4 per cent compared to 14.7 per cent of boys. By January 1974, 15.3 per cent of teenage girls
were smoking compared to 15.8 per cent of boys. In another 10 years there would be as many adult female smokers as adult male smokers (13:20).

Smoking and Health

Every year cigarettes kill more Americans than were killed in World War I, the Korean War, and Vietnam combined; nearly as many as died in battle in World War II. Each year cigarettes kill five times more Americans than do traffic accidents. Lung cancer alone kills as many as die on the road. The cigarette industry is peddling a deadly weapon. It is dealing in people's lives for financial gain (27:5-6).

Since 1927 many physicians have reported that in almost every case of lung cancer, the patient was a cigarette smoker (19:17-22).

In 1962 The Royal College of Physicians reported that diseases related to cigarette smoking caused many deaths and presented a big problem for preventive medicine (38:9).

Most lung cancer is caused by cigarette smoking (13:19; 11:950). This relationship is even stronger in the Far East where adenocarcinoma and cigarette smoking are intimately linked (8:622).

In present studies, the prevalence of chronic bronchitis and asthma was higher in smokers than non-smokers (29:262).

In the West Indies, while acquiring the smoking habit, smokers have a greater tendency to cough, and
their lung ventilatory capacity is reduced (32:503).

A few years ago, many physicians strongly remarked that cigarette smoking has been the cause of chronic bronchitis and emphysema (7:437; 40). In addition, cigarette smoking can cause peptic ulcer (43:399), nicotine stomatitis and leukoplakia (17:278). The latter can lead to a large number of associated cancers (8:272).

Cigarette smokers run the risk of absorbing into their blood stream the pesticides used in tobacco cultivation (20:104-6). This finding might explain why the leucocyte count in the blood has a clear relationship with the amount of smoke inhaled (14:632-4).

Although cigar and pipe smokers have a lower risk of lung cancer than cigarette smokers (23:541), the risk of having oral cancer has been found to be greater with pipe smokers (45:537-8).

Many studies, both prospective and retrospective, have shown that cigarette smoking is contributing to the development of coronary heart diseases and is a cause of increasing sudden death by myocardial infarction (31: 527) and angina pectoris (5:105).

It has been also demonstrated that the level of serum cholesterol increases with the number of cigarettes smoked (9:64).

There have been a number of communications about effects of smoking on the fetus (4:579). Smoking
mothers have a tendency to produce smaller babies (33:962; 46:24), have a higher incidence of perinatal mortality (12:572), and even after delivery, maternal smoking continues to affect the child up to seven years later (46:24; 22:539).

Cancer Education

Today, over 100,000 American men and women have lung cancer. In 1976 there will be another 93,000 new cases, and during this same year 84,000 will die of lung cancer (13:9).

Together we must strive for the day where avoidable illness and disabilities will no longer be tolerated (44:533).

Cancer education is very important since most lung cancer and diseases related to cigarette smoking are avoidable.

It is advisable to influence the patient with myocardial infarction or coronary heart disease to stop smoking in order to survive (43:419; 21:1345), and to discourage an ex-smoker from attempting to smoke the first cigarette (34:159).

The American Cancer Society has developed and implemented many cancer education programs, one such program includes The Stop Smoking Clinic (13:20).

The purpose of the Stop Smoking Clinic is to assist those smokers who wish to give up the smoking habit but are unable to do so by themselves (44:533; 25).
CHAPTER III

METHODS

Purpose of the Study

The purpose of this study was to evaluate the Stop Smoking Clinic organized by the San Fernando Valley Unit of the American Cancer Society and to determine whether there was a reduction in the number of cigarettes smoked after the program.

The Null hypotheses for this evaluation were:

1. The difference between the number of cigarettes smoked before the program and after the program was not statistically significant.

2. The difference between smoking behavior, before and after the program, was independent of the age, sex, educational level, etc., and of the self-assessed value of the program.

3. The multiple regression equation can not be used to predict the probability of the participant who could quit smoking after the program.

Population Studied

The sample of this study consisted of 394 participants randomly selected from a large population of 5,409 people who attended the Stop Smoking Clinic carried out by the San Fernando Valley Unit of the American Cancer Society.
American Cancer Society from October 1973 to October 1975. Those clinics were led by volunteers who were themselves ex-smokers.

The participants were both male and female, ranging in age from 22-73, with varied marital status. The level of education covered from eighth grade to post graduate. Participants had been smoking from 5 to 52 years. They had differing health conditions. The number of sessions they had attended in the Stop Smoking Clinic ranged from 3 to 8 sessions. They came from different social classes, and had seriously attempted to quit smoking from 0 to 12 times.

Educational Method

Participants attending the Stop Smoking Program are divided into groups of eight-eighteen smokers. Each group meets for two hours, twice a week, for four weeks.

These meetings or sessions are usually headed by two group leaders who are themselves ex-smokers, and who have attended special training sessions to become group leaders.

The Stop Smoking Program can be held in different kinds of settings such as churches, schools, hospitals, etc. (24:2).
Research Design

The following methods were developed and utilized in this study:

Construction of the questionnaire. The follow-up questionnaire (appendix I) was constructed to determine whether or not the program had been effective. First it was designed to measure the number of cigarettes the participant was smoking at the time of the survey. Then it was used to discover how many factors influence the smoking behavior of the participant in order to predict the chance of success of the program for each participant.

This questionnaire was based on the Smoker Profile I (appendix II) given to the participants prior to the attendance of the program, and the Profile II (appendix III) handed out to the participants at the seventh session, and collected at the eighth.

Since the majority of the participants did not attend all the sessions, the number of Profile II collected was very small compared with the Profile I.

Collection of data. On December 29, 1975, 394 questionnaires were mailed. One month after the mailing date, all responses were collected. Among them were 10 questionnaires returned by the post office, due to a change of address and no forwarding.
One hundred and twenty six response questionnaires (33%) were collected. One was discarded due to improper completion.

Method of evaluation. Since every participant had Profile I, it was used to record: (1) the number of cigarettes smoked before the program, (2) the number of meetings attended, (3) the number of trials to quit smoking before entering into the program.

Question number 12 was specifically designed to check whether the success, if any, was caused by program attendance or not. People who attended smoking cessation programs after the American Cancer Society program, were classified as "non-quitters' for the purposes of this study.
CHAPTER IV

RESULTS

This chapter contains the description of the demographic characteristics of the respondents, tables describing the relationship of smoking cessation to the other variables, and the multiple regression equation for the prediction of cessation of smoking.

One of the Null hypotheses suggested that there was no difference between the number of cigarettes smoked by participants prior to the program and after the program. The acceptance or rejection of this hypothesis was evaluated by the t-test at the .05 level of significance. The .05 significance level was also used in subsequent tests.

Comparison Between the Number of Cigarettes Smoked Before and After the Program

To determine if there was a reduction in the number of cigarettes smoked, the number of cigarettes smoked BEFORE AND AFTER the program were recorded and compared using the t-test.
TABLE I

Comparison between the number of cigarettes smoked before and after the program

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of cases</th>
<th>Mean of cigarettes smoked</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>125</td>
<td>38.936</td>
<td>9.35</td>
</tr>
<tr>
<td>After</td>
<td>125</td>
<td>14.776</td>
<td></td>
</tr>
</tbody>
</table>

(Significant at .05 level)

Table value 1.98

The null hypothesis: There was no difference between the number of cigarettes smoked before the program and after the program was rejected.

The above t-value (9.35) indicates, after the program, smoking was reduced.

Smoking Behavior: Demographic Data and Educational Level

To test the null hypothesis that the changing of smoking behavior is independent of age, sex, educational level, etc., of the participant, and participant perception of the program, a two by two contingency table was used with Yates' correction (44:319).
### TABLE II
Smoking behavior change by age

<table>
<thead>
<tr>
<th>Age</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>Forty eight or under</td>
<td>25</td>
<td>32</td>
<td>57</td>
</tr>
<tr>
<td>Over 48</td>
<td>30</td>
<td>38</td>
<td>68</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td><strong>70</strong></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

Chi-square = .044. Table value 3.84 at .05 level.

The chi-square is not significant. The smoking behavior change is independent of age.

### TABLE III
Smoking behavior change by sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>Male</td>
<td>27</td>
<td>22</td>
<td>49</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
<td>48</td>
<td>76</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td><strong>70</strong></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

Chi-square = 3.32. Table value 3.84 at .05 level.
The chi-square is not significant. The change in smoking behavior is independent of sex.

**TABLE IV**

Smoking behavior change by marital status

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Quit Smoking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Other than married</td>
<td>21</td>
</tr>
<tr>
<td>Married</td>
<td>34</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>55</td>
</tr>
</tbody>
</table>

Chi-square = .89. Table value 3.84 at .05 level.

The chi-square is not significant. The smoking behavior change is independent of marital status.

**TABLE V**

Smoking behavior change by educational status

<table>
<thead>
<tr>
<th>Education</th>
<th>Quit Smoking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>High School</td>
<td>20</td>
</tr>
<tr>
<td>College</td>
<td>35</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>55</td>
</tr>
</tbody>
</table>

Chi-square = .076. Table value 3.84 at .05 level.
The chi-square is not significant. The participant's smoking status is independent of educational status.

TABLE VI
Smoking behavior change by household size

<table>
<thead>
<tr>
<th>Number of person(s)</th>
<th>Quit Smoking</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>One</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>More than one</td>
<td>43</td>
<td>59</td>
</tr>
<tr>
<td>TOTAL</td>
<td>55</td>
<td>70</td>
</tr>
</tbody>
</table>

Chi-square = .418. Table value 3.84 at .05 level.

The chi-square is not significant. The smoking behavior change is independent of the number of persons in the household.
### TABLE VII

Smoking behavior change by the number of smoker(s) in the household

<table>
<thead>
<tr>
<th>Number of smoker(s)</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>One or zero</td>
<td>43</td>
<td>47</td>
<td>90</td>
</tr>
<tr>
<td>More than one</td>
<td>12</td>
<td>23</td>
<td>35</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>55</td>
<td>70</td>
<td>125</td>
</tr>
</tbody>
</table>

Chi-square = 1.35. Table value 3.84 at .05 level.

The chi-square is not significant. The number of smokers in the household is independent of smoking behavior change.

### TABLE VIII

Smoking behavior change and number of years smoked

<table>
<thead>
<tr>
<th>Years smoked</th>
<th>Quit Smoking</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Twenty and less</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>More than twenty</td>
<td>37</td>
<td>48</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>55</td>
<td>70</td>
</tr>
</tbody>
</table>

Chi-square = .001. Table value 3.84 at .05 level.
The chi-square is not significant. The change in smoking behavior is independent of the number of years smoked.

TABLE IX

Smoking behavior change and the time lapse between program participation and survey

<table>
<thead>
<tr>
<th>Time Lapse</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than a year</td>
<td>34</td>
<td>41</td>
<td>75</td>
</tr>
<tr>
<td>A year and more</td>
<td>21</td>
<td>29</td>
<td>50</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td><strong>70</strong></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

Chi-square = .038. Table value 3.84 at .05 level.

The chi-square is not significant. This fact indicates that the number of participants who attended the program less than a year ago did not have more persons who quit smoking than those who attended the program more than a year ago.
TABLE X
Smoking behavior change and health condition

<table>
<thead>
<tr>
<th>Health Condition</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>Yes</td>
<td>42</td>
<td>50</td>
<td>92</td>
</tr>
<tr>
<td>Morbid</td>
<td>Yes</td>
<td>13</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>55</td>
<td>70</td>
<td>125</td>
</tr>
</tbody>
</table>

Chi-square = .191. Table value 3.84 at .05 level.

The chi-square is not significant. The smoking behavior change is independent of health condition of the participants.

TABLE XI
Smoking behavior change and number of sessions attended

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three to five</td>
<td>Yes</td>
<td>13</td>
<td>29</td>
<td>42</td>
</tr>
<tr>
<td>Six to eight</td>
<td>Yes</td>
<td>42</td>
<td>41</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>55</td>
<td>70</td>
<td>125</td>
</tr>
</tbody>
</table>

Chi-square = 5.2. Table value 3.84 at .05 level.
The chi-square is significant. Cessation of smoking is dependent on attendance at sessions.

TABLE XII

Smoking behavior change and previous attempts to quit

<table>
<thead>
<tr>
<th>Attempt(s)</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>7</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>One or more</td>
<td>48</td>
<td>60</td>
<td>108</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>55</td>
<td>70</td>
<td>125</td>
</tr>
</tbody>
</table>

Chi-square = .265. Table value 3.84 at .05 level.

The chi-square is not significant. The success of the program was independent of former quitting experience.
### TABLE XIII
Smoking behavior change and program pertinence rating

<table>
<thead>
<tr>
<th>Pertinence Rating</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very much</td>
<td>48</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To some extent or no</td>
<td>7</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td><strong>70</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

Chi-square = 16.36. Table value 3.84 at .05 level.

The chi-square is significant. The quitting of smoking is dependent on program pertinence rating.

### TABLE XIV
Smoking behavior change and program content rating

<table>
<thead>
<tr>
<th>Content</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>34</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other than excellent</td>
<td>21</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td><strong>70</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

Chi-square = 12.55. Table value 3.84 at .05 level.
The chi-square is significant. The quitting of smoking is dependent on the participants' feeling the program content excellent.

TABLE XV
Smoking behavior change and program length rating

<table>
<thead>
<tr>
<th>Length</th>
<th>Quit Smoking</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>Just right</td>
<td>49</td>
<td>41</td>
<td>90</td>
</tr>
<tr>
<td>About right</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Too long</td>
<td>6</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Too short</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>55</td>
<td>70</td>
<td>125</td>
</tr>
</tbody>
</table>

Chi-square = 12.75. Table value 3.84 at .05 level.

The chi-square is significant. Quitting smoking is dependent on the participants' feeling the program length correct.
TABLE XVI
Smoking behavior change and leader rating

<table>
<thead>
<tr>
<th>Leaders</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent, Very good</td>
<td>49</td>
<td>48</td>
<td>97</td>
</tr>
<tr>
<td>Good to poor</td>
<td>6</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>55</td>
<td>70</td>
<td>125</td>
</tr>
</tbody>
</table>

Chi-square = 6.32. Table value 3.84 at .05 level.

The chi-square is significant. Quitting smoking is dependent on the participants perceiving the leaders are excellent.

Use of the Multiple Regression Equation in the Prediction of the Success of the Program

Multiple regression is a method in which one variable, the dependent variable, is expressed by the value of several other independent variables (39:381). It is best used in predictive studies (28:428-9).

It is not convenient to regress the dependent variable on all independent variables. The problem is how to choose a limited number of independent variables, so as to obtain best prediction (high value of $R^2$) (35:372). The set needs to be sufficiently small for ease of
understanding and facilitation of analysis.

With the use of the Statistical Package For The Social Sciences (36) this problem was solved.

The independent variables were entered individually. This procedure, known as Forward Stepwise Inclusion, was used to isolate a set of predictor variables that would yield an optimal prediction equation with as few terms as possible (36:345).

The computer would enter variables in single step from the best to the worse. The independent variable that explains the greatest amount of variance in the dependent variable would be entered first. The independent variable that explains the greatest amount of variance in conjunction with the first independent variable would be entered second and so on.

In this system only the few independent variables that yield high prediction value (high value of $R^2$) are selected and the others that yield a small amount of $R^2$ are discarded.
TABLE XVII

Result of the computer output

<table>
<thead>
<tr>
<th>Selected statistics from multiple regression:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>.55932</td>
</tr>
<tr>
<td>R²</td>
<td>.31283</td>
</tr>
<tr>
<td>Standard error</td>
<td>37.70870</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program content</td>
<td>6.73980</td>
</tr>
<tr>
<td>Program length</td>
<td>17.47600</td>
</tr>
<tr>
<td>Program pertinence</td>
<td>16.57268</td>
</tr>
<tr>
<td>Sessions attended</td>
<td>3.93635</td>
</tr>
<tr>
<td>Constant (intercept)</td>
<td>-38.44339</td>
</tr>
</tbody>
</table>

R² = .31283 indicates that 31 per cent of the variation in the efficiency of the program is explained by Content, Length, Pertinence of the program, and Sessions attended operating jointly.

The above table would be used to obtain the prediction equation:

\[ Y' = -38.44 + 6.74X_1 + 17.48X_2 + 16.57X_3 + 3.94X_4 \]

Where:

\( Y' \) = Predicted efficiency of the program expressed by percentage.
\( X_1 \) = Rating of the program content.
\( X_2 \) = Rating of the program length.
X3 = Rating of the program pertinence.
X4 = Number of sessions attended.
-38.44 = Constant or intercept.

In this study the coding was as following:

<table>
<thead>
<tr>
<th>Program content</th>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program length</td>
<td>Just right</td>
<td>About right</td>
<td>Too short</td>
<td>Too long</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program pertinence</td>
<td>Very much</td>
<td>To some extent</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sessions attended</td>
<td>One point for each session attended</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With the prediction equation one could compute the predicted percentage of efficiency of the Smoking Program for any given set of combination score of: Content, length, pertinence of the program, and number of sessions attended.

For example, the predicted percentage of efficiency for a participant who attended six sessions
and who rated the program content: very good, the program length: just right, the program pertinence: very much.

\[ Y' = -38.44 + 6.74(3) + 17.48(2) + 16.57(2) + 3.94(6). \]
\[ Y' = -38.44 + 20.22 + 34.96 + 33.14 + 23.64 \]
\[ Y' = 73.52 \]

The standard error of estimate for the present example is 37.70 per cent. On the average the predicted percentage of efficiency would deviate from the actual percentage of 37.70 units on the efficiency scale.
CHAPTER V

DISCUSSION AND CONCLUSION

The results of this study show that the program was very effective. Forty four per cent of the people who attended the program quit smoking. This number is very close to that of the national survey published 1975: 35-40 per cent (13:21).

The t-test, used to measure the difference in the number of cigarettes smoked before the program and several months after the program, was statistically significant at the .05 level.

The tests of independence using the 2 by 2 contingency table with the Yates' correction (42:321) showed that the smoking behavior change was dependent of the rating of the program content, the program length, the program pertinence, the program leaders, and the number of sessions attended. The smoking behavior change was independent of other variables tested: number of years smoked, educational level, number of persons in the household, number of smokers in the household.

The use of the SPSS system yielded the following Regression Equation:

\[ Y' = -38.44 + 6.74X_1 + 17.48X_2 + 16.57X_3 + 3.94X_4 \]
In this equation the most important factor for the prediction of the efficiency of the program was the variable: program content; the second most important was: program length. The least important variable in this equation was: number of sessions attended.

With the use of the Forward Stepwise Inclusion the computer entered the variable from best to worst ((36:345). In this Multiple Regression run, the computer entered the variable "Sex" before the variable "Leaders." It meant that for the prediction equation the variable "Sex" had more weight than the variable "Leaders." In the test of independence the variable "Sex" was discarded because it did not meet the .05 level of significance, and the factor "Leaders" was significant at the .05 level. In this equation both "Sex" and "Leaders" were disregarded since they only yielded a very small amount of prediction value $R^2$.

In the survey questionnaire, question number 12 was used to control whether the participant quite smoking because of the program. Among the reply envelopes none of the participants who quit smoking have sought further help since they finished the program.

Question number six was dropped from statistical analysis because of ambiguity.
Conclusion

The Stop Smoking Program was found to be an effective program. Forty four per cent of the participants who responded to the questionnaire quit smoking. The percentage of response for this survey was 32.8 per cent.

The t-test was used to compare the difference between cigarette consumption before the program and after the program.

The tests of independence using the two by two table indicated that there were some factors that were linked with the change in smoking behavior.

The Multiple Regression Equation was found to predict the efficiency of the program with 32 per cent accuracy.

Recommendations

On the basis of this study, the following recommendations were made:

1) The sample size should be larger.
2) The leaders of the program should encourage participants to attend the maximum number of meetings in order to increase the efficiency of the program.
3) More follow-ups should be sent to verify the reliability of this study because the latter only covered a two year period.

4) A follow-up of non-respondents will help increase confidence in this study.
BIBLIOGRAPHY


13. '76 Cancer facts and figures. A publication of the American Cancer Society. New York, 75.


24. Helping smokers quit. Pamphlet, American Cancer Society, 73.
25. If you want to give up cigarette. Booklet, American Cancer Society, 70.


37. Sharpe, J. S. "Is your sex life going up in smoke?" Reader's Digest, Jan. 75.


40. The decision is yours. Pamphlet, American Cancer Society, 70.


APPENDIX I

FOLLOW-UP QUESTIONNAIRE

This questionnaire is a part of a study conducted by a graduate student at California State University, Northridge to evaluate the Smoking Cessation Program organized by the American Cancer Society. You are asked to assist in the study by filling out this form, and mailing it back within a week. A self addressed envelope is enclosed.

Your name was selected at random, and your answers will be kept confidential. Since only a few persons were selected for this study, the success of this work depends fully on the participation of each person like yourself.

Thank you for your cooperation in answering this questionnaire.

Please check or fill out when appropriate.

NAME ___________________________ TODAY'S DATE _________
ADDRESS ________________ CITY _____ZIP CODE ______
AGE ___ HEIGHT ____ WEIGHT ____ ( ) MALE ( ) FEMALE
MARITAL STATUS: ( ) SINGLE ( ) MARRIED ( ) WIDOW
( ) SEPARATED OR DIVORCED
1. Circle highest completed school grade:
   1 2 3 4 5 6 7 8 9 10 11 12
   College 1 2 3 4 +

2. Number of persons living in your household (include yourself) ____________

3. Number of persons living in your household who smoke (include yourself)

4. On the average how many packs of cigarettes are you presently smoking per day:
   ( ) None ( ) 1/2 pack ( ) 1 pack ( ) 1-1/2 pack
   ( ) 2 packs ( ) 2-1/2 packs or more

5. How many years of your life have you been smoking or did you smoke ____________

6. What is (was) the longest single period of time you have stayed away from cigarettes:
   ____ Years ____ months ____ weeks ____ days
   ____ hours

7. Check any health conditions you have or have had:
   ( ) Heart diseases ( ) Lung cancer ( ) Emphysema
   ( ) Other disease related to smoking (Specify)

8. Since the ACS program you have:
   ( ) Gained ____ lbs weight ( ) Lost ____ lbs weight
   ( ) Remained the same ( ) Not known whether you have weight change.
9. Since the ACS program, my consumption of alcoholic beverage has:
   ( ) Increased ( ) Remained the same ( ) Lessened
   ( ) I have quite drinking ( ) I don't drink.

10. Since the ACS program, my consumption of tranquilizers has:
    ( ) Increased ( ) Remained the same ( ) Lessened
    ( ) I have quit using tranquilizers ( ) I don't take tranquilizers.

11. Since the ACS program, my consumption of sleeping pills has:
    ( ) Increased ( ) Remained the same ( ) Lessened
    ( ) I have quit using sleeping pills ( ) I don't take sleeping pills.

12. Have you sought further help in quitting smoking since the program from:
    ( ) Another program ( ) Your doctor or dentist
    ( ) A psychologist or Counselor ( ) Meditation
    ( ) Other person (specify) __________________________

13. Was the program pertinent to your needs, and interests:
    ( ) Very much ( ) To some extent ( ) No
14. How do you rate the program content:
   ( ) Excellent ( ) Very good ( ) Good ( ) Fair
   ( ) Poor.

15. How do you rate the length of the program:
   ( ) Just right ( ) About right ( ) Too short
   ( ) Too long ( ) Specify what length you prefer

16. How do you rate the leader/leaders and his/her/their techniques:
   ( ) Excellent ( ) Very good ( ) Good ( ) Fair
   ( ) Poor.
APPENDIX II

SMOKER'S PROFILE I

Name __________________ Address __________________ Date __________

City ___________ County ___________ Home Phone ___________

Age ______ Height ______ Weight ______ ( ) Male

( ) Female

OCCUPATION _______________ Business Phone ___________

Marital Status: ( ) Single ( ) Married ( ) Widowed

( ) Divorced or Separated

1. Circle highest completed school grade:

1 2 3 4 5 6 7 8 9 10 11 12

College 1 2 3 4 +

2. Number of persons living in your household (include yourself) __________________

3. Number of persons living in your household who smoke (include yourself) ________________

4. On the average day, how many packs of cigarettes do you usually smoke?

( ) 1/2 pack ( ) 1 pack ( ) 1-1/2 pack

( ) 2 packs ( ) 2-1/2 packs or more

5. Which brand do you most frequently smoke?

________________________________________
6. How many years of your life have you been smoking cigarettes? ____________________________

7. How many different times in your life have you made a serious and deliberate attempt to stop smoking cigarettes? ________________ ( ) None.

8. How many different organized programs have you attended to help you quit smoking? ________________ or ( ) None.

9. What is the longest single period of time you have stayed away from cigarettes?
   _____ Years _____ Months _____ Weeks _____ Days _____ Hours _____ None

10. Have you had a physical examination by a physician in the last year? ( ) Yes ( ) No

11. Check any health conditions you have or have had:
    ( ) Heart disease ( ) Lung cancer ( ) Emphysema
    ( ) Other disease related to smoking (specify)
       ____________________________ ( ) None

12. How many different people have you personally helped to quit smoking in the last twelve months?
    ____________________________ or ( ) None.
<table>
<thead>
<tr>
<th>SESSION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTENDANCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMOKING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STIMULATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELAXATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRAVING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HANDLING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRUTCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HABIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX III

SMOKER'S PROFILE II

<table>
<thead>
<tr>
<th>NAME</th>
<th>ADDRESS</th>
<th>PHONE</th>
</tr>
</thead>
</table>

1. On an average day, how many packs of cigarettes are you presently smoking?
   - ( ) None
   - ( ) Less than 1/2 pack
   - ( ) 1/2 pack
   - ( ) 1-1/2 packs
   - ( ) 2 packs or more
   (Indicate how many) _______

2. Since the ACS Program, I have (check one):
   - ( ) Gained ___ lbs. weight
   - ( ) Lost ___ lbs. weight
   - ( ) Remained the same weight
   - ( ) I do not know if I have weight change

3. Since the ACS Program, my consumption of alcoholic beverages has:
   - ( ) Increased
   - ( ) Remained the same
   - ( ) Lessened
   - ( ) I have quit drinking
   - ( ) I don't drink

4. Since the ACS Program, my consumption of tranquilizers has:
   - ( ) Increased
   - ( ) Remained the same
   - ( ) Lessened
   - ( ) I have quit using tranquilizers
   - ( ) I don't take tranquilizers
5. Since the ACS Program, my consumption of sleeping pills has:
( ) Increased ( ) Remained the same ( ) Lessened
( ) I have quit using sleeping pills ( ) I don't take sleeping pills

6. Have you had a physical examination since the first day of the ACS Program? ( ) Yes ( ) No
If Yes, check any of the following conditions which were discovered at the examination:
( ) heart disease ( ) lung cancer ( ) emphysema
( ) other disease related to smoking (specify)

( ) none

7. How many sessions of the program did you attend?

8. How many different people have you personally helped to stop smoking cigarettes since the program?

( ) none

9. Have you sought further help in quitting smoking since the program from:
( ) another program ( ) my doctor or dentist
( ) a psychologist or counselor ( ) other person
(specify)

10. What comments or suggestions do you have for improving our program?


11. What was the approximate total income of your family (i.e. spouse and yourself) last year?
(Optional - for research only) ________________