

HIGH SCHOOL SMOKING PREVENTION: THE RELATIVE EFFICACY OF VARIED TREATMENTS AND INSTRUCTORS

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Despite a downward trend in the number of adult smokers in the past decade, cigarette use still remains the most prevalent behavior linked to premature death in this country (10). Adolescents appear to be mirroring this trend, with decreases in smoking rates in the last few years (5). At graduation, however, 21% of the students are regular smokers (5). Clearly, the problem of cigarette use is far from being solved.

Efforts to convince adult smokers to quit have met with marginal success (2). The literature on adolescent cessation programs is even more discouraging. The importance of peer acceptance, the stress of transitional roles and the instability of that population appear to make traditional adult cessation clinics even less effective with adolescents (11).

In the past few years, many health educators have turned their attention to primary prevention of smoking with young adolescents. By teaching social skills to identify and actively resist pressures to smoke, and by targeting entire school populations for interventions, several programs have shown long-term success (1, 3, 7, 8).

The application of these social skills methods to high school students, also has shown some success (9). College students led 10th grade health classes in social skills to resist smoking pressures, in identifying the immediate physiological effects of smoking, methods to quit smoking, and ways to help others remain or become non-smokers. Treatment classes showed significant reductions in smoking rates two months following the classroom program.

Several questions emerged from these successful programs and led to the current study. The complexity of the interventions made identification of critical components impossible. It is difficult to determine whether social skills training, demonstration of health effects, or more concentrated time devoted to the topic of smoking accounted for the program's success. The efficacy of peer models as the disseminators of

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the programs also was not assessed. In terms of generalizability and program costs, the relative effectiveness of peers and the regular classroom teacher seemed to be important.

STUDY DESIGN

The High School Smoking Prevention Program has three objectives: to reduce the rate of smoking among high school adolescents, to assess the relative effectiveness of social skills and health effects programs, and to compare college students with health educators as program disseminators.

Four schools in northern California participated in the study. Five health classes in each of the four schools were randomly assigned to one of three treatment programs. One program concentrated on the social consequences of smoking; one on the immediate and long-term physiological effects; and one on the long-term health effects of smoking. The latter curriculum was viewed as a control, employing a traditional health education, fear-arousal approach. The four schools also were randomly assigned to two instruction modalities. The regular classroom teachers were trained to conduct classes at two of the schools; college students taught the classes at the other two schools. The Study Design appears in Table 1.

TABLE 1

Study Design

Twenty health classes in four high schools were randomly assigned to three different treatments within each school.

Treatment Groups

	<u>Long-term Health Effects</u>	<u>Social Consequences</u>	<u>Physiological Effects</u>
Teacher- taught (2 schools)	N = 73	N = 102	N = 136
College student- taught (2 schools)	N = 55	N = 117	N = 100

Twenty classes of tenth-grade students participated in one of the three programs within the first two weeks in March 1980. Each program consisted of three one-hour sessions. An outline of each of the programs is presented in Table 2. Three teachers and four college students each taught five classes at one high school. Staff members

TABLE 2

<u>Social Consequences Curriculum</u>	
Day 1	- Slide show and discussion of social pressures to smoke
Day 2	- Self-measurements of the immediate effects of smoking
Day 3	- <u>The Feminine Mistake</u> How to help others remain/become non-smokers
<u>Immediate Effects of Smoking Curriculum</u>	
Day 1	- Slide show of long-term health effects of smoking
Day 2,3-	Same as above
<u>Long-term Health Effects Curriculum</u>	
Day 1	- Slide show on long-term health effects of smoking
Day 2	- Making anti-smoking posters emphasizing health effects
Day 3	- Traditional anti-smoking health education films

from Stanford University and the American Lung Association monitored the classes, provided materials, reinforced the instructors, but did not intervene in the classroom process.

Pre-assessments were conducted in February 1980 with post-assessments in May 1980. Assessments for all students consisted of self-reports of smoking and other health behaviors, carbon monoxide breath tests, and knowledge surveys. Anonymity was insured by use of a secret code rather than names to match subjects. The surveys were administered by staff not involved in program implementation. The students were not aware of the timing of the post-test.

RESULTS

Both qualitative and quantitative assessments were made of the program. Staff members who participated in training were involved in classroom observations of program implementation. The curricula were written as scripts and adherence to protocol was essentially uniform across instructors. The only noted difference concerned classroom conduct among the high school students which was more problematic in college student-taught classes.

Students were matched at pre- and post-assessments by their anonymous codes. Of the 82 who reported weekly smoking at pre-test, 23% reported no smoking in the week prior to post-test. These self-reports were validated with low carbon monoxide readings (< 6 p.p.m). Table 3 summarizes these results for the different treatment groups. Due to small sample sizes, none of the differences are statistically significant. It is interesting to note that teachers appeared to be more effective in the classes with the traditional health effects curriculum, whereas college students were more effective in those classes concerned with social pressures.

TABLE 3

Results

Percentage of Students Reporting Smoking at
Pre-Test at Non-Smoking at Post-Test

	Long-term Health Effects (N = 15)	Social Pressures (N = 36)	Immediate Effects (N = 31)
Teacher taught (25%)	60%	8%	26%
College student- taught (18%)	10%	23%	42%
	(27%)	(17%)	(29%)

Using the class as the unit of analysis, no significant differences were found between treatments or between instructional modes. The curriculum which focused on the social consequences of smoking was the only program to show any increase in weekly smoking rates. It should be noted that the "control" program which emphasized the long-term effects of smoking was as effective as the other two programs. Table 4 summarizes these results.

DISCUSSION

The goal of this research project was to look at components of a previously implemented intervention strategy to ask questions about program content, dissemination, and replication. None of the programs proved to be significantly more potent in reducing the onset of smoking

or encouraging cessation. Since the post-assessments were conducted only two months following the program, the efficacy of the differing programs may not have had time to be manifested. A Hawthorne effect might explain the strength of the traditional health effects curriculum. Longer follow-up would be needed to more accurately assess the program's relative success. Still the program had a combined effect of reducing regular weekly smoking by 23%. This finding replicated the previous finding for treated classrooms and suggests the power of school-based programs with explicit messages about health at least in the short term.

TABLE 4

Results:

Pre- and Post-Reported Rates of Weekly Smoking

	<u>Pre-</u>	<u>Post</u>
Long-term health effects curriculum	20.3%	18.9%
Social Consequences curriculum	18.7%	21.7%
Immediate Physiological effects curriculum	20.7%	17.2%
Teacher-taught	22.8%	20.7%
College student-taught	16.5%	16.1%

Teacher-taught programs were as effective as those taught by college students, with a possible treatment-instructor interaction. Since college students are more proximal models to adolescents for social skills, it is not surprising that the social pressures curriculum showed greater effects when taught by college-age peers. Likewise, instruction on the health effects of smoking is a developed skill among most health education teachers, and they appeared to be more effective when teaching in that modality. These trends suggest that peer leaders can be trained to conduct successful health behavior classes but that they may be most effective as models for social skills.

The present trend among high school students still shows a marked increase in adoption of the smoking habit. Cessation efforts have been notably unsuccessful. The current study suggests that programs aimed at the behaviors and health effects associated with smoking may modify this trend. The efficacy of various types of programs or facilitators

could not be determined without longer follow-up to assess eventual effects. Still, the apparent success of the long-term health effects curriculum parallels a finding with a younger cohort (4). Perhaps education efforts aimed at behavior change may need multiple approaches, models, and messages to be the most efficacious. At present, no one approach appears to be best. "Scare-tactics" with adolescents—messages about long-term effects—perhaps should not be refuted too quickly.

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