



The Arizona CHAMPS Peer Project for Tobacco Use Prevention: Effects on Tobacco Use, Intentions to Use, and Knowledge

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ABSTRACT

This study reports on CHAMPS, a youth tobacco education and prevention program intervention that focused on peer-led educational activities. Nineteen schools implemented a CHAMPS tobacco prevention program in grades 5, 6, and 7. Six schools served as nonintervention comparison sites. Baseline and follow-up questionnaires were completed by 1,412 students. The proportion of students reporting current cigarette use decreased significantly in the CHAMPS group but not in the comparison group. Intervention group students' knowledge about the harmful consequences of tobacco use increased significantly, whereas knowledge essentially stayed the same among comparison group students. Finally, the number of nonsmoking students who reported they would smoke a cigarette if one of their best friends offered it increased significantly in the comparison group but not in the intervention group. These results suggest that a well-planned and implemented peer-helping program represents an important potential resource that should be considered as a welcome adjunct to existing school-based tobacco education and prevention efforts.

Because almost all adult cigarette smokers started smoking as adolescents (Centers for Disease Control and Prevention [CDC], 1999), the schools are a logical place for tobacco prevention activities. Advantages of providing tobacco prevention efforts at the school site include convenient access to, and the potential to impact, a large proportion of young people; opportunities to expose youths to environments and norms that support tobacco-free lifestyles; and the potential to impact youths at an age when many experiment with tobacco and may develop habits that endure through-

out their lives. The U.S. Surgeon General has concluded that school-based prevention programs that teach young people how to resist social influences to smoke and that teach skills to resist peer pressure to smoke can be especially effective in reducing tobacco initiation among adolescents (U.S. Department of Health and Human Services, 1994, 2000).

Peer tobacco education is the teaching or sharing of tobacco prevention information, values, behaviors, and skills by members of similar age or status groups (Sciacca & Valenari, 1998). Student peer helpers are

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young people who are trained and supervised by professionals to provide services in such capacities as peer role models and educators. Such peer educators are not intended to replace adult health educators but rather to extend the services provided by these professionals. The rationale for using students to enhance existing tobacco education programs is based on the following suppositions.

Tobacco use usually begins at an early age. A National Institute on Drug Abuse national survey (1993) found that 18% of surveyed U.S. high school seniors reported smoking their first cigarette in elementary school, and 30% started smoking in grades 7 through 9. Valois and colleagues (1998) found that among 374 rural fifth grade students, 26% of the males and 16% of the females reported that they had already tried smoking.

Furthermore, there is a strong correlation between early use and the probability of regular smoking in later life (Chassin, Presson, Rose, and Sherman, 1996; Everett et al., 1999; Johnson et al., 2002). If adolescents can be kept tobacco free, smoking may be delayed among some and many others may remain tobacco free for the rest of their lives.

Youths frequently turn to their peers for information and advice. Studies of young people have consistently reported a strong reliance on peer advice and referral when problems are encountered, and a friend is generally the first person students think to turn to for help with most problems (Sciacca & Valenari, 1998).

Adolescent peer interactions can be potent influences on health behavior. For young people, peers are the primary reference group for influencing values and behaviors. Johnson et al. (2002) found that the strongest predictor of smoking between fifth and eighth grades was smoking by a best friend. Dinges and Oetting (1993) found a very close correspondence in drug use, drug for drug, between youths and their peer group.

These associations are not simply a matter of adolescents who smoke choosing to

associate with other smokers. Aloise-Young, Graham, and Hansen (1994) used a longitudinal analysis to study the tendency of adolescents to conform to the smoking behavior of potential friends to gain entrance into a desired friendship group. They found that "desired friends" exert an important influence on subsequent smoking behavior during adolescence. In another longitudinal study, Wang, Fitzhugh, Eddy, Fu, and Turner (1997) examined the social factors that predicted the transition from non-smoking and experimental smoking to more advanced stages of smoking among adolescents. The researchers found that the smoking behavior of best friends was the only consistent and significant factor in predicting changes to advanced smoking stages during a 3-year period. In addition, Andrews, Tildesley, Hops, and Li (2002) recruited 763 adolescents, 11 through 15 years of age, as part of a 16-year longitudinal study of influences on adolescent and young adult substance abuse. They found, in prospective analyses, that cigarette use by peers predicted young adult cigarette use.

Informal and unstructured peer health education may result in misinformation. Student peers are often viewed as credible sources of information and advice, although this credibility appears to stem more from "peerness" than from any special expertise (Sciacca & Seehafer, 1991). Studies have shown that youths have many misconceptions regarding health topics (Sciacca & Valenari, 1998). Thus, inaccurate education and inappropriate assistance may often be provided by well-meaning but misinformed peers. Unstructured, informal peer influence and education are taking place on a daily basis. Much of it likely results in misinformation or even harmful advice. For example, perceived high prevalence of smoking among peers has been associated with increased likelihood of smoking in adolescents and students sometimes greatly overestimate the prevalence of health-compromising behaviors among their peers (Conrad, Flay, & Hill, 1992). Peers trained to provide tobacco education can help correct wrong perceptions about smoking

norms (Simons-Morton et al., 1999). Therefore, it is appropriate to attempt to structure the peer education process to reduce misinformation and to positively impact the health of youths.

The rationale for advocating adolescent peer involvement in delivering tobacco prevention programs has been supported by evidence that young people are responsive to this strategy.

Murray, Davis-Hearn, Goldman, Pirie, and Luepker (1988), in 4- and 5-year follow-up studies of smoking prevention strategies, found that among those who reported never smoking at baseline, the incidence of smoking at least once a week was 35% lower for the peer-led social influences group compared with the adult-led and existing curriculum groups. They also found that the incidence of smoking at least once a day was 40–50% lower in the peer-led social influences group. Other comparisons revealed modest benefits for peer-led approaches or no differences among the various interventions. The researchers concluded from this study of 4- and 5-year follow-ups that the most effective condition was the peer-led social influences approach. A 6-year follow-up study, however, found no lasting effect from any of the treatment programs (Murray, Pirie, Luepker, & Pallonen, 1989). Because no booster sessions were applied, these findings may suggest that National Cancer Institute recommendations (Glynn, 1989) for booster sessions beyond grade 7 need to be implemented for more lasting positive effects.

The Hutchinson Smoking Prevention Project involved a scientifically sound study of a state-of-the-art, theory-based, social influences approach to preventing student smoking (Peterson, Kealey, Mann, Marek, & Saraso, 2000). The researchers concluded that such an approach to preventing smoking among school children does not work. It is important to note that the intervention was a teacher-led and teacher-directed intervention. Several meta-analyses of adolescent substance abuse prevention programs (which included tobacco prevention interventions) have suggested that



interactive programs, which include student peer-led activities, are more effective than programs that are only teacher led and directed. Tobler (1986) conducted a meta-analysis of 143 adolescent drug prevention programs and found that interactive peer programs were more successful at reducing drug use than either a standard teacher led and delivered curriculum or no program. Bangert-Drowns's meta analyses (1988) reported similar findings. Tobler (1993) concluded that when utilized as a component of a larger prevention intervention, peer programs can be highly effective. This meta-analysis revealed that peer programs were twice as effective when implemented as part of a total community effort to prevent drug use. A more recent meta-analysis of 120 adolescent drug prevention programs (Tobler & Stratton, 1997) also supported the effectiveness of programs that included peer-led activities versus approaches that were only teacher-led and directed. Overall, these studies provide important evidence that prevention programs that include peer-led activities, especially those that use the social influences model and are implemented as part of a larger school-community linked program, can be effective in both the short and moderate term in preventing tobacco use.

The prevalence of youth tobacco use increased during the 1990s (National Institute on Drug Abuse, 1996). In 1999 more than 35% of U.S. high school students and nearly 13% of middle school students reported current use of tobacco products (CDC, 2000). Because many students begin using tobacco before high school and impressions about tobacco are formed even earlier, the CDC has recommended that tobacco use prevention education be provided in elementary school and continued through middle and high school (CDC, 1994, 1999). Consistent with CDC recommendations, the Arizona CHAMPS Peer Project for Tobacco Use Prevention intervention was developed and delivered to fifth through seventh graders in Arizona schools. The purpose of this study was to determine whether the CHAMPS program was effective

in reducing the number of youths who became current tobacco users, reducing those who reported intentions to smoke if offered a cigarette by one of their best friends, and whether it increased youths' knowledge about the consequences of tobacco use.

METHODS

Design

This study utilized a quasi-experimental design. In 1998, 25 Arizona elementary and middle school teams (school principals, teachers, the school counselor or nurse, parents, and community representatives who were willing to make a long-term commitment as trainers) were recruited to participate in a 2-day training workshop that prepared adults to become CHAMPS trainers. As a prerequisite to participation, schools agreed to support administration of the CHAMPS Peer Project Youth Tobacco Survey Questionnaire at the beginning and end of the school year. During the 1998–1999 school year 25 school teams completed the 2-day CHAMPS adult Training of Trainers Workshop; however, only 19 actually implemented the program in the 1998–1999 school year. Reasons for not implementing the program focused on concerns about the availability of resources to conduct the program. The six schools represented at the adult Training of Trainers Workshop but not implementing the program during 1998–1999 academic year served as comparison (nonintervention) sites. The intervention and comparison schools did not share educational materials, and assessments made after the study period found no evidence that any CHAMPS intervention activity was provided in nonintervention schools during the study period. Therefore, contamination was not considered to be a concern.

Subjects

Active student consent and active or passive parental consent procedures were employed after review and approval of the study protocol by the Arizona State University Institutional Review Board. Prior to

administration of the youth baseline survey, the data collector checked with the school administration as to what kind of consent they preferred. The data collectors followed the school's policy. There were two major parental consent policies. The passive consent occurred when the school notified parents that it intended to collect data from students, described the purpose for collecting the data, and invited the parents to review the survey. If parents did not want their child to participate in the CHAMPS survey, they returned a signed form to the school, which stated their wishes and their child was excused from completing the survey. If no form was returned, it was assumed that consent was granted.

The active consent also notified the parents about the intention to collect data from students, described the purpose for collecting the data, and invited the parents to review the questionnaire. In this case the parental consent process involved the parent (or legal guardian) returning a signed form indicating that they approved of their child completing the questionnaire. In this case all students had to have a signed form to take the survey. The data collectors followed each school's policy, and 100% of schools used the passive consent policy. The number of parents who refused permission for their child to participate was not known, because those students were pulled from the classroom before the data collectors arrived. Active student assent also was obtained before the baseline questionnaire was administered. Each student signed a Student Agreement Form stating they would participate in both the baseline and follow-up survey. Student preferences to not complete the survey or participate in the study were honored. Less than 1% of the students expressed a preference not to participate.

Instrument

From a review of existing questionnaires related to youth tobacco use and knowledge, the CHAMPS Peer Project Youth Tobacco Survey questionnaire was developed by project staff. The questionnaire included sections on knowledge and attitudes about tobacco; tobacco use; intentions to use



tobacco; exposure to other tobacco prevention interventions; awareness of school policy regarding tobacco use; perception of social norms regarding tobacco use; and demographic variables. The questionnaire was comprised of 64 individual items (including demographics) and took an average of 20–30 minutes to complete. Response options for the knowledge items were: “don’t know,” “disagree strongly,” “disagree,” “agree,” and “agree strongly.” Current tobacco use was determined by self-report of smoking within the past 30 days. Students also were asked “If one of your best friends offered you a cigarette, would you smoke it?” Response options for this question were: “yes,” “not sure,” and “no.”

Initial construction of the instrument involved review by a panel of health professionals, pilot testing (see next section), and modification according to panel consensus to ensure face and content validity. In addition, internal reliability was assessed on a Health Consequences of Tobacco Use Scale, which included all seven knowledge questions, using Cronbach alpha, and was found to be 0.60. Scale items were measured on a four point continuum from “agree strongly” to “disagree strongly.” The option “don’t know” was not included in this analysis.

Procedures

The questionnaire was pilot tested in two schools to determine the appropriateness with the intended population, then further revisions to improve comprehension were conducted. English and Spanish versions were created. The final English version was translated into Spanish, and then back into English to verify the accuracy of the translation. The Spanish version was pretested for understanding among the Spanish-speaking population, and minor modifications were made to improve comprehension. In 1997–1998 (the year prior to this study), the survey was field tested in 11 schools (8 rural schools, 3 urban schools) with 1,139 students representing 24.4% (278) fifth graders and 75.8% (861) seventh graders. The field testing results indicated only very minor fine-tuning of the ques-

tionnaire. The data collectors received standardized training and instructions to ensure consistency in data collection. Baseline data surveys were administered in the fall of 1998. Follow-up surveys were conducted in the spring of 1999, for an average baseline follow-up period of 6 months.

Data were collected from fifth, sixth, and seventh graders in 19 intervention schools (CHAMPS) and 6 nonintervention (comparison) rural and urban schools in Arizona. A seven-digit ID number was assigned at baseline to each student and recorded on baseline questionnaires for follow-up matching purposes. Student names, class/grade, and ID numbers were recorded on a Confidential Student Matching Form, which was kept in a file in the school principal’s office. Prior to administration of the follow-up survey, this student matching form was retrieved and used to link students’ baseline questionnaires with follow-up questionnaires.

Intervention

CHAMPS is a statewide tobacco education program funded by the Arizona Department of Health Services, Tobacco Education and Prevention Program. This program uses the CHAMPS (CHAMPS Have and Model Positive Peer Skills) peer leadership model to train and empower students to become a positive force in preventing tobacco use. The CHAMPS program adheres to the National Peer Helpers Association (NPHA, 2003) standards for planning and implementing peer-led programs.

CHAMPS is a youth-driven peer leadership program for the prevention of tobacco use that includes teaching youths to understand the impact of social influence on tobacco use. Students in the fifth through seventh grades were selected by adult trainers as CHAMPS leaders based on the perceived influence they had over their peers. Ideal candidates were those to whom other students listened and those who exhibited strong leadership skills. After they were trained, CHAMPS students formed Student Action Teams and were provided with the resources necessary to implement tobacco prevention activities. These teams of 8–12

selected the specific activities to be implemented. Some organized media campaigns and conducted peer-led classroom lessons on tobacco issues, such as tobacco advertising and the basic physiological effects of tobacco use. Other teams focused on education about tobacco advertising or became tobacco education puppeteers. Peer-led activities included crossword puzzles, scavenger hunts, skits, and lessons easily incorporated into the existing curriculum. English, for instance, included student-composed poems highlighting what tobacco can do to the body. An interactive workshop that helped classmates learn how tobacco advertising promotes tobacco use fit into a social studies course.

Data Analysis

The chi-square for compatibility of K counts was used in the analysis of all data and compared baseline with follow-up numbers. For the analysis of current smoking the chi-square for compatibility of K counts took into account only those individuals who reported they were current smokers. For the analysis of intentions to smoke, only current nonsmokers were included in the analysis. All comparisons were made assuming an $\alpha=.05$ significance level and with two-tailed comparisons. The analyses controlled for the comparison group having a higher proportion of smokers by determining the net changes from baseline to follow-up measures for both groups.

RESULTS

Of the 1,720 students who completed the baseline surveys, 82.1% (1,412) also completed the follow-up surveys. The 1,412 students who completed both surveys were found to have similar demographic characteristics in gender, race/ethnicity, grade level, and rural/urban breakdowns and did not differ significantly from the 1,720 who completed the baseline surveys (Table 1).

Current Cigarette Use

The decrease, from baseline to follow-up, in the number of CHAMPS students reporting smoking in the past 30 days (pre $n=51$ and post $n=12$) was significant

**Table 1. Demographic Characteristics of the Baseline and Follow-up Respondents**

Demographic Characteristic	All Baseline Respondents (n and %)		Students Responding to Both Questionnaires (n and %)	
	n	%	n	%
Gender				
Male	838	49.1%	690	49.1%
Female	870	50.9%	714	50.9%
Race/Ethnicity				
White	602	35.8%	508	36.8%
Hispanic	497	29.5%	395	28.6%
Native American	159	9.4%	126	9.1%
Black/African American	55	3.3%	40	2.9%
Asian American/Pacific Islander	25	1.5%	23	1.7%
Combination	345	20.5%	289	20.9%
Grade				
Fifth	828	48.1%	711	50.4%
Sixth	638	37.1%	515	36.5%
Seventh	254	14.8%	186	13.1%
Urban/Rural				
Rural	743	43.2%	632	44.8%
Urban	977	56.8%	780	55.2%

Note: Numbers responding to specific items varied.

($\chi^2 = 4.375$; $p < .05$). The decrease in the number of comparison group students who reported current smoking (pre $n=52$ and post $n=18$) was not significant.

Knowledge of the Harmful Effects of Tobacco Use

Table 2 summarizes the changes in knowledge from baseline to follow-up for the seven questions regarding the harmful effects of tobacco use. Correct answers were considered to be “disagree” or “disagree strongly” for questions 1, 2, 4, 5, and 6 and “agree” or “agree strongly” for questions 3 and 7.

The correct responses to all seven questions collectively were then examined. The increase in correct answers for all questions was significant for the CHAMPS group (from 5,221 to 5,624; $\chi^2=14.98$; $p < .05$), a 7% increase. The correct responses essentially stayed the same in the comparison

group, going from 2,084 to 2,078.

Intentions to Smoke

The percentage of all nonsmoking students who reported that they would smoke a cigarette if one of their best friends offered it increased significantly, from 2 (0.6%) to 16 (4.6%), in the comparison group ($\chi^2=10.88$; $p < .05$). The increase among CHAMPS students, from 12 (1.3%) to 19 (2.0%), was not significant.

DISCUSSION

The purpose of this study was to determine the effects of the CHAMPS intervention on intention to use tobacco use, current smoking, and knowledge about the consequences of tobacco use. More than 82% ($n=1,412$) of the students who completed the baseline questionnaire also completed the follow-up questionnaire.

The CHAMPS intervention appears to

have helped students to decide not to smoke as well as to have provided students with the perceived abilities to refuse cigarettes offered by a close friend. The percentage of all nonsmokers who reported that they would smoke a cigarette if one of their best friends offered it increased a small amount (from 1.3 to 2%) in the CHAMPS group but a larger amount (from 0.6 to 4.6%) in the comparison group. Simons-Morton and colleagues (1999) reported that youths who have been offered a cigarette by a friend are more likely to smoke than those who have not experienced this form of peer pressure. Furthermore, Johnson et al. (2002) found that children who indicated their intention not to smoke in fifth grade generally were not smoking in eighth grade. Thus, efforts to increase students' perceived ability to resist peer pressure to smoke may be important in reducing smoking among youths. We also found that the proportion of students reporting that they were current cigarette smokers decreased significantly in the CHAMPS group but not in the comparison group.

Finally, the CHAMPS program appeared to have had a positive effect on improving knowledge about the harmful effects of tobacco use. From baseline to follow-up surveys, for the seven knowledge questions collectively, CHAMPS students increased their knowledge, whereas comparison group students' knowledge essentially stayed the same.

It is important to note that both intervention and comparison sites were exposed to a number of other non-CHAMPS tobacco prevention programs and strategies funded by the Arizona Department of Health Services, including a statewide mass media tobacco prevention campaign and various community tobacco prevention projects. Some of the changes experienced by both comparison and intervention group students may, therefore, have been influenced by exposure to these other tobacco education activities. Because students in both groups were exposed to other (non-CHAMPS) tobacco prevention activities, our results suggest that the observed effects



Table 2. Changes in Knowledge of Harmful Effects of Tobacco

Question	Group	% Correct Responses		Significance of Changes Between Groups ^A
		Baseline	Follow-Up	
1. There is no harm from smoking an occasional cigarette.	CHAMPS: Comparison:	71.3 68.2	77.0 69.4	**
2. It is safe to smoke for only a year or two.	CHAMPS: Comparison:	82.5 80.1	87.8 76.5	**
3. Smoking during pregnancy is harmful to the baby's health.	CHAMPS: Comparison:	80.5 82.5	77.8 77.9	
4. Smoking does not cause cancer.	CHAMPS: Comparison:	82.0 79.5	88.8 83.3	*
5. It is safe to use smokeless tobacco for only a year or two.	CHAMPS: Comparison:	82.0 78.5	85.9 77.6	**
6. There is no harm from breathing tobacco smoke.	CHAMPS: Comparison:	78.8 69.5	81.5 68.6	**
7. Smokeless tobacco is habit-forming.	CHAMPS: Comparison:	61.7 65.2	67.5 60.0	**

Note: Total $n=1,000$ in CHAMPS group and $n=412$ in comparison group (note that numbers responding to specific items varied).
^A χ^2 significant at * $p<.05$; ** $p<.0001$

that might be attributable to the CHAMPS intervention are beyond those that may have resulted from mass media and other tobacco prevention activities.

This study has several limitations the authors wish to note. First, CHAMPS and comparison schools were not randomly assigned, and the comparison group had a higher proportion of cigarette smokers at baseline than the intervention group (5.1% smokers in the intervention group and 12.8% smokers in the comparison group). These baseline differences may have operated to affect the observed outcomes in a positive or negative manner. To reduce the possible effect of baseline differences, net changes were examined. Second, the amount of CHAMPS tobacco prevention activities in the intervention schools and the proportion of students exposed to CHAMPS interventions varied. School level

of CHAMPS intervention (e.g., frequency of educational interventions) was not controlled, so it is more difficult to make a statement of cause and effect. Future analyses will examine the effects of the program by levels of intervention (low, medium, and high). Third, self-reports on smoking behavior were not validated. Dijkstra, Mesters, de Vries, v. Breukelen, and Parcel (1999), however, noted that self-reports have been demonstrated to be accurate when anonymity and confidentiality are assured and an identification coding system is used. Anonymity and confidentiality were assured and adhered to in this study, and an identification coding system was utilized. Fourth, it is possible that a ceiling effect operated to restrict the knowledge increase in the CHAMPS group. Knowledge pretest scores were higher among CHAMPS students (77% correct) than comparison students

(74.8% correct). Such a ceiling effect would make it more difficult to see improvement in knowledge among intervention students. Even with the possibility that a ceiling effect limited knowledge increases among CHAMPS students, it is interesting to note that CHAMPS students still increased their knowledge more than comparison group students. Finally, our study followed students for an average period of only about 6 months. Future analyses that follow students for a multiyear period will provide greater insights into the longer term changes associated with the intervention.

CONCLUSION

Peer influence does not explain all smoking behavior. Simons-Morton, Haynie, Crump, Eitel, and Saylor (2001), for example, documented that both peer and parental influences are independently



associated with smoking among youths. Nevertheless, peer influence is one of the important influences on a youth's decision to use tobacco.

Youths can be effectively utilized in their schools to help their peers reduce tobacco use. Peer-helping programs capitalize on natural channels of influence and are a relatively low-cost path to prevention. A well-planned and implemented peer-helping program represents an important potential resource that should be considered as a welcome adjunct to existing school-based tobacco education and prevention efforts.

Standards for planning and implementing peer-led programs have been developed by NPHA (2003) and include guidelines for the screening, selection, and roles of the peer helpers; the kind of training that should be provided; the essential requirements for staff supervisors; and the steps to take to ensure program maintenance. Black, Tobler, and Sciacca (1998) argued that when youths receive adequate training and supervision, and when programs are operated and organized according to the NPHA programmatic standards, positive outcomes are more likely to occur. Programs that use peer helpers inappropriately or programs that do not follow these standards are less likely to be effective. An appropriately structured peer education program is therefore advocated as an important component of a school-based tobacco prevention program.

Altogether, our evaluation of the CHAMPS Peer Project for Tobacco Use Prevention program has indicated a positive effect. Our findings support the importance of including peer education interventions in helping to delay and prevent tobacco use by youths. The evidence that structured adolescent peer-helping programs can foster a reduction in tobacco use justifies further support of this concept.

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Health Education Advocacy Kits: Community Health & School Health



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A first for AAHE, this kit provides the community health educator with the latest resource materials, tips and ideas to help you promote and sustain your health education program. The kit, which includes valuable statistics, trends, and rationales, provides ammunition to help you confidently speak in support of community health education programs to the public, the media, and state and local legislators. \$30.00



School Health (301-10080):

This kit is a compilation of information on coordinated school health programs, comprehensive school health education, health education standards, teacher preparation guidelines and teacher education accreditation. The kit also contains useful resources, background information, rationales and policies for strengthening the professional preparation of teachers (K-12) in health education and HIV prevention education. \$30.00

To Order: Call: 1-800-321-0789