



AMERICAN UNIVERSITY OF ARMENIA
CENTER FOR HEALTH SERVICES RESEARCH

Substance Use Prevention School Health Project: Development, Implementation & Evaluation

Report to the United Methodist Committee on Relief

Written by
Karine Markosyan, PhD, MPH
Project Coordinator

Follow-up data analyzed and reported by
Anahit Demirchyan, MD, MPH

Research Consultance provided by

Michael E. Thompson, MS
Associate Director, CHSR
American University of Armenia

Robert McPherson, Ph.D.
Consultant to CHSR

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Executive summary

In 1999 the United Methodist Committee on Relief (UMCOR) funded the American University of Armenia's Center for Health Services Research (AUA, CHSR) to develop and implement a pilot Substance Use Prevention (SUP) project for adolescents (aged 13-15) who attend 7-9th grades in four schools in Yerevan. The rationale for such a project was supported by the following facts: (1) one of the lifestyle habits that has been shown to be strongly associated with serious health outcomes is substance abuse, i.e. smoking, alcohol and drug use; (2) despite the lack of statistical data, smoking behavior was perceived to be widely prevalent among Armenian adolescents; and (3) school substance use prevention programs were identified as key cost effective health interventions.

The goal of SUP project was to reduce the adoption of substance use among adolescents through the provision of appropriate information and the development of their motivation and capacity to maintain or adopt healthy behaviors. The project was developed, implemented and evaluated between September 1999 and September 2000 in four schools in Yerevan. CHSR staff and consultants were responsible for the implementation of the project. Key steps in the project's implementation included: curriculum development; obtaining approval from the Ministry of Education and Science (MOES); selection of intervention sites (i.e. schools) and instructors for implementation of the curriculum; development of manuals for instructors and booklets for students; conduct of training activities for instructors; monitoring of the curriculum implementation (March -May, 2000); summative evaluation of the project; and documentation of the project's results in the form of a comprehensive final report.

The purpose of evaluation was to demonstrate whether or not health education could impact participants' substance use-specific knowledge, attitudes, skills and behaviors and present recommendations for the development of a national school health program. Four schools that were not exposed to the SUP project comprised the control group. The phases of evaluation consisted of 1) the collection of baseline information from the students of enrolled intervention and control schools; 2) the collection of mid-project data from the same students after implementation of the curriculum; and 3) the collection of 3-months follow-up data.

This report summarizes the results of the evaluation of SUP project focusing both on the impact of the project immediately after intervention and 3 months later. The evaluation of the project has demonstrated that substance-related knowledge, attitudes and skills of the target population increased significantly. Increase in knowledge and attitude was significant at both statistical and practical level. An increasing trend of the attitude was detected at the follow-up survey also, while knowledge and skill gain remained statistically significant. According to the mid-project data the net knowledge gain of adolescents in the intervention group was 32% higher than the net knowledge gain of adolescents in the control group. Thus, the knowledge-related evaluation objective set at a 10% difference was surpassed. The net attitude gain of adolescents in the intervention group was 7.7% higher than the net attitude gain of adolescents in control group thus meeting the attitude-related objective. The average aggregated skill score was 81.9% at the final survey, which exceeded the skill-related objective by 30%.

Comparison between different grades involved in the project indicated, that the best grades for implementation of SUP project are the 7th and 9th. Perhaps, it will be optimal to start the first exposure to SUP curriculum at 7th grade and to insure one more exposure to it at 9th grade. The results of focus groups showed that both teachers and students liked the project and found it to be

very useful. The opinions expressed by both teachers and students as well as limitations noted in the report should be taken into consideration when developing larger interventions.

The finding that the evaluation of SUP project did not detect positive impact on behaviors of the target population can be explained by the fact that the present evaluation did not cover a long period of instruction, or as long a post-instruction delay period, as desired. However, given the evidence from the literature that knowledge and attitudes mediate the impact of intervention on behaviors, and that behavior change requires sufficient time lag, we could expect to see changes after at least one year following the intervention.

The SUP project was the first substance use prevention project for Armenian schools that utilized interventions teaching social resistance skills. The results of the SUP project implementation study are straightforward and have direct and important implications for health education professionals and consumers. The results of the evaluation suggest that prevention strategies that were initially developed and found to be effective with other target populations can be applied to Armenian youth as well. The lessons learned and the experience gained during the development, implementation and evaluation of this project could be very useful when developing national school health education programs.

The Center of Health Services Research recommends to the Ministry of Education and Science to implement the SUP curriculum as a separate module in Yerevan schools and to use it as a model for development of a national school health program.

1. INTRODUCTION

1.1 Background

1.1.1 Health Problems in Armenia and Their Relation to Substance Use

Over the past decades the profile of diseases in Armenia has changed significantly. While the infectious and parasitic diseases that adversely afflict children still remain a priority, morbidity and mortality due to chronic diseases of adulthood is increasing (1). Mortality due to cardiovascular disease has increased by 57% between 1980 and 1994 (2). According to a recent World Bank report, the three leading causes of morbidity in Armenia, which in turn cause the greatest burden of disease, are cardio-vascular diseases, cancer and injuries (3).

Very little baseline information exists about “adolescents” (defined by WHO as persons in the 10-19 years age group) health (4). The problem is that there are two separate health statistics in Armenia - one for children under 14 years of age, and the other for adults, including adolescents above 14 years of age. There is no separate age-specific health statistics for adolescents. However, adolescents have very specific and serious health problems and, because of the increase in health-related risks for adolescents, WHO has given increasing attention to them (4).

Research has shown that of the different factors contributing to chronic disease and early death, unhealthy lifestyle is the most important (5,6). One of the lifestyle habits that has been shown to be strongly associated with serious health outcomes is substance abuse, i.e. smoking, alcohol and drug use (7-10).

"If tobacco were a new product seeking authorization for sales, there would be little chance that it would be granted approval. The evidence is very clear- tobacco is a deadly product" (11). "Tobacco is the only legally available drug that is lethal when taken as directed" declared William Foege, MD, former director of the Centers for Disease Control and Prevention (11).

Recent studies conducted in the United States suggest that tobacco use alone annually causes more than 400,000 premature deaths and 5 million years of potential life lost in that country (12). Another 50,000 premature deaths have been shown to be caused by secondhand smoke. The world-wide toll from tobacco is about 3 million each year. This toll will rise dramatically as the tobacco industry aggressively expands advertising, promotion and cigarette consumption in Asia, the Third World, and Eastern Europe to replace the declining market in America and other Western countries (11).

In the Former Socialist Economies of Europe (FSE), the figures are particularly startling. Countries of Eastern Europe have come under particular attention from transnational tobacco companies, not just in terms of advertising and promotion, but also in terms of considerable investment in their tobacco manufacturing sectors. Armenia's "Grand Tobacco" is one of these companies. In FSE countries, around 14% of all deaths in 1990 were due to tobacco use. However, this figure is predicted to increase so that in 2020, from 20% to 25% of all deaths will be due to tobacco. Nearly every second premature death of a middle-aged man (35-69) and every fourteenth of a woman is the result of disease caused by tobacco (13).

Cigarette smoking has been shown through research to cause heart disease, stroke, chronic lung disease, and cancers of the lung, mouth, pharynx, esophagus, and bladder (14-19). Cigarette smoking causes respiratory illnesses, decreases physical fitness, and adversely affects blood cholesterol level (20).

Research on the effects of use of other substances such as alcohol or illicit drugs is not as complete as the smoking research. Excessive alcohol consumption has been shown to cause more than 100,000 deaths annually in the United States (8). Alcohol abuse has been associated with diseases such as gastrointestinal and cardiovascular and with liver damage, while drug abuse has been shown to lead to brain and heart damage and hormonal changes altering normal patterns of growth and sexual development (9, 10). Alcohol and drugs impair one's physical and mental reactions, making it difficult to drive safely. Driving under influence or riding in a car with a driver who's been using alcohol or drugs is the number one killer of 15- to 24-year-olds - more than 12,000 young people are killed in the US each year in accidents involving substance use (21). Moreover, alcohol and drug use is also often linked with teen deaths by drowning, fires, suicide or homicide and is a leading cause of teen injuries (22).

The data from the literature indicate that the rate of substance use among adolescents is rising worldwide (22). During the last few years the prevalence of alcohol and drug abuse, violence, and homicides increased among adolescents in Central and Eastern European countries(23). Tobacco is one of the greatest public health challenges facing Europe. In the FSE countries, smoking rates among men are particularly high, and in a number of countries these rates are greater than 50%. Among women, smoking prevalence is greater than 20% and in some cases is as high as 30%. In the majority of FSE countries, cigarette use is increasing among young people, who, along with women, are the target groups of the tobacco industry (13).

There is lack of national statistics that describe the prevalence of unhealthy behaviors among Armenian adolescents. What data does exist show that some health-endangering behaviors are widely practiced (24). As it is mentioned in the Armenian Human Development Report “...despite the lack of relevant statistical data, it can be maintained that tobacco smoking and alcohol and drug abuse are becoming spread quite widely, especially among teenagers...”(2). Qualitative research conducted in Armenia has shown that members of the population felt that current conditions in Armenia may contribute to the spread of substance use (25).

Many young people start to use substances without fully understanding that this habit is addictive. Adolescents often underestimate or don't know about the health consequences of substance use. Persons who start to use substances early in life are more likely to become lifelong substance abusers, are more likely to develop substance-related disease, and experience more difficulty quitting (14, 26). That is why substance use prevention programs are more effective if they target people early in life. It is at this time in the life-span that attitudes and behaviors are more open to developing healthy practices.

1.1.2 The Impact of School Health Programs on Adolescents' Substance Use

The 1993 World Bank Development Report identified school health programs as key cost-effective health interventions (27). School based health programs tend to be more effective than other drug use prevention programs for several reasons:

1. Most youth are likely to be exposed to such programs if instituted during school hours, whereas in other contexts only a relatively small percentage of youth may be reached.
2. Effective programming can be optimally evaluated because youth are likely to be exposed to the complete program and can generally be followed up several years post-program.
3. Program can be taught to most students of the same age and may be age-relevant/appropriate.

4. Learning of new information is facilitated by face-to-face encounters. The learning of both verbal and nonverbal social skills and the advantages of more personalized feedback are available within the school context (28).

The health risks facing children and adolescents are not discrete problems but a set of interconnected issues. So logically, an effective program should address all of them simultaneously. Increasingly school health professionals' efforts are focusing on interdisciplinary, comprehensive approaches. As declared Ellen Shall, JD from the National Center for Health Education "...school health education is a vital part of improving the health of this nation's citizens and effective school-based education must be comprehensive, continuous and interdisciplinary and must offer information, motivation and skills..." (29).

In 1988 an evaluation of comprehensive health education in American public schools was conducted. It was found that overall, the students in exposed schools had more knowledge and better health-related attitudes and behavior, than control students. It was also found that students' health-related knowledge, attitudes and behaviors increased as the number of years of exposure to health education increased (30). Another School Health Education Evaluation (SHEE), a three year study of four different health instruction programs involving more than 30,000 children, grades 4 to 7, from 1,071 classrooms in 20 states concluded "...that health education works, that it works better when there is more of it" (31, 32).

Teenage Health Teaching Modules (THTM) evaluation revealed that THTM-exposed students were more likely than controls to report bigger knowledge gains and larger attitude gains among high school seniors. Exposed students were more likely to either abstain from or smoke fewer cigarettes, abstain from or exhibit less drug use, and consume fewer alcoholic drinks (33).

Long-term success of school-based prevention programs depends on continuity of exposure to health education. It has been demonstrated that school based prevention programs implemented in junior schools have little chance of long-term success unless additional programming is offered throughout high school (34, 35).

These findings suggests that carefully designed and implemented comprehensive school health education program can reduce risks for disease and injury among young persons.

The U.S. Department of Health and Human Services, in their National Health Promotion and Disease Prevention Objectives "Healthy People 2000", asserts that comprehensive school health education is extremely important for helping children and youth develop the increasingly complex knowledge and skills they will need to avoid health risks and maintain good health throughout life (36). Quality health education that is planned and sequential for students in kinder-garden through 12th grade, and taught by educators trained to teach the subjects, has been shown to be effective in preventing risk behaviors. Quality school health education addresses and integrates education, skills development, and motivation on a range of health problems and issues (e.g., nutrition, physical activity, injury control, use of tobacco, alcohol and other drugs, sexual behaviors that result in HIV infection, other sexually transmitted diseases, and unintended pregnancies) at developmentally appropriate ages (37-42).

If embedded in comprehensive school health education, substance use prevention program can substantially decrease adoption of the use of substances (43-46). However, in most cases projects face time or financial constraints, which limits the range of topics and target populations that they can focus on. Even in a project of limited scope, cost-effectiveness analysis has shown that it is

more effective to address a set of interrelated problems and high-risk behaviors, such as smoking, alcohol and drug abuse, than to focus only on one problem (27, 31).

Qualitative research conducted in Armenia has revealed that health issues are poorly addressed by the Armenian school curriculum (25). Several studies have shown that Armenian adolescents' primary sources of health information are peers, mass media, books and magazines. This information has been found to often be inadequate and misleading (47). In-depth interviews with adolescents and adult respondents (parents, teachers, officials from the Ministry of Health (MOH) and the Ministry of Education and Science (MOES) have confirmed these findings. Adult respondents expressed great concern with this situation. In their opinion, the misleading nature of much of the health information available to Armenian adolescents could contribute to an increase in the adoption of a variety of unhealthy behaviors, including substance use and unsafe sex. All respondents expressed their conviction that health programs need to be introduced in Armenia's schools. Substance use was one of the topics that they prioritized for inclusion in school health programs.

1.2 Project's Goals and Objectives

In 1999 the United Methodist Committee on Relief (UMCOR) funded the American University of Armenia's Center for Health Services Research (AUA CHSR) to develop and implement a pilot Substance Use Prevention (SUP) project for adolescents (aged 13-15) who attend 7-9th grades in four selected schools in Yerevan. The project's goal was to reduce the adoption of substance use among adolescents through the provision of appropriate information and the development of their motivation and capacity to maintain or adopt healthy behaviors. The long-term effect of the project could be thereby the prevention of disease and premature death. The goal of evaluation was to detect whether the health education could positively affect the adolescents' substance-related knowledge, attitudes, skills and behaviors.

To achieve the project's goal, the following measurable objectives have been set:

1. At the end of the project's education component, the net knowledge gain (i.e. mean improvement in knowledge score from baseline to post-intervention) of adolescents in intervention schools will be at least 10% higher than the net knowledge gain of adolescents in control schools.
2. At the end of the project's education component, the net attitude gain (i.e. mean improvement in attitude score from baseline to post-intervention) of adolescents in intervention schools will be at least 7% higher than the net attitude gain of adolescents in control schools.
3. During the project's duration, the percentage of adolescents in intervention schools who experiment with tobacco (or alcohol) for the first time will be 8% less than the percentage of adolescents in control schools who experiment for the first time.
4. At the end of project's education component, the aggregated 'skill score' of project participants will be greater than 50%.

2. PROJECT PHASES

The major phases of the SUP project were as follows:

- 1) curriculum design;
- 2) obtaining approval from the MOES
- 3) development of manual for teachers and booklets for students;
- 4) selections of schools for intervention and control;
- 5) instructor training;
- 6) intervention (implementation of the curriculum); and
- 7) project evaluation and monitoring

2.1 Curriculum Design

Different strategies were used to implement school health education programs that focus on the prevention of substance use. Most conventional programs have been based on the assumption that if children know why substance use is bad for them, they will choose to not start use them. These programs have been limited to providing only factual information about the harmful effects of substance use. Some of them have attempted to induce fear in young persons about the consequences of substance use (48). Of those conventional programs evaluated, many have succeeded in changing students' knowledge and attitudes, but very few have consistently reduced the onset of substance use behavior (49, 50). They may stimulate curiosity about substance use, and may prompt some students to believe that the health hazards of substance use are exaggerated (51-53).

Recent developments in the field of smoking prevention have provided empirical support for the efficacy of approaches which target the major psychosocial factors implicated in the onset of adolescent cigarette smoking. As they evolved, the primary conceptual orientation shifted from communication theory (54) to social learning theory (55). Research by Bandura and others discusses a spectrum of circumstances and actions which form and motivate behavior. These progress from basic awareness of a problem to increased knowledge, self awareness and self analysis, attitude development or change, skills development/enhancement and finally to actual behavior modification(55). Studies testing these approaches have consistently demonstrated significant reductions in cigarette smoking (28, 49).

Recognizing that facts alone do not shape or change behavior, the development of the Substance Use Prevention module utilizes much of this behavioral research. Exercises in the curriculum challenge teens to think, solve problems, work together, and express themselves. This group process is an important part of adolescent learning and should be carefully planned and implemented. Group effort reinforces and enhances both cognitive and social skills, essential to overall substance use prevention.

The curriculum for SUP project was based on existing programs with proven effectiveness. One of them was 'The Michigan Model For Comprehensive School Health' - a program that is among 6 of 47 national prevention programs in the United States that received an "A" rating. This program has been named as an exemplary prevention program to prevent alcohol and other drug problems. Housed within a comprehensive health framework, this substance prevention program is supported and enhanced by information about how a healthy body functions, safety lessons which emphasize respecting and obeying rules and laws, and activities designed to promote a healthy lifestyle. The related skills of recognizing and dealing with feelings, making positive decisions, solving problems, and knowing how and where to get help increase the likelihood that students will implement a drug-free policy for themselves. (37). The project coordinator for 'The Michigan Model For Comprehensive School Health' collaborated with CHSR in the acquisition

of educational materials. The SUP project mostly utilized three modules of 'The Michigan Model For Comprehensive School Health', that were as follows:

- Drugs Make The News -Bad News - a module for 6th grade
- It's No Mystery: Tobacco Is A Killer - a module for grades 7-8
- Teens Campaign Against Tobacco - a module for grades 9-12

However, as far as SUP could not utilize the entire comprehensive approach due to the time and resource limitation, it borrowed several activities from other modules of the Model as well in order to address skill building as completely as it was possible.

Another curriculum that was used as a reference was the one of TNT (Towards no Tobacco Use) project. This project was classified by the Center for Disease Control and Prevention (CDC) as a "program that works" (56). This program obtained significant decrease on initiation and weekly use of cigarettes and smokeless tobacco, when 1- and 2-year follow-up outcomes were considered (28, 57,58). An implementation manual providing step-by-step instructions for completing each lesson and a student workbook were acquired from the publishers.

Both models were carefully reviewed and adapted in order to design a curriculum that was appropriate for Armenian schools. The theory underlying the SUP curriculum is that young people will be best able to resist using substances if they (1) know about the physical consequences that substance use may have on their own life; (2) have positive health attitudes; (3) have high level of self-efficacy; and (4) have skills to counteract the social pressures to achieve approval by using substance. The curriculum consisted of 11 lessons (see Appendix A). The 3 major parts of the curriculum followed the aforementioned scheme:

1. Lessons 1-4 provided information on different consequences of substance use.
2. Lessons 5-7 enhanced self efficacy and developed positive health attitudes.
3. Lessons 8-11 developed basic skills helping in maintaining/adoption/modification of behavior.

The curriculum was designed in September- November, 1999 by the project coordinator and educational consultants. The educational consultants were selected from local professionals having experience in implementing non-conventional school programs.

2.2 Obtaining Approval from the MOES

The curriculum along with an official letter was sent to the MOES in order to obtain its approval for the implementation of the pilot SUP project. The project coordinator was invited to the MOES for an interview detailing the curriculum. An official letter was obtained which notified the school directors about the objectives and intentions of the project and recommended the implementation as an optional program funded by UMCOR (See the copy of the letter in Appendix B). This phase lasted from November 16 to November 30, 1999.

2.3 Development of Manuals for Instructors and Booklets for Students

A 150-page manual was developed for instructors, that contained detailed descriptions of the 11 lessons including materials, resources, lesson plans, objectives and procedures. A 50-page student booklet contained resources for students, both in-class and take-home (copies of manual and

student booklet are attached). Both the instructor manual and the student booklet were written in the Armenian language. They contained the most recent information on different aspects of substance use including: prevalence of use; mechanism of substance action; health consequences of use; social, financial and other issues connected with substance use; tobacco and alcohol advertisement issues; the results of anti-tobacco-campaigns; and resources to use during classroom activities on skill building and attitude change. The booklets presented information regarding substance use in an attractive and interesting manner. A sufficient amount of manuals and booklets was printed in order to provide instructors and participants of the project with individual copies. The development of manuals and booklets was accomplished by the project coordinator and educational consultants. These activities took place in November, 1999 - February, 2000.

2.4 Selection of Schools and Instructors

Although the implementation plan called for three schools in Yerevan, a fourth school was later added in order to secure a sufficient sample size. Then target schools were selected randomly from the list of all Yerevan schools. The selection process was two-stepped. First the hamajks (administrative units in Yerevan) were selected and then the schools in them. The hamajks were selected as those representing both the Center of the City and the remote districts. This was done in order to have representatives of all social and cultural backgrounds. In each of the selected hamajks a school was selected randomly using a random digit list.

Interviews were conducted with the directors and eligible teachers of the selected schools. The main purpose of the interviews was to present the main features of the project and to determine if the school met inclusion criteria. Schools were excluded in two cases: 1) if the director did not appear to be motivated to implement this type of project; 2) if the school was participating in other health education programs carried out by other organizations. If the school was selected, but there were no appropriate teachers there, the consent of director was obtained for an outside instructor to implement the curriculum. The main criteria for selecting instructors were as follows: 1) if he/she was motivated to teach a curriculum; 2) if he/she was found to understand the underlying theory and conceptual framework of the program.

Information on schools and teachers selected for the implementation of the SUP project is presented in the Table 1. Four schools were selected as 'control' facilities. Each of the four control schools was directly comparable with one of the intervention schools (i.e. was 'matched', based on location, physical condition, size, programs, etc.). Selection procedures took place in November 1999 - January, 2000. These tasks were conducted by CHSR staff and educational consultants.

Table 1. Schools and teachers selected for the implementation of the SUP project

| School | Hamajnk | The position of teacher | Years of teacher experience | Teacher background | Teacher local/outside of school |
|--------|----------------------|-------------------------|-----------------------------|-----------------------------|---------------------------------|
| #134 | Nor-Nork (remote) | Director | 20 | Biology | Local |
| #185 | Achapnjak (remote) | Deputy Director | 17 | Chemistry | Local |
| #147 | Zeytun (semi-center) | Teacher | 10 | History and children rights | Outside |
| #172 | Arabkir (center) | Teacher | 3 | Biology | Local |

2.5 Instructor Training

Implementation of the curriculum and overall program effectiveness are enhanced when instructors are trained to deliver the program as planned (20, 27). Project-specific training was provided for instructors selected to implement the SUP curriculum. The training included a review of the content of the curriculum and a modeling of classroom activities by project coordinator and educational consultants. In total, 11 training sessions were conducted detailing each of the 11 lessons. Attendance at training sessions was 100%. After the training, the instructors took written and oral exams measuring: (1) understanding of the underlying theory and conceptual framework of the program; and (2) instructors' performance in modeling program activities. All teachers passed both exams at an excellent level (85-90%). Training of instructors was conducted in February, 2000 by the project coordinator and educational consultants.

2.6 Implementation of the Curriculum

The curriculum was implemented in selected classes of the 7-9th grades (one class per grade) of the intervention schools over an eleven-week period (February 28, 2000 - May 12, 2000). One hour per week per grade was required to deliver the classroom-based curriculum. Instructors were responsible for curriculum implementation. They were required to keep detailed records on attendance of students, classroom activities and the successes of students. The implementation of the curriculum was monitored weekly by the project coordinator and/or educational consultants. Monitoring activities included a systematic examination of the extent to which (1) the program was reaching the intended target population (coverage); and (2) the delivery of curriculum was consistent with program design (i.e. delivery). Coverage was measured through class records (class attendance by adolescents is presented in Appendix C). Indicators of delivery assessed the content of messages, the use of educational materials/resources, classroom activities that took place, and class time devoted to project activities. Delivery was measured both through review of teacher's records, as well as via observations conducted in the classrooms by CHSR and MOES personnel. It was found to be satisfactory. Once a month all individuals responsible for the program (project coordinator, educational consultants and instructors) met to make decisions about further actions.

2.7 Project Evaluation

The evaluation of the project was a multi-phase process. A goal-oriented approach was used to assess the project's impact.

2.7.1 Evaluation Design

The impact of the project was assessed through the degree of change in the knowledge, attitudes, skills and practices of adolescents who participated in the program. The assessment was conducted using a design formally known as "quasi-experimental non-equivalent control group evaluation design" (59). The project's impact was assessed at two points in time: once immediately following the implementation of the project, and then again three months later. The purpose of the second measurement of impact was to assess its sustainability. As far as in control group the improvement in knowledge and attitudes was not observed, it was decided to administer there the a shortened questionnaire, asking about practices only. A pictorial representation of evaluation design is given below:

| | | | | |
|---------------------------|----------------------|----------|----------------------|----------------------|
| Intervention group | O₁ | X | O₂ | O₃ |
| Control group | O₁ | | O₂ | O₃ |

O₁ - baseline data collection (February 14-25, 2000)

X - intervention (health education classes) (February 28 - May 12, 2000)

O₂ - post-intervention data collection (May 14-18, 2000)

O₃ - final data collection (September 1-15, 2000)

A Gantt chart portraying the implementation and evaluation schedule is presented in Appendix D.

2.7.2 Participants of the Surveys

Participants of the first survey were all students present in selected classes the day of survey. Participants of the second and third surveys were those participants of the previous survey present at school on the corresponding days.

2.7.3 Measurement of Project Impact

The following variables were measured in order to assess the impact of SUP project:

1. aggregated knowledge score
2. aggregated attitude score
3. aggregate "knowledge about skills" score
4. aggregated self-reported skills score
5. aggregated demonstrated skill-score
6. tobacco/alcohol related practice

2.7.4 Evaluation Questionnaires and Interview Process

The instrument for measuring students' knowledge, attitudes skills and practices regarding substance use was an anonymous self-administered questionnaire. The questionnaire was developed using two validated questionnaires, one of which was kindly provided by the team of evaluators of TNT project. The questionnaires were translated from English into Armenian by CHSR staff. Several questions were designed by the CHSR staff basing on the objectives of the project and the specific features of SUP curriculum. The questionnaire was pre-tested by

interviewers in order to define the time required for its filling and the understandability of the questions. Small changes were made in wording of the questions and flow of the interview.

The questionnaire was administered by surveyors who were trained on the use of questionnaire and the goals of the study. Prior to distributing questionnaires, the goals of the project and the confidentiality of the data were explained to the students. As far as questions concerning practices could be sensitive in school setting, the questionnaire was designed as an anonymous one. However, in order to be able to conduct paired analysis of the results, the students were assigned specific codes. The list of codes was kept by one of the students who was elected by the students themselves and who had to remind the students their codes during the second and the third surveys.

The questionnaire for baseline survey consisted of 94 items (see Appendix E for English and Appendix G for Armenian versions) comprising the five major sections as follows:

1. demographic information
2. practices concerning tobacco and alcohol use
3. substance-related knowledge
4. attitudes and self-esteem
5. specific skills

In the first section (Questions D1 to D9) an effort was made to define the socio-economic status of participants by measuring the educational level and the working status of their parents as well as the presence of specific luxury items in their house. The second section (questions P1 to P10) measured the practices of participants, their family members and their close friends as well as the estimates on tobacco use by the students of participants' age, assessed by the participants. The third section (questions K1 to K34) measured the knowledge of participants regarding the specific terminology and definitions used in the curriculum, as well as health consequences of substance use. In a special subsection (questions K11 to K16) were accumulated the questions concerning the knowledge about the skills that the program was called to build. In the fourth section (questions A34 to A37) there were questions concerning: the attitude of students towards substance use by other people including the adolescents of their age; their perceptions on the effects and consequences of drug use; their assessment of attitudes of other adolescents, including their close friends; their attitudes towards different behavioral patterns of adolescents reflecting the level of their self-esteem of the latter. In the last section the students were asked to self-assess their specific skills.

The questionnaires used in the post-intervention and the final surveys were mostly the same as the baseline questionnaire with slight differences reflecting the specific phases of evaluation (see Appendix F). In the post-intervention and the final surveys the questions on demographic information and question on the smoking patterns of family members were eliminated as being redundant. A special section was added to the post-intervention questionnaire asking the participants of the project to evaluate its structure and process. The aim of this section was to measure the participants' impressions about the overall quality of the project and the students' booklet.

Instructors' records were used as a measure of the students' skills (see Appendix H). The teachers were required to assess the ability of each student to demonstrate each of the 4 skills taught during the 8 to 11th lessons: decision making, resisting peer pressure, recognizing the

misleading nature of ads, and communicating concern about others' substance use. The teacher records were used as instruments for assessing the ability of students to demonstrate the skills.

2.7.5 Statistical Analysis

Data was entered using EpiInfo (version 5.0) statistical software. SPSS for Windows (release 9.0) was utilized for statistical analyses. For each participant, aggregated scores were constructed to assess their knowledge, attitudes, knowledge about skills, and self-reported skills. The knowledge score was defined as the proportion of 34 knowledge questions (K1 -K34) that each student answered correctly. Each individual participant's knowledge score could thus range from 0-100. The aggregated "knowledge about skills" score was calculated similarly, basing on the answers to the questions (K11-K16). In order to calculate an individual's attitude score, his/her answers to 33 attitude questions (A1- A33) were first summed, yielding an attitude score that theoretically could range between 33-165. The answers to questions 3, 6, 7-12, 14, 16, 18, 19, 21, 23, 24, 27, 28, and 30 were reversed, in order to make the score "5" to correspond to the "healthiest" attitude. The sum was then divided by 1.65 in order to generate a variable where a score of 100 signified the best possible attitude towards issues of concern, while a score of 20 signified the poorest attitude. Similarly were calculated the three attitude sub-scores and the aggregated skill score.

The aggregated scores were the evaluation's primary dependent variables and were treated as continuous variables. Scores from all participants within each group were pooled in order to create an average score for each group. Within-group comparison of aggregated scores showed the improvement in knowledge, attitudes and skills of the same group of adolescents over time. The statistical significance of within-group differences of these scores at the various stages of the project (baseline, post-intervention and three months follow-up) were assessed using the paired Student's t-test. In an additional analysis the ANOVA test was used to test for the presence of a positive association between key independent variables and the magnitude of improvement in knowledge (attitude). The independent variables that were tested consisted of subgroups of the intervention group, e.g. schools and grades.

In order to identify the extent to which any observed gains in knowledge, attitudes and self-reported skills could be attributed to the project, a between-group comparison of scores was performed. The statistical significance of the difference of the intervention and control groups' knowledge and attitude scores was assessed using the Student's t-test for two independent variables.

Besides the aggregated "knowledge about skills" score and the "self-reported skills" score, the skills of participants were assessed through their performance during classroom activities. In this case the measure of skills was an aggregated 'skills score' that measured the proportion of specific skills that the participant was able to demonstrate during classroom activities. The average aggregated "demonstrated skills" score was constructed only for the students in the intervention group and reflected the level to which the group had gained the skills.

The key measure of adolescents' practice was measured as 'the proportion of adolescents who experimented with tobacco (and in a separate measure, alcohol) during the project.' For the analysis of this measure a new variable was created reflecting the proportion of those who experimented first with tobacco/alcohol during the period of interest (intervention period for the mid-term analysis and post-intervention period for the follow-up analysis). The statistical significance of the difference in proportions of students practicing these behaviors in intervention

and control schools was assessed using the z-test for categorical variables. The Wilcoxon test was used to assess the significance in difference of proportions within the same group over time.

The differences between groups in demographic variables as well as the variables regarding smoking patterns of respondents' family members and closest friends were assessed using t test for continuous variables and z test for categorical variables.

At the mid-term stage all analyses were conducted with information obtained from participants of post-intervention survey, comprising 230 students in intervention group and 208 students in control group. Separate analyses were conducted for those students who participated only in the first survey in order to exclude a non-response bias.

Only those who participated in both previous surveys were involved in the final survey, comprising 153 students in intervention group and 113 students in control group and all the analysis at the final stage were conducted with the data obtained from them. However, the data of students who did not participate in the previous surveys and/or had no identification information also was obtained and analyzed separately in order to minimize selection bias.

2.7.6 Sample Size Considerations

The sample size of students in this project at the mid-term stage was limited by logistical constraints to about 230 adolescents in the intervention group and 208 in the control group. In order to calculate the power of the evaluation to detect any differences that may exist in the improvement in knowledge and attitudes between the intervention and control groups (as stated in the objectives), the following formula has been used:

$$T: \quad z_{\beta} = \sqrt{n/4} \otimes [\Delta \div \sigma] - z_{\alpha/2}$$

The terms in the equation above represent the following:

- Δ the difference in improvement of scores (attitude, knowledge) between intervention and control groups which is proposed to be at least 10% (0.1) for knowledge and 7% (0.07) for attitudes
- σ the standard deviation of the improvement of aggregated scores (attitude, knowledge). This has been assumed to be 0.15 (one-sixth of the possible range of answers).
- α typically 0.05.

According to the formula, the power of evaluation to detect the proposed differences is $P=1-\beta=99.99\%$ for knowledge score and 99.7% for attitude score. The minimum difference in knowledge or attitude which we could detect with a sample size 208 and a power of 80% was 3.6. The sample size was therefore large enough to detect a reasonably small impact of intervention regarding knowledge and attitudes.

This evaluation had a more limited ability to detect differences between the two groups in their practice of tobacco/alcohol use. In order to calculate the power of the evaluation to detect the proposed difference between intervention and control groups for the practice measure (i.e. the

proportion of adolescents who first try tobacco/alcohol during the intervention period), the following formula has been used:

$$z_{\beta} = [\sqrt{n/4} \otimes (\Delta \div p/q)] - z_{\alpha/2}$$

The following assumptions have been made for the following calculation:

- Of the 208 adolescents who was in smaller group, 20% had previously experimented with tobacco/alcohol, so that the sample size to measure the proportions of those who would try these substances for the first time was 166;
- The proportion of participants in the control group who experimented with these substances during the intervention period is 10%, so that p=0.1, and q=0.9;
- Δ - the difference in proportions in the intervention and control groups of those who tried tobacco/alcohol for the first time would be at least 8% (0.08)

The power of evaluation to detect the proposed difference was 68%. The sample size was likely too small to detect the proposed differences in practice.

In respect of the follow-up survey the power of evaluation to detect the proposed difference between intervention and control groups was even less, since the sample size was considerably smaller (153 in intervention group and 113 – in control).

We would need a sample of 277 to detect the proposed difference (taking into consideration the aforementioned assumption that 20% had previously experimented with tobacco/alcohol, the effective sample size for calculating the proportion of those, who would try these substances for the first time becomes 222). At the mid-term survey the proposed sample size was close to this figure, but it was not achieved. In any case, the difference in proportions of 8%, as it was proposed, also came up to be non-realistic.

2.7.7 Qualitative Data Collection

In order to obtain both the participants' recommendations for how to improve the program, as well as their opinions regarding the evaluation's quantitative findings, 2 focus group discussions were conducted with the students and one with the teachers. Field guides for the focus group discussions were developed (see Appendices I & J). Field guides included questions that asked participants and teachers about their overall impressions of the substance use prevention program, its structure and process. Additional questions asked participants and teachers to interpret the findings concerning inconsistency of quantitative results regarding students practices. Textual data was analyzed by identifying respondents' answers to questions and through repeated reading of the text of the discussions.

3. RESULTS

3.1 Sample Enrollment at Baseline Survey

The baseline survey was planned for the start of the second semester. However, the teachers reported a high rate of absenteeism at the beginning of semester, and the survey was postponed. It was conducted from February 14-25 in the intervention schools, and from March 1- 10 in control schools. All students, registered in the lists of the selected classes were treated as being eligible. All eligible students present in school participated in the survey. As this was part of an academic module, participation was considered obligatory.

From the four intervention schools 244 students were enrolled, representing 82% of the eligible students; 245 students were enrolled from control schools representing 78% of all eligible students. The numbers of students enrolled in intervention and control schools are presented in in Appendix K.

3.2 Coverage at Post-Intervention Survey

Only those students who participated in the baseline survey were treated as eligible for the post-intervention survey. The post-intervention survey was conducted during the second half of May. The coverage rate was 94% in intervention schools, and 85% in control schools. Appendix K presents the figures of post-intervention coverage rates by schools. The reason for non-participation at post-intervention survey was that the students were absent from the school at the time of survey. The sample size for statistical analysis was limited to 230 students participated at post-intervention survey in intervention schools and 208 students in control schools.

3.3 Coverage at Follow-up Survey

The final data-collection (post-post-intervention or follow-up survey) took place from 11-15 September 2000 in the intervention schools and from 18-22 September 2000 in the control schools. Only those students who participated both in the baseline and in the post-intervention surveys were treated as eligible for the post-post-intervention survey. However, the academic year had changed and many students had moved. Some grades were redistributed and thus, it was difficult to ensure a high level of coverage of the survey participants. Moreover, the survey protocol required students to keep their ID information, and many of them were not able to recall their ID numbers after the summer break and so were not included in the final analysis. Students' absenteeism was another reason for coverage restriction. As a result, the coverage rate was 63% for the intervention group and only 36% for the control group. Data of those students who could not recall their ID-s (113 additional cases mainly from the control group) were also collected and entered into database. The possible bias due to low coverage rate was estimated by examining the means and distributions of key variables in the post-post data by both ID match and ID match/not collections. The comparison of those means and distributions showed very little differences, thus, there was only a little chance of bias. Appendix K presents the figures of post-post-intervention coverage rates by schools. The sample size for paired statistical analysis was limited to 153 students in intervention schools and 113 students in control schools.

3.4 Demographic Characteristics of Study Participants and Smoking Patterns of Their Family Members and Closest Friends

The demographic characteristics of groups of participants at baseline and post-intervention survey are presented in Appendix L. Statistically significant differences between intervention and control groups were not observed for any of measured variables suggesting that the schools were matched properly. There were no differences by any of the variables between those who did and did not participate at the post-intervention survey suggesting that the cohort of respondents of

post-intervention survey was similar to the one of baseline survey and thus minimizing the threat of non-response bias.

The post-intervention data is presented below. The respondents' mean age was approximately 14. The proportions of 7th and 8th graders were similar (36% to 39%), while the proportion of 9th graders was slightly smaller. Girls outnumbered boys by 12-16%.

The average number of people in respondents' households was approximately 4.9 ranging from 2 to 10. In the intervention group 8% of the participants and in control group 6% of the participants reported having no father in the house,. There was no mother in the home of 1% of the respondents in intervention group. The average number of siblings was 1.3-1.4 ranging from 0 to 5. In intervention group 32% of respondents and 36% in control group reported having a grandmother living in their house; 17% and 22% respectively reported having a grandfather in their house.

The educational level of respondents' parents was rather high. More than 52% of both fathers and mothers had higher (14+ years) education in both the intervention and control group. The parents working status was also similar. Approximately 60% reported their fathers have had a job, and 42 to 49% reported their mothers have had a job. Overall 75-77% reported one of the parents have had a job.

Respondents in both groups reported having at their households approximately 3.5 of 5 luxury items listed in the questionnaire (car, video, color TV, video camera and tape recorder); 91 to 97% reported having color TV or tape recorder or both, 44-46% reported having a video, 44% reported having a car, and 14-16% reported having a video camera.

The rationale for including questions on smoking patterns of respondents family members and closest friends in the questionnaire was supported by the assumption, that having more smoking people in one's surrounding puts him/her at a greater risk of becoming a smoker (49, 50). The aim of the analysis was to find out if one of the groups was at higher risk of smoking than the other. The results of analysis of corresponding variables are presented in the Tables 2 and 3.

Table 2. Smoking patterns of respondents' family members by group

| Variable | Intervention group (n=230) | Control Group (n=208) | p-value for difference between groups |
|---------------------------|-------------------------------|--------------------------|---|
| Nobody smokes | 23.9% (55) | 22.1% (46) | 0.656 |
| Father smokes | 66.1% (152) | 71.2% (148) | 0.255 |
| Mother smokes | 10.4% (24) | 4.3% (9) | 0.016* |
| Brother smokes | 10.9% (25) | 12.0% (25) | 0.706 |
| Sister smokes | 0.9% (2) | 0.5% (1) | 0.623 |
| Grandfather smokes | 7.4% (17) | 9.1% (19) | 0.508 |
| Grandmother smokes | 1.3% (3) | 0% (0) | 0.099 |

* - difference between intervention and control groups is statistically significant

The smoking patterns of family members of respondents were similar in intervention and control groups. The only difference that was found to be statistically significant concerned the smoking of mothers. However, the proportion of smoking mothers was rather small to make a practical difference and would only presumably serve to minimize any observed program effect.

The smoking patterns of the respondents' 5 closest friends were measured as the mean 'number of friends who tried cigarettes' and the mean 'number of friends who smoked at least one cigarette a week'. Statistically significant differences were not observed between groups by these variables as well.

Table 3. Smoking patterns of respondents' 5 closest friends

| Variable | Intervention group (n=230) | Control Group (n=208) | p-value for difference between groups |
|---|----------------------------|-----------------------|---------------------------------------|
| P8. How many of your five closest friends have tried cigarettes? | 1.6 | 1.6 | 0.509 |
| P9. How many of your five closest friends usually smoke at least one cigarette a week? | 0.9 | 1.9 | 0.560 |

Thus, the intervention and control groups were similar in all measured demographic characteristics as well as in smoking patterns of their family members and closest friends. Neither the demographic characteristics of study participants, nor the smoking patterns of their family members and closest friends could be confounding factors while analyzing the impact of the project.

3.5 Short-term Impact of the Substance Use Prevention Project

The short-term impact of the project was assessed through the comparison of between and within group differences of study variables before and immediately after the intervention. Those variables were knowledge, attitude, self-reported skills, and practice. For several variables such as knowledge, attitude, knowledge about skills, and self-reported skills, the aggregated scores were constructed that were treated as continuous variables. The impact of the program on these variables was measured by comparing the scores at baseline and post-intervention tests. The mean difference between post-intervention and baseline scores was labeled as an "average short-term improvement". For each measure t-test was used to determine statistical significance.

The impact of the program on smoking and alcohol drinking practice was measured through the comparison of within and between group differences in proportions of self-reported practices. Z-test was used to determine statistical significance. The average aggregated "demonstrated skills" score was constructed only for the students in the intervention group and reflected the level to which the group had gained the skills.

3.5.1. Knowledge

Table 4 summarizes the dynamics of aggregated knowledge scores during the intervention period. There was no statistically significant difference between intervention and control groups in baseline knowledge scores suggesting that the groups were similar by this variable. During the intervention period a statistically significant difference in knowledge score was observed in both intervention and control groups. In intervention group the knowledge score increased by approximately 28% and was practically significant as well. In control group it decreased by 3%, which could not be considered as a practical significance.

Table 4. Within- and between-group comparisons of knowledge scores

| | Intervention | Control | Between- | p value for |
|--|--------------|---------|----------|-------------|
|--|--------------|---------|----------|-------------|

| | Group (n=230) [mean (SD)] | Group (n=208) [mean (SD)] | group difference in knowledge scores | difference between groups |
|---|---------------------------------|---------------------------------|---|---------------------------------|
| Baseline | 37.0 (12.3) | 36.2 (12.0) | 0.8 | 0.725 |
| Post-intervention | 65.0 (20.0) | 33.2 (14.3) | 31.8 | 0.000 |
| The difference of scores over time (average improvement of knowledge within the group) [mean (SD)] | 28.0 (22.1) | -3.0(12.4) | 30.0 | |
| p value for improvement within groups over time | 0.000 | 0.001 | 0.000 | |
| Improvement/standard deviation | 1.3 | 0.2 | | |

The next question was if there were any subgroups in intervention group which benefited more from the program than the other ones. The results of within-subgroup analyses are presented in Table 5. Within group average improvement of aggregated knowledge scores was statistically significant for all subgroups suggesting that the SUP project positively impacted the knowledge of all subgroups.

Table 5. Within group differences in average knowledge scores of different subgroups

| Subgroup | The dynamics of knowledge scores of subgroups over time | | | | |
|---------------------|---|-------------------|---|--------------------------------|--|
| | Baseline | Post-intervention | Average improvement of knowledge scores over time [mean (SD)] | Improvement/standard deviation | p value for difference within sub-groups over time |
| School # 134 (n=55) | 40.2 | 59,1 | 18.9 (13.1) | 1.4 | 0.000 |
| School # 147 (n=63) | 32.7 | 76.7 | 44.0 (21.3) | 2.1 | 0.000 |
| School # 172 (n=53) | 35.6 | 67.9 | 32.2 (19.4) | 1.7 | 0.000 |
| School # 185(n=59) | 39.9 | 55.6 | 15.6 (20.5) | 0.8 | 0.000 |
| 7th grade (n=87) | 32.4 | 65.7 | 33.2 (20.9) | 1.6 | 0.000 |
| 8th grade (n=84) | 40.0 | 65.1 | 25.1 (23.8) | 1.1 | 0.000 |
| 9th grade (n=59) | 39.6 | 64.1 | 24.4 (20.1) | 1.2 | 0.000 |

However, between-subgroup analyses of the improvement in knowledge score revealed some differences. The results of one-way analysis of variance are presented in Tables 6 and 7 below. In schools # 147 and 172 the improvement of knowledge was significantly higher than in other two schools. The difference between schools #147 and 172 was also statistically significant. In 7th grade knowledge gain was the highest compared to other two grades and the difference was statistically significant.

Table 6. Between-school differences in average improvement of knowledge scores: results of ANOVA

| | Mean improvement | #185 | #134 | #172 |
|--------------|------------------|------|------|------|
| #185 (n=59) | 15.6 | | | |
| # 134 (n=55) | 18.9 | | | |
| #172 (n=53) | 32.2 | * | * | |
| #147 (n=63) | 44.0 | * | * | * |

Table 7. Between-grade differences in average improvement of knowledge scores: results of ANOVA

| | Mean improvement | 8th grade | 9th grade |
|------------------|------------------|-----------|-----------|
| 7th grade (n=87) | 33.3 | * | * |
| 8th grade (n=84) | 25.1 | | |
| 9th grade (n=59) | 24.4 | | |

* - differences in average improvement of knowledge score between corresponding subgroups were significant

Knowledge gains for each specific knowledge item are reported in Appendix M.

3.5.2 Attitude

The attitudinal questions of the questionnaire were divided into five categories:

The attitude of respondents towards general health issues and tobacco/alcohol use-related issues (questions A7-A19 & A25- A33).

The attitude of respondents towards self-esteem-related issues (questions A20-A24)

The belief of respondents about the attitude of teenagers towards tobacco/alcohol users (questions A1-A6).

The belief of respondents about the attitude of their closest friends towards their tobacco/alcohol use (question A34-A37).

The belief of respondents about the prevalence of smoking among students of their age (questions P6-P7).

As a measure of attitude, the evaluation's primary dependent variable was the aggregated attitude score that reflected the proportion of "desired" answers to 33 attitude questions (A1-A33). As a "desired" answer was considered one which was a healthier attitude, or the highest self-esteem attitude. However, as far as there was a large diversity in 33 attitude questions, the separate aggregated sub-scores were constructed for 1-3 section as well. For sections 4 and 5 the attitude was measured through between- and within-group comparison of differences in means of corresponding variables.

Table 8 summarizes the dynamics of aggregated attitude scores of intervention and control groups during the intervention period. There was no statistically significant difference between aggregated attitude scores of both intervention and control groups at both baseline and post-intervention tests. However, within group analysis demonstrated that while in intervention group the attitude score increased approximately by 4%, in control group it decreased by 2%. The fact, that the intervention group positively changed its attitude was demonstrated by comparing the within-group improvement of attitude scores of two groups. The difference in improvement of scores had marginal significance (p=0.081), suggesting that the intervention group nevertheless improved its attitude.

Table 8. Within- and between-group comparisons of attitude scores (33 questions)

| | Intervention Group (n=230) [mean(SD)] | Control Group (n=208) [mean (SD)] | The difference of attitude scores between groups at the same point of time | p value for differences between groups |
|--|--|--|---|---|
| Baseline | 78.3 (7.8) | 76.6 (7.3) | 1.7 | 0.412 |
| Post-intervention | 82.6 (9.5) | 75.0 (9.6) | 7.7 | 0.950 |
| The difference of scores over time (average improvement of attitude within the group) [mean (SD)] | 4.3 (9.3) | -1.7 (8.1) | 6.0 | |
| P-value for improvement within groups over time | 0.000* | 0.003* | 0.081** | |
| Improvement/standard deviation | 0.5 | 0.2 | | |

* - the difference is statistically significant; ** - the difference is of border significance

The next evaluation question was to determine if any subgroups in intervention group benefited more from the program than another. The results of subgroup analyses are presented in Table 9. The improvement of attitude scores over time in all subgroups, but the school #172 was statistically significant.

Table 9. Within group differences in average attitude scores of different subgroups

| Subgroup | The dynamics of attitude scores of subgroups over time | | | | |
|----------------------|---|--------------------------|--|---------------------------------------|--|
| | Baseline | Post-intervention | Average improvement of attitude scores over time [mean(SD)] | Improvement/standard deviation | p value for difference within subgroups over time |
| School # 134 (n= 55) | 77.4 | 83.6 | 6.2 (8.7) | 0.7 | 0.000 |
| School # 147 (n=63) | 78.6 | 82.8 | 4.1 (9.2) | 0.4 | 0.001 |
| School # 172 (n=53) | 80.3 | 81.2 | 0.9 (7.7) | 0.1 | 0.388 |
| School # 185(n=59) | 76.9 | 82.7 | 5.8 (10.3) | 0.6 | 0.000 |
| 7th grade (n=87) | 78.3 | 83.6 | 5.3 (7.8) | 0.7 | 0.000 |
| 8th grade (n=84) | 78.3 | 81.5 | 3.2 (10.7) | 0.3 | 0.008 |
| 9th grade (n=59) | 78.3 | 82.8 | 4.5 (9.0) | 0.5 | 0.000 |

The differences between-subgroups were assessed through one-way analysis of variance of the improvement of attitude score. The results are presented in tables 10 and 11. The improvement of attitude score in school # 172 was significantly lower than that of schools # 134 and 185. Thus, the schools #134 and 185 benefited more from the attitude component of the program, while schools # 147 and 172 - from the knowledge component. The statistically significant differences in improvement of attitude scores between other subgroups were not observed. However, the practical significance of the improvement of attitude score in 7th grade could be classified as "medium", while in 8th and 9th grades it was rather "low".

Table 10. Between-school differences in average improvement of attitude scores (33 questions): results of ANOVA

| Mean improvement | #172 | #147 | #134 |
|-------------------------|-------------|-------------|-------------|
| | | | |

| | | | | |
|--------------|-----|---|--|--|
| #172 (n=53) | 0.9 | | | |
| #147 (n=63) | 4.1 | | | |
| #185 (n=59) | 5.8 | * | | |
| # 134 (n=55) | 6.2 | * | | |

Table 11. Between-grade differences in average improvement of attitude scores (33 questions): results of ANOVA

| | Mean improvement | 8th grade | 9th grade |
|------------------|------------------|-----------|-----------|
| 7th grade (n=87) | 5.3 | | |
| 8th grade (n=84) | 3.1 | | |
| 9th grade (n=59) | 4.5 | | |

* - differences in improvement of attitude score between corresponding subgroups were significant

3.5.2.1 Topic-Specific Analysis of Attitude-Related Items

The results of comparison of sub-scores for 3 sections of attitude are presented in Table 12. Statistically significant improvement over time was observed in intervention group for sub-scores for all variables. In control group the sub-score for variable 1 decreased significantly. The improvement of sub-score for variable 3 of intervention group was significantly higher than that of control group. The difference in improvement in sub-score for variable 1 between intervention and control groups was of marginal significance.

Table 12. Within- and between-group comparisons of attitude sub-scores

| Variable | Intervention group (n=230) | | | Control group (n=208) | | | p value for difference between groups |
|--|----------------------------|------|---|-----------------------|------|---|---------------------------------------|
| | Base | Post | Improvement [mean (SD), mean/SD, p-value] | Base | Post | Improvement [mean (SD), mean/SD, p-value] | |
| 1. Self-attitude to tobacco/alcohol use issues (A7-A19 & A25-A33) | 80.5 | 84.5 | 4.0* (10.3) 0.4 p=0.000 | 78.2 | 75.4 | -2.7* (9.2) 0.3 p=0.000 | p=0.104 |
| 2. Attitude to self efficacy issues (A20-A24) | 75.1 | 81.9 | 6.8*(13.5) 0.5 p=0.000 | 74.8 | 75.6 | 0.8 (14.4) | p=0.494 |
| 3. Attitude of other teenagers towards tobacco/alcohol use issue (A1-A6) | 72.9 | 76.2 | 3.4*(19.9) 0.2 p=0.011 | 72.3 | 72.5 | 0.3 (16.3) | p=0.001** |

* - statistically significant improvement of scores within groups over time

** - statistically significant difference between groups in improvement of scores

The impact of the project on the respondents' belief on 'how many of their 5 closest friends would approve if they used tobacco/alcohol' was measured as the difference in the mean of the numbers reported by respondents. The impact of the project on the respondents' belief on 'what is the percentage of smoking boys/girls of their age in their school' was measured by the difference in the mean of percentages reported.

The results of analysis of 4 belief-related variables are presented in Table 13. Significant differences were observed between groups concerning the aforementioned variables. Respondents of control group compared to respondents of intervention group believed that more of their

friends would approve if they drank alcohol at post-intervention test. In the intervention group the prevalence of smoking among girls was believed to be higher at post-test than at baseline. In control group the prevalence of smoking among boys was believed to be higher at post-test than at baseline. Overall, the prevalence of smoking among teens was believed by respondents to be very high (38 to 50% among boys and 3 to 10% among girls).

Table 13. Belief of respondents

| Variable | Intervention group | | | Control group | | |
|---|--------------------|-------------------|-----------------|---------------|------------------|-----------------|
| | Base | Post | Difference | Base | Post | Difference |
| A34- A36. How many of your 5 closest friends would approve if you smoked (mean) | 0.18 | 0.21 | 0.03 | 0.25 | 0.23 | 0.02 |
| A35- A37. How many of your 5 closest friends would approve if you drank alcohol (mean) | 0.21 | 0.27** p=0.014 | 0.05 | 0.4 | 0.5** p=0.014 | 0.1 |
| P6. Out of every 100 boys of your age in your school, how many do you think smoke cigarettes at least once a week? (mean) | 47.8 | 50.0 | 2.2 | 37.8 | 47.5 | 9.7* p=0.002 |
| P7. Out of every 100 girl of your age in your school, how many do you think smoke cigarettes at least once a week?(mean) | 3.2 | 10.0 | 6.8* p=0.001 | 3.2 | 7.7 | 4.6 p=0.124 |

* - the difference of means within groups over time is significant

** - the post mean for intervention group is significantly lower, than that for control group

3.5.3 Skills

For the analysis of skills three different approaches were used. The first approach is based on the reports of respondents themselves and measures perceived self-efficacy. The questionnaire included 4 items asking the respondents to self-assess their skills. The aggregated skill score was constructed that was analyzed as other scores.

Table 14 summarizes the dynamics of self-reported skill scores over time. Unlike the control group, the skill score in the intervention group increased significantly. These two groups were not significantly different from each other at the baseline survey. The statistically significant difference between them at the post-intervention survey shows the impact of the program. The between-group difference of changes in average skill scores over time was also statistically significant.

Table 14. Within- and between-group comparisons of self-reported skill scores

| | Intervention Group | Control Group | The difference of scores between subgroups at | p value for |
|--|--------------------|---------------|---|-------------|
|--|--------------------|---------------|---|-------------|

| | (n=230) | (n=208) | the same point of time | differences between groups |
|--|-------------|--------------|------------------------|----------------------------|
| Baseline | 78.4 (12.4) | 76.6 (13.5) | 1.8 | 0.151 |
| Post-intervention | 81.3 (13.5) | 75.3 (15.3) | 6.0 | 0.000* |
| Difference in self-reported skill score over time [Mean (SD)] | 2.9 (14.6) | - 1.3 (15.7) | 4.2 | |
| p value for within-group differences over time | 0.000* | 0.260 | 0.004* | |
| Difference/standard deviation | 0.2 | 0.1 | | |

* - The difference is statistically significant

The second approach used to measure skills of respondents was to assess their knowledge about skills. 6 questions (K11-K16) in the knowledge section of questionnaire asked questions regarding skills. The aggregated "knowledge about skills score" was constructed and analyzed as other aggregated scores. The dynamics of this score is presented in Table 15. The patterns of change of "knowledge about skills" scores over time were similar to the patterns of change of overall knowledge scores.

Table 15. Within- and between-group comparisons of "knowledge about skills" scores

| | Intervention Group (n=230) | Control Group (n=208) | Between-group difference | p value for differences between groups |
|---|----------------------------|-----------------------|--------------------------|--|
| Baseline | 39.6 | 37.7 | 2.0 | 0.588 |
| Post-intervention | 56.4 | 34.6 | 21.8 | 0.007* |
| Improvement of scores over time [mean (SD)] | 16.7 (27.7) | -3.0 (21.3) | 19.8 | |
| Improvement/standard deviation | 0.6 | 0.1 | | |
| p value for within-group differences over time | 0.000* | 0.041* | 0.02* | |

* - Statistically significant differences

However, subgroup analyses demonstrated (Table 16) that in one of the intervention schools the improvement in "knowledge about skills" score over time was not significant. The grades 7th and 8th benefited more from the project in terms of "knowledge about skills" than the 9th grade.

Table 16. Within group differences in "knowledge about skills" scores of different subgroups

| Subgroup | The dynamics of "knowledge about skills" scores of subgroups over time | | | | |
|----------|--|-------------------|---------------------------|----------------|---------|
| | Baseline | Post-intervention | Improvement of "knowledge | Improvement/SD | P value |

| | | | about skills" score over time [mean (SD)] | | |
|----------------------|------|------|---|-----|-------|
| School # 134 (n= 55) | 36.4 | 48.2 | 11.8 (23.1) | 0.5 | 0.000 |
| School # 147 (n=63) | 38.9 | 72.2 | 33.3 (31.0) | 1.1 | 0.000 |
| School # 172 (n=53) | 40.6 | 56.6 | 16.0 (21.7) | 0.8 | 0.000 |
| School # 185(n=59) | 42.7 | 47.0 | 4.3 (24.7) | 0.2 | 0.192 |
| 7th grade (n=87) | 35.1 | 55.0 | 19.9 (28.1) | 0.7 | 0.000 |
| 8th grade (n=84) | 41.3 | 60.3 | 19.0 (27.8) | 0.7 | 0.000 |
| 9th grade (n=59) | 44.1 | 52.8 | 8.7 (26.0) | 0.3 | 0.012 |

The third approach in measuring skills of respondents was to calculate an aggregated skill score for each respondent based on teacher's report on performance of each student during the four skill-teaching lessons. The results are presented in Table 17. Statistically significant differences were observed in average scores concerning 4 skills. While the skills for standing up to ads and creating anti-tobacco/alcohol ads were demonstrated by most of the students rather excellent, many students failed to demonstrate good refusal skills. The demonstration of decision-making and communication skills was graded as average for most of the students.

Table 17. Skills demonstrated by the students during skill-teaching lessons

| Subgroups | Specific skill score | | | | |
|----------------------|----------------------|------------------------------|--------------------|-----------------------|------------------------|
| | Decision making | Standing up to peer pressure | Standing up to ads | Communicating concern | Aggregated skill score |
| School # 134 (n= 55) | 61.6 | 40.1 | 81.5 | 61.1 | 61.1 |
| School # 147 (n=63) | 62.4 | 41.2 | 83.5 | 55.2 | 60.6 |
| School # 172 (n=53) | 60.8 | 38.6 | 80.8 | 56.2 | 59.1 |
| School # 185(n=59) | 60.9 | 36.2 | 83.4 | 59.4 | 60.0 |
| 7th grade (n=87) | 60.3 | 39.0 | 82.3 | 55.9 | 59.4 |
| 8th grade (n=84) | 62.5 | 39.8 | 82.1 | 59.3 | 60.9 |
| 9th grade (n=59) | 61.7 | 38.0 | 82.7 | 59.0 | 60.3 |
| Average | 61.4 | 39.0 | 82.3 | 57.9 | 60.2 |

Statistically significant differences between subgroups concerning either the aggregated skill score, or specific skill scores, were not observed.

3.5.4 Practice

The key construct of adolescents’ practice was measured as ‘the proportion of adolescents who experimented with tobacco (and in a separate measure, alcohol) during the project.’ There were three questions in the questionnaire concerning tobacco use by adolescents and four questions concerning alcohol use. The results of analysis of 7 variables are presented in Table 18. There were no statistically significant differences between intervention and control groups at any of practice-related variables. The only marginally significant difference was that the number of those who reported that had never tried alcohol at baseline and had tried at post-test was somewhat more in intervention group than that in control group.

Table 18. Self-reported practices of respondents

| | Intervention Group (n=230) | Control Group (n=208) | p-value |
|--|------------------------------------|------------------------------------|----------------|
| The number of those who reported that had never tried tobacco at baseline and had tried at post-test (Q. P1) | 8% (20) | 12% (24) | 0.324 |
| The number of those who reported that had never tried tobacco at baseline and had tried at post-test (Q. P3) | 12% (27) | 10% (21) | 0.583 |
| The number of those who reported that had never tried alcohol at baseline and had tried at post-test (Q. P2) | 13% (31) | 9% (19) | 0.154 |
| The number of those who reported that had never tried alcohol at baseline and had tried at post-test (Q. P4) | 17% (39) | 11% (23) | 0.077** |
| The number of those who reported that had never tried alcohol at baseline and had tried at post-test (Q. P5) | 12% (28) | 11% (22) | 0.600 |
| P1-1. When did you try tobacco first time? 1.Never tried 2.Tried before March 1, 2000 3.Tried after March 1, 2000 | 71% (163) 27 % (63) 1.3% (3) | 73% (151) 26% (53) 1.4% (30) | 0.693 |
| P2-1. When did you try alcohol first time? 1.Never tried 2.Tried before March 1, 2000 3.Tried after March 1, 2000 | 20% (47) 66% (151) 13% (29) | 29% (60) 55% (115) 16% (33) | 0.334 |

** - The difference is marginally significant

What was found to be statistically significant was the trend in practices over time (Table 19). Although positive, the trend was similar in intervention and control groups, demonstrating that the program did not effect any impact on behaviors of participants during the evaluation window.

Table 19. The trend in tobacco/alcohol using patterns over time

| | P1. Have you ever tried tobacco? | P3. How often do you use tobacco? | P2. Have you ever tried alcohol? | P4. How often do you use alcohol? |
|---|---|--|---|--|
| Intervention group (n=230), Z test | ↑ p= 0.007 | ↑ p=0.542* | ↑ p= 0.133 | ↑ p=0.028 |
| Control, Z test | ↑ p= 0.002 | ↑ p=0.045 | ↑ p= 0.0005 | ↑ p=0.855* |

↑- trend is positive,

*-trend is not statistically significant

However, what was particularly important to consider when analyzing the practice-related variables was the inconsistency of respondents' answers to practice-related questions. The results of this analysis are presented in Appendix N. The respondents were inconsistent both when answering several tobacco/alcohol-related questions at one point in time as well as when answering the same question at different points in time. Let us demonstrate this using as an example "experimentation with tobacco" in the intervention group. As it is demonstrated in Table 18, 8% of those respondents who reported having not experimented with tobacco at baseline, reported that they tried it at post-test. However, when asked "When did you try tobacco first time?" only 1.3% answered that they first did it after March 1, 2000, i.e. after the baseline survey. Furthermore, Appendix N demonstrates that 6% of those respondents who reported that they never tried tobacco at posttest, were those who reported having tried it at baseline. The similar patterns of inconsistency were found in answers to other practice-related questions, demonstrating that the reliability of the survey questionnaire to measure the corresponding variables was low. Thus, the instrument used in SUP evaluation was not able to demonstrate whether the project had any impact in terms of behaviors.

It was of interest to compare the self-reported practices of participants of quantitative survey to their belief on the prevalence of tobacco use among teens and among their friends. The results of comparison are presented in Table 20.

Table 20. Comparison of self-reported practices of participants to their belief on the prevalence of tobacco use among teens in general and among their friends

| Subgroup | The self-reported tobacco use of the whole sample (n=438) at post-intervention test | | | The belief of the whole sample (n=438) at post-test about prevalence of tobacco use | | |
|------------------|--|--------------|------------|--|--|--------------------------|
| | Never used | Experimented | Weekly use | Teens believed to use | Friends* believed to have experimented | Friends* believed to use |
| Boys | 54% (102) | 39% (73) | 7% (4) | 47% | 38% | 19% |
| 7th grade | 71% (56) | 27% (21) | 3% (2) | 34% | 26% | 8% |
| 8th grade | 39% (28) | 49% (35) | 11% (8) | 50% | 43% | 18% |
| 9th grade | 46% (18) | 43% (17) | 10% (4) | 58% | 50% | 31% |
| Girls | 88% (220) | 11% (28) | 0.4% (1) | 9% | 26% | 18% |
| 7th grade | 94% (84) | 6% (5) | 0 | 6% | 12% | 7% |
| 8th grade | 91% (85) | 9% (8) | 0 | 10% | 27% | 20% |
| 9th grade | 76% (51) | 22% (15) | 2% (1) | 10% | 42% | 27% |

* - in these two columns the gender is considered for respondents but not for their friends

The prevalence of weekly use of tobacco by teenagers in general was believed to be much higher than the self-reported weekly tobacco use. Weekly use of tobacco by participants' closest friends fell between these two values. The evaluators suppose, that the belief about tobacco use by other teens could be exaggerated, while the self-use might be underreported, thus making the belief on weekly use by friends to be the most realistic estimate of prevalence.

3.6 Participants' Evaluation of the 'Substance Use Prevention' School Health Project

The participants' evaluation of the SUP project was felt to be of crucial importance in the presentation of a balanced evaluation set of evaluation results. This section of the report reflects the answers that participants of the project provided to questions asked during the survey, as well as the results of focus group discussions with students and instructors.

3.6.1 Survey Results

The results of analysis of 12 variables concerning the corresponding questions asked during the survey are presented in Appendix O.

The program was both understandable and interesting for most of the participants (93 and 87% respectively). However, for 2 and 4% respectively it was not at all understandable and not at all interesting. 79% of participants thought that the program would positively impact smoking prevention, while only 8% thought this to be unlikely.

The majority (70%) thought, that if the program were taught as a part of school academic program and were graded, it would have an even greater positive impact, while 11 % thought that to be unlikely.

The program was perceived as one worth to teach in school at different grades by the majority of respondents. 8th and 7th grades were perceived as the most appropriate ages for this program. However, 13% of respondents would not recommend to teach this program in school in any grade.

The content of the program was liked by 26% of respondents; 46 % liked the methods; 20% liked everything; 6% reported that they did not like anything in the program.

The coverage of the students by the project was high - 87% of students reported that they attended 7 to all sessions of the program. The coverage was correlated with the reports of the teachers on attendance, although the latter was higher.

Respondents' opinions about the booklet were as follows: 93%, 88% and 93% of respondents reported the booklet to be understandable, interesting and useful respectively. Only 7% reported to have not read it.

3.6.2 Focus Group Results

Post-intervention focus group allowed the evaluation team to obtain a wider range of participants' opinions about the strengths and limitations of the SUP module, instructor manuals and student booklets. Additional questions aimed to interpret some of the findings of the quantitative evaluation. The information on students' focus groups participants is presented in Appendix P. The participants of focus groups with instructors were the four instructors who taught the SUP

curriculum. The opinions of instructors and students will not be presented separately, because they were similar.

Participants of the focus groups both students and instructors stated that the SUP module was very interesting, useful and informative. They confirmed the need for such a program to be introduced in Armenian schools for in contrast to the findings of quantitative survey on low prevalence of tobacco use among teenagers, the participants of focus groups told that it was widespread. They found that the curriculum contained clear messages on abstaining from the use of substances and that it would be able to help young people to make healthy decisions concerning substance use. During the focus groups as well as during the whole project implementation both instructors and students related positive results of the program. In two intervention schools several teachers and a director were influenced by the project to cease smoking. Students reported that their parents quit smoking, too.

The content of the curriculum was found to be very informative. The students and even the instructors stated that even though they knew about harmful effect of substances, they did not imagine that substances were so dangerous. It referred especially to substances, that were legal and widespread, e.g. tobacco and alcohol. Participants of focus groups felt that knowing this information so deeply could help young people to abstain from substance use. Some of the participants even declared that the information alone, if understood clearly, could make a difference and that there was no need for other parts of the program such as efforts to change attitudes, to increase the self-esteem and to practice in skills. Overall, the information component was perceived as more important than other parts of the curriculum.

Instructors and students had mixed opinions about the interactive teaching methods utilized by SUP project. Whereas the participants were rather excited by activities like discovering mysterious killers (tobacco, alcohol); interviewing witnesses to the crime; taking a stand for no substance use by writing letters to school administrators and governmental officials; writing group essays; and discussions within and between the groups, the teachers and students felt activities like role plays and "attitude changing" to be not appropriate for Armenian school traditions.

Overall, the instructors were not confident that they used new methods correctly. They felt the lack of training and experience. Not all activities went smoothly. In some activities the participation was very low, other activities were not treated seriously. Some participants of focus group discussions explained failures in the class by the fact the methods were new and non-conventional. Other participants thought that these methods required time to be perceived as something usual and then the students as well as teachers would enjoy them.

The focus group participants' opinions on the other features of the SUP project were also diverse. Some of them thought that if the module were obligatory and were graded as a usual academic module, it could enhance discipline during the lessons, attendance of students, and preparation of home assignments. Others felt that in that case the module would not be so interesting and this would negatively influence its impact. In any case, all of them agreed that as far as the schedule of schools was usually overcrowded, it was extremely problematic to place the SUP curriculum into it in the middle of academic year. This fact negatively affected the attendance of classes by the students. Some students complained of having extra-classes especially during the cold weather. If the curriculum were included into the schedule from the beginning of school-year, it would be perceived more positively.

There was no consensus concerning the group work and the incentive-for-group approach as well. In some cases group- and incentive-approaches worked well and enhanced the activity and participation, while in other cases they failed. Class-time shortage was felt to be one of the causes why incentive-approach failed: following the rules of the game to identify the best group was extremely time-consuming. Overall, the class-time shortage was felt to be a limitation of the SUP project. The instructors complained that they did not manage to perform all activities described in the manual. The students complained that they did not have enough time to express their feelings and opinions. Opinions were expressed that booster lessons during the subsequent years could have a dramatic effect and a refresher course could help remind students of their earlier decision and reinforce their current nonuse behavior.

Concerning the appropriate grade to teach the SUP module, the opinions again were similar. There were two approaches for defining the age appropriate to teach the module. One assertion was that a small number of teens start to smoke as early as in 4th-5th grade, suggesting that smoking prevention classes should start then. On the other hand, the SUP model as it was developed, was perceived to be too complicated for lower grades. Besides, the age when larger proportions of teens start to experiment with tobacco was perceived to be 13. Thus, the participants of focus groups agreed on the following conclusion. Some amount of information and skills to prevent substance use has to be taught in 4th, 5th and 6th grades, but the SUP module with the majority of its activities should be taught in 7th-8th grades. Some activities, like preparing a campaign to reduce tobacco use, were found to be appropriate for 15-17 year olds.

As a final question, the participants of focus groups were asked to explain several findings of the quantitative survey. First, the low rate of smoking behavior, reported by respondents of quantitative survey was deemed by focus group participants to underreport practice. The focus group participants' estimate on the percentage of boys smoking at least one cigarette per week was 20 to 40%. Estimates on prevalence of smoking among girls were felt to be as low as 0 to 5%. The fact that the respondents of quantitative survey underreported their smoking practice was explained by the sensitivity of issue.

Another problem, revealed by quantitative survey, was inconsistency of answers to some questions. Regarding practice-related questions, the inconsistency of answers was explained again by the sensitivity of issue resulting in underreporting. Underreporting particularly referred to the baseline survey. The participants of focus groups felt, that the baseline survey was more sensitive, as being the first of this type and more students were inclined to underreport their tobacco/alcohol use. The results of post-intervention survey might be considered as more accurate at least for intervention schools, where the students had more contact with evaluators and program developers and trusted them more in terms of confidentiality of survey results. However, even the post-intervention data was not felt by the focus group participants to reflect the real situation. The reported difference in practice at baseline and post-intervention rather reflected the degree of openness of students, than the real difference in experimentation prevalence. The participants of focus groups explained the inconsistency of answers to other questions by the low level of respondents' reading skills. They thought that the questionnaire was understandable for an average student of that age, but not for all of them. Nevertheless, they did not suggest to make the questionnaire more easy for understanding, because as they said, "...you can never make it understandable for everybody...".

3.7 Long-term Impact of the Substance Use Prevention Project

At the final stage of data collection, the students from intervention schools were asked to fill in all the topics of the questionnaire other than the demographic part to avoid repetition. Students from control schools were asked to fill in only a small part of the survey concerning their own substance use practices (Q. P1- P5).

The long-term impact of the project was assessed through the comparison of within group differences of study variables (knowledge, attitude, self-reported skills, and practice) before and three months after the intervention. The maintenance of the project impact was measured by comparing the scores immediately after and three months after the intervention, namely: at post-intervention and post-post-intervention tests. Again, aggregated scores were constructed for knowledge, attitude, knowledge about skills, and self-reported skills that were treated as continuous variables.

The mean difference between post-post intervention and baseline scores was labeled as an "average long-term improvement". Meanwhile, the mean difference between the post-intervention and post-post-intervention scores was labeled as "maintenance". For each measure t-test was used to determine statistical significance.

Between group differences were measured only for practice variables to detect any significant differences in substance use practices between intervention and control groups three months after the intervention. Again, the impact of the program on smoking and alcohol drinking practices was measured through the comparison of within and between group differences in proportions of self-reported practices. Z-test was used to determine statistical significance.

3.7.1 Knowledge

Table 21 summarizes the dynamics of aggregated knowledge scores in the intervention group during the period between baseline and post-post-intervention surveys. As mentioned previously, a statistically and practically significant improvement in the knowledge score (an increase by approximately 28%) was observed in the intervention group immediately after the intervention. Although three months after the intervention the aggregated knowledge score decreased, the long-term improvement (by 23%) of the aggregated knowledge score remained both statistically and practically significant.

Table 21. Within-group comparisons of aggregated knowledge scores

| | Intervention Group (n=153) [mean (SD)] | p value for differences | Practical significance (difference/SD) |
|--|---|--------------------------------|---|
| Baseline | 36.7 (12.7) | | |
| Post-intervention | 65.3 (19.3) | | |
| Post-post-intervention | 59.2 (18.2) | | |
| "The maintenance" (Difference between knowledge scores at post-post and post tests) | - 6.1 (21.9) | 0.001 | 0.28 |
| "The average long-term improvement" (Difference between knowledge scores at post-post and baseline tests) | 23.0 (20.5) | 0.000 | 1.12 |

The analysis also answered if there were any subgroups in the intervention group whose long-term knowledge gain from the program was more than others'. The results of within-subgroup analyses are presented in Table 22. Within group average long-term improvement of aggregated knowledge scores was statistically significant for all subgroups suggesting that the SUP project had long-term positive impact on the knowledge of all subgroups.

Table 22. Within group differences in average knowledge scores of different subgroups

| Subgroup | The dynamics of knowledge scores of subgroups over time | | | | | | |
|---------------------|---|--------------------------|-------------------------------|---------------------------|-------------------------------|---|---|
| | Base-line [mean (SD)] | Post-interv. [mean (SD)] | Post-post-interv. [mean (SD)] | “Maintenance” [mean (SD)] | P-value for the “maintenance” | “Average long-term improv.” [mean(SD)] & improv./SD | P-value for the “average long-term improv.” |
| School # 134 (n=40) | 41.0 (11.3) | 62.0 (9.0) | 62.0 (10.3) | 0.0 (9.8) | 1.000 | 21.0 (12.8) 1.64 | 0.000* |
| School # 147 (n=41) | 31.1 (12.4) | 80.8 (13.0) | 56.9 (21.7) | - 24.2 (21.6) | 0.000* | 26.9 (24.6) 1.09 | 0.000* |
| School # 172 (n=22) | 34.1 (14.2) | 64.0 (24.2) | 60.5 (24.2) | - 4.2 (35.7) | 0.616 | 24.5 (24.3) 1.01 | 0.000* |
| School # 185 (n=50) | 39.1 (11.5) | 55.8 (20.1) | 59.2 (18.2) | 1.7 (13.3) | 0.418 | 20.0 (21.3) 0.94 | 0.000* |
| 7th grade (n=64) | 31.9 (12.7) | 65.9 (18.8) | 58.1 (19.2) | - 7.8 (24.1) | 0.015* | 26.2 (22.1) 1.19 | 0.000* |
| 8th grade (n=41) | 40.9 (11.5) | 65.5 (19.7) | 57.0 (20.3) | - 10.6 (23.8) | 0.009* | 15.9 (21.4) 0.74 | 0.000* |
| 9th grade (n=48) | 39.5 (11.6) | 64.3 (20.0) | 64.5 (13.2) | 0.9 (14.0) | 0.675 | 25.3 (15.2) 1.66 | 0.000* |

*- Change in the knowledge score was statistically significant

However, the subgroup analyses revealed considerable differences between groups. Interestingly, the students of school # 147 that gained remarkably more during the intervention than all other subgroups lost also considerably more than the others did. Out of all 4 schools only in this one decrease in the aggregated knowledge score was statistically significant. As a result, long-term knowledge gain in this school was similar to the long-term gain in the other schools. One-way analysis of variance showed no statistically significant differences between schools in terms of long-term knowledge gain. Unlike this, school # 147 was significantly different from the others in terms of knowledge maintenance, as it is shown in Tables 23 below.

Table 23. Between-school differences in knowledge maintenance: results of ANOVA

| | Mean difference in knowledge scores between mid-term and final tests | #134 | #147 | #172 | #185 |
|-------------|--|------|------|------|------|
| #134 (n=40) | 0.0 | | * | | |
| #147 (n=41) | - 24.2 | * | | * | * |
| #172 (n=22) | - 4.2 | | * | | |
| #185 (n=50) | 1.7 | | * | | |

* - Corresponding schools were significantly different from each other in terms of knowledge maintenance

Comparison of long-term knowledge gain among different grades showed no statistically significant differences. Although at the mid-term test knowledge gain of 7-th grade students was

the highest compared to other two grades and the difference was statistically significant, at the final survey this difference disappeared.

In terms of knowledge maintenance 9-th grade students were in a better state than 7-th and 8-th grade students were. While 9-th grade students kept the level of their knowledge score practically unchanged, both 7-th and 8-th grade students lost some proportion of their aggregated knowledge score. As it is shown in Table # 24 below, one-way analysis of variance showed marginally significant difference between 8-th and 9-th grade students in terms of knowledge maintenance.

Table 24. Between-school differences in knowledge maintenance: results of ANOVA

| | Mean difference in knowledge scores between mid-term and final tests | 7th grade | 8th grade | 9th grade |
|------------------|--|-----------|-----------|-----------|
| 7th grade (n=64) | - 7.8 | | | |
| 8th grade (n=41) | - 10.6 | | | ** |
| 9th grade (n=48) | 0.9 | | ** | |

** - Corresponding grades were marginally different from each other in terms of knowledge maintenance (p=0.059)

3.7.2 Attitude

As done during the analysis of mid-term data, an aggregated attitude score was calculated as a measure of the proportion of “desired” answers to 33 attitude questions (A1-A3). All five attitude categories (attitude towards general tobacco/alcohol use-related issues; attitude towards self-esteem-related issues; belief about the attitude of peers towards tobacco/alcohol users; belief about the attitude of respondents’ friends towards respondents’ tobacco/alcohol use; and belief about the prevalence of smoking among peers) were also considered.

Table 25 summarizes the dynamics of aggregated attitude scores of the intervention group during the period between baseline and final surveys. Interestingly, attitude scores showed increasing trend not only during the intervention, but also during the post-intervention period, unlike the knowledge scores. As a result, both improvement of attitude during the post-intervention period and the average long-term improvement were statistically significant. What is also remarkable is that the increasing trend of the attitude score was quite stable during the whole period of the evaluation. Eventually, the average long-term improvement of the attitude score reached considerable level of practical significance also.

Table 25. Within-group comparisons of aggregated attitude scores (33 questions)

| | Intervention Group, n=153 [mean (SD)] | p value for differences | Practical significance (difference/SD) |
|--|---------------------------------------|-------------------------|--|
| Baseline | 78.3 (7.4) | | |
| Post-intervention | 82.5 (8.7) | | |
| Post-post-intervention | 85.3 (9.6) | | |
| “The maintenance” (Difference between attitude scores at post-post and post tests) | 3.2 (8.3) | 0.014* | 0.4 |
| “The average long-term improvement” (Difference between final and baseline) | 6.9 (9.3) | 0.000* | 0.74 |

Comparison of the attitude scores’ dynamics in the different subgroups showed that only 9-th grade students had statistically significant improvement of attitude scores during the post-intervention period. However, some improvement in these scores during the post-intervention

period was observed in almost all groups, which eventually resulted in statistically significant long-term improvement of attitude scores in these subgroups (besides the subgroup of #172 school where the initial increase of the attitude score was very little and the sample size at the final survey was rather small). The only exceptions were 7th grade students and students of #147 school, where attitude scores decreased during the post-intervention period. For 7th grade students this might be explained by their younger age that makes them more vulnerable to recent impressions and peer pressure. For school #147 the observed trend is more difficult to explain. However, this negative trend of attitude scores during the post-intervention period is consistent with the negative dynamic of the knowledge scores that was observed in this school. Unlike the long-term knowledge improvement, the long-term attitude improvement in this school was not statistically significant.

Table 26. Within group differences in average attitude scores of different subgroups (33 questions)

| Subgroup | The dynamics of attitude scores of subgroups over time | | | | | | |
|------------------------|--|--------------------------------|-------------------------------------|---------------------------------|----------------------------------|---|--|
| | Base-line [mean (SD)] | Post-interv. [mean (SD)] | Post-post-interv. [mean (SD)] | “Maintenance” [mean (SD)] | P-value for the “maintenance” | “Average long-term improv.” [mean (SD)] & improv./SD | P-value for the “average long-term improv.” |
| School # 134 (n=40) | 79.2 (6.8) | 84.6 (9.2) | 84.8 (9.8) | 0.2 (6.3) | 0.868 | 5.5 (9.1) [0.6] | 0.000* |
| School # 147 (n=41) | 78.7 (8.2) | 84.1 (8.2) | 81.6 (11.3) | - 2.6 (11.0) | 0.145 | 2.6 (11.2) [0.23] | 0.146 |
| School # 172 (n=22) | 79.2 (7.1) | 79.8 (9.2) | 82.8 (10.9) | 3.0 (15.7) | 0.379 | 3.6 (14.3) [0.25] | 0.253 |
| School # 185 (n=50) | 77.1 (8.1) | 82.5 (10.9) | 84.3 (12.3) | 1.7 (9.2) | 0.224 | 6.8 (10.9) [0.62] | 0.000* |
| 7th grade (n=64) | 78.9 (7.9) | 84.8 (8.4) | 83.0 (11.7) | - 1.9 (11.0) | 0.169 | 3.8 (12.2) [0.31] | 0.016* |
| 8th grade (n=41) | 77.6 (7.6) | 81.2 (11.7) | 82.0 (11.9) | 0.6 (10.9) | 0.748 | 4.3 (11.3) [0.38] | 0.020* |
| 9th grade (n=48) | 78.3 (7.4) | 82.5 (8.7) | 85.3 (9.6) | 3.14 (8.3) | 0.014* | 6.6 (9.3) [0.71] | 0.000* |

*- Change in the attitude score was statistically significant

The differences between subgroups were assessed through one-way analysis of variance of the changes of attitude scores. According to this test, there were no statistically significant differences between schools and grades in terms of long-term attitude improvement. Nor were schools were not significantly different from each other in terms of attitude score maintenance. With respect to grades, 9th grade students were significantly different from 7th grade students in terms of changes in the attitude score during the post-intervention period. They gained positive attitude while 7th grade students lost a proportion of positive attitude what they had gained during the intervention. The results of ANOVA are presented in table 27 below.

Table 27. Between-school differences in attitude maintenance: results of ANOVA

| | Mean difference in knowledge scores between mid-term and final tests | 7th grade | 8th grade | 9th grade |
|------------------|--|-----------|-----------|-----------|
| 7th grade (n=64) | - 1.9 | | | * |
| 8th grade (n=41) | 0.6 | | | |
| 9th grade (n=48) | 3.14 | * | | |

* - Corresponding grades were significantly different from each other in terms of knowledge maintenance

3.7.2.1 Topic-Specific Analysis of Attitude-Related Items

Table 28 demonstrates the dynamics of sub-scores for 3 sections of attitude during the whole period of evaluation. Statistically significant long-term improvement was observed in intervention group for all sub-scores measuring different attitudinal aspects. An increase of all three sub-scores was observed during the post-intervention period also. However, this increase was statistically significant only for the third sub-score measuring belief of respondents about the attitude of peers towards tobacco/alcohol users. Generally, the attitude of respondents towards tobacco/alcohol use issues at the final survey was rather close to the “desirable” (or 100), which could potentially provide them a good protection against substance use.

Table 28. Within-group comparisons of attitude sub-scores

| | 1. Self-attitude to tobacco/ alcohol use issues (A7-A19 & A25-A33) | 2. Attitude to self-efficacy issues (A20-A24) | 3. Attitude of peers towards tobacco/ alcohol users (A1-A6) |
|--|--|---|---|
| Baseline [mean (SD)] | 80.5 (8.5) | 77.7 (12.5) | 72.6 (14.0) |
| Post-interv. (mid-term) [mean (SD)] | 83.9 (9.3) | 82.5 (13.2) | 77.3 (16.1) |
| Post-post-interv. (final) [mean (SD)] | 86.0 (9.8) | 84.3 (12.1) | 82.4 (16.1) |
| “The maintenance” (Difference at final and mid-term tests) [mean (SD)] | 2.4 (10.6) | 1.8 (14.7) | 5.1 (16.6) |
| p value for “The maintenance” | 0.126 | 0.393 | 0.040* |
| “The average long-term improvement” (Difference at final and baseline tests) [mean (SD)] | 5.6 (10.3) | 6.6 (12.9) | 9.7 (17.7) |
| p value for “The average long-term improvement” | 0.001* | 0.001* | 0.000* |

* - Improvement of sub-scores over time is statistically significant

Another attitude-related item was respondents’ belief about the attitude of their closest friends towards their tobacco/alcohol use. The average number of friends who according to the respondents’ belief would approve their smoking practices was less at the final test than at the mid-term test. The same was true for alcohol-drinking practices when comparing the mean numbers at baseline and at final tests. However, the differences were not statistically significant.

With respect to the respondents’ belief about the prevalence of smoking among teenagers, this prevalence believed to be quite high at all three phases of the evaluation (45 to 50% among boys and 4 to 9% among girls). Comparison of these numbers at the baseline and final surveys, as well as at the mid-term and final surveys showed no statistically significant differences. The results of this comparison are presented in Table 29 below.

Table 29. Belief of respondents at three phases of the survey

| Variable | Base | Mid-term | Final | Difference between mid-term & final | Difference between base & final |
|---|------|----------|-------|-------------------------------------|---------------------------------|
| A34. How many of your 5 closest friends would approve if you smoked (mean) | 0.35 | 0.5 | 0.27 | 0.23 | 0.08 |
| A35. How many of your 5 closest friends would approve if you drank alcohol (mean) | 0.8 | 0.5 | 0.48 | 0.02 | 0.32 |
| P6. Out of every 100 boys of your age in your school, how many do you think smoke cigarettes at least once a week? (mean) | 46.8 | 44.8 | 50.0 | - 5.2 | - 3.2 |
| P7. Out of every 100 girl of your age in your school, how many do you think smoke cigarettes at least once a week?(mean) | 4.0 | 9.3 | 4.8 | 4.5 | - 0.84 |

3.7.3 Skills

Only two out of the three approaches that were used to determine the short-term effect of the intervention on the skills of respondents were used in the analysis of the final data. The first was measurement of the perceived self-efficacy according to the respondents' answers to the four skill-measuring questions in the skill sections of the questionnaire, the second was assessment of knowledge about skills according to 6 skill-related questions (K11-K16) in the knowledge section. For both measures aggregated scores were constructed and analyzed.

Table 30 summarizes the dynamics of self-reported aggregated skill score over time. Skill score increased significantly during the intervention period and maintained this increased level during the post-intervention period. As a result, the long-term improvement of the aggregated skill score was both statistically and practically significant.

It was also interesting to detect significant differences in terms of impact of the intervention on skills of respondents among different subgroups. As it is shown in Table 31, in three schools out of four there were statistically significant long-term improvements of perceived skill scores. Only in the school #172 was this improvement not significant.

Table 30. Within-group comparisons of aggregated skill scores

| | Intervention Group, n=153 [mean (SD)] | p value for differences | Practical significance (difference/SD) |
|--|--|--------------------------------|---|
| Baseline | 77.8 (12.7) | | |
| Post-intervention | 81.1 (13.8) | | |
| Post-post-intervention | 81.9 (14.5) | | |
| “The maintenance” (Difference between skill scores at final and mid-term tests) | 0.8 (16.3) | 0.551 | |
| “The average long-term improvement” (Difference between skill scores at baseline and final tests) | 4.1 (15.5) | 0.001* | 0.3 |

* - The difference is statistically significant

With respect to grades, significant long-term improvement of the skill scores was detected in the 7th and 9th grade students. Meanwhile, significant short-term improvement was detected in the 7th and 8th grade students. What is interesting is that here, as in the case of knowledge and attitude, 9th grade students showed a tendency to maintain /increase their scores during the post-intervention period while the opposite tendency was observed among 7th and 8th grade students.

Table 31. Within group differences in average skill scores of different subgroups

| Subgroup | The dynamics of skill scores of subgroups over time | | | | | |
|---------------------|--|---------------------------------|--------------------------------------|---|----------------------------------|--|
| | Base-line [mean (SD)] | Post-interv. [mean (SD)] | Post-post-interv. [mean (SD)] | “Average short-term (pre-post) improv.” [mean(SD)] | “Maintenance” [mean (SD)] | “Average long-term improv.” [mean (SD)] |
| School # 134 (n=40) | 77.4 (13.1) | 80.5 (13.9) | 82.0 (14.1) | 3.1 (15.4) | 1.5 (16.2) | 4.6 (13.7) p=0.040* |
| School # 147 (n=41) | 76.8 (11.3) | 80.2 (15.4) | 81.9 (13.0) | 3.4 (14.8) | 1.6 (14.9) | 4.9 (13.5) p=0.028* |
| School # 172 (n=22) | 80.7 (11.9) | 79.1 (16.5) | 81.4 (16.6) | - 1.6 (14.8) | 2.3 (19.9) | 0.7 (18.2) |
| School # 185 (n=50) | 77.7 (13.9) | 83.3 (10.8) | 82.2 (15.4) | 5.6 (12.7) p=0.003* | - 1.1 (16.0) | 4.5 (17.3) p=0.071** |
| 7th grade (n=64) | 76.9 (13.2) | 80.8 (15.0) | 82.1 (12.8) | 3.9 (16.4) p=0.062** | 1.2 (15.1) | 5.0 (15.8) p=0.015* |
| 8th grade (n=41) | 76.1 (14.6) | 81.0 (15.3) | 78.9 (16.9) | 4.9 (14.8) p=0.042* | - 2.1 (18.7) | 2.8 (16.4) |
| 9th grade (n=48) | 80.4 (9.7) | 81.7 (10.6) | 84.4 (14.3) | 1.2 (10.5) | 2.7 (15.6) | 3.9 (14.5) p=0.066** |

*- Change in the skill score was statistically significant

** - Change in the attitude score was marginally significant

One-way analysis of variance, however, did not detect any significant differences between subgroups in terms of changes in aggregated skill scores either in the post-intervention period or during the whole period of evaluation.

With respect to "knowledge about skills score" (aggregated score of Q. 11-16 in the knowledge section), the results of the final test are presented in Table 32.

Table 32. Within-group comparisons of "knowledge about skills" scores

| | Intervention Group, n=153 [mean (SD)] | p value for differences | Practical significance (difference/SD) |
|---|--|-------------------------|--|
| Baseline | 39.2 (19.5) | | |
| Post-intervention | 56.1 (24.3) | | |
| Post-post-intervention | 52.0 (22.6) | | |
| "The maintenance" (Difference between "knowledge about skills" scores at final and mid-term tests) | - 4.9 (29.4) | 0.046* | 0.17 |
| "The average long-term improvement" (Difference between "knowledge about skills" scores at baseline and final tests) | 12.9 (28.2) | 0.000* | 0.46 |

* - The difference is statistically significant

The patterns of change of "knowledge about skills" scores in the intervention group over time were similar to the patterns of change of overall knowledge scores. Although significant decrease of the mid-term level of this score was observed during the post-intervention period, the long-term improvement of the "knowledge about skills" score still remained statistically significant. This is one more evidence of the positive long-term impact of the intervention. It is worthwhile to mention that the practical significance of the observed decrease of "knowledge about skills" score was very low. Meanwhile, the long-term improvement of this score had medium practical significance.

Subgroup analyses of the final data demonstrated that all the subgroups except one (school #185) had a significant long-term improvement of the "knowledge about skills" score. However, the subgroups were different from each other in terms of knowledge maintenance during the post-intervention period. While some subgroups gained knowledge during this period, some others lost. The dynamics of the "knowledge about skills" scores in different subgroups over the whole period of evaluation is presented in Table 33. As in the case with general knowledge and attitude, students from school #147 lost considerably more, then students from other schools.

With respect to differences between different grades, again 9th grade students showed a tendency of gaining knowledge during the post-intervention period, while 7th and 8th grade students demonstrated a tendency of losing a proportion of what they had gained before.

One-way analysis of variance was performed to detect any schools that are significantly different from the others. The results are presented in Tables 34, 35, and 36. All four schools were similar in terms of "knowledge about skills" score at the baseline survey. However, school #147 was significantly different from the others at the mid-term survey. This school was different from the others also in terms of both short-term "knowledge about skills" improvement and its maintenance. Detected differences in school #147 are difficult to explain.

Table 33. Within group differences in average “knowledge about skills” scores of subgroups

| Subgroup | <i>The dynamics of “knowledge about skills” scores of subgroups over time</i> | | | | | |
|------------------------|---|-----------------------------|----------------------------------|--|------------------------------|---|
| | Base-line [mean (SD)] | Post-interv. [mean (SD)] | Post-post-interv. [mean (SD)] | “Average short-term improv.” [mean(SD)] | “Maintenance” [mean (SD)] | “Average long-term improv.” [mean(SD)] |
| School # 134 (n=40) | 38.3 (17.8) | 51.2 (13.8) | 56.7 (15.5) | 12.9 (23.4) p=0.001* | 5.4 (15.7) p=0.036* | 18.3 (22.9) p=0.000* |
| School # 147 (n=41) | 37.0 (19.2) | 72.4 (26.0) | 51.7 (25.9) | 35.4 (31.9) p=0.000* | -22.2(30.2) p=0.000* | 15.0 (29.6) p=0.003* |
| School # 172 (n=22) | 37.1 (21.2) | 54.5 (27.8) | 50.8 (28.6) | 17.4 (27.9) p=0.008* | -4.8 (43.5) | 13.5 (34.4) p=0.087** |
| School # 185 (n=50) | 42.7 (20.5) | 47.3 (21.9) | 48.9 (21.8) | 4.7 (26.1) | 0.7 (24.1) | 6.4 (27.9) |
| 7th grade (n=64) | 34.6 (20.4) | 56.2 (25.1) | 48.9 (20.9) | 21.6 (30.8) p=0.000* | -8.1 (30.3) p=0.040* | 14.2 (29.7) p=0.000* |
| 8th grade (n=41) | 39.8 (17.8) | 56.9 (26.9) | 50.4 (24.6) | 17.1 (31.5) p=0.001* | -8.5 (32.0) | 10.7 (28.7) p=0.026* |
| 9th grade (n=48) | 44.8 (18.6) | 55.2 (21.2) | 57.6 (22.4) | 10.4 (25.6) p=0.007* | 2.5 (24.8) | 13.0 (26.3) p=0.002* |

*- Change in the skill score was statistically significant

** - Change in the attitude score was marginally significant

Table 34. Between-school differences in “knowledge about skills score” at the midterm survey: results of ANOVA

| | “Knowledge about skills” score at the mid-term test | #134 | #147 | #172 | #185 |
|-------------|--|------|------|------|------|
| #134 (n=40) | 51.2 | | * | | |
| #147 (n=41) | 72.4 | * | | * | * |
| #172 (n=22) | 54.5 | | * | | |
| #185 (n=50) | 47.3 | | * | | |

* - Corresponding schools were significantly different from each other

Table 35. Between-school differences in “knowledge about skills score” short-term improvement: results of ANOVA

| | Mean difference in “knowledge about skills” scores between baseline and mid-term tests | #134 | #147 | #172 | #185 |
|-------------|---|------|------|------|------|
| #134 (n=40) | 12.9 | | * | | |
| #147 (n=41) | 35.4 | * | | ** | * |
| #172 (n=22) | 17.4 | | ** | | |
| #185 (n=50) | 4.7 | | * | | |

* - Corresponding schools were significantly different from each other

** - Corresponding schools were marginally different from each other

Table 36. Between-school differences in “knowledge about skills score” maintenance during post-intervention period: results of ANOVA

| | Mean difference in “knowledge about skills” scores between mid-term and final tests | #134 | #147 | #172 | #185 |
|-------------|---|------|------|------|------|
| #134 (n=40) | 5.4 | | * | | |
| #147 (n=41) | - 22.2 | * | | * | * |
| #172 (n=22) | - 4.8 | | * | | |
| #185 (n=50) | 0.7 | | * | | |

* - Corresponding schools were significantly different from each other

With respect to differences between grades, one-way test of variance showed that 9th grade was significantly different from 7th grade at the baseline survey in terms of aggregated “knowledge about skills” score. This score was higher among 9th grade students. Also, 9th grade was marginally different from 8th grade in terms of knowledge maintenance during the post-intervention period. These differences are shown in Tables 37 and 38. No other differences were detected between subgroups through ANOVA.

Table 37. Between-grade differences in “knowledge about skills score” at the baseline survey: results of ANOVA

| | Mean difference in knowledge scores between mid-term and final tests | 7th grade | 8th grade | 9th grade |
|------------------|--|-----------|-----------|-----------|
| 7th grade (n=64) | 34.6 | | | * |
| 8th grade (n=41) | 39.8 | | | |
| 9th grade (n=48) | 44.8 | * | | |

** - Corresponding grades were significantly different from each other

Table 38. Between-grade differences in “knowledge about skills score” maintenance during post-intervention period: results of ANOVA

| | Mean difference in knowledge scores between mid-term and final tests | 7th grade | 8th grade | 9th grade |
|------------------|--|-----------|-----------|-----------|
| 7th grade (n=64) | - 8.1 | | | |
| 8th grade (n=41) | - 8.5 | | | ** |
| 9th grade (n=48) | 2.5 | | ** | |

** - Corresponding grades were marginally different from each other (p-value was 0.059)

3.7.4 Practice

As mentioned above, students from both intervention and control groups were suggested to answer the questions estimating their tobacco/alcohol use practice (Q-s. P1-P5) at the final survey. Question P1 was used to define proportion of those who ever experimented with tobacco, and question P2 - to define proportion of those who ever experimented with alcohol. Meanwhile, those who reported smoking several times a week or more (question P3) were considered as regular users. Similarly, those who reported drinking alcohol several times a month or more (question P4) were considered as regular users.

Table 39 demonstrates distribution of proportions by intervention status and gender of those who ever tried tobacco or used it regularly at all three stages of the survey. There were no significant differences between intervention and control groups in terms of all reported variables at all three tests. An increasing trend of tobacco-using patterns over time was observed in both groups and in both genders. However, this pattern was not statistically significant among boys. Among girls of the intervention group the difference of proportions (at baseline and at final tests) of those who ever tried tobacco was marginally significant (p=0.096). Similarly, among girls of the control group the difference of proportions (at baseline and at mid-term tests) of those who ever tried tobacco was marginally significant (p=0.058).

Table 39. Dynamics of respondents’ self-reported smoking practices

| | | Proportions of smokers and those who ever experimented with tobacco | | | | | |
|-----------------|---------------|---|------|--------------------|------|--------------------|------|
| | | Baseline test | | Mid-term test | | Final test | |
| | | Experim. | Used | Experim. | Used | Experim. | Used |
| Interven. group | male (n=64) | 51.6% | 1.6% | 54.7% | 3.1% | 50% | 4.7% |
| | female (n=89) | 7.9% ¹ | 0% | 9.0% | 1.1% | 13.5% ¹ | 0% |
| Control group | male (n=48) | 37.5% | 4.3% | 47.9% | 6.3% | 45.8% | 8.3% |
| | female (n=65) | 6.2% ² | 0% | 13.8% ² | 0% | 12.3% | 0% |

¹ - difference between marked numbers is marginally significant (p-value = 0.096)

² - difference between marked numbers is marginally significant (p-value = 0.058)

Table 40 demonstrates gender distribution and time-trend of alcohol drinking practices in both groups.

Table 40. Dynamics of respondents’ self-reported alcohol-drinking practices

| | | Proportions of regular alcohol users and those who ever tried alcohol | | | | | |
|-----------------|---------------|---|--------------------|--------------------|-------|--------------------|-------------------|
| | | Baseline test | | Mid-term test | | Final test | |
| | | Experim. | Used | Experim. | Used | Experim. | Used |
| Interven. group | male (n=64) | 79.4% ¹ | 6.3% | 83.9% | 6.3% | 90.6% ¹ | 4.7% |
| | female (n=89) | 69.7% ² | 10.1% ³ | 80.9% ² | 4.5% | 77.3% | 3.4% ³ |
| Control group | male (n=48) | 79.2% | 12.5% | 75.0% | 10.4% | 85.4% | 8.3% |
| | female (n=65) | 72.3% | 7.7% ⁴ | 73.8% | 6.2% | 67.7% | 3.1% ⁴ |

¹ - difference between marked numbers is statistically significant (p-value = 0.034)

² - difference between marked numbers is statistically significant (p-value = 0.018)

³ - difference between marked numbers is statistically significant (p-value = 0.013)

⁴ - difference between marked numbers is marginally significant (p-value = 0.083)

Again, no statistically significant differences in proportions were detected between intervention and control groups at any point of time. In respect of time-trends, there was increasing trend of

proportions of students who ever tried alcohol. This increase was statistically significant for intervention group, both for boys ($p=0.034$ for difference between proportions at baseline test and at final test) and for girls ($p=0.018$ for difference between proportions at baseline test and at post-test). Unlike this, the proportion of those who reported drinking alcohol several times a month or more declined over time in both groups. This decline was statistically significant among girls of intervention group ($p=0.013$ for difference between proportions at baseline test and at final test).

The key measures of practice at this stage of evaluation were ‘the proportions of adolescents who experimented with tobacco/alcohol first during the post-intervention period.’ The results of analysis of seven practice-related variables constructed to measure these proportions are presented in Table 41. At this stage, as at the mid-term stage, no statistically significant differences were detected between intervention and control groups in terms of these practice-measuring variables.

Table 41. Self-reported practices of respondents at the final survey

| | Intervention Group (n=153) | Control Group (n=113) | p-value |
|--|----------------------------|-----------------------|---------|
| The number of those who reported that had never tried tobacco at mid-term test and had tried at final test (Q. P1) | 7.8% (12) | 5.3% (6) | 0.417 |
| The number of those who reported that had never tried tobacco at mid-term test and had tried at final test (Q. P3) | 7.2% (11) | 7.1% (8) | 0.973 |
| The number of those who reported that had never tried alcohol at mid-term test and had tried at final test (Q. P2) | 8.5% (13) | 9.7% (11) | 0.728 |
| The number of those who reported that had never tried alcohol at mid-term test and had tried at final test (Q. P4) | 8.5% (13) | 9.7% (11) | 0.728 |
| The number of those who reported that had never tried alcohol at mid-term test and had tried at final test (Q. P5) | 11.1% (17) | 9.7% (11) | 0.718 |
| P1-1. When did you try tobacco first time? | | | |
| 1. Never tried | 73% (111) | 77% (87) | 0.550 |
| 2. Tried before March 1, 2000 | 24 % (37) | 20% (23) | |
| 3. Tried after March 1, 2000 | 2% (3) | 2.7% (3) | |
| P2-1. When did you try alcohol first time? | | | |
| 1. Never tried | 20% (30) | 26% (30) | 0.255 |
| 2. Tried before March 1, 2000 | 65% (100) | 61% (69) | |
| 3. Tried after March 1, 2000 | 14% (21) | 12% (14) | |

The above-mentioned suggests that there is almost no detectable change in the practice of students that could be considered as an impact of the intervention within the limited evaluation window. As mentioned previously, there are many evidences of inconsistency of respondents' answers to practice-related questions (see Appendix N) in both intervention and control groups. Thus, reliability of the survey questionnaire in measuring practice variables was low and one should be cautious in interpreting the project impact on practice of the students building his conclusions solely on the findings of this survey.

As mentioned in the analysis of mid-term data, the comparison of self-reported practices of respondents to their belief on the prevalence of smoking among teens and among their friends showed that the belief about tobacco-use by other teens could be exaggerated, while the self-use might be underreported. The same tendency was observed at the final test.

Table 42 demonstrates the changes in belief of intervention-group students on the prevalence of smoking among peers and friends. Almost no significant changes in the belief took place during the period of evaluation. The only significant change was that in comparison with the baseline test, at the post-test respondents believed that twice as many girls use tobacco ($p=0.012$). But this proportion became less again at the final test. Another marginally significant time-trend was that in comparison with the baseline survey, at the final survey respondents reported lower numbers of friends who believed to use tobacco ($p=0.067$).

Table 42. Dynamics of the intervention-group students' belief on prevalence of smoking among teenagers and friends

| | Baseline test | Mid-term test | Final test |
|---------------------------------------|--------------------|-------------------|--------------------|
| Boys believed to use | 46.8% | 44.7% | 50.0% |
| Girls believed to use | 4.0% ¹ | 9.3% ¹ | 4.8% |
| Friends believed to have experimented | 30.2% | 30.0% | 28.2% |
| Friends believed to use | 23.8% ² | 14.8% | 16.2% ² |

¹ – P-value of the difference between marked numbers is 0.012 (statistically significant difference)

² – P-value of the difference between marked numbers is 0.067 (marginally significant difference)

4. DISCUSSION

These data suggest that the SUP curriculum was successful at improving the health-related knowledge, attitudes and skills of adolescents while it failed to improve self-reported practices within the evaluation window. The observed effects in improvement of knowledge, attitude and skills were statistically significant and sustainable over time. Although some decrease in aggregated knowledge score was observed during the post-intervention period, long-term knowledge gain remained statistically significant and remarkable. Indeed, significant improvement in attitude score took place during the post-intervention period making positive changes in attitude even stronger. Of more importance to school administrators and teachers, is the practical significance of the long-term improvement of students' knowledge, attitude and skills.

This conclusion is based on the method of assessing results of educational programs that has been applied across many research projects. The essence of the method is to convert the observed program effects to proportions of the standard deviation of the measures employed (similar to z test). "Successful" educational interventions have been found to have effect sizes up to 1.17 standard deviations. Generally, an effect size of 0.25 standard deviations has been accepted both practically (educationally) as well as statistically significant for knowledge measures. In turn, 0.5 standard deviation has been considered "medium" and 0.8 as "large" effect (31).

Across the entire intervention group the effect illustrated in Table 21 represents 1.12 standard deviations for the long-term improvement in aggregated knowledge score. Thus, both the short-term (Table 4) and long-term effects of SUP program on knowledge of entire intervention group can be classified as "large". For subgroups the ratio 'long-term improvement/SD' ranged from

0.74 to 1.66 (Table 22) suggesting that knowledge gains were both practically significant and "large" in all subgroups. Concerning improvement of "knowledge about skills", the effect of SUP program was "middle" for entire intervention group (Tables 15 and 32). The patterns of practical significance of improvement of "knowledge about skills" score for different subgroups coincided with ones of statistical significance (Tables 16 and 33). Although the short-term improvement of both overall knowledge and "knowledge about skills" was larger in schools #147 and 172, the long-term improvement of these scores was almost equal in all four schools since the schools that gained more during the intervention period, lost more in the post-intervention period. The same was true for the targeted grades. While 7-th grade students gained more during the intervention, they lost some amount of what they had gained, during the post-intervention period. 8-th grade students lost even more during this period. Unlike this, 9th grade students' knowledge gain remained unchanged. As a result, 7-th and 9-th grade students benefited more from the intervention than 8-th grade students did.

While the method of 'practical significance' may provide adequate guidance for interpretation of knowledge effects, this method has rarely, if ever, been addressed for measures of attitudes and self-reported skills. The issue of translation from statistical significance into clinical or social significance is, at present, one for the individual reader. If the practical significance of the improvement of attitude would be classified according to the aforementioned scale, it would be considered as "middle" for the entire intervention group at the mid-term test (Table 8) and close to "large" (0.74) at the final test (Table 25). The size of effect on subgroup level ranged from "low" (the ratio is 0.2- 0.3) to almost "large" (0.7- 0.8) (Tables 9 and 26). There was only one subgroup (school #172) in which the improvement of attitude score at mid-term test was neither statistically, nor practically significant. However, at the final test another subgroup (school # 147) joined this one, since it lost some amount of gained attitude during the post-intervention period. Schools #134 and 185, where the teachers were more experienced, gained more in terms of positive changes in attitude.

Comparison of 7-th grade with two other grades at the mid-term test demonstrated that it benefited the most in terms of attitude. However, during the post-intervention period it lost some positive attitude, while 9-th grade gained it. As a result, 9-th grade benefited the most in terms of long-term attitude change. This conclusion is important when deciding about the grade appropriate for teaching the SUP module.

Though reported attitude improvements may appear to be relatively minor, they are the result of a relatively brief exposure to health instruction. It is well known that attitudes are resistant to change (31). Yet, minor differences in attitude represent a basis for cumulative impact of school health education. Evidence from the literature indicates that students' reported attitudes benefit dramatically from a second exposure to health instruction (31). However, the stable tendency of continuing positive changes in attitude during the post-intervention period suggests that even this brief exposure have a potential to make sustainable impact on attitude.

Self-reported skills were also improved significantly due to the intervention. And again as in the case with attitude, there was no decline of these skills during the post-intervention period. Thus, long-term improvement of self-reported skills was also statistically significant. However, the practical significance of this improvement was low – 0.26. Among school-subgroups again only in school #172 the improvement of self-reported skills was not statistically significant. In respect of grades, 7-th grade students benefited more in terms of self-reported skills than other grades did.

The ability of students to demonstrate specific skills in the classroom was evaluated by the teachers as sufficient. This method of evaluation for skills is described in the literature and the level of demonstration of skills corresponds to the literature data (60). Yet, this method is subject to an evaluator bias and is not entirely objective. It was found that students were better able to demonstrate the skills for interpreting social sources of information (ads), than for resisting normative social influences (peer pressure). This finding can be indirectly supported by the evidence from the literature indicating that "teaching refusal assertion skills and facts about classmates disapproval of tobacco use were ineffective"(57). Students in the cited study reported that the "flooding" of their homes and schools with public service announcements like "just say no" may have led to a lack of excitement over additional information. The SUP focus groups respondents' feelings concerning the activities of the corresponding lesson ("Standing up to peer pressure") were pretty much similar. They felt a bit "fed up" by all these role-plays supposed at refusing tobacco/alcohol offers. Even though Armenia has not received extensive health education, the participants of focus groups reported fatigue with repeated messages.

The evaluation of SUP project did not detect positive impact on belief and practices of the students. One possible reason for that might be the shortage of time for the proper implementation of the curriculum. It is well known that the aforementioned factors are particularly resistant to change (41, 61). The evidence from the literature indicates that in order for school health education programs to improve targeted health behaviors sufficient time must be provided for intervention (41). Significant improvement in general attitudes and behaviors was achieved when classroom instruction time exceeded 20 hours (31).

The SUP curriculum was planned to be implemented during the entire second semester, which usually lasts for about 17 weeks. There were 11 lessons in the curriculum, yet it was supposed that some of them would require more than one academic hour. However, the absenteeism was very high at the beginning of the second semester and the instructors supposed it to be high as well at the end of the semester. So, the instructors tried to implement the curriculum within exactly 11 lessons. Adding to the time crunch, the activities were planned for 45-minute academic hour, but the real duration of classes was just 30 minutes during the cold season. Moreover, the activities, being new and non-conventional required more time for their implementation than planned. Very often there was a need to keep the students in school after classes to complete all activities. In schools # 134 and 185 the SUP instructors, who were the director and the deputy director respectively, managed to do this while in remaining schools it was not possible for the following reasons: 1) there were no classrooms available, and 2) while the majority of students expressed their willingness, some of them had other commitment. All of the aforementioned negatively affected the degree of implementation of the curriculum, which in turn could have resulted in the observed low effect of SUP project on behaviors.

Evidence from the literature indicated that while skills and behaviors changed from one exposure to health instruction very little, the benefit from a second exposure was dramatic (31). Evaluation of the TNT project found that the use of booster lessons to supplement a classroom tobacco use prevention program may significantly enhance program effects, especially when repeated over a number of years (28, 35). The underlying assumption is that messages that are repeated over relatively long periods of time, and that allow expression of newly formed attitudes and behaviors, are relatively likely to be incorporated into one's personal repertoire.

The results of focus group discussions conducted by evaluators of the SUP project support this evidence. The participants of focus groups strongly felt, that the time shortage was one of the limitations of the SUP project and that the second exposure to the prevention program or the use of booster lessons could increase its impact dramatically.

Another factor that has been shown to be crucial for positively changing attitudes, belief, skills and behaviors, is teacher training and experience. The literature data indicates that while the teachers appeared to be quite effective at meeting the specific knowledge-related instructional objectives, they failed to completely realize during the first year the broader objectives of health programs, involving attitudes and practices (31, 62). For instructors teaching SUP curriculum as well as for the trainers, SUP was the first experience of this kind. Although the training was conducted, detailing 11 lessons of the curriculum, the teachers were not confident that they would succeed in developing attitudes, belief, self-efficacy and specific skills. At the conclusion of the project they were still not confident about their success. They felt that they must have given time to develop and implement modifications to the program so their local needs are best met. It is of interest to mention that the success in changing the students' attitudes positively correlated with the years of teacher overall teaching experience. The teachers mentioned during the focus group discussions that they would teach the project better if they had one more chance.

As the final goal of any health education is adoption of healthy behaviors, it is of crucial importance to understand why the SUP evaluation failed to detect the changes in behaviors of project participants. One possible explanation could be the evidence that detectable changes in behavior usually demand the time lag of one year or longer (57). The SUP evaluation, as it was designed, did not allow this long time lag. The time lag is necessary for knowledge and attitude gains to evolve into behavior change. The fact that the SUP project had a significant positive impact on knowledge and attitudes is very promising, for knowledge and attitude are the most important predicting factors for behavior change. The evidence from the literature indicates that there is a positive correlation between these two factors and behavior (49). Thus, we could expect to find changes in behavior if additional phase of evaluation was conducted one-year post-intervention.

Another reason for the failure of SUP evaluation to detect changes in behavior might be the low reliability of the evaluation instrument for obtaining accurate data on such sensitive issues as tobacco/alcohol use by school students. The evidence from the literature indicates that anonymity of a questionnaire is a necessary but not a sufficient condition for obtaining reliable data on sensitive issues. To increase the accuracy of self-reported tobacco use, the researchers used another procedure, which is collection of breath or saliva samples (28, 49, 50, 57, 58). The SUP evaluation did not have resources to apply this method. As a result, our data on the practice of tobacco/alcohol use were inconsistent, suggesting that they were not accurate. Overall, the self-reported weekly tobacco use as well as the experimentation with tobacco was reported to be very low, which contradicted to the belief of respondents of quantitative survey on the prevalence of tobacco use among teens as well as to the findings of qualitative research (25) and SUP qualitative evaluation. While percentage of boys smoking at least one cigarette per week was believed by participants of quantitative survey to be in average 47%, the percent of boys who self-reported using cigarettes at least once a week was 7%. Weekly use of tobacco by male participants' closest friends was reported to fall between these two values. The participants of focus groups felt, that the self-use of tobacco was underreported, especially at baseline survey. This finding could be explained by the fact, that tobacco use is banned for students in schools and the users are being punished either administratively or morally. The participants of focus groups told that although the confidentiality of data was promised by surveyors, it could be not convincing for the respondents of quantitative survey. The respondents preferred to underreport their smoking habits rather than to be punished. According to the opinion of focus group participants, the data on the prevalence of tobacco/alcohol use could not be used as a basis for drawing valid conclusions about the impact of SUP project on this issue.

SUP project was the first substance use prevention project for Armenian schools that utilized interventions teaching social resistance skills. The results of the SUP project implementation study are straightforward and have direct and important implications for health education professionals and consumers. The results of the evaluation suggest that prevention strategies that were initially developed and found to be effective with other target populations can be applied to Armenian youth as well. The question on whether the inability of evaluation to detect behavior change was connected to the lack of the project implementation, the evaluation time frame or low reliability of the evaluation instrument is an appropriate focus of future research. Nevertheless, the experience gained during the development, implementation and evaluation of this project could be very useful when developing national school health education programs.

5. LIMITATIONS OF THE SUP PROJECT

This project had several limitations, which should be acknowledged. First, the project staff had limited access to educational materials, resources and professional expertise. Several decades were spent by thousands researchers to develop, implement and evaluate school health programs. There is no need to "reinvent the wheel" in Armenia. Outside expertise has to be taken into consideration when developing local programs. The SUP utilized some of the approaches shown to have positive impact. Broader access to materials developed elsewhere would benefit the local project particularly in the face of the lack of local professionals who conduct instructor training. The evidence from the literature indicates, that there is a need for strengthening the teacher training component as well as a need for ongoing consultation by project staff in order to assist teachers in dealing with any potential barriers to successful implementation (31, 49, 50, 62).

Second, SUP project had limited resources influencing the number of schools involved, the number of staff working for the project and the quantity and quality of educational materials provided for the project. This could negatively influence the degree of implementation of the project as well as the power of evaluation to detect significant changes in variables under study. Among the factors, that could negatively affect the project impact were the generally bad conditions in schools, making the implementation difficult. Bad conditions included: delay at start due to high rate of absenteeism; overall high level of absenteeism; difficulties keeping students in the class after the usual lessons; low temperature in the class; and short class hours.

The evaluation of SUP had also several limitations that should be mentioned. First, the present evaluation does not cover a long period of instruction, or as long a post-instruction delay period, as desired. In order for school health education programs to improve targeted health behaviors sufficient time must be provided for intervention (41). To detect changes in behavior it is better to evaluate the effect at least one year after implementation of the program, because detectable changes in behaviors usually demand the time lag of one year or longer (57).

Second, the instrument for assessment of demonstrated skills was subject to evaluator bias. The instrument for assessment of practices had low reliability. As a result, data on self-reported practices are inconsistent. Reported behaviors were measured instead of overt behaviors that have known implications for subsequent health.

Third, this was a pilot project involving a relatively small number of students from a small number of schools. Although the school was used as the unit of assignment to conditions, the student was used as a unit of analysis since the number of schools was too small to permit analysis on the school level. This approach to data analysis, while common in school-based

prevention research, has been criticized because it permits the possible confounding of school and intervention effects and increases the possibility of a Type I error (49, 50). For this reason, these findings should be interpreted with caution.

Forth, the coverage rate at the final survey was low especially in control schools that limited the ability of the evaluation to detect mild differences in practices between intervention and control groups. Meanwhile, low coverage rate could introduce some bias in the results of the final survey.

Fifth, this project was implemented in conditions different from overall conditions of Armenian schools. Teachers were paid regularly; the project was something new and interesting for them; and the assistance was provided by the project coordinator. It is questionable if the fidelity of implementation would be the same in usual conditions. Nothing has been learned about how health education could be placed into the often already-crowded schedules of schools. It is unknown how the curricula would fare in rural schools.

6. CONCLUSION AND RECOMMENDATIONS

The results of the SUP project implementation study are straightforward and have direct and important implications for health education professionals and consumers. The evaluation of the project has demonstrated that the substance-related knowledge and attitudes of the target population increased both significantly and practically. Comparison between the intervention and control groups showed that this improvement completely could be attributed to the SUP.

The SUP succeeded in developing in adolescents specific skills that will help them to adapt or maintain healthy behaviors.

Comparison between different grades involved in the project indicated, that the best grades for implementation of SUP project are 9-th and/or 7-th grades.

The results of focus groups showed that both teachers and students liked the project and found it to be very useful. The expressed opinions of teachers and students as well as the results of analysis of limitations of the project should be taken into consideration while developing larger interventions.

The evaluation of SUP project did not detect positive impact on behaviors of the target population. The question on whether this change was connected to the lack of the project implementation, the evaluation time frame or low reliability of the evaluation instrument is an appropriate focus of future research. The main reason for this could be the fact that the present evaluation did not cover a long period of instruction, or as long a post-instruction delay period, as desired. However, basing on the evidence from the literature indicating that knowledge and attitudes mediate the impact of intervention on behavior (49), we could expect to see changes after at least one year following intervention.

SUP project was the first substance use prevention project for Armenian schools that utilized interventions teaching social resistance skills. The results of the evaluation suggest that prevention strategies that were initially developed and found to be effective with other target populations can be applied to Armenian youth as well. The lessons learned and the experience gained during the development, implementation and evaluation of this project could be very useful when developing national school health education programs.

SUP project as a separate module can be recommended for implementation in Yerevan schools. In order to enhance its effect, the following recommendations are made:

1. Teach the module in 7-th grade and provide one more “booster” exposure in the 9-th grade.
2. Provide sufficient time for intervention. It would be better to teach the module throughout one school year instead of one semester. Booster lessons during the subsequent years could increase the project's impact.
3. Strengthen the teacher-training component and consult and assist teachers in dealing with potential barriers.
4. Further develop the evaluation instrument to enhance its reliability.
5. Change the evaluation time frame to provide sufficient time for the knowledge and attitude gain to evolve into behavioral outcomes.

SUP module as one that utilized the teaching of social resisting skills can be used as a model when developing comprehensive school health education program for Armenian schools.

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Appendix A

Curriculum for the Substance Use School Health Education Project

Lesson 1: Killers on the loose

The students will:

- Identify the causes of deaths of millions people each year (tobacco, alcohol).
- Start to write articles on different drugs (tobacco, alcohol, hashish, cocaine, inhalants, steroids).

Resources:

Epidemic clues on tobacco and alcohol

Information sheets on 6 drugs

Causes of deaths of 15-24 year old

Lesson 2. Drugs in the news

The students will summarize factual information on 6 drugs by examining student-written news articles.

Lesson 3. Interviewing witnesses to the crime

The students will:

- Identify ways drug use and exposure to tobacco affect the user, friends, family members and community members.
- Explain some of the legal, social, financial, political and health issues related to drug use.
- Share drug-related issues with classmates by conducting interviews.
- Summarize information on different issues of drug use, formulate what drug abuse means.

Resources:

1. Eyewitness accounts of doctor, narcologist, nurse, investigating authority, social security worker, and policeman

Lesson 4. Comparison of harmful effect caused by different drugs to society. Drug information summary

The student will:

- Compare different drugs by their deadly effect.
- Learn the cause-specific mortality for different drugs.
- Discuss the reasons why tobacco and alcohol cause these many deaths.
- Identify factors of early death and learn that unhealthy lifestyle is the most important among them.
- Identify the leading role of tobacco and alcohol among other factors of early deaths.
- Identify tobacco and alcohol aliases.
- Understand that people are responsible for their own health.

Resources:

1. Materials for drug death demonstration
2. Table “Comparison of drugs”
3. Tobacco-caused mortality
4. Campaign against tobacco in the US
5. Factors contributing to early death
6. Tobacco products
7. Alcohol products

Lesson 5. Why hang out with killers?

The students will:

- Explore reasons young people might use drugs (initiation and continue).
- Discuss the mechanism of drug action, including addiction, tolerance and withdrawal.
- Discuss the actual prevalence of tobacco use among teenagers in order to change their perception of the norm.
- Correct the inflated images of tobacco users.
- List healthy ways for young people to meet personal needs without using tobacco/alcohol/drugs.

Resources:

1. Drug action mechanism
2. Prevalence of tobacco use

Lesson 6. Self-esteem

The students will:

- Classify the reasons teenagers start to smoke/use alcohol into five categories: lack of knowledge, positive attitude, environment (availability, lack of constraints), low self-esteem, lack of skills.
- Discuss how this course can help to change the factors contributing to drug use into factors reinforcing abstinence.
- Show their attitude towards teenagers drug use (“restructuring activity” helping to understand that social images connected to drug use are inflated).
- Practice techniques to improve their self-esteem.

Resources:

1. How to improve self-esteem

Lesson 7. Students will:

- Learn to prioritize their own values and learn that to uphold their own values could help them to be respected by friends.
- Learn to recognize those qualities which they would like to see in their friends (girlfriend/boyfriend).

- Show their attitude towards different values and learn that good health is a value.
- Learn that that peer pressure situations are not as threatening as they initially appear and that they may be respected by their peers for refusing a drug offer.

Resources:

1. The hierarchy of values
2. Qualities which I would like my friend to have.

Lesson 8. Social problem solving

The students will learn and practice to make decisions.

Resources:

Five steps for decision making
Situations for decision making

Lesson 9. Refusal learning and practice

The students will learn:

- To recognize direct and indirect pressure.
- To recognize weak, middle and strong pressures.
- To avoid peer pressure situations.
- Learn the importance of being assertive in peer pressure situations.
- Learn and practice various ways of saying “No”.

Resources:

1. Various ways of saying “No”
2. Situations for practicing saying "no"

Lesson 10. Advertising images

The students will:

- Discuss the ways in which the entertainment and advertisement media portray tobacco and alcohol “social images” that influence individuals to use these products.
- Learn to correct inaccurate social image depiction.
- Learn to use advertising strategies to promote abstinence from substance use (to sell “no use” messages).

Resources

1. Advertising tactics
2. Examples of ads

Lesson 11. Social activism

The students will:

- Learn and practice communicating concern about drug use without alienating others.
- Prepare a script using positive communication skills to express concern to others who use drugs.
- Discuss what it means to be a social activist and practice by writing letters advocating no substance use.

Appendix C

Coverage of students by the SUP curriculum

| # of lessons attended | Cumulative percent of students attended | | | |
|-----------------------|---|-------------|-------------|-------------|
| | School #134 | School #147 | School #172 | School #185 |
| 11 lessons | 60% | 30% | 38% | 63% |
| 9-10 lessons | 85% | 58% | 77% | 85% |
| 7-8 lessons | 90% | 74% | 92% | 93% |
| 5-6 lessons | 94% | 89% | 94% | 95% |
| 3-4 lessons | 98% | 97% | 98% | 97% |
| 1-2 lessons | 100% | 100% | 100% | 100% |

Appendix E

**SUBSTANCE USE PREVENTION
SCHOOL HEALTH EDUCATION PROJECT**
**United Methodist Committee on Relief in collaboration with the
AUA Center for Health Services Research**
Questionnaire for baseline survey

Instructions to the Surveyor: *It is important to build rapport with the students. Begin by greeting them and introducing yourself. Then explain them the goals of the survey, the procedure and assure on the confidentiality of the information.*

Hello, I am _____(name). I am working at the Center for Health Services Research of the American University of Armenia. Our Center is developing currently a health education module for students of Armenian schools. In order to meet better the needs of Armenian students in health education, we are conducting today this survey to assess the level of your health-related knowledge, attitudes and practices. Proceeding each section, you will find explanations of how to fill the questionnaire.

Before you will start to fill the questionnaire, I would like to focus your attention on several points. There is a section in the questionnaire, regarding your smoking and alcohol use practices. We understand, that these topics are sensitive. However, we are interested in that section particularly because correct information on that section is of crucial importance. Except for the role that these data could play for our program development, it could as well serve as statistical data on substance use prevalence among adolescents of our country. Up to now we do not have such statistical data, which makes our efforts in the field of health education nearly useless.

In order to make it less sensitive for you to report your real practice, we decided to make the questionnaire anonymous. You will not write here your name and nobody will know what did you report. However, as far as we are going to conduct two other surveys during the next 6 months, and we want to compare the results of this survey with the results of subsequent ones, we have to have at least some code on your questionnaire to match your records each time. We have here in the box pieces of paper with codes on them: each of you will pick up a unique code and write it on your questionnaire. During the subsequent surveys you have to put the same code on your questionnaire. In order to exclude the chance that someone can forget his code, you will elect somebody from your class whom you trust, who will keep your codes and remind them to you during the subsequent surveys.

Are you ready? Let us start!!!

Number of school ###
Grade #
Code of respondent ##

Data entry ###

Demographic information

Questions D1-D9 concern you and your family members. Circle all those choices that are applicable to you.

D1. Age of respondent (years) _____

D2. Gender

- 1. Male
- 2. Female

D3. How many people live with you in your house? (including you) _____

D4. Who lives with you in your house? (For brothers and sisters mention how many of them you have and their age)

1. Father/stepfather

- 1. Yes
- 2. No

2. Mother/stepmother

- 1. Yes
- 2. No

3. Sister

1. how many ____

2. ages ____ ____ ____ ____ ____

4. Brother

1. how many ____

2. ages ____ ____ ____ ____ ____

5. Grandfather

- 1. Yes
- 2. No

6. Grandmother

- 1. Yes
- 2. No

7. Other relatives

- 1. Yes
- 2. No

D5. What is your father's education?

1. 8 years
2. 10 years
3. College (12 years)
4. University (15 years)
5. Post graduate (18 years)
6. Candidate of Sciences
7. Doctor of Sciences

D6. What is your mother's education?

1. 8 years
2. 10 years
3. College (12 years)
4. University (15 years)
5. Post graduate (18 years)
6. Candidate of Sciences
7. Doctor of Sciences

D7. What is your fathers job?

1. _____
2. does not work
3. don't know

D8. What is your mother's job?

1. _____
2. does not work
3. don't know

D9. Circle all of the following luxury items you have in your house

1. Car
2. Color TV
How many _____
3. Video
4. Video-camera
5. Tape recorder

Practice

There are several choices for each of the questions P1-P4 and P6-P9. Circle the one that is applicable to you. For questions P5 and P10 you have to circle all those choices that are relevant.

P1. How many times have you tried cigarettes?

1. Never tried
2. 1 time
3. 2-5 times
4. 6-10 times
5. more than 10 times

P2. How many times have you tried drinking alcohol?

1. Never tried
2. 1 time
3. 2-5 times
4. 6-10 times
5. more than 10 times

P3. How often do you smoke cigarettes?

1. I never smoked cigarettes
2. none in the last year
3. a few times this year
4. a few times each month
5. a few times each week
6. a few times most days
7. about $\frac{1}{2}$ pack each day
8. a pack or more each day

P4. How often do you drink alcohol?

1. I never drink alcohol
2. none in the last year
3. a few times this year
4. a few times each month
5. a few times each week
6. a few times most days
7. many times most days
8. many times every day

P5. If you drink alcohol, what do you usually drink?

1. I do not drink alcohol
2. beer
3. wine
4. vodka, cognac or other hard liquor
5. one or two of aforementioned
6. liquor, Champaign

P6. Out of every 100 male students your age in your school, how many do you think smoke cigarettes at least once a week?

1. _____
2. do not know

P7. Out of every 100 female students your age in your school, how many do you think smoke cigarettes at least once a week?

1. _____
2. do not know

P8. How many of your five closest friends have tried cigarettes?

1. _____
2. do not know

P9. How many of your five closest friends usually smoke at least one cigarette a week?

1. _____
2. do not know

P10. In the list below check all those people living with you in one house who smokes.

1. my father
2. my mother
3. my brother
4. my sister
5. my grandfather
6. my grandmother
7. other relative

Knowledge

Questions K1-K34 relate to your knowledge concerning health issues. Questions K1-K17 are multiple choice questions. You have to check **only one answer**, which you think is the correct one. If you think that none of the answers is correct, you put your answer under "other". If you are not sure which one is the correct answer, you have to circle "I don't know". K18-K34 are Yes/No statements. You have to put "yes" if you think that the statement is correct, "no" if it is incorrect and "I do not know", if you do not know.

K1. Which of the following is the definition of early death?

1. death before age 30
2. death before age 50
3. death before the average life expectancy
4. death before age 80
5. other _____
6. don't know

K2. Which of the following is the factor causing more early deaths than any other?

1. environment
2. human biology
3. unhealthy lifestyle
4. health care system
5. other _____
6. don't know

K3. The life expectancy of smokers compared to general population is:

1. the same
2. less by 22 years
3. more by 22 years
4. more by 10 years
5. other _____
6. don't know

K4. Which drug causes more early deaths worldwide?

1. cocaine
2. hashish
3. alcohol
4. tobacco
5. steroids
6. inhalants
7. other _____
8. don't know

K5. Which drug is number one killer of 15-24year olds in the US?

1. cocaine
2. hashish
3. alcohol
4. tobacco
5. steroids
6. inhalants
7. other _____
8. don't know

K6. Which of the following is the definition of drug withdrawal?

1. a person will feel bad if he can not get any drug
2. a person must use more and more drug to feel the same effect
3. other _____
4. Don't know

K7. The main form of cancer caused by cigarette smoking is cancer of:

1. intestines
2. stomach
3. mouth
4. lung
5. other _____

6. don't know

K8. Which of the following drugs mainly causes liver cirrhosis?

1. inhalants
2. alcohol
3. steroids
4. tobacco
5. other _____
6. don't know

K9. Which of the following drugs is the main cause of hair growth on women faces and body?

1. inhalants
2. alcohol
3. steroids
4. tobacco
5. other _____
6. don't know

K10. Cigarette smoking and alcohol drinking by pregnant women can affect their baby's:

1. gender
2. hair color
3. growth and development
4. other _____
5. Don't know

K11. What is the purpose of tobacco/alcohol advertisements?

1. to tell the truth about tobacco/alcohol
2. to entertain people
3. to get people to buy their products
4. other _____
5. don't know

K12. To be able to make a decision you first assess the situation and list options. What is the next step?

1. take action
2. reflect and revise
3. evaluate the options
4. other _____
5. don't know

K13. Which of the following is an example of assertiveness?

1. doing what your friends want you to do
2. saying what you want without harming people
3. refusing an offer in an insulting tone
4. other _____
5. don't know

K14. Which of the following is not an example of a technique to avoid an offer of tobacco/alcohol?

1. not to enter the place where you can be offered tobacco/alcohol
2. leaving before an offer is made
3. saying direct no
4. other _____
5. Don't know

K15. Which of the following has not to be done while communicating concern about drug use without alienating others?

1. select a place where the person is alone with you
2. select a situation when you both have plenty of time
3. accuse and blame the person for using drugs
4. state the facts that are involved in the situation and that impact your thoughts
5. communicate the concern clearly in emphatic tone
6. other _____
7. don't know

K16. Which of the following is the definition of indirect pressure?

1. non-aggressive offer of something
2. aggressive offer of something
3. no actual offer, you just see somebody doing something and feel you have to do something to be liked or accepted
4. other _____
5. don't know

K17. Which of the following is the definition of "passive smoking"?

1. not to do any active work during smoking
2. 'to inhale the smoke exhaled by other people
3. when smoke by one's offer
4. other _____
5. don't know

K18. People smoking cigarettes have higher risk to have a serious heart disease than nonsmokers

1. Yes
2. No
3. Don't know

K19. Cigarette smoking/ alcohol drinking lead you to be addicted to nicotine/alcohol

1. Yes
2. No
3. Don't know

K20. Cigarette smoking can cause strokes

1. Yes
2. No
3. Don't know

K21. There is no punishment for tobacco use in our country. Does this mean that tobacco is not a drug?

1. Yes
2. No
3. Don't know

K22. Cigarette smoking causes early wrinkles

1. Yes
2. No
3. Don't know

K23. Cigarette smoking can stunt your growth and development

1. Yes
2. No
3. Don't know

K24. Drinking large amounts of alcohol in short time can kill you

1. Yes
2. No
3. Don't know

K25. Cocaine/illicit drugs are more addictive than tobacco.

1. Yes
2. No
3. Don't know

K26. Use of cocaine and hashish is legal in Armenia

1. Yes
2. No
3. Don't know

K27. Any use of steroids can be classified as abuse.

1. Yes
2. No
3. Don't know

K28. Inhalants are household products. Does this mean that they can not cause health problems?

1. Yes
2. No
3. Don't know

K29. Can "passive smoking" cause lung cancer?

1. Yes
2. No
3. Don't know

K30. Hashish smoke contains more tar than cigarette smoke

1. Yes
2. No
3. Don't know

K31. Chewing tobacco is not as harmful as cigarettes.

1. Yes
2. No
3. Don't know

K32. Most women need to drink only half as much alcohol as men to have the same effect

1. Yes
2. No
3. Don't know

K33. Inhalants reduce oxygen flow to the brain

1. Yes
2. No
3. Don't know

K34. Can a person become an alcoholic if he/she only drinks beer?

1. Yes
2. No
3. Don't know

Attitude

A1-A37 are attitude questions. You don't have to know anything for sure, you just express your attitude, put whatever you think.

A1. Most teenagers /13-15/ agree that cigarette smoking /alcohol drinking are the signs of independence of young people:

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A2. Most teenagers /13-15/ agree that cigarette smoking /alcohol drinking make young people look glamorous (romantic):

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A3. Most teenagers /13-15/ agree that cigarette smoking /alcohol drinking make young people look silly:

1. completely agree

2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A4. Most teenagers /13-15/ agree that cigarette smoking /alcohol drinking make boys look “macho”:

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A5. Most teenagers /13-15/ agree that cigarette smoking /alcohol drinking/ make girls look modern:

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A6. I think that a smoking person can not be considered as an independent person, because he/she depends on nicotine:

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A7. I think that cigarette smoking and alcohol drinking can negatively affect my reputation:

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A8. I think that cigarette smoking and alcohol drinking can negatively affect my health:

1. completely agree
2. somewhat agree
3. I am not sure
4. somewhat disagree
5. completely disagree

A9. I would not like my girlfriend/boyfriend to smoke

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A10. I don't like to go to a party with a person, who likes to drink much, because I never know what can I expect him/her to do:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A11. I don't like to communicate with people who use tobacco, because they smell bad:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A12. I do not like when somebody smokes around me:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A13. Smoking cigarettes/ drinking alcohol would help you to relax:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A14. Smoking cigarettes/drinking alcohol would make you feel dizzy:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A15. Smoking cigarettes/drinking alcohol would give you something to do when you are bored:

1. completely agree

2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A16. There is so much interesting to do without smoking and using alcohol for teenager, that it is silly to waste the time smoking and drinking alcohol:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A17. Smoking cigarettes helps to concentrate:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A18. Cigarette smoking causes addiction:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A19. Cigarette smoking causes more unpleasant feelings connected with temporal nonavailability of tobacco, than pleasant feelings:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A20. I like to act in ways that please other people in my group, even if I don't think it is right:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A21. I respect those teenagers who uphold their opinions, even if they are different from opinions of surrounding people

1. completely agree

2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A22. I prefer to communicate with people, who always agree with the majority:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A23. I respect those people whose words and deeds are never at variance:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A24. I respect those teens who can assertively refuse to use tobacco or alcohol even if the majority in their surrounding smokes and drinks alcohol:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A25. The parties are not interesting without tobacco and alcohol:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A26. To enter a group, it is necessary for a teen to smoke and to drink alcohol:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A27. There are many interesting teens in my surrounding who does not smoke and drink alcohol, so I do not need to start to smoke or drink alcohol to have friends:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A28. I think that most of what I do today will have consequences for the future:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A29. I think that horrible images of tobacco and alcohol are created by bad people in order to deprive people of pleasure:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A30. My health is more important for me than any temporal pleasure:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A31. I think that it does not make sense to deprive oneself of today's pleasures, thinking about the future. In any case, everybody will die - I don't care to live 20 years more or less:

1. completely agree
2. somewhat agree
3. I am uncertain
4. somewhat disagree
5. completely disagree

A32. In general how do you feel about other people smoking?

1. I like it very much
2. I like it
3. I don't mind
4. I don't like it
5. I hate it

A33. In general how do you feel about other people drinking alcohol?

1. I like it very much
2. I like it
3. I don't mind
4. I don't like it
5. I hate it

A34. How many of your five closest friends would approve if you smoked cigarettes?

1. _____
2. don't know

A35. How many of your five closest friends would approve if you drank alcohol?

1. _____
2. don't know

A36. How many of your five closest friends would not approve if you smoked cigarettes?

1. _____
2. don't know

A37. How many of your five closest friends would not approve if you drank alcohol?

1. _____
2. don't know

Skills

The following section refers to your skills to do something.

S1. If someone else's smoking bothered you, would you ask them not to smoke around you?

1. definitely yes
2. yes
3. I am not sure
4. no
5. definitely no

S2. I can imagine refusing to use tobacco and alcohol with students my and still have them like me:

1. definitely yes
2. yes
3. I am not sure

4. no
5. definitely no

S3. I know how to avoid tobacco/alcohol offer:

1. definitely yes
2. yes
3. I am not sure
4. no
5. definitely no

S4. I know how to communicate my concern to people who smoke without hurting them

2. definitely yes
3. yes
4. I am not sure
5. no
6. definitely no

Thanks for participation

Appendix F

**SUBSTANCE USE PREVENTION
SCHOOL HEALTH EDUCATION PROJECT**

**United Methodist Committee on Relief in collaboration with the
AUA Center for Health Services Research
Post-intervention questionnaire**

Instructions to the Surveyor: Make sure everybody wrote their codes correctly.

Number of school ###
Grade #
Code of respondent ##
Data entry ###

Practice.

P1. How many times have you tried cigarettes?

6. Never tried
7. 1 time
8. 2-5 times
9. 6-10 times
10. more than 10 times

P1-1. When did you try cigarettes first time?

1. Never tried
2. Tried first time before March 1, 2000
3. Tried first time after March 1, 2000

P2. How many times have you tried drinking alcohol?

1. Never tried
2. 1 time
3. 2-5 times
4. 6-10 times
5. more than 10 times

P2-1. When did you try alcohol first time?

1. Never tried
2. Tried first time before March 1, 2000
3. Tried first time after March 1, 2000

P3. How often do you smoke cigarettes?

9. I never smoked cigarettes
10. none in the last year
11. a few times this year
12. a few times each month
13. a few times each week
14. a few times most days
15. about ½ pack each day
16. a pack or more each day

P4. How often do you drink alcohol?

9. I never drink alcohol
10. none in the last year
11. a few times this year
12. a few times each month
13. a few times each week
14. a few times most days
15. many times most days
16. many times every day

P5. If you drink alcohol, what do you usually drink?

7. I do not drink alcohol
8. beer
9. wine
10. vodka, cognac or other hard liquor
11. one or two of the aforementioned
12. liquor, champaign

P6. Out of every 100 male students your age in your school, how many do you think smoke cigarettes at least once a week?

1. _____
2. do not know

P7. Out of every 100 female students your age in your school, how many do you think drink alcohol at least once a week?

1. _____
2. do not know

P8. How many of your five closest friends have tried cigarettes?

1. _____
2. do not know

P9. How many of your five closest friends usually smoke at least one cigarette a week?

1. _____
2. do not know

For Knowledge, Attitudes & Skills sections see the questionnaire for baseline survey in Appendix E.

Opinions about the program (for intervention schools only)

O1. How understandable is the program for adolescents of your age?

1. fully understandable
2. somewhat understandable
3. I am not certain
4. somewhat not understandable
5. not at all understandable

O2. How interesting is the program for adolescents of your age?

1. very interesting
2. somewhat interesting
3. I am not certain
4. Somewhat uninteresting
5. Not at all interesting

O3. How likely is it that the program will effect a positive impact in terms of substance use prevention in people of your age?

1. very likely
2. somewhat likely
3. I am not certain
4. somewhat unlikely
5. not at all likely

O4. How likely is it that if the program were taught as a part of school academic program and were graded it would effect more positive impact in terms of substance use prevention?

1. very likely
2. somewhat likely
3. I am not certain
4. somewhat unlikely
5. not at all likely

O5. In which grade would you recommend to teach this program?

1. _____

2. I would not recommend to teach this program in school in any grade
3. Don't know

O6. What did you like in the program?

1. content
2. methods
3. other

O7. What did you dislike in the program?

1. content
2. methods
3. other

O8. How many of the eleven sessions of the program did you attend? _____

O9. How many times have you read the "Live healthy" booklet?

1. I haven't read it
2. I have read only some parts
3. One time
4. Several times
5. Many times

O10. Is the booklet understandable?

1. Yes
2. No

O11. Is the booklet interesting?

1. Yes
2. No

O12. Is the booklet useful?

1. Yes
2. No

Thanks for participation

Appendix G

Baseline questionnaire & additional questions included in post-intervention questionnaire: Armenian version

Appendix H. Instructor's record form on students' ability to demonstrate specific skills

Skills demonstrated by the students during skill-teaching lessons

| The List of students | Specific skill score | | | |
|----------------------|----------------------|------------------------------|--------------------|-----------------------|
| | Decision making | Standing up to peer pressure | Standing up to ads | Communicating concern |
| Student #1 | | | | |
| Student #2 | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Student # n | | | | |

Appendix I

Field Guide for Focus Groups with Teachers

Hello and welcome to our session today. Thank you for taking the time to join us for a discussion on the Substance Use Prevention project. You are now at the Center for Health Services Research of AUA. The Center for Health Services Research is going to further develop and improve SUP. We are trying to gain information on the strengths and weaknesses of the project. We have invited you here today to share your ideas with us. We will take them into consideration when further developing the program.

In February 2000 we started the evaluation of the project. We chose 4 schools in Yerevan for intervention where the SUP curriculum was taught and four other schools for control. You know that by now we conducted two surveys in intervention and control schools and have some findings that we would like to interpret with your help.

Before we begin, let me tell you a few things that will make this session go smoothly. Your opinions are valuable to us and our project. Please, speak up, and only one person should talk at a time. We are taking notes on your opinions because we do not want to miss any of your comments.

Our session will last about an hour. Well, let us begin.

Let us start with general questions.

- 1. What did you like about the project?**
 - a. Content
 - b. Methods
 - c. Other
- 2. What did you dislike about the project?**
 - a. Content
 - b. Methods
 - c. Other
- 3. What is your opinion about interactive methods of teaching?**
- 4. What is your impression concerning group work, game and incentive approaches for grading the assignments?**
- 5. How possible is that the project will have an impact on adolescents' substance use prevention?**
- 6. Which of the components of the project do you think are more effective in preventing substance use?**
 - a. information about the consequences of substance use
 - b. attitude changing
 - c. self-efficacy enhancement
 - d. skill building

7. **What would you change in the project to make it more effective?**
8. **If the project would be taught as an obligatory academic module, how likely is it that it would have more impact?**
9. **How understandable were the project, manuals and booklets?**
10. **How interesting was the program for adolescents?**
11. **What is the grade the most appropriate for teaching a module?**

Let us now talk about several findings of the survey and try to interpret them. We found that while the self-reported prevalence of tobacco use was only 7%, the prevalence of tobacco use by other teens was believed to be in average 47%.

What do you think about these two values? Why there is so much disagreement between them? What is your own estimate on the prevalence of tobacco use among adolescents ?

Another finding refers to the inconsistency of answers to several questions. First of all it refers to practice questions. There were several questions in the questionnaire having the same option "never used". Different numbers of respondents chose this option for different questions. Or, some of the respondents who answered "never used" at post test were those who at baseline answered that they tried.

How could you interpret this inconsistency?

And the second: There were several questions in the questionnaire asking about opposite things about the same issue (for example: approve/disapprove tobacco use). The answers of some of the respondents to these questions are in disagreement.

How would you interpret this disagreement?

How understandable was the wording of the questionnaire ?

Thanks for your time and efforts.

Appendix J

Information on Focus Group Participants

| School | Grade | Gender | How many lessons attended | How many times have read the booklet |
|------------------------|--------------|---------------|----------------------------------|---|
| Participant # 1 | | | | |
| Participant #2 | | | | |
| | | | | |
| Participant # n | | | | |

Field Guide for Focus Groups with Students

Hello and welcome to our session today. Thank you for taking the time to join us for a discussion on the Substance Use Prevention project. You are now at the Center for Health Services Research of AUA. My name is Karine Markosyan and I have been the SUP Project Coordinator. The Center for Health Services Research is going to further develop and improve SUP. We are trying to gain information on the strengths and weaknesses of the project. We have invited you here today to share your ideas with us. We will take them into consideration when further developing the program.

In February 2000 we started the evaluation of the project. We chose 4 schools in Yerevan for intervention where the SUP curriculum was taught and four other schools for control. You know that by now we conducted two surveys in intervention and control schools and have some findings that we would like to interpret with your help.

Before we begin, let me tell you a few things that will make this session go smoothly. Your opinions are valuable to us and our project. Please, speak up, and only one person should talk at a time. We are taking notes on your opinions because we do not want to miss any of your comments. We will not register your names, and in our reports there will not be any names attached to your comments. You may be assured of complete confidentiality.

Our session will last about an hour. Well, let us begin. First, why don't we tell each other our names?

Let us start with general questions.

12. What did you like about the project?

- a. Content
- b. Methods
- c. Other

13. What did you dislike about the project?

- a. Content
- b. Methods
- c. Other

14. What is your opinion about interactive methods of teaching?

- 15. What is your impression concerning group work, game and incentive approaches for grading the assignments?**
- 16. How likely is that the project will have an impact on substance use prevention for adolescents of your age?**
- 17. Which of the components of the project do you think are more effective in preventing substance use?**
 - a. information about the consequences of substance use
 - b. attitude changing
 - c. self-efficacy enhancement
 - d. skill building
- 18. What would you change in the project to make it more effective?**
- 19. If the project were taught as an obligatory academic module, how likely is it that it would have more impact?**
- 20. How understandable were the project and booklet for adolescents of your age?**
- 21. How interesting was the program for adolescents of your age?**
- 22. What is the grade the most appropriate for teaching a module?**

Let us now talk about several findings of the survey and try to interpret them. We found that while the self-reported prevalence of tobacco use by boys was only 7%, the prevalence of tobacco use by other boys of the same age was believed to be in average 47%.

What do you think about these two values? Why there is so much disagreement between them? What is your own estimate on the prevalence of tobacco use among adolescents?

Another finding refers to the inconsistency of answers to several questions. First of all it refers to practice questions. There were several questions in the questionnaire having the same option "never used". Different numbers of respondents chose this option for different questions. Or, some of the respondents who answered "never used" at post test were those who at baseline answered that they tried.

How could you interpret this inconsistency?

And the second: There were several questions in the questionnaire asking about opposite things concerning the same issue (for example: approve/disapprove tobacco use). The answers of some of the respondents to these questions were in disagreement.

How would you interpret this disagreement?

How understandable was the wording of the questionnaire ?

Thanks for your time and efforts.

Appendix K

Intervention and Control Schools and Number of Students Sampled

| School | Number of eligible students registered | Sample size at pre-test | Response rate at pre-test (%) | Sample size at post-intervention test | Post-intervention coverage rate (%) |
|---------------------------------|--|-------------------------|-------------------------------|---------------------------------------|-------------------------------------|
| 134 | 67 | 58 | 87 | 55 | 95 |
| 147 | 83 | 68 | 82 | 63 | 93 |
| 172 | 73 | 59 | 81 | 53 | 90 |
| 185 | 73 | 59 | 81 | 59 | 100 |
| Total Intervention Group | 296 | 244 | 80 | 230 | 94 |
| 76 | 85 | 66 | 78 | 54 | 82 |
| 127 | 56 | 48 | 86 | 40 | 83 |
| 165 | 79 | 58 | 73 | 46 | 79 |
| 195 | 95 | 73 | 77 | 68 | 93 |
| Total Control Group | 315 | 245 | 78 | 208 | 85 |

| School | Sample size at post-post-intervention test | Post-post-intervention coverage rate (%) |
|---------------------------------|--|--|
| 134 | 40 | 69 |
| 147 | 41 | 60 |
| 172 | 22 | 37 |
| 185 | 50 | 85 |
| Total Intervention Group | 153 | 63 |
| 76 | 25 | 39 |
| 127 | 23 | 48 |
| 165 | 39 | 67 |
| 195 | 26 | 36 |
| Total Control Group | 113 | 46 |

Appendix L

Socio-Demographic Characteristics of Study Participants at Baseline and Post-Intervention Survey by Group

| Variable | Intervention Group | | Control Group | |
|--|--------------------|-------------------------|----------------|-------------------------|
| | Baseline (244) | Post-intervention (230) | Baseline (245) | Post-intervention (208) |
| Age (mean) | 13.9 | 13.9 | 14.0 | 14.0 |
| 12 | 5% (11) | 5% (11) | 1% (3) | 1% (3) |
| 13 | 32% (79) | 32% (75) | 30% (74) | 32% (66) |
| 14 | 33% (81) | 33% (76) | 34% (83) | 33% (68) |
| 15 | 28% (67) | 28% (64) | 33% (80) | 33% (69) |
| 16 | 2% (16) | 2% (4) | 2% (5) | 1% (2) |
| Grade | | | | |
| 7 | 37% (91) | 38% (87) | 39% (96) | 39% (81) |
| 8 | 37% (89) | 36% (84) | 36% (88) | 38% (80) |
| 9 | 26% (64) | 26% (59) | 25% (61) | 23 % (47) |
| Male | 44 % (108) | 43% (99) | 42% (102) | 43% (90) |
| Female | 56% (136) | 57 % (131) | 58% (143) | 57% (118) |
| Number of people in household | 4.7 | 4.8 | 4.9 | 4.9 |
| Have a father in the house | 91% (223) | 92% (211) | 93% (230) | 94% (195) |
| Have a mother in the house | 99% (242) | 99% (228) | 100% (245) | 100% (208) |
| Siblings (mean) | 1.3 | 1.3 | 1.4 | 1.4 |
| 0 | 8% (19) | 7% (16) | 8% (19) | 8% (16) |
| 1 | 61% (149) | 62% (142) | 56% (138) | 56% (116) |
| 2 | 26% (64) | 26% (60) | 29% (70) | 29% (61) |
| 3 | 4% (9) | 4% (9) | 6% (15) | 6% (13) |
| 4 | 1% (3) | 1% (3) | 1% (2) | 0.5% (1) |
| 5 | 0% (0) | 0% (0) | 0,4% (1) | 0.5% (1) |
| Have a grandfather in the house | 16% (39) | 17% (38) | 22% (53) | 22% (45) |
| Have a grandmother in the house | 32% (78) | 32% (74) | 36% (87) | 36% (74) |
| Father education | | | | |
| 10 years or less | 25% (60) | 23% (53) | 23% (57) | 25% (51) |
| 10-13years | 22% (54) | 24% (54) | 23% (56) | 23% (48) |
| 14+ years | 53% (130) | 53% (123) | 54% (132) | 52 % (109) |

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| | | | | |
|--|-----------|-----------|-----------|-----------|
| Mother education | | | | |
| 10 years or less | 17% (41) | 17% (39) | 15% (36) | 15% (32) |
| 10-13years | 27% (67) | 28% (64) | 24% (59) | 24%(49) |
| 14+ years | 56% (136) | 55% (127) | 61% (150) | 61% (127) |
| Father has a job | 63% (153) | 62% (143) | 58% (141) | 61% (126) |
| Mother has a job | 42% (103) | 42% (97) | 47 (114) | 49% (102) |
| Mother or father has a job | 77% (187) | 75% (174) | 72% (177) | 75% (157) |
| Number of luxury items in household | 3.5 | 3.4 | 3.5 | 3.5 |
| Car | 44% (107) | 44% (101) | 46% (114) | 46% (95) |
| Video | 62% (152) | 61% (140) | 60% (146) | 60% (124) |
| Color TV | 94% 230) | 94% (216) | 97% (238) | 97% (201) |
| Video Camera | 14% (35) | 14% (31) | 16% (39) | 15% (32) |
| Tape recorder | 92% (224) | 92% (211) | 91% (223) | 92% (191) |

Appendix M

The level of question-specific knowledge of respondents of intervention group

| Question | Baseline | Post-intervention | P-value |
|---|----------|-------------------|---------|
| <p>K1. Which of the following is the definition of early death?</p> <p>7. death before age 30 8. death before age 50 9. death before the average life expectancy 10. death before age 80 11. other _____ 12. don't know</p> | 0.08 | 0.5 | 0.000 |
| <p>K2. Which of the following is the factor causing more early deaths than any other?</p> <p>7. environment 8. human biology 9. unhealthy lifestyle 10. health care system 11. other _____ 12. don't know</p> | 0.45 | 0.64 | 0.000 |
| <p>K3. The life expectancy of smokers compared to general population is:</p> <p>7. the same 8. less by 22 years 9. more by 22 years 10. more by 10 years 11. other _____ 12. don't know</p> | 0.08 | 0.7 | 0.000 |
| <p>K4. Which drug causes more early deaths worldwide?</p> <p>9. cocaine 10. hashish 11. alcohol 12. tobacco 13. steroids 14. inhalants 15. other _____ 16. don't know</p> | 0.01 | 0.6 | 0.000 |
| <p>K5. Which drug is number one killer of 15-24year olds in the US?</p> <p>9. cocaine 10. hashish 11. alcohol 12. tobacco 13. steroids 14. inhalants 15. other _____ 16. don't know</p> | 0.01 | 0.3 | 0.000 |

| | | | |
|--|------|-----|-------|
| <p>K6. Which of the following is the definition of drug withdrawal?</p> <p>5. a person will feel bad if he can not get any drug</p> <p>6. a person must use more and more drug to feel the same effect</p> <p>7. other _____</p> <p>8. Don't know</p> | 0.4 | 0.7 | 0.000 |
| <p>K7. The main form of cancer caused by cigarette smoking is cancer of:</p> <p>7. intestines</p> <p>8. stomach</p> <p>9. mouth</p> <p>10. lung</p> <p>11. other _____</p> <p>12. don't know</p> | 0.7 | 0.9 | 0.001 |
| <p>K8. Which of the following drugs mainly causes liver cirrhosis?</p> <p>7. inhalants</p> <p>8. alcohol</p> <p>9. steroids</p> <p>10. tobacco</p> <p>11. other _____</p> <p>12. don't know</p> | 0.4 | 0.8 | 0.000 |
| <p>K9. Which of the following drugs is the main cause of hair growth on women faces and body?</p> <p>7. inhalants</p> <p>8. alcohol</p> <p>9. steroids</p> <p>10. tobacco</p> <p>11. other _____</p> <p>12. don't know</p> | 0.01 | 0.4 | 0.000 |
| <p>K10. Cigarette smoking and alcohol drinking by pregnant women can affect their baby's:</p> <p>6. gender</p> <p>7. hair color</p> <p>8. growth and development</p> <p>9. other _____</p> <p>10. Don't know</p> | 0.7 | 0.9 | 0.000 |
| <p>K11. What is the purpose of tobacco/alcohol advertisements?</p> <p>6. to tell the truth about tobacco/alcohol</p> <p>7. to entertain people</p> <p>8. to get people to buy their products</p> <p>9. other _____</p> <p>10. don't know</p> | 0.7 | 0.9 | 0.000 |

| | | | |
|---|-----|-----|-------|
| | | | |
| <p>K12. To be able to make a decision you first assess the situation and list options. What is the next step?</p> <p>6. take action 7. reflect and revise 8. evaluate the options 9. other _____ 10. don't know</p> | 0.2 | 0.4 | 0.000 |
| <p>K13. Which of the following is an example of assertiveness?</p> <p>6. doing what your friends want you to do 7. saying what you want without harming people 8. refusing an offer in an insulting tone 9. other _____ 10. don't know</p> | 0.7 | 0.8 | 0.158 |
| <p>K14. Which of the following is not an example of a technique to avoid an offer of tobacco/alcohol?</p> <p>6. not to enter the place where you can be offered tobacco/alcohol 7. leaving before an offer is made 8. saying direct no 9. other _____ 10. Don't know</p> | 0.5 | 0.5 | 0.438 |
| <p>K15. Which of the following has not to be done while communicating concern about drug use without alienating others?</p> <p>8. select a place where the person is alone with you 9. select a situation when you both have plenty of time 10. accuse and blame the person for using drugs 11. state the facts that are involved in the situation and that impact your thoughts 12. communicate the concern clearly in emphatic tone 13. other _____ 14. don't know</p> | 0.1 | 0.3 | 0.000 |
| <p>K16. Which of the following is the definition of indirect pressure?</p> <p>6. non-aggressive offer of something 7. aggressive offer of something 8. no actual offer, you just see somebody doing something and feel you have to do something to be liked or accepted 9. other _____ 10. don't know</p> | 0.2 | 0.4 | 0.000 |
| <p>K17. Which of the following is the definition of "passive smoking"?</p> <p>6. not to do any active work during smoking 7. 'to inhale the smoke exhaled by other people 8. when smoke by one's offer 9. other _____</p> | 0.3 | 0.7 | 0.000 |

| | | | |
|---|------|-----|-------|
| 10. don't know | | | |
| K18. People smoking cigarettes have higher risk to have a serious heart disease than nonsmokers | 0.8 | 0.9 | 0.124 |
| K19. Cigarette smoking/ alcohol drinking lead you to be addicted to nicotine/alcohol | 0.6 | 0.9 | 0.000 |
| K20. Cigarette smoking can cause strokes | 0.2 | 0.6 | 0.000 |
| K21. There is no punishment for tobacco use in our country. Does this mean that tobacco is not a | 0.6 | 0.8 | 0.000 |
| K22. Cigarette smoking causes early wrinkles | 0.6 | 0.9 | 0.000 |
| K23. Cigarette smoking can stunt your growth and development | 0.3 | 0.3 | 0.128 |
| K24. Drinking large amounts of alcohol in short time can kill you | 0.6 | 0.9 | 0.000 |
| K25. Cocaine/illicit drugs are more addictive than tobacco. | 0.03 | 0.2 | 0.000 |
| K26. Use of cocaine and hashish is legal in Armenia | 0.6 | 0.9 | 0.000 |
| K27. Any use of steroids can be classified as abuse. | 0.03 | 0.2 | 0.000 |
| K28. Inhalants are household products. Does this mean that they can not cause health problems? | 0.2 | 0.7 | 0.000 |
| K29. Can "passive smoking" cause lung cancer? | 0.4 | 0.7 | 0.000 |
| K30. Hashish smoke contains more tar than cigarette smoke. | 0.3 | 0.5 | 0.000 |
| K31. Chewing tobacco is not as harmful as cigarettes. | 0.1 | 0.6 | 0.000 |
| K32. Most women need to drink only half as much alcohol as men to have the same effect | 0.3 | 0.6 | 0.000 |
| K33. Inhalants reduce oxygen flow to the brain | 0.2 | 0.7 | 0.000 |
| K34. Can a person be an alcoholic if he/she only drinks beer? | 0.3 | 0.7 | 0.000 |

Appendix N

Inconsistency of respondents' answers to practice-related question

| Variable | Intervention group (n=230) | | | | Control group (n=208) | | | |
|--|----------------------------|-----------------------------------|------------|----------------------------|-----------------------|-----------------------------------|------------|---------------------------|
| | Baseline | Post-intervention | Difference | % of inconsistent answers* | Baseline | Post-intervention | Difference | % of inconsistent answers |
| P1. How many times have you tried cigarettes? 1. Never tried | 72% (166) | 70% (160) | 2% (6) | 6% (14) | 79% (165) | 71% (147) | 8% (18) | 3% (6) |
| P3. How often do you smoke cigarettes? 1. Never tried | 79% (181) | 72% (166) | 7% (15) | 5% (12) | 84% (174) | 75% (156) | 9% (18) | 1% (3) |
| P2. How many times have you tried drinking alcohol? 1. Never tried | 26% (59) | 19% (43) | 5% (16) | 7% (15) | 27% (56) | 27% (56) | 0 | 9% (19) |
| P4. How often do you drink alcohol? 1. Never tried | 33% (75) | 21% (49) | 12% (26) | 6% (13) | 31% (65) | 31% (65) | 0 | 11% (22) |
| P5. If you drink alcohol, what do you usually drink? 1. I don't drink alcohol | 22% (50) | 19% (44) | 3% (6) | 10% (22) | 25% (53) | 23% (47) | 2% (6) | 8% (16) |
| P1-1. When did you try tobacco first time? 1)Never tried 2)Before March 1, 2000 3)After March 1, 2000 | | 71% (163) 27% (63) 1.3% (3) | | | | 73% (151) 26% (53) 1.4% (3) | | |
| P2-1. When did you try alcohol first time? 1)Never tried 2)Before March 1, 2000 3)After March 1, 2000 | | 20% (47) 66% (151) 13% (29) | | | | 29% (60) 55% (115) 16% (33) | | |

* - those who reported having not experienced at post-test while having experienced at baseline

Appendix O

Opinions of students about the SUP project

| Question | Percentage (number) of answers |
|---|--|
| O1. How understandable is the program for people of your age? 6. fully understandable 7. somewhat understandable 8. I an not certain 9. somewhat not understandable 10. not at all understandable | 76 (175) 17 (38) 4 (10) 1 (2) 2 (4) (1) - Missing |
| O2. How interesting is the program for people of your age? 6. very interesting 7. somewhat interesting 8. I am not certain 9. Somewhat uninteresting 10. Not at all interesting | 62 (143) 25 (57) 4 (8) 5 (11) 4 (9) 1 (2) - Missing |
| O3. How likely is it that the program will effect a positive impact in terms of tobacco use prevention in people of your age? 6. very likely 7. somewhat likely 8. I am not certain 9. somewhat unlikely 10. not at all likely | 54 (124) 25 (58) 11 (26) 4 (10) 4 (10) 1 (2) - Missing |
| O4. How likely is it that if the program were taught as a part of school academic program and were graded it would effect more positive impact in terms of tobacco use prevention? 6. very likely 7. somewhat likely 8. I am not certain 9. somewhat unlikely 10. not at all likely | 51 (118) 19 (43) 18 (41) 4 (10) 7 (16) 1 (2) - missing |
| O5. In which grade would you recommend to teach this program? 1 2 3 4 5 6 7 8 9 10 I would not recommend to teach this program in school in any grade I don't know | 9 (20) 1 (2) 1 (3) 3 (8) 7 (16) 10 (24) 25 (59) 17 (40) 4 (10) 5 (11) 13 (29) 13 (29) |

| | |
|---|---|
| <p>O6. What did you like in the program?</p> <p>4. content 5. methods 6. other (everything) 7. nothing</p> | <p>26 (60) 46 (106) 47 (20) 6 (13) 2 (4) - missing</p> |
| <p>O7. What did you dislike in the program?</p> <p>4. content 5. methods 6. nothing</p> | <p>12 (28) 8 (19) 79 (182)</p> |
| <p>O8. How many of the eleven sessions of the program did you attend?</p> <p>0 1 2 3 4 5 6 7 8 9 10 11</p> | <p>1 (3) 1 (2) 2 (4) 1 (2) 1 (1) 3 (6) 1 (2) 3 (6) 5 (11) 12 (27) 20 (45) 47 (109) 5 (12) - missing</p> |
| <p>O9. How many times have you read the "Live healthy" booklet?</p> <p>6. I haven't read it 7. I have read only some parts 8. One time 9. Several times 10. Many times</p> | <p>7(16) 26 (60) 34 (77) 17 (39) 15 (35) 1 (3) - missing</p> |
| <p>O10. Is the booklet understandable?</p> <p>Yes No</p> | <p>93 (215) 5 (11) 2 (4) - missing</p> |
| <p>O11. Is the booklet interesting?</p> <p>3. Yes 4. No</p> | <p>88 (203) 11 (25) 1 (2)</p> |
| <p>O12. Is the booklet useful?</p> <p>5. Yes 6. No</p> | <p>93 (213) 6 (14) 1 (3)- missing</p> |

Appendix P**Participants of focus groups**

| Focus group # | School | Grade | Gender |
|----------------------|---------------|--------------|---------------|
| 1 | 147 | 9 | Boy |
| 1 | 147 | 8 | Girl |
| 1 | 147 | 7 | Boy |
| 1 | 147 | 7 | Boy |
| 1 | 134 | 8 | Girl |
| 1 | 134 | 8 | Girl |
| 1 | 134 | 7 | Girl |
| 1 | 134 | 7 | Girl |
| 1 | 134 | 7 | Girl |
| 2 | 172 | 9 | Boy |
| 2 | 172 | 9 | Boy |
| 2 | 185 | 7 | Girl |
| 2 | 185 | 9 | Girl |
| 2 | 185 | 9 | Girl |
| 2 | 185 | 9 | Girl |
| 2 | 185 | 9 | Girl |
| 2 | 134 | 9 | Girl |
| 2 | 134 | 9 | Girl |