Impact of a Comprehensive Youth Reproductive Health Intervention Among Vocational School Students in Shanghai

China Youth Reproductive Health Project
CFPA and PATH

Shanghai Institute for Planned Parenthood Research

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China Youth
Reproductive Health Project

PATH
A catalyst for global health

CFPA
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Executive Summary

Objective

This evaluation aimed to assess the impact of life-planning skills (LPS) training, peer education (PE), and youth-friendly services (YFS) on the sexual and reproductive health knowledge and attitudes of vocational school students in China.

Methodology

In this study, students from Shanghai vocational schools were provided with sexual and reproductive health education during school hours. One intervention group received LPS training facilitated by teachers. A second group received similar LPS training along with peer education and youth-friendly counseling services. A control group continued its routine course of education.

The LPS training course consisted of eight topics: reproduction and contraception, prevention of sexually transmitted infections (STIs), HIV/AIDS prevention, values clarification and decision-making, interpersonal relations and communication, sexuality and safe sexual behavior, drug abuse prevention, and planning for the future. The intervention lasted two semesters.

The sexual and reproductive health knowledge, attitudes, skills, and behaviors of the students were compared before and after intervention by means of surveys, focus group discussions, and record review.

Results

The research findings showed that both intervention measures significantly increased respondents' sexual and reproductive health knowledge compared to baseline and compared to the control group. The median scores for all knowledge categories increased in both intervention groups.

The group that received LPS training, peer education, and youth-friendly counseling services developed more conservative sex-related attitudes. Both interventions improved the safe-sex intentions of respondents and made the respondents' attitudes toward condom use more positive. Neither intervention prompted or postponed respondents' non-intercourse sexual behaviors or sexual intercourse.

The education program received positive feedback from students and the participatory approach was welcomed.

Conclusion

LPS training brought positive changes in sexual and reproductive health knowledge, attitudes, skills, and behaviors among vocational school students. The integration of LPS training with peer education and services was more effective than LPS training alone.

Recommendations

- Use participatory approaches for sexual and reproductive health education.
- Tailor the contents of sexual and reproductive health education to students' real needs.
- Provide comprehensive sexual and reproductive health education, including contraceptive information.
- Encourage use of psychology teachers for sex education.

- Work in small groups and give each session enough time.
- Strengthen peer education to improve the effectiveness of sexual and reproductive health education and services.
- Further enrich the contents of youth-friendly services to meet the needs of youth by including contraceptive services.

Key Words

Vocational school students; life-planning skills training; youth-friendly services; peer education; impact evaluation; adolescents; sexual and reproductive health; school-based.

Acronyms

AIDS	Acquired immune deficiency syndrome
CFPA	China Family Planning Association
FGD	Focus group discussion
FP	Family planning
FPA	Family Planning Association
HIV	Human immunodeficiency virus
LPS	Life-planning skills
PE	Peer education
PLA	Participatory learning and action
QL	Lower quartile
QU	Upper quartile
RH	Reproductive health
SFPA	Shanghai Family Planning Association
SIPPR	Shanghai Institute of Planned Parenthood Research
STI	Sexually transmitted infection
YFS	Youth-friendly services
YRHP	Youth Reproductive Health Project

1. Background

The China Youth Reproductive Health Project (YRHP) was initiated by CFPA and PATH in 2000, with funding from the Bill & Melinda Gates Foundation. It was a five-year project carried out in 12 provincial capital cities and municipalities and 2 rural counties in China. The Shanghai project was launched in September 2001 and, over the life of the project, carried out in all 19 districts of the city. The project includes three main components. The first is providing life-planning skills (LPS) training and youth-friendly services (YFS) to adolescents. The second is advocating for and providing training courses to adults who can provide sexual and reproductive health (RH) education and services for young people, such as parents, teachers, peer educators, family planning (FP) staff, health care providers, and shopkeepers who sell contraceptives. The third approach is advocating for such services among decision-makers and government leaders at different levels as well as leaders of relevant departments such as health, education, and family planning.

The Shanghai FPA focused its efforts on senior middle school and vocational school students ages 15 to 18 and out-of-school youth ages 15 to 24 (including migrant youth). According to the Shanghai Statistical Yearbook 2003,[1] there were 346,900 senior middle school students, 344,100 young migrants ages 13 to 19, and 650,000 young migrants ages 20 to 24 in Shanghai in 2002. Compared to out-of-school interventions, school education has the advantages of qualified educators and concentrated adolescents, sufficient space, and strong organization and management. Thus, intervention conducted in schools became the key focus of institutionalizing LPS training. Vocational school students account for about one-fifth of in-school students.[1] Graduation from vocational middle school means the end of school education for the majority of vocational school students, who typically look for a job and live independently earlier than their peers. Findings of the participatory learning and action research conducted in the early stage of this project indicate that [2] vocational school students may be at higher risk than other school students. Reasons for the higher risk are that their attitudes toward sex-related issues such as dating and premarital sex are more open than those in other types of middle schools, and the incidence of dating and sexual behaviors, as well as smoking, alcohol abuse, and fights with peers, is much higher than that of their in-school peers. So vocational school students are a key population to whom sexual and RH education and YFS should be provided.

This evaluation study assessed the impact of LPS training, peer education (PE), and YFS on vocational school students. The study provided lessons useful to the overall scaling up of the YRHP in Shanghai as well as the improvement of the training strategy and materials in different types of schools.

2. Objectives and Methods

2.1 Evaluation Objectives

The general objective is to evaluate the impact of LPS training, PE, and YFS among vocational school students.

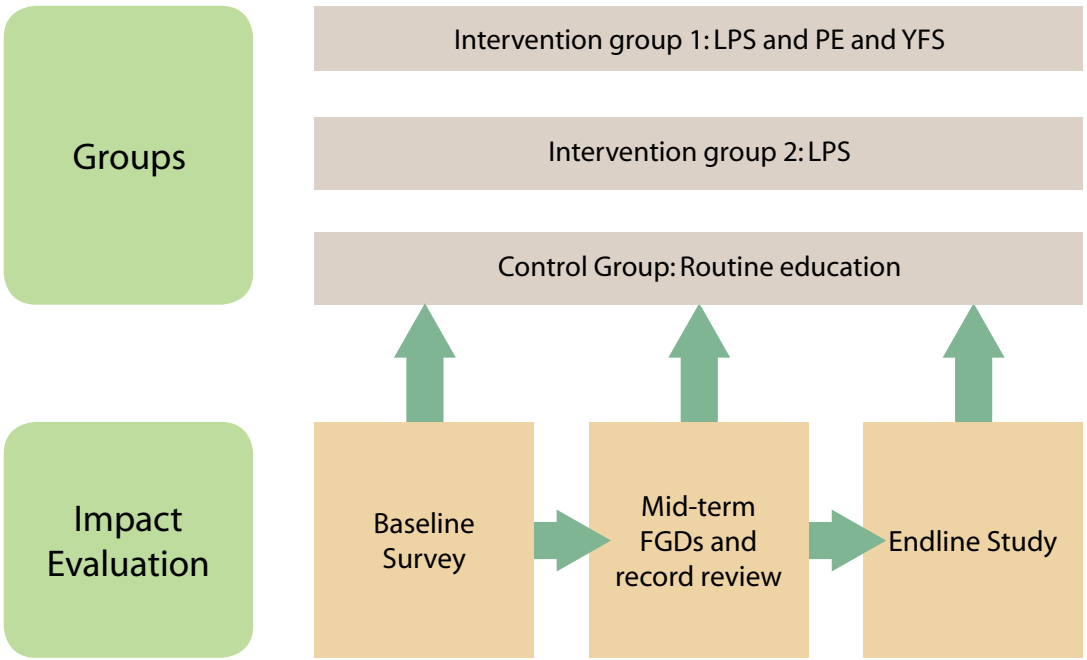
Special aims are:

- To evaluate the impact of LPS training on vocational school students' sexual and reproductive health knowledge, attitudes, skills, and behaviors.
- To compare the acceptability and effectiveness between LPS training facilitated by teachers alone and LPS training coupled with PE and YFS.
- To analyze the provision and the use of YFS in vocational middle schools.

2.2 Evaluation Framework

Three vocational middle schools with similar characteristics were selected as the study sites, among which two were intervention groups and one was the control group. The two intervention schools adopted different intervention measures: one school was provided only LPS training facilitated by teachers, and the other was provided LPS training, PE, and YFS. The intervention lasted two semesters. The research team collected data through questionnaire surveys (baseline, mid-term, and endline), focus group discussions (FGDs, at mid-term), and periodic record review (Figure 2-1). The impact of the interventions was evaluated by comparing the sexual and RH knowledge, attitudes, skills, and behaviors between students in the

Figure 2-1. Impact Evaluation Framework of Youth Reproductive Health Project Among Vocational School Students



intervention and control groups, between the two intervention groups and between baseline and endline.

2.3 Evaluation Methods

Study Sites and Subjects

Three vocational middle schools in Pudong New District were selected as study sites, among which two were the intervention groups and one was the control group. The two intervention schools adopted different intervention measures. The study populations were all of the grade one students in these schools in 2002.

The standards for selecting schools were:

- The three schools are alike in size, specialty, and educational level.
- Directors of the schools support the study.
- There are more than 400 grade one students in each school.

Intervention Measures

The Shanghai Family Planning Association (SFPA), Pudong New District Family Planning Association, Pudong New District Social Development Bureau, and Pudong New District Education College implemented the intervention for two semesters between September 2003 and June 2004.

Intervention group 2 was provided only LPS training facilitated by teachers, while intervention group 1 was provided LPS training, PE, and YFS. The control group continued its routine health education course, which includes eye protection, drug laws, and basic HIV prevention.

Implementation of LPS Training

To train the trainers, Pudong New District Family Planning Association and Pudong New District Education College organized a workshop to train YRHP trainers at the district level during the summer vacation of 2003. Teachers and leaders of the two intervention schools attended the three-day training and became certified to facilitate LPS.

For intervention group 2, three teachers were trained at district level (a psychology, a physics, and a chemistry teacher—the latter two are head teachers), and twelve head teachers were trained at schools, to become LPS facilitators. They provided courses to students during set aside class times using participatory approaches introduced by the project. The guiding material for trainers, called Youth Reproductive Health Teaching Plan Summary, was edited by the district's YRHP working group. The contents of the teaching plan were consistent with the training guidebook of CFPA and included eight topics: reproduction and contraception, prevention of STIs, prevention of HIV/AIDS, values clarification and decision-making, interpersonal relations and communication, sexuality and safe sexual behavior, drug abuse prevention, and planning for the future. LPS training was conducted once every two weeks and each training course covered one topic and lasted 45 minutes. In addition, facilitators organized relevant lectures and other activities.

For intervention group 1, one psychology teacher was primarily responsible for the training. LPS content was incorporated into a psychology course that was part of the regular teaching schedule. Class time, guiding materials for trainers, and the training topics were the same as those in intervention group 2.

Data Collection

Questionnaire Survey

Project researchers used the results of participatory learning and action (PLA) research conducted in the early stage of this project, the core YRHP questionnaires of PATH and the World Health Organization (WHO),

and instruments from other adolescent sexual and RH programs conducted in China and elsewhere to design the questionnaire. They conducted a pretest before the formal survey and modified the questionnaire accordingly. Study subjects in the three schools participated in three surveys during the two-semester intervention (baseline survey in April 2003, mid-term survey in December 2003, and endline survey in May 2004). This evaluation report primarily features the results of the baseline and endline surveys. Mid-term survey findings were similar to endline results and were used to assess if the project needed to adjust the implementation.

The contents of baseline survey included:

- General status and demographic characteristics: age, sex, education, living conditions.
- Family situation: occupation and education of parents, economic status, relationship with parents.
- Sexual and RH knowledge: general physical and psychological knowledge about puberty; knowledge about reproduction, contraception, sexually transmitted infections (STIs) and HIV/AIDS; information sources.
- Attitudes toward sex-related issues such as dating among students and premarital sex.
- Skills: communication with the opposite sex, communication with parents and teachers, self-protection, self-esteem, and confidence.
- Sexual and RH behavior: dating, masturbation, sexual intercourse, contraceptive use.
- Other risk behaviors: smoking, alcohol use.
- School sexuality education and counseling services: availability, opinions, and suggestions.

The questionnaire used for the endline survey was similar to that for the baseline survey, but questions on the implementation of intervention activities and opinions about these activities were added.

To improve the reliability of answers on sensitive questions, each subject filled out the questionnaire himself/herself anonymously on a computer. The software had functions of logical jumping, automatic data checking, and data saving. The survey was carried out in the computer rooms of the three schools and took each student about 30 minutes to complete.

Focus Group Discussions

Project researchers conducted five focus group discussions (FGDs) among the study subjects of the two intervention schools in the middle of the intervention in order to better understand the impact of the intervention and to learn students' attitudes towards and assessments of the intervention. Researchers carried out one FGD with peer educators and the other four FGDs among non-peer-educator students in the two intervention schools (one girl group and one boy group for each intervention school). Each FGD included eight participants. Participant selection criteria for the latter four FGDs included: (1) non-peer educators; (2) non-student leaders, if possible; and (3) students from different classes. The discussions focused on subjects' attitudes, opinions, and suggestions regarding LPS and/or PE; evaluation of YFS; and benefits of the program and any personal changes taking place after the intervention (e.g., relationships with classmates, teachers, and parents; self-protection). Each FGD lasted about 60 minutes. Researchers wrote summaries of and audiotaped sessions. After the interviews, the team supplemented written records with the taped records and analyzed the data.

Record Reviews

Researchers reviewed intervention-related records, routine records, and statistical data from the three schools in order to understand the actual implementation of interventions, the use of YFS, and the daily education activities conducted in the schools.

The collected records included:

- Life-planning skills education: course hours, number of students trained, training plans and materials, questions raised by students, responses and feedback of students, lessons from course.
- Peer education: time, place, means, content, and number of PE courses conducted; number of participants; questions raised and responses given; number and characteristics of peer educators.
- Youth-friendly services: number, age, and sex of students seeking services; questions raised and responses given; referral services.
- Other activities: distribution of informational materials; exhibition of videotapes; organization of lectures and exhibitions.

Data Management and Analysis

Qualitative data were entered into a computer in order to classify and compare responses for analysis by topic areas.

The team converted the quantitative data into an SAS dataset using Sata-transfer 7.0 software. They used SAS version 8.2 to merge, check, and analyze the data. Analysts used standard statistical methods, including statistical description (frequency, percentage, and median), chi-square test (General Association $\chi 2$, Row Mean Scores Differ $\chi 2$), Kruskal-Wallis test, Binary Logistic Regression, and Ordinal Logistic Regression.

The intervention impact was evaluated by comparing the students' sexual and RH knowledge, attitudes, skills, and behaviors between the intervention and control groups, between the two intervention groups, and between baseline and endline.

The major indicators were:

- Indicators of knowledge: knowledge scores, correct answer rates, knowledge sources.
- Indicators of attitude: attitudes toward wet dreams, masturbation, dating, premarital sex, use of condoms.
- Indicators of skill: safe-sex intentions.
- Indicators of behavior: incidence of dating, hugging, kissing, petting, sexual intercourse.

3. Results

3.1 Respondents' Characteristics

The three schools participating in the study were similar in size and in the type and number of specialized courses offered to the students.

A total of 1,612 respondents participated in the baseline survey; 623 and 472 respondents were from intervention groups 1 and 2, respectively, and 517 were from the control group. Respondents' mean age was 16 (16.35) years and the percentage distribution of age among the three groups was not statistically significant. There were 810 boys and 802 girls. The ratio of boys to girls was higher than 1:1 in the intervention groups while lower than 1:1 in the control group. The difference in the sex distribution was of statistical significance. The follow-up percentages of the three groups at the endline survey were 92.55 percent, 94.70 percent, and 94.00 percent, respectively.

The percentage distribution among the three groups of respondents' family structure, living condition (type of residence and whether the student had his/her own room), parents' educational level, and whether respondents felt at ease talking with parents about things happening in school was statistically significant. The percentage of large families (see definition below Table 3-1) was higher in intervention group 1 than in the other two groups. There was no statistical difference in the distribution of single-parent families among the three groups. Compared to the other two groups, the percentage of those who had their own room, those who felt it was not easy to talk with parents about school events, and those whose parents' educational levels were low was significantly higher in intervention group 2. The percentage of those who lived in the school dormitory in the intervention groups was significantly higher than that in the control group. The differences of the self-reported family economic status and parents' occupation among the three groups were not statistically significant (Table 3-1).

At baseline, between 35 and 50 percent of respondents reported having received RH education in schools; the percentage was the highest in intervention group 1 (averaging 50 percent). The primary educational content was physical development and health care, drug abuse prevention, STIs/AIDS prevention, and interpersonal relations and communication. The content was similar among the three groups according to the answers from respondents, except that the intervention groups had received more education about HIV/AIDS than the control group (Table 3-2).

3.2 Respondents' Involvement in and Evaluation of Intervention

LPS Training

According to the endline survey, 93.92 percent and 91.95 percent of respondents in the two respective intervention groups reported they had received LPS training. They reported that the contents covered a variety of topics, especially contraceptive information (reported by 70.33% and 73.77% of respondents in the two respective intervention groups). Fewer respondents mentioned life and vocation planning, dating and marriage, and values clarification and decision-making. Respondents in the two intervention groups reported that the training was participatory (reported by 65.97 percent and 55.26 percent, respectively). The facilitators were different between the two groups. One psychology teacher was the primary facilitator in intervention group 1, with occasional assistance from other teachers including physiology, biology, and moral education teachers. In intervention group 2, a psychology teacher, other teachers, and

Table 3-1. The Distribution of Respondents' Characteristics at Baseline (%)

Characteristics	Intervention 1 (n=623)	Intervention 2 (n=472)	Control (n=517)
Sex			
Male	52.49	59.32	37.72#
Female	47.51	40.68	62.28
Age			
Under 15	29.37	26.69	24.95
16–17	58.27	64.41	66.15
17–18	9.31	7.20	7.54
Over 18	6.10	3.38	2.70
Type of family@			
Large family	41.25	32.42	35.59#
Nuclear family	53.61	62.71	59.19
Single parent	5.14	4.87	5.22
Own room			
Yes	72.71	88.77	71.37#
No	27.29	11.23	28.63
Economic status*			
Well off	17.50	15.89	16.44
About average	72.39	77.54	74.66
Below average	10.11	6.57	8.90
Residence			
Home	74.80	69.70	93.62#
School dorm	20.22	28.60	2.51
Relative/friend/classmate's home	4.97	1.69	3.86
Talk with parents about things happening in school			
Easy	45.04	41.03	48.02#
Average	40.08	43.65	37.18
Difficult	14.87	15.32	14.79
Father's occupation			
Professional/technician	9.09	11.28	9.62
Governmental/clerk	13.55	11.71	13.43
Self-employed	9.92	7.59	8.62
Factory/commercial worker	38.84	44.25	39.88
Jobless	12.23	8.24	14.03
Other	16.36	16.92	14.43
Father's education level*			
Junior secondary or below	39.17	53.15	38.48#
Senior secondary	55.54	44.03	56.31
College or above	5.29	2.82	5.21
Mother's occupation			
Professional/technician	5.61	3.70	5.14
Governmental/clerk	9.41	6.54	7.31
Self-employed	5.78	4.58	4.55
Factory/commercial worker	44.22	51.20	48.02
Jobless	23.10	18.52	25.49
Other	11.88	15.47	9.49
Mother's education level*			
Junior secondary or below	42.90	58.61	43.28#
Senior secondary	52.81	40.52	55.14
College or above	4.29	0.87	1.58

Note: Non-sequential variables tested by Pearson chi-square, sequential variables tested by Mantel-Haenszel chi-square.
* Sequential variables.
# P<0.05, chi-square test among three groups.
@ Large family is defined as including children, parents, and grandfather and/or grandmother, all living together. Nuclear family includes children and parents only. Single-parent family includes children and only the mother or father.

Table 3-2. RH Education Status at Baseline (%)

Educational status	Intervention 1 (n=623)	Intervention 2 (n=472)	Control (n=517)
Whether received RH education in school? (Yes)	50.08	36.02	35.59#
Content of RH education			
Physical development and health care	83.65	88.24	84.24
Reproduction and contraception	28.21	38.24	29.89
Prevention of STIs	50.96	48.82	43.48
Prevention of HIV/AIDS	59.29	55.29	41.85#
Values clarification and decision-making	15.71	14.71	14.67
Interpersonal relations and communication	43.91	45.88	39.67
Drug abuse prevention	62.50	61.76	56.52
Dating and marriage	21.15	27.06	22.83

# P<.05, chi-square test among three groups.

administrative staff acted as primary facilitators and most of them were head teachers (Table 3-3).

Over 90 percent of respondents reported taking the LPS courses seriously, and 58.68 percent were interested in the training courses. When asked how they benefited from the training, over 55 percent of respondents answered that they better understood themselves, increased their RH knowledge, and enhanced their psychological health. In addition, about 40 percent thought they had learned to say no, improved their self-protection skills, and strengthened their sexual morals. One-third of respondents also thought their communication with parents, teachers, and classmates improved, decision-making skills were enhanced, and motivation to participate in activities was strengthened. Half of those who had received training thought the course met their needs and over one-fifth thought it was useful for the future. When asked about any problems with the LPS training, the two leading problems, mentioned by 31.77 percent and 23.66 percent, respectively, were "What we want to know was not covered" and "Teachers let us learn by ourselves." About 70 percent of respondents in the two intervention groups reported receiving educational pamphlets and 67.52 percent of them had read all or most of the pamphlets. Among those that had read them, over 94 percent evaluated the pamphlets as useful (Table 3-3).

Compared to intervention group 2, intervention group 1 rated the LPS training courses more highly. More respondents from intervention group 2 reported problems such as "Teachers let us learn by ourselves" (34.90 percent), "Something was skipped" (26.40 percent), and "Teachers had taught classes didactically, we did not have any interest" (20.36 percent). The differences between the two groups were of statistical significance ($P<0.05$).

Youth-Friendly Services (YFS)

As mentioned above, YFS were provided to intervention group 1 along with the LPS training. The counseling service was provided to help students resolve their personal RH problems, such as questions about physical development, interpersonal relations and communication, dating, contraception, abortion, STIs, and so on. The counseling area of the school was used for the YFS; it included three rooms, one of which is an activity room

Table 3-3. Respondents' Involvement in and Evaluation of LPS Training (%)

Involvement and evaluation	Intervention 1 (n=576)	Intervention 2 (n=447)	Total (n=1023)
Whether received LPS training? (Yes)	93.92	91.95	93.06
Education/training content			
Physical development and health care	92.29	94.81	93.39
Reproduction and contraception	70.33	73.77	71.83
Prevention of STIs	80.61	63.39	73.09
Prevention of HIV/AIDS	85.98	66.39	77.42
Values clarification and decision-making	34.35	18.31	27.34
Interpersonal relations and communication	68.22	57.38	63.48
Drug abuse prevention	85.51	61.48	75.01
Dating and marriage	41.36	25.41	34.39
Self-efficacy	82.94	83.33	83.11
Self-protection and refusal skills	68.46	55.74	62.90
Sexual morals	36.45	32.79	34.85
Premarital sex and consequences of induced abortion	43.22	31.97	38.30
Life and vocation planning	23.36	16.67	20.44
Other	12.62	6.83	10.09
Was the training participatory? (Yes)	65.97	55.26#	61.29
Who acted as facilitators?			
Psychology teacher	86.11	55.93#	72.92
Physiology teacher/biology teacher	10.42	6.49#	8.70
Moral education teacher	7.81	9.17#	8.40
Other course teacher	5.21	24.38#	13.59
Other	7.47	19.02#	12.52
Were the facilitators head teachers? (Yes)	7.21	46.47#	24.36
How did you treat LPS training?◆			
Very seriously	33.83	20.68#	28.08
Rather seriously	56.56	70.07	62.46
Not seriously	9.61	9.25	9.45
Were you interested in the training?◆◆			
Very interested	20.52	12.17#	16.87
Interested	41.96	41.61	41.81
Not interested	9.24	4.14	7.01
Indifferent	28.28	42.09	34.31
Benefits from LPS training			
Have a better understanding of ourselves	63.54	66.22	64.71
Strengthen communication with teachers/parents/classmates	34.38	30.65	32.75
Increase RH knowledge	58.16	64.21#	60.80
Set life goals and promote good decision-making	31.77	29.31	30.70
Learn to say no and improve self-protection skills	48.09	48.55	48.29
Improve motivation to participate in activities	28.82	29.53	29.13
Improve psychological health	52.43	58.61#	55.13
Improve study habits	23.96	24.38#	24.14
Improve sexual morals	37.50	42.73	39.79

table continues on next page

Table 3-3. continued

Involvement and evaluation	Intervention 1 (n=576)	Intervention 2 (n=447)	Total (n=1023)
Problems with LPS training			
What we want to know was not covered	31.25	32.44#	31.77
Something was skipped	17.53	26.40#	21.41
Teachers let us learn by ourselves	14.93	34.90#	23.66
Teaching was didactic and uninteresting	14.93	20.36#	17.30
We felt ashamed because boys and girls were trained together	20.31	26.40#	22.97
The teachers only used one teaching method	12.67	17.23#	14.66
No problem/welcomed by students	21.53	14.09#	18.28
Whether received pamphlets? (Yes)	68.92	70.47	69.60
What did you do with the pamphlets?			
Read all	32.75	37.46	35.05
Read most	31.49	34.60	32.47
Read some in which I was interested	25.94	19.05	22.69
Did not read	9.82	8.89	9.78
Evaluation of pamphlets? ◆			
Very useful	38.79	38.10	39.27
Useful	55.42	55.87	54.89
Not useful	5.79	6.03	5.84
Attitudes toward education program			
Necessary—It meets our needs	48.24	56.69#	51.93
Not necessary—we do not need it at present	8.69	5.84	7.44
Not necessary—we already know it	6.84	7.06	6.94
Necessary—it is useful for future	21.26	20.19	20.79
Other	14.97	10.22	12.89

Note: Non-sequential variables tested by Pearson chi-square. Sequential variables tested by Mantel-Haenszel chi-square.
◆ Sequential variables.
# $P<0.05$, chi-square test between intervention group 1 and intervention group 2.

about 40 m^2 with a library corner, a TV, a round table and chairs, and a number of RH books, magazines, and videos. This room was open between classes and after school. Counseling service was provided at noon in the other two rooms, each about 20 m^2 with a comfortable environment. A box labeled "Heartfelt Mailbox" was set beside the door of the counseling room for anonymous questions.

One female psychology teacher was responsible for the counseling; she was also a facilitator of LPS training courses. At the beginning of the intervention, sometimes counseling services were not available because the teacher was too busy. In order to promote the use of YFS, in March 2003 a questionnaire survey was conducted to get student comments on YFS provision. As a result, eight teachers (including one male and seven female) and eight students (four male and four female) were selected and trained as counseling service providers and a detailed schedule of counseling services was put in place. The expanded services were publicized through school publications, window exhibitions, broadcasts, the psychology association, and announcements by head teachers. To be more convenient for students, the counseling services were not limited to the counseling room; students could make an appointment or seek service in the offices of counselors or classroom teachers at any time.

Table 3-4. The Distribution of Counseling Topics (%)

Counseling topics	Frequency	Percentage
Physical development and health care	24	19.67
Relationship with the opposite sex	44	36.07
Communication with parents	15	12.30
Relationship with teachers	4	3.28
Dating and dating-related sexual issues	24	19.67
Pregnancy/contraception/induced abortion/STI prevention	9	7.38
Sexual harassment/sexual abuse	2	1.64
Abnormal sexual psychology	2	1.64
Relationship with the same sex/classmates	9	7.38
Life and vocation planning	1	0.82
Lack of confidence/school pressures	23	18.85

Note: One counseling session may cover more than one topic.

The eight students came from the psychology association of the school and were involved in the YFS directly as peer educators. In addition, other members of the psychology association participated in the YFS in an indirect way by helping with publicity, decoration, and administration of the YFS room.

During the two-semester intervention, there were a total of 122 counseling visits (44 male and 78 female). Among these visits, 10 students sought counseling service two or more times. Peer educators provided 8.2 percent of counseling services.

Counseling topics covered sex-related physiology, psychology, and social well-being and focused on relationships with the opposite sex (36.07%), physical development and health care (19.67%), dating and dating-related sexual issues (19.67%), lack of confidence/school pressures (18.85%), and communication with parents (12.30%). Counseling that focused on interpersonal relations with classmates, teachers, and parents and relationship with the same sex and the opposite sex accounted for a relative high proportion of sessions (59.03%), while those about sensitive topics such as pregnancy, contraception, abortion, and prevention of STIs accounted for a low proportion (7.38%). Life and vocation planning were seldom counseling topics (Table 3-4).

Students who had sought counseling were aware of YFS and the YFS room through pamphlets, classmates/friends/teachers, and school publications. Among them, most were informed by classmates/friends (mostly members of the psychology association). Pamphlets also contributed to publicizing the YFS room (Table 3-5). However, over half of students still did not know the location or type of YFS available according to results of endline survey.

Table 3-5. Source of Awareness About YFS (%)

Awareness sources	Percentage
Classmates/friends	28.69
Pamphlets	20.49
Teachers	16.39
School publication	13.10
School website	8.20
Wired television in the classroom	3.28
Blackboard exhibition	3.28
Other	3.28

The YFS activity room attracted students' attention. Boys and girls often gathered there to watch videos and read books. They said in the interviews, "The activity room is open every day. The books here are new and good and suitable for us." Another reason the students liked the activity room was that "It is a good place for boys and girls to watch the VCD and chat together with the support of the school."

Peer Education (PE)

Peer education was used widely and flexibly. Teachers supported the PE activities. The contents of the education were correlated to LPS training but not fixed. Peer educators used student publications, school broadcasts, and window exhibitions. Peer educators also organized educational activities, publicized the program, and designed training slides.

Most peer educators came from the school grade that received the project intervention. In addition, a few peer educators were recruited from senior students. At least one student in each class was selected as a peer educator. Classmates first nominated candidates and the psychology teacher made the final selection. The peer educators also became members of the Heart Association, a formal and long-term peer education association in the school. During the intervention, there were 24 peer educators in the Heart Association. Besides publicizing the program and connecting with students, the Heart Association was divided into four groups to conduct special activities:

- Publicity Group—arranged the YFS room, publicized YFS, and designed LPS training slides.
- Editorial Group—produced a special RH column in the school publication (five issues).
- Broadcast Group—broadcast 10 minutes of YRHP news every other Monday at 12:50.
- Books Group—administered the YFS room and managed reading materials in the room.

In order to institutionalize peer education, information from all peer educators in the Heart Association was gathered to build an archive. The Heart Association made a rule that each group should meet monthly to make plans, summarize activities, and evaluate efforts. In addition, excellent peer educators were praised at the end of the year to encourage peer educators to make greater efforts to serve their classmates.

Education Activities in the Control Group

Each class in the control group made a blackboard exhibition on psychological health before mid-term and final exams. After the mid-term exam, each class also conducted a theme class meeting titled "How to develop balanced personality traits." Health care teachers gave a weekly hygiene lecture to help students to improve life quality, develop healthful habits, and increase their knowledge about health and disease prevention.

3.3 The Impact of LPS Training, YFS, and PE on Knowledge, Attitude, Skills, and Behavior

Knowledge of Reproductive Health

There were 70 questions about RH knowledge in the questionnaire in four general areas: reproductive physiology (15), HIV/AIDS (28), STIs (9), and contraception (18). For each question on each type of knowledge, a score of one was given if answered correctly and zero if not. Then the original score for each area was converted into a new score, with the maximum of 100. The score of each area was weighted by 1/4 and four weighted types of scores were added to the sum to get the total RH knowledge score. Because the knowledge score distribution is not normal, the median score was used to evaluate respondents' knowledge level.

RH Knowledge Score

At baseline, the median overall knowledge score was only 40, with low knowledge levels among all three groups. Among the four types of knowledge tested, respondents' scores about STIs was the highest (44–56), followed by contraception (39–43). The difference of scores among the three groups was statistically significant (P<0.05) except for the knowledge about STIs, with respondents from intervention group 2 scoring higher than those from the other two groups.

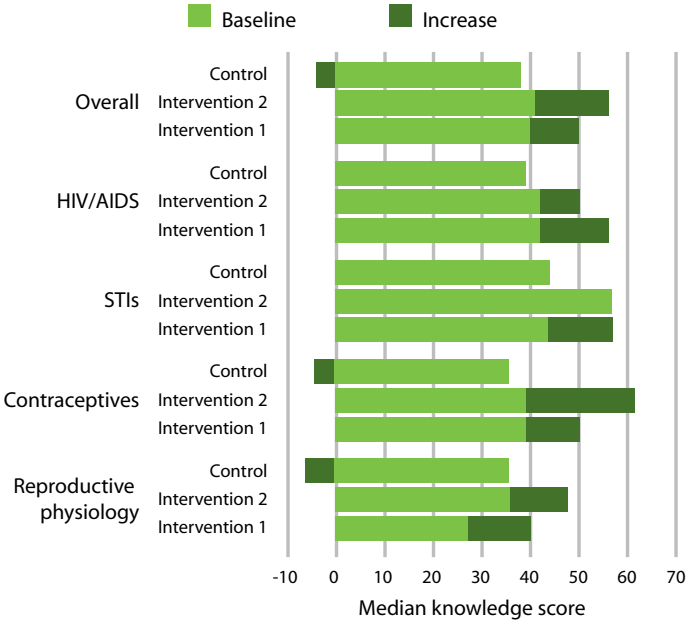
In the endline survey, the general score and all four types-of-knowledge scores in the two intervention groups were significantly higher than those in the control group (P<0.05). Compared to the baseline survey, the median knowledge scores in the intervention groups rose significantly. The contraception score rose the most (rising by 11.11 and 22.22, respectively, in the two intervention groups), followed by reproductive physiology scores (13.33 and 13.34, respectively). However, compared to the scores at baseline, knowledge scores of the control group in the endline survey declined (shown as a negative value in Figure 3-1). Further comparison between the two intervention groups showed that knowledge scores of intervention group 2 rose significantly higher than those of intervention group 1. However, the general knowledge scores of both intervention groups were still less than 60 at endline (Figure 3-1).

Knowledge of Reproductive Physiology

At baseline, there were no significant differences in correct answer rates among the three groups for all questions on reproductive physiology (P>0.05). Correct answer rates for questions about physiology varied from 46.84 percent to 89.26 percent, except that only 30.40 percent of respondents knew that casual masturbation does not lead to sexual dysfunction. However, there were rather low correct rates to some questions on reproduction (10.97 to 49.81 percent). For example, only 13.15 percent of respondents gave the correct answer to the question "In which part of the menstrual cycle are women most likely to become pregnant?" There were significant differences in correct answer rates for most questions on reproduction among the three groups (P<0.05), and the control group had higher correct rates.

In the endline survey, respondents' correct answer rates for all questions on reproductive physiology were significantly higher in the two intervention groups than those in the control group (P<0.05). Compared to the baseline survey, there was a significant increase in correct answer rates for all questions in the two intervention groups. For some questions, such as "In which part of the menstrual cycle are women most likely to become pregnant?", "Can casual masturbation lead to sexual dysfunction?", " and "Can a girl avoid pregnancy by urinating or washing her vagina immediately after intercourse?", the correct answer rates in the two intervention groups rose between 16 percent and 43 percent. However, among the control

Figure 3-1. Knowledge of Reproductive Health (Median Scores Before and After Intervention)



group, correct answer rates for all questions only increased slightly and sometimes declined. In addition, correct answer rates for most questions were significantly higher in intervention group 2 when compared to intervention group 1 (P<0.05) (Figure 3-2).

Knowledge of Contraception

At baseline, respondents knew three contraceptives on average. More respondents were aware of condoms and oral contraceptives (84.74 and 78.54 percent, respectively) whereas fewer (27.23 percent) knew about emergency contraceptives. More respondents from the intervention groups were aware of the three contraceptives mentioned above compared to the control group and the difference was statistically significant (P<0.05).

In the endline survey, respondents could name an average of four contraceptive methods. Contraceptive awareness in the two intervention groups was significantly higher than that in the control group (P<0.05). Compared to the baseline survey, there was an increase in the intervention groups in the proportion of those aware of all contraceptives (listed in Figure 3-3), especially of withdrawal, rhythm, and emergency contraceptives (an increase of 21 percent, 22 percent, and 32 percent respectively). Notably, the proportion of those aware of emergency contraceptives was twice that at baseline (56.08 percent and 66.67 percent in the two intervention groups, respectively). However, awareness of contraceptives in the control group only increased slightly or even declined compared to the baseline survey. In addition, the increase in awareness of rhythm and emergency contraceptives was significantly higher in intervention group 2 compared to intervention group 1 (P<0.05) (Figure 3-3).

At baseline, there was no significant difference among the three groups in the correct answer rates to questions about effectiveness of

Figure 3-2. Knowledge of Reproductive Physiology (Correct Answers Before and After Intervention, %)

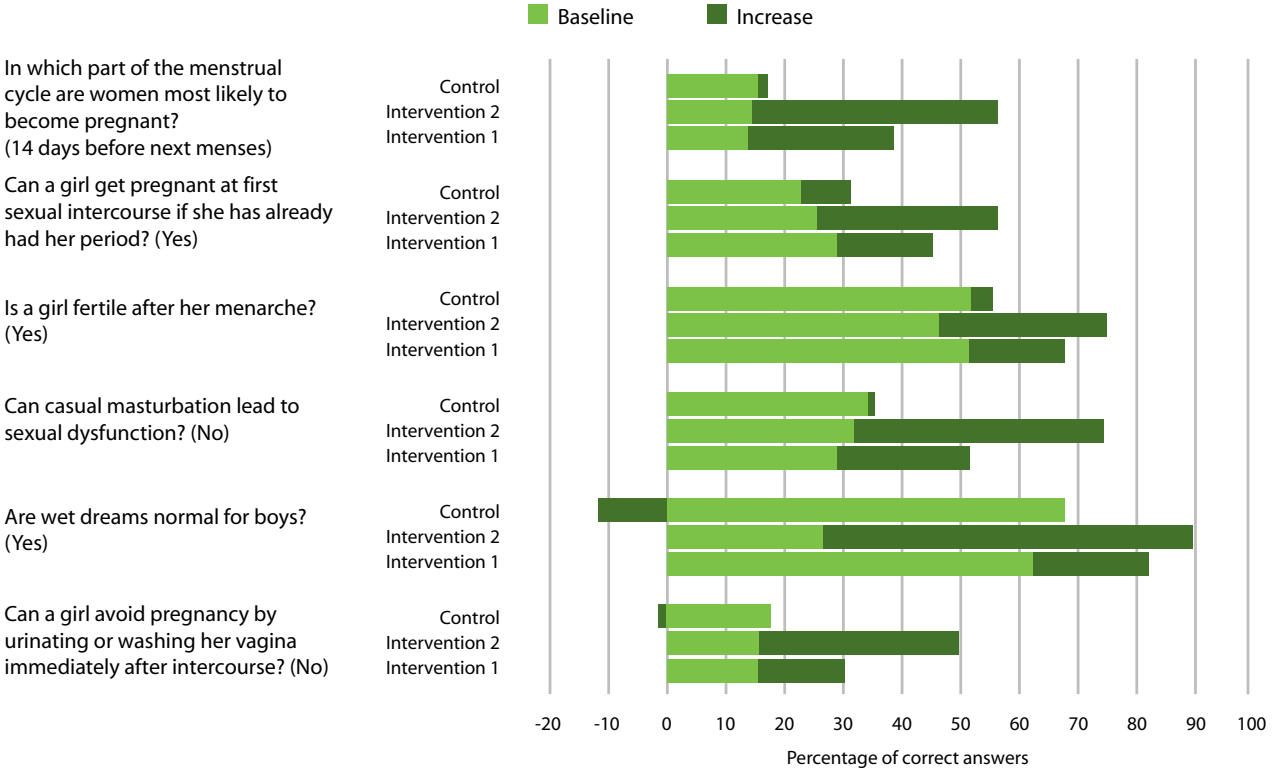
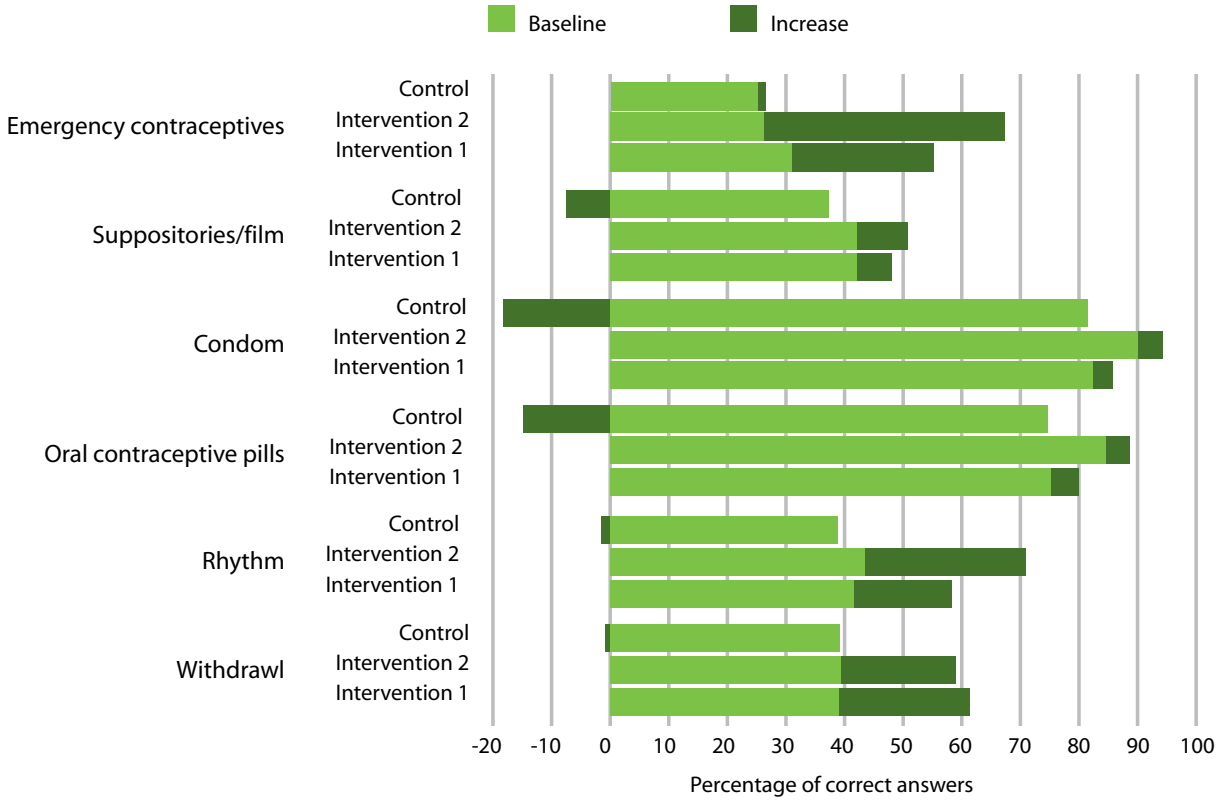


Figure 3-3. Knowledge of Contraception (Awareness Before and After Intervention, %)



contraceptive methods (P>0.05). In the endline survey, those from the intervention groups had significantly higher correct answer rates than those in the control group (P<0.05). Compared to the baseline survey, there was an increase in correct answer rates for all questions about effectiveness in the three groups, especially in the two intervention groups. The increase in intervention group 2 was the most obvious; for example, correct answer rates about the effectiveness of withdrawal and condoms rose 24.05 percent and 20.19 percent, respectively, in intervention group 2. The percentage of those who knew condoms could be used to prevent both pregnancy and STIs or AIDS rose from 37.35 percent at baseline to 60.31 percent at endline in the two intervention groups.

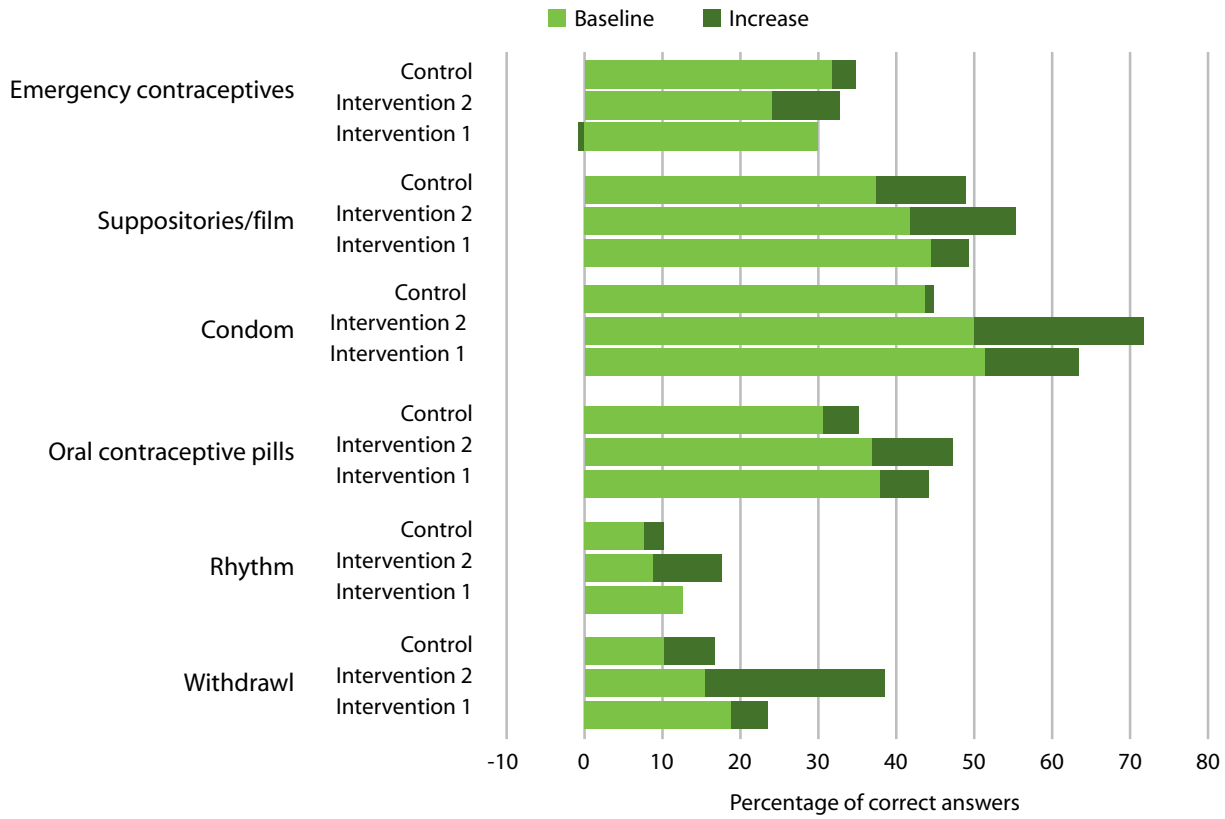
For both the baseline and endline surveys, correct answer rates were higher for more effective contraceptives and lower for less effective contraceptives. For example, 48.98 percent and 61.69 percent of respondents knew the condom is an effective contraceptive method at baseline and endline, respectively, while only 10.01 percent and 13.83 percent of respondents knew rhythm was a less effective method (Figure 3-4).

Knowledge of STIs

At baseline, 76.50 percent of respondents had heard of STIs. Among them, 85.92 percent knew that STIs can be transmitted by sexual intercourse. Only 34.42 percent and 18.63 percent of respondents knew that STIs might interfere with a woman's fertility in later life and that a person with an STI does not always have noticeable symptoms, respectively. There were no significant differences among the three groups in the correct answer rates for all questions about STIs (P>0.05).

In the endline survey, for all STI knowledge questions, correct answer rates in the two intervention groups were significantly higher than those in the control group. Compared

Figure 3-4. Knowledge About Effectiveness of Contraceptives (Correct Answers Before and After Intervention, %)



Note: The correct answer rate for a contraceptive was calculated among respondents who had heard of it.

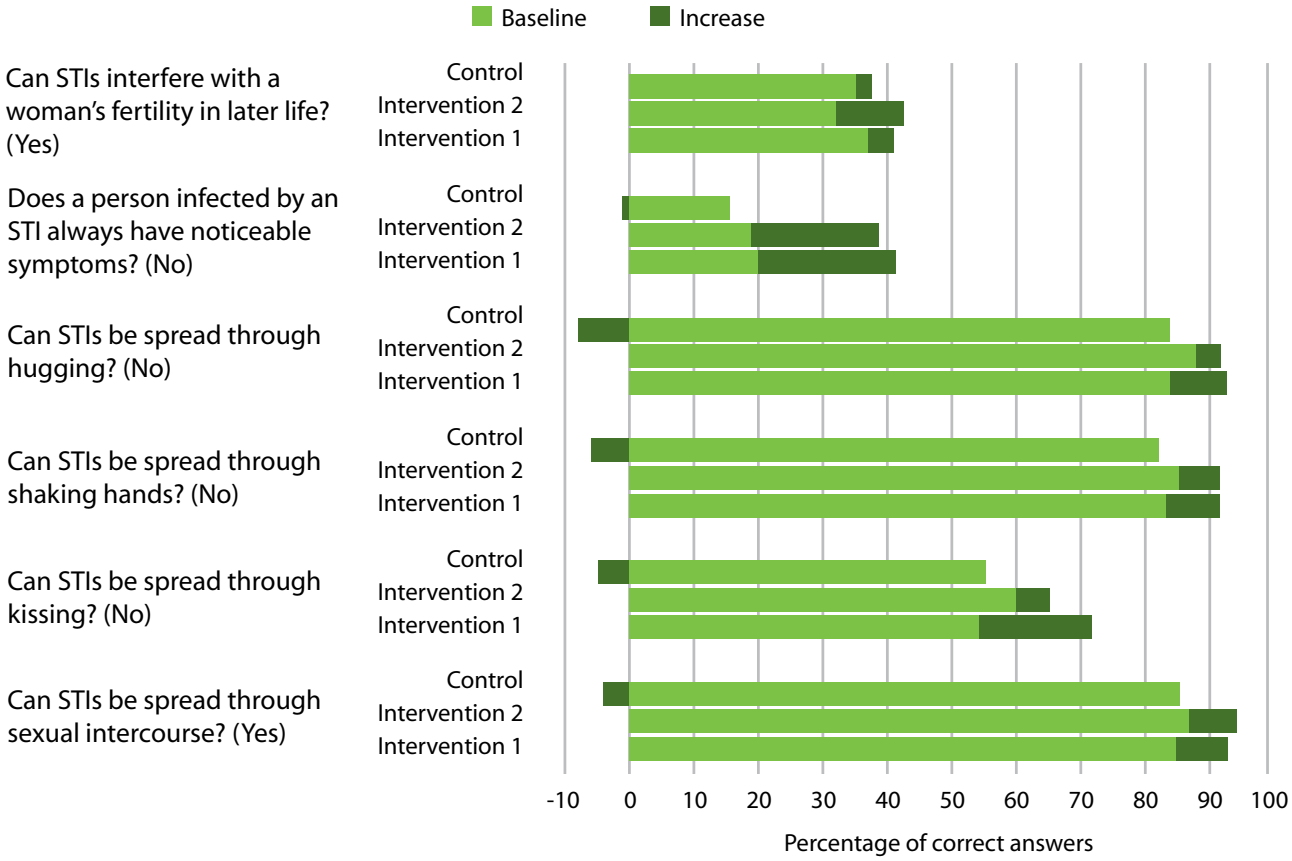
to the baseline survey, there was an increase in correct answer rates for all questions in the two intervention groups. For the question "Does a person infected by an STI always have noticeable symptoms?", the correct answer rate rose about 20 percent in the intervention groups. Correct answer rates to most questions declined about 5 percent in the control group. Further comparison showed that there were no significant differences in correct answer rates between the two intervention groups (P>0.05) (Figure 3-5).

Knowledge of HIV/AIDS

At baseline, 85 percent of respondents knew the main ways HIV is transmitted, but also had some misconceptions on HIV transmission. For example, 79.40 percent of respondents did not know that insect bites do not transmit HIV. There were no significant differences in correct answer rates for most HIV transmission and prevention questions among the three groups (P>0.05), except that correct answer rates in intervention group 2 for the questions "Can HIV be transmitted by sexual intercourse?", "Can HIV be transmitted by insect bites?", and "Can HIV be transmitted by sharing needles?" were significantly different from those in the other two groups.

In the endline survey, for all questions about HIV/AIDS, correct answer rates among respondents in the two intervention groups were significantly higher than those in the control group (P<0.05). On average, respondents in the intervention groups knew 2.3 ways that HIV can be transmitted,

Figure 3-5. Knowledge About STIs (Correct Answers Before and After Intervention, %)



Note: The correct answer rates were caculated among those who had heard of STIs.

compared with 1.5 at baseline. Compared to the baseline survey, the intervention groups showed a significant increase in correct answer rates for all questions (between 4.15 percent and 26.76 percent), especially for questions on ways that HIV is not transmitted ($P<0.05$). Further comparison between the two intervention groups showed that intervention group 1 respondents' correct answer rates to questions about ways that HIV is not transmitted, such as "insect bites," "kissing," and "eating together" were significantly higher than those in intervention group 2. The correct answer rate to the question "Can HIV be transmitted by blood transfusion?" among those in intervention group 2 was significantly higher than that in intervention group 1 ($P<0.05$). Correct answer rates for most questions about HIV/AIDS declined in the control group compared to the baseline survey (Figure 3-6).

At baseline, the main sources of RH knowledge that respondents mentioned were "school education" (37.53 percent) and "friends and classmates" (31.82 percent). When asked which source they preferred for RH knowledge, over half mentioned "school education" (55.27 percent) and 13.03 percent and 12.16 percent mentioned "friends and classmates" and "experts or medical personnel," respectively. There were no significant differences in knowledge sources among the three groups ($P>0.05$).

In the endline survey, there were significant differences in knowledge sources among the three groups ($P<0.05$). The proportion of

Table 3-6. Knowledge Sources (%)

Knowledge sources	Baseline survey				Endline survey			
	Int. 1 (n=623)	Int. 2 (n=472)	Con. (n=517)	Total (n=1612)	Int. 1 (n=576)	Int. 2 (n=447)	Con. (n=486)	Total (n=1509)
Main source of RH knowledge								
School education	38.68	34.53	38.88	37.53	56.94	51.90	34.57#	48.24
Friends and classmates	31.14	34.75	29.98	31.82	20.66	26.40	31.07	25.71
Parents/relatives	4.98	5.08	4.64	4.90	2.60	2.01	3.70	2.78
Siblings/peer relatives	1.61	0.64	2.51	1.61	0.87	1.12	2.47	1.46
Experts or medical personnel	3.21	2.97	3.87	3.35	5.38	3.13	6.58	5.10
Scientific reading	3.21	4.66	4.06	3.91	3.99	4.25	4.12	4.11
Novels and leisure reading	2.89	2.97	1.35	2.42	1.22	0.89	4.12	2.05
Mass media	7.70	9.11	8.90	8.50	3.99	6.71	6.79	5.70
Internet	1.28	2.33	2.13	1.86	2.26	2.46	2.47	2.39
Pornography video/ novels	2.89	1.69	1.93	2.23	0.87	0.45	1.23	0.86
Ads and posters	0.16	0.21	0.58	0.31	0.35	0.22	1.44	0.66
Other	2.25	1.06	1.16	1.55	0.87	0.45	1.44	0.93
Preferred source of RH knowledge								
School education	52.81	56.99	56.67	55.27	65.97	68.01	42.59#	59.05
Friends and classmates	14.13	11.44	13.15	13.03	7.81	6.94	14.40	9.68
Parents/relatives	7.70	5.30	7.16	6.82	4.69	2.91	7.61	5.10
Siblings/peer relatives	1.12	0.21	1.93	1.12	2.26	1.57	4.94	2.92
Experts or medical personnel	11.72	14.62	10.44	12.16	8.68	10.51	13.58	10.80
Scientific reading	3.53	3.60	2.51	3.23	3.13	3.13	6.38	4.17
Novels and leisure reading	1.28	1.27	0.58	1.05	0.87	0.89	2.47	1.39
Mass media	3.37	3.81	3.87	3.66	2.78	3.80	2.88	3.11
Internet	1.28	1.27	2.32	1.61	2.08	0.89	2.47	1.86
Pornography video/ novels	1.77	1.06	0.58	1.18	0.52	0.89	1.03	0.80
Ads and posters	0.64	0.21	0.39	0.43	0.52	0.45	0.62	0.53
Other	0.64	0.21	0.39	0.43	0.69	0.00	1.03	0.60

#P<0.05, chi-square test among three groups.

those who chose "school education" as their leading and preferred knowledge source in the intervention groups was 20 percent and 25 percent higher respectively than those in the control group. On the other hand, the proportion who chose "friends and classmates" in the intervention groups was significantly lower than in the control group. Compared to the baseline, the proportion who chose "school education" as the leading and preferred knowledge source in the intervention groups rose over 17 percent and 12 percent respectively while the proportion who chose "friends and classmates" declined 8 percent and 6 percent, respectively. In sharp contrast to the intervention groups, the proportion of those in the control group who chose "school education" as their knowledge source declined while the proportion of those who chose "friends and classmates" rose (Table 3-6). There were no significant differences in knowledge sources between the two intervention groups (P>0.05).

Factors Related to RH Knowledge

Researchers conducted an ordinal logistic regression analysis to determine factors related to respondents' knowledge (combining data from baseline and endline) with the scores of respondents' reproductive health knowledge divided into four groups with lower quartile (QL), median, and upper quartile (QU) as ordinal dependent variable. The model included factors related to respondents' knowledge such as group, time, whether they had received the intervention, sex, whether they felt it was easy to talk with parents about sex-related issues, and whether they had talked with good friends about sex-related issues seriously. Results showed that both interventions had clearly increased respondents' knowledge (ORInt.1|No=3.98, ORInt.2|No=6.43) and that there was no significant difference between the two interventions in the effect on knowledge (ORInt.1|Int.2=0.62, 95%CI: 0.37–1.03). In addition, respondents who were male and who had talked with good friends about sex-related issues seriously were more likely to have a higher knowledge score. Those who felt it was not easy to talk with their parents about sex-related issues also had a higher knowledge score (Table 3-7).

In addition, ordinal logistic regression analysis was conducted to explore the effect of the two interventions on each of the four types of RH knowledge studied. The results show that both interventions increased respondents' knowledge about reproductive physiology, contraception, STIs, and HIV/AIDS, and there were differences of effects between the two interventions. Intervention 1 had a stronger effect on increasing knowledge scores for reproductive physiology and HIV/AIDS (ORInt.1|No=4.37 and ORInt.1|No=4.50 respectively) than for contraception and STIs. Intervention 2 had a stronger effect on increasing knowledge scores for reproductive physiology and contraception (ORInt.2|No=9.63 and ORInt.2|No=4.76 respectively) than for STIs and HIV/AIDS. Further comparison between the two interventions showed that intervention 2 had a stronger effect than intervention 1 on increasing reproductive physiology knowledge (ORInt.1|Int.2=0.45) and contraceptive knowledge (ORInt.1|Int.2=0.60), while intervention 1 had a stronger effect than intervention 2 on increasing HIV/AIDS knowledge (ORInt.1|Int.2=1.67) (Table 3-8).

Attitudes Toward Sexual and RH Issues

Attitudes Toward Dating and Premarital Sex

At baseline, 54.53 percent of respondents agreed with the statement "It's OK for high school students to date if it does not interfere with their studies." 51.61 percent agreed with "Sex before marriage is OK if they are really in love." However, about 60 percent opposed the statement "I admire people of my age who have chance to practice sex." There was statistical significance among the three groups for opinions on premarital sex in the baseline

Table 3-7. Ordinal Logistic Regression Analysis of Factors Related to RH Knowledge

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention group 1	1.62	1.22	2.17
		Intervention group 2	0.77	0.67	0.88
Time	Baseline	Endline	1.22	0.94	1.58
Intervention	No	Intervention 1	3.98	2.68	5.91
		Intervention 2	6.43	3.93	10.53
Sex	Male	Female	0.98	0.83	1.17
Whether feel it is easy to talk about sex-related issues with parents	Ordinal variable (difficult, average, easy)		0.83	0.73	0.95
Have talked seriously with good friends about sex-related issues	No	Yes	2.58	2.13	3.14

Note: In the model, "Group" effect indicated the possible effect on knowledge, attitudes, and practices caused by the difference of basic characteristics among three groups. "Time" effect showed the effect caused by the time span from baseline to endline. "Intervention" effect indicated the effect of the different interventions. (The three variables have the same meaning in the other models below).

Table 3-8. Ordinal Logistic Regression Analysis on the Effect of Interventions on Four Types of RH Knowledge

Knowledge	Int.1/Con.			Int.2/Con.			Int.1/Int.2		
	OR	95%	CI	OR	95%	CI	OR	95%	CI
Reproductive physiology	4.37	3.20	5.95	9.63	6.86	13.52	0.45	0.33	0.63
Contraception	2.87	2.11	3.91	4.76	3.40	6.66	0.60	0.44	0.83
STIs	2.74	1.98	3.77	2.61	1.86	3.68	1.05	0.76	1.45
HIV/AIDS	4.50	3.30	6.15	2.70	1.95	3.76	1.67	1.22	2.28

Note: Controlled for factors of sex, whether felt it was easy to talk with parents about sex-related issues, and whether had talked with friends about sex-related issues seriously

survey (P<0.05). Those who came from the two intervention groups had more liberal attitudes toward premarital sex than those from the control group.

In the endline survey, although more students from the intervention groups approved of premarital sex and admired their peers who had sex than in the control group (P<0.05), more students in intervention group 1 opposed premarital sex compared to the baseline (P<0.05) and the percentage was higher by 10 percent than that in the control group. However, more students from intervention group 2 approved of premarital sex compared to the baseline survey, with the proportion rising to 58.61 percent from 54.87. In the control group, more students answered "Don't know" than in the baseline survey (P<0.05) on question of premarital sex and the proportion rose about 17 percent (from 32.50 percent to 49.79 percent). Further comparison between the two intervention groups showed that more students from intervention group 1 opposed premarital sex compared to intervention group 2 in the endline survey, and the difference was significant (P<0.05) (Table 3-9).

Attitude scores were determined according to the score sheet below (Table 3-10); the sum of scores indicated the degree of sex-related attitudes. A higher score indicates more liberal

Table 3-9. Attitudes Toward Dating and Premarital Sex (Before and After Intervention, %)

Opinions	Baseline survey			Endline survey		
	Int. 1 (n=623)	Int. 2 (n=472)	Con. (n=517)	Int. 1 (n=576)	Int. 2 (n=447)	Con. (n=486)
It's OK for high school students to date if it does not interfere with their studies.						
Agree	57.14	50.00	55.51	54.86*	57.27*	51.85
Disagree	17.50	19.28	15.86	13.19	10.96	17.08
Don't know	25.36	30.72	28.63	31.94	31.77	31.07
Sex before marriage is OK if they are really in love.						
Agree	53.77	54.87	46.03#	43.92*	58.61	36.83*#
Disagree	20.06	15.04	21.47	24.48	16.55	13.37
Don't know	26.16	30.08	32.50	31.60	24.83	49.79
I admire people my age who have had sex.						
Agree	20.22	12.29	11.61#	15.10	18.12*	13.37*#
Disagree	58.43	59.96	60.35	60.59	60.85	43.21
Don't know	21.35	27.75	28.05	24.31	21.03	43.42

*P<0.05, chi-square test between two surveys. #P<0.05, chi-square test among three groups.

Table 3-10. Score Sheet of Attitudes Toward Sexual and RH Issues

Opinions	Attitude		
	Agree	Don't know	Disagree
Sex is a way to show young people's maturity.	3	2	1
I admire people my age who have had sex.	3	2	1
I think most people my age wouldn't refuse sex if they had the chance.	3	2	1
Sex before marriage is OK if they are really in love.	3	2	1
Premarital sex can result in loss of self-respect and dignity for girls.	1	2	3
If most people my age have had sex, I will also do it in the near future.	3	2	1

attitudes and a lower score indicates more conservative attitudes.

The scores of respondents' sex-related attitudes, the dependent variable, were divided into a four-point scale ordinal variable using QL, median, and QU. The team then conducted ordinal logistic regression analysis to determine factors related to respondents' sex-related attitudes including group, time, whether they received the intervention, sex, and parents' attitudes to premarital sex. The result showed intervention 1 made the respondents' sex-related attitudes more conservative (ORInt.1|No=0.52, 95%CI: 0.38-0.70). Males had more liberal attitudes than females, and if the parents had more liberal attitudes, so did their children (Table 3-11).

Safe Sex Intentions

At baseline, with regard to hypothetical scenario 1—"Your friend is at home alone with his/her girlfriend/boyfriend. The girlfriend/boyfriend makes a request to have sex, but your friend has no intention of having sex at this age, what should he/she do?"— the percentage of those who chose "Tell her/him your true feelings, if she/he insists on it, then have sex" or "Don't know" varied from 26.48 percent to

Table 3-11. Ordinal Logistic Regression Analysis of Factors Related to Attitudes Toward Sexual and RH Issues

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention group 1	1.00	0.81	1.24
		Intervention group 2	0.74	0.59	0.93
Time	Baseline	Endline	1.21	1.08	1.35
Intervention	No	Intervention 1	0.52	0.38	0.70
		Intervention 2	0.77	0.56	1.07
Sex	Male	Female	0.22	0.19	0.25
Parents' attitudes to premarital sex	Ordinal variable (liberal, average, conservative)		0.90	0.82	0.99

32.11 percent among the three groups. As to the hypothetical scenario 2—Your friend wants to have sex with his/her partner, the partner insists on using a condom but neither has one, what should your friend do?— from 48.64 percent to 52.03 percent of respondents among the three groups chose "Try to convince his/her partner to have sex without a condom" or "Don't know." Differences between respondents' answers to both of the above-mentioned hypothetical scenarios were statistically significant (P<0.05).

In the endline survey, more students from the two intervention groups had safe sex intentions while fewer students from the control group had such intentions compared to the baseline. According to the answers to hypothetical scenario 2, the percentage of those who chose "Try to convince his/her partner to have sex without a condom" or "Don't know" in the two intervention groups declined 6 percent while the responses "Go to get a condom" or "Have sex after getting a condom" rose about 10 percent compared to the baseline. In sharp contrast to the intervention groups, the control group's safe sex intentions generally declined between the baseline and endline. The difference was statistically significant (P<0.05) (Table 3-12).

Respondents' answers to hypothetical scenario 1 were used to evaluate their safe sex intentions. Students whose answers were "Tell her/him true feelings, if she/he insists on it, then have sex" or "Don't know" were considered to have no safe sex intentions, while those who answered "Go get a condom," "Have sex after getting a condom," "Stop the intimacies," "Do something else," or "Don't have sex" were considered to have safe sex intentions. With the intentions of respondents as the dependent variable (yes=1, no=0) and factors that might affect students' intentions as independent variables (including group, time, whether they received the intervention, and sex), the researchers used binary logistic regression analysis to predict important indicators. The findings showed that both interventions improved the safe sex intentions of respondents (ORInt.1|No=2.62, ORInt.2|No=2.55), but the difference of effectiveness between the two interventions was not significant (OR Int.1|Int.2=1.03 95%CI: 0.70–1.53). In addition, females had stronger safe sex intentions than males (OR Female |Male=2.92) (Table 3-13).

Attitudes Toward Condom Use

At baseline, about 47 percent of respondents agreed with the statement "For young people, knowing more about condoms is a sign of protecting oneself and others" and about 40

Table 3-12. Safe Sex Intentions (Before and After Intervention, %)

Hypothetical scenario	Baseline survey			Endline survey		
	Int. 1 (n=623)	Int. 2 (n=472)	Con. (n=517)	Int. 1 (n=576)	Int. 2 (n=447)	Con. (n=486)
1. Your friend is at home alone with girlfriend/boyfriend. The girlfriend/boyfriend makes a request to have sex, but your friend has no intention of having sex at this age, what should he/she do?						
Tell her/him true feelings, if she/he insists on it, then have sex/don't know.	32.10	26.48	32.11#	28.65	23.94	50.00*#
Try to find a condom and then have sex.	6.26	3.18	5.42	6.08	5.82	5.35
Stop the intimacies /do something else /don't have sex.	61.64	70.34	62.48	65.28	70.25	44.65
2. Your friend wants to have sex with his/her partner, the partner insists on using a condom but neither has one, what should your friend do?						
Try to convince his/her partner to have sex without a condom/don't know.	48.64	43.43	52.03#	41.15*	37.58*	62.55*#
Go get a condom /have sex after getting a condom.	28.73	29.03	22.05	38.19	38.03	20.99
Do not have sex.	22.63	27.54	25.92	20.66	24.38	16.46

*P<0.05, chi-square test between two surveys. # P<0.05, chi-square test among three groups.

Table 3-13. Logistic Regression Analysis of Factors Related to Safe Sex Intentions

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention 1	1.18	0.91	1.53
		Intervention 2	1.69	1.27	2.25
Time	Baseline	Endline	0.67	0.59	0.77
Intervention	No	Intervention 1	2.62	1.81	3.78
		Intervention 2	2.55	1.70	3.81
Sex	Male	Female	2.92	2.47	3.44

percent of respondents disagreed with the statement "A woman would make her boyfriend distrust her if she insists on him using a condom." However, over half of respondents agreed with the following three opinions: "It is embarrassing for people of my age to purchase condoms." (59.96–70.13 percent); "If my parents find that I carry condoms, I will be in real trouble." (57.06–71.11 percent); "I don't want to know much about condoms because I don't want to have sex at this moment." (50.29–56.57 percent). Compared to the intervention groups, more respondents from the control group answered "don't know" to most questions about condoms (Table 3-14). The difference was significant (P<0.05).

In the endline survey, respondents of the two intervention groups had more positive attitudes toward condom use compared to the baseline survey. The percentage of those who agreed with the statement "For young people, knowing more about condoms is a sign of protecting oneself and others" rose by between 6 percent and 17 percent; the percentage of those who opposed the statement "A woman would make her boyfriend distrust her if she insists on him using a condom" rose by between 8 percent and 17 percent. The differences between baseline and endline were statistically significant (P<0.05). The proportion of those who had positive attitudes to condom use decreased in the control group. For example, the proportion

Table 3-14. Attitudes Toward Condom Use (Before and After Intervention, %)

Opinions	Baseline survey			Endline survey		
	Int. 1 (n=623)	Int. 2 (n=472)	Con. (n=517)	Int. 1 (n=576)	Int. 2 (n=447)	Con. (n=486)
For young people, knowing more about condoms is a sign of protecting oneself and others.						
Agree	52.97	53.39	42.36#	58.33*	70.92*	41.15*#
Disagree	10.59	7.63	12.96	6.94	7.38	5.76
Don't know	36.44	38.98	44.68	34.72	21.70	53.09
A woman would make her boyfriend distrust her if she insists on him using a condom.						
Agree	12.04	9.96	11.03	11.81*	10.07*	13.37#
Disagree	43.66	45.13	38.30	51.56	62.19	32.72
Don't know	44.30	44.92	50.68	36.63	27.74	53.91
Asking questions about condom use is difficult because it looks as if I plan to have sex.						
Agree	30.02	24.15	19.34#	21.88*	22.37*	19.75*#
Disagree	30.82	38.56	33.08	40.63	49.66	23.05
Don't know	39.17	37.29	47.58	37.50	27.96	57.20
It is embarrassing for people my age to purchase condoms.						
Agree	68.22	70.13	59.96#	55.90*	57.72*	36.21*#
Disagree	10.27	6.57	8.51	14.41	16.78	12.14
Don't know	21.51	23.31	31.53	29.69	25.50	51.65
I don't want to know much about condoms because I don't want to have sex at this moment.						
Agree	55.38	56.57	50.29#	39.76*	42.73*	31.69*#
Disagree	21.51	18.22	18.76	29.69	32.21	15.84
Don't know	23.11	25.21	30.95	30.56	25.06	52.47
If your partner does not want to use a condom, you can do nothing to change her/his mind.						
Agree	22.95	14.19	14.89#	18.40*	17.90*	19.14*#
Disagree	28.73	28.39	29.21	37.50	40.04	22.02
Don't know	48.31	57.42	55.90	44.10	42.06	58.85
If my parents find that I carry condoms, I will be in real trouble.						
Agree	71.11	66.95	57.06#	61.28*	61.74*	39.30*#
Disagree	6.42	5.08	7.74	10.24	9.84	9.26
Don't know	22.47	27.97	35.20	28.47	28.41	51.44
Using condoms is very difficult at the first sex.						
Agree	28.09	23.52	23.02#	21.88*	23.04*	19.55*#
Disagree	12.52	9.32	7.74	15.97	21.03	8.85
Don't know	59.39	67.16	69.25	62.15	55.93	71.60

*P<0.05, chi-square test between two surveys. # P<0.05, chi-square test among three groups.

of those who disagreed with the statement "A woman would make her boyfriend distrust her if she insists on him using a condom" decreased 6 percent while the proportion of those who answered 'don't know' to most of the questions listed in Table 3-14 increased by between 3 percent and 20 percent. These differences were significant (P<0.05).

To assist with data analysis, researchers scored the answers to the above-mentioned opinions. The sum of scores indicated respondents'

attitudes toward condom use. A higher sum indicates a more positive attitude about condoms and a lower sum indicates a more negative one (Table 3-15).

The scores of respondents' attitudes toward condom use divided into a four-point scale ordinal dependent variable using QL, median, and QU, was used by the team to conduct ordinal logistic regression analysis to determine factors related to respondents' attitudes toward condom use including group, time, whether they received the intervention, sex, and parents' attitudes to premarital sex. The result showed that both interventions made the respondents' attitudes toward condom use more positive (ORInt.1|No=1.79, OR Int.2|No=2.16) and the difference of effect between the two interventions was not statistically significant (OR Int.1| Int.2=1.20, 95%CI: 0.88-1.65). In addition, females had more negative attitudes toward condom use (Table 3-16).

Attitudes Toward Other RH Issues

At baseline, there was no significant difference in attitudes toward other RH issues (listed in Figure 3-7) among the three groups except opinions on boys' wet dreams and fantasies. There were 30.83 percent, 24.32 percent, and 34.06 percent of respondents who regarded boys' masturbation, girls' masturbation, and adolescents' interest in pornographic materials as natural physiology, respectively.

In the endline survey, the proportion of those who regarded boys' or girls' masturbation and sexual dreams and fantasies as natural physiology in the intervention groups was significantly higher than those in the control group. Compared to the baseline survey, the proportion of those who had the above-mentioned opinions in the intervention groups rose by between 15 percent and 38 percent. In particular, the proportion of those who agreed with the statement "I believe it is okay for a boy/girl my age to masturbate" rose significantly. The comparison between the two intervention groups showed that the proportion of those who thought girls' and boys' masturbation, girls' and boys' sexual fantasies, and boys' wet dreams were natural physiology in intervention group 2 were significantly higher than that in intervention group 1 ($P<0.05$).

Table 3-15. Score Sheet of Attitudes Toward Condom Use

Opinions	Attitude		
	Agree	Don't know	Disagree
For young people, knowing more about condoms is a sign of protecting oneself and others.	3	2	1
A woman would make her boyfriend distrust her if she insists on him using a condom.	1	2	3
Asking questions about condom use is difficult because it looks as if I plan to have sex.	1	2	3
It is embarrassing for people my age to purchase condoms.	1	2	3
I don't want to know much about condoms because I don't want to have sex at this moment.	1	2	3
If your partner does not want to use a condom, you can do nothing to change her/his mind.	1	2	3
If my parents find that I carry condoms, I will be in real trouble.	1	2	3
Using condoms is very difficult at first sex.	1	2	3

Table 3-16. Ordinal Logistic Regression Analysis of Factors Related to Attitudes Toward Condom Use

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention 1	0.77	0.62	0.95
		Intervention 2	0.88	0.70	1.11
Time	Baseline	Endline	1.19	1.06	1.33
Intervention	No	Intervention 1	1.79	1.32	2.44
		Intervention 2	2.16	1.55	3.00
Sex	Male	Female	0.84	0.73	0.95
Parents' attitudes to premarital sex	Ordinal variable (liberal, average, conservative)		0.96	0.87	1.05

Figure 3-7. Attitudes Toward Other RH Issues (Before and After Intervention)

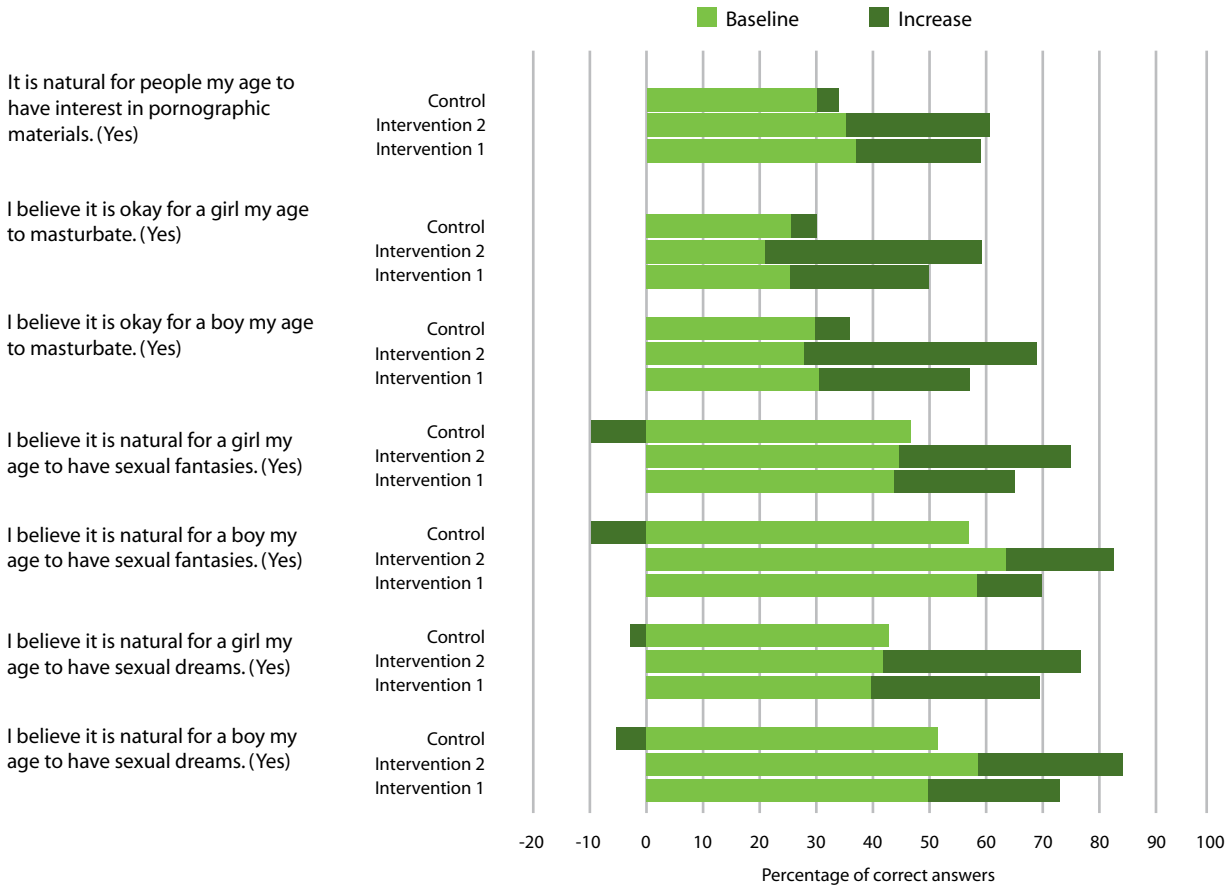


Table 3-17. Experience of Menarche and First Wet Dream, at Baseline (%)

Status of menarche/first wet dream	Int. 1 (n=623)	Int. 2 (n=472)	Con. (n=517)
Have had menarche	95.61	97.92	97.20
Reaction to menarche			
I Expected it and was not worried/scared	35.34	38.30	34.50#
I Expected it and was worried/scared	19.08	21.81	19.17
I Did not expect it and was not worried/scared	10.95	12.23	8.63
I Did not expect it and was worried/scared	14.84	17.02	8.31
I Forgot	19.79	10.64	29.39
Have had wet dream	56.27	69.64	56.41
Reaction to first wet dream			
I Expected it and was not worried/scared	44.57	39.49	49.09#
I Expected it and was worried/scared	4.35	6.15	9.09
I Did not expect it and was not worried/scared	17.39	19.49	7.27
I Did not expect it and was worried/scared	4.89	7.18	4.55
I Forgot	28.80	27.69	30.00

# P<0.05, chi-square test among three groups.

Adolescent Development and Sexual Behaviors

Developmental Experiences

At baseline, 96.79 percent of female respondents had experienced menarche and the mean age at menarche was 13.72 years; 60.97 percent male respondents had experienced their first wet dream and the mean age at first emission was 13.08 years. Most respondents regarded these physical developments as normal. The proportion of female respondents who felt worried about their menarche (about 30 percent) was significantly higher than that of males who had worried about their first emission (about 11 percent) (Table 3-17).

Masturbation, Dating, Sex-Related Behaviors, and Condom Use

At baseline, 23.82 percent of respondents reported they had masturbated and 47.76 percent of them felt guilty after masturbation. 41.81 percent of respondents had dated and 7.01 percent reported they had experienced sexual intercourse in the last year. The average age at first sex was between 14.5 years and 15 years. Among those who had had sex, 56.64 percent and 53.64 percent of respondents had used condoms at first and last sex, respectively. There were significant differences in sex-related experiences and behaviors among the three groups (P<0.05). The proportion of those who had masturbated and felt guilty after masturbation were lowest in the control group; the incidences of dating, hugging, kissing, and petting were lowest in intervention group 2; and the incidence of sexual intercourse was the highest in intervention group 1 (reaching 10.11 percent).

In the endline survey, the proportions of respondents who reported having sex-related behaviors in the last year were higher than those reported at baseline and the increase was higher in the intervention groups (about 10 percent) than that in the control group (about 3 percent). However, the percentage of youth with sexual intercourse experience in

Table 3-18. Sex-Related Behaviors With Opposite Sex in Previous Year (Before and After Intervention, %)

Behaviors	Baseline survey			Endline survey		
	Int. 1 n=623)	Int. 2 (n=472)	Con. (n=517)	Int. 1 (n=576)	Int. 2 (n=447)	Con. (n=486)
Hugging	41.09	29.87	43.13#	51.91*	41.61*	45.27#
Kissing	31.30	21.40	32.69#	40.28*	31.77*	36.83#
Petting	21.99	16.74	20.50	28.82*	24.83*	25.93#
Sexual intercourse	10.11	4.24	5.80#	8.33	6.94	6.38

*P<0.05, chi-square test between the two surveys. # P<0.05, chi-square test among the three groups.

intervention group 1 was lower compared to the baseline survey. In addition, the proportion of condom use at last sexual intercourse was reduced in the two intervention groups while it increased in the control group compared to the baseline survey. The proportion was 54.17 percent and 53.33 percent in the two intervention groups respectively, compared to 55.17 percent in the control group. However, the differences in condom use between the two surveys and among the three groups were not statistically significant (P>0.05). Results of the two surveys showed that the condom was the most commonly used contraceptive among sexually active students, with about 50 percent of respondents using them. (Table 3-18).

Multivariate Analysis of Factors Related to Non-intercourse Sexual Behaviors

Hugging, kissing, or petting/touching were considered to be non-intercourse sexual behaviors. Using experience of any of these non-intercourse sexual behaviors as the dependent variable (Yes=1, No=0), and factors affecting sex-related behaviors (including group, time, whether they received the intervention, sex, attitudes to dating among high school students, proportion of friends dating, proportion of out-of-school youth among friends, frequency of visiting karaoke/ Internet café/bar, and amount of smoking) as independent variables, binary logistic regression analysis showed neither of the two interventions prompted or postponed respondents' non-intercourse sexual behaviors. The results also indicated that non-intercourse sexual behaviors were higher among males, those who approved of high school students dating, and those who had more friends dating, more out-of-school youth as friends, those who often visited karaoke/Internet café/bar, and those who often smoked (Table 3-19).

Multivariate Analysis of Factors Related to Sexual Intercourse

Using whether respondents had experienced sexual intercourse as the dependent variable (Yes=1, No=0) and factors affecting experience of sexual intercourse (including group, time, whether they received the intervention, sex, attitudes toward dating among high school students, proportion of friends dating, proportion of out-of-school youth among friends, frequency of visiting karaoke/ Internet café/bar and amount of smoking) as independent variables, binary logistic regression analysis showed neither of the interventions prompted or postponed students' sexual intercourse. The effects of other related factors on sexual intercourse were similar to those on non-intercourse sexual behaviors (Table 3-20).

Multivariate Analysis of Factors Related to Condom Use

Using whether respondents used a condom at last sexual intercourse as the dependent variable (Yes=1, No=0), and factors including group, time, whether they received the intervention, and sex as independent variables, binary logistic regression analysis showed neither of the interventions affected condom use (Table 3-21).

Table 3-19. Logistic Regression Analysis of Factors Related to Non-intercourse Sexual Behaviors

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention 1	0.79	0.61	1.03
		Intervention 2	0.59	0.44	0.78
Time	Baseline	Endline	1.01	0.88	1.16
Intervention	No	Intervention 1	1.37	0.94	1.98
		Intervention 2	1.21	0.82	1.81
Sex	Male	Female	0.80	0.68	0.95
Attitudes to dating among high school students	Agree/don't know	Disagree	0.52	0.46	0.58
Proportion of friends dating	Ordinal variable (fewer than half, about half, most of them)		1.70	1.50	1.93
Proportion of out-of-school youth among friends	Ordinal variable (fewer than half, about half, most of them)		1.44	1.31	1.59
Frequency of visiting karaoke/ Internet café/bar	Ordinal variable (never, once, occasionally, once per month, once a week)		1.46	1.35	1.58
Amount of smoking	Ordinal variable (never, one cigarette occasionally, less than one cigarette per day, more than one cigarette per day)		2.08	1.83	2.37

Table 3-20. Logistic Regression Analysis of Factors Related to Sexual Intercourse

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention 1	1.41	0.87	2.30
		Intervention 2	0.73	0.40	1.36
Time	Baseline	Endline	0.86	0.65	1.14
Intervention	No	Intervention 1	0.83	0.41	1.69
		Intervention 2	1.41	0.62	3.22
Sex	Male	Female	0.70	0.49	1.00
Attitudes to dating among high school students	Agree/don't know	Disagree	0.79	0.62	1.01
Proportion of friends dating	Ordinal variable (fewer than half, about half, most of them)		1.91	1.39	2.61
Proportion of out-of-school youth among friends	Ordinal variable (fewer than half, about half, most of them)		1.64	1.39	1.92
Frequency of visiting karaoke/ Internet café/bar	Ordinal variable (never, once occasionally, once per month, once a week)		1.29	1.13	1.48
Amount of smoking	Ordinal variable (never, one cigarette occasionally, less than one cigarette per day, more than one cigarette per day)		1.86	1.59	2.17

Table 3-21. Logistic Regression Analysis of Factors Related to Condom Use

Variables	Reference group	Comparison group	OR	95%	CI
Group	Control group	Intervention 1	1.34	0.37	4.83
		Intervention 2	1.47	0.32	6.80
Time	Baseline	Endline	0.76	0.32	1.81
Intervention	No	Intervention 1	0.74	0.24	2.30
		Intervention 2	0.86	0.51	1.43
Sex	Male	Female	1.17	0.64	2.15

4. Discussion and Recommendations

4.1 Vocational School Students Need Sexual and RH Education

Sexual and RH Knowledge Levels Are Low

According to baseline results, vocational school students' attitudes toward sex-related issues were quite open. Over half of the respondents agreed "Sex before marriage is OK if they are really in love." When asked about their perspectives on premarital sex, a boy said without reservation during class discussion "I shall become a man after I have sexual experience," and this point of view was accepted by most of the male students. The attitudes of female students also seemed to be open. They said, "Today, premarital sex activity among middle school students has become quite common," and "Sexual behavior would make us more intimate than ever."

Dating was common among vocational school students, in part because most of them did not have to face entrance examination stress for further study in university. At baseline, about 42 percent of respondents reported they had ever been in love. The proportion was much higher than that in other types of middle school settings and similarly higher for sexual intercourse. At baseline, about 7 percent of respondents had ever had sexual experience. The highest proportion in one school reached 10 percent while it was only about 1 percent among students their age in other types of middle schools. Findings showed that most sexual intercourse was heterosexual and that the main reasons for sexual intercourse were acting on impulse, expressing love and intimacy to the lover, and having difficulty refusing the partner, but not being forced. The proportions of respondents who felt excited (53.98 percent) or proud at first sex (19.47 percent) were much higher than that of respondents who felt afraid (30.09 percent) or regretful (15.04 percent).

The study showed poor knowledge on sexual and reproductive health among vocational school students. Their knowledge level was lower than among their peers in other types of schools. [2]

Urgent Need for Contraceptive Information

Focus group discussions indicated that there were differences between male and female students in the answer to the question of "What kind of knowledge do you want most?" Girls were more definite than boys in saying "We want contraceptive information." At the same time, girls said that they would feel embarrassed if they showed any interest in contraceptive information with boys on the scene. Just as one girl said, "One time when I focused my attention on what was playing in the video tape about contraception, boys sitting beside me made fun of me, saying, 'Don't you want to have a try?'" In contrast, boys wanted information on "How to succeed in chasing girls" and "How to handle relationships with girls." However, they admitted that "Contraceptive information is also important and we are concerned about that as well. It should not be left out of school education." This difference between female and male students might be attributed to the fact that female students had less knowledge about contraception than male students and girls are the main and direct victims of the adverse consequences of sexual activity resulting from no or failed use of contraceptives.

For those who had not had sex yet, the experiences of their sexually active peers made them realize that knowledge about contraceptives could enhance their self-protection. As they said frankly, "We should learn this kind of knowledge, for it is useful information. Even if it is of no use at present, I am sure that we would benefit from it one

day. Once we leave school, no one else will teach us about it any more." On the other hand, for those who were already sexually experienced, correct and clear information on contraception was much more important. According to the results of the study, among those who had had sexual experience, the proportion of contraceptive use at the first or the last intercourse was less than 60 percent at both baseline and endline. In addition, half of the contraceptive users practiced ineffective methods, such as withdrawal and rhythm. Thus most of the sexually active students faced the risk of unwanted pregnancy and induced abortion. Therefore, provision of clear and correct knowledge on contraception so as to ensure their safe and effective use when they become sexually active is of the same importance as advocacy for abstinence.

Weak Family Sex Education Requires Strong School Sexual Health Education

The consequences of adolescent sexual behaviors can bring serious problems to both adolescents and society. Without guidance from adults such as parents and teachers, youth have no preparation for healthy and responsible sexual behavior. [4, 5] Providing sex education at home and school are two major channels to solve the problem. However, one review which compared the effects of school family sex education pointed out that family sex education is weak in shaping healthy and responsible sexual behaviors because parents are ashamed to talk about sex-related topics with their children;[5] in contrast, many school-based intervention programs were effective.[5-7]

The causes of poor family sexuality education among vocational school students included parents' disinterest and inability. Results indicated that the educational level of vocational school students' parents was relatively low. Furthermore, parents' shortage of sexual and RH knowledge also limited their ability to give guidance on sexuality to children. Findings of FGDs showed that parents talked to their daughters only about physiological issues like dysmenorrhea, and they talked even less to their sons. When it came to other sex-related topics, parents either evaded it as taboo or just made offhand comments such as: "Don't fall in love, you little guy," "Be careful! Don't do those things," and "Remember, never make a close relationship with the opposite sex." One girl said, "Mother knew that I had experienced sexual intercourse, but she said nothing except that she warned me what I should be careful about." Therefore, school-based sexual and RH education should be stressed and strengthened in the context of the present poor quality of family sex education among vocational school students.

4.2 YRHP Achieved Good Effects

LPS Training Brought Positive Changes in Knowledge, Attitudes, and Skills

Adequate knowledge is an essential factor for behavior change, but simply providing information on sexual and RH does not necessarily assure that adolescents will alter their sexual behavior. Thus, while the YRHP aimed at increasing adolescents' knowledge of sexual and RH, most importantly, it also emphasized changing attitudes and developing skills. Much better outcomes were seen in this study than in a similar intervention study conducted in the early stage of the YRHP.[2]

First, both interventions significantly increased students' sexual and RH knowledge. Among various types of knowledge, understanding of contraception and reproductive physiology increased most obviously, followed by STIs and HIV/AIDS. Poor baseline knowledge about and more current need for contraceptive and reproductive knowledge might be the reason for the larger impact in these two knowledge areas, while an already relatively higher knowledge level might be the reason for

the lesser impact on HIV/AIDS knowledge. Secondly, the intervention that integrated education with services had a positive impact on students' sex-related attitudes and, at the same time, made their attitudes toward premarital sex more conservative. Meanwhile, both interventions promoted positive changes in both awareness of safe sex and attitudes towards condom use. However, no significant change was found in sexual or contraceptive behaviors in the intervention groups compared with the control group. The possible reasons might be that (1) the current sampling size in the study was not big enough to determine change in behaviors with low frequency, or (2) as behavior change needs a relatively long timeframe and the study only lasted for a short period, the length of the intervention was not sufficient to show its effect at present. Therefore, it is necessary to conduct follow-up studies to evaluate the long-term effects of the intervention on behavior change.

Participatory Methods Increased the Effectiveness of Sexual Health Education

One important reason for the good effects of the YRHP in the vocational schools was the use of participatory approaches. Using a participatory approach is one of the prominent characteristics of LPS training which differs from traditional educational methods. It is an innovation in current teaching methods in China. Participatory methods, such as group discussion, brainstorming, and role-playing, differ from the traditional didactic teaching methods, which can be dull. They not only increased student interest but also promoted communication between teachers and students. Participation turned the classroom into a stage where students were provided a wide scope to perform and imagine.

The impact of LPS was consolidated by building up students' skills in communication, negotiation, and refusal through role-playing. Furthermore, to make sexual health education more attractive to students, a sunny and appealing name was given to each session using phrases favored by students, such as "walking slowly in the road of love," "true love is worth waiting for," "love and values—a story about a girl and a sailor," "difference between like and love," and "difference between boys and girls." This made the sexual health education course shift from a boring to an attractive atmosphere, which readily engaged the adolescents. As one student said, "The first time I heard that a sex education course would be offered this term, I thought it would be boring as usual so I intended to kill time at the first lesson. To my big surprise, the teacher talked about all we are interested in. From then on, the first class on each Tuesday afternoon became what we would look forward to."

The teachers also managed the sequence of eight training sessions to gradually prepare the students for the most sensitive topic, "decision-making about sex and contraception." The course began with HIV/AIDS prevention, one of the most popular topics, and then progressed from AIDS to STIs, to physical and psychological characteristics of boys' and girls' development, to friendship and love, to refusal skills on smoking, to refusal skills on sex, and ended at decisions on sex and contraception. Following this order, students felt comfortable when they faced sensitive topics. The innovative teaching process turned the often embarrassing sexual health education course into the most welcomed course, and thus greatly enhanced the effectiveness of the intervention.

LPS Training Worked Better With PE and YFS

Of the two interventions, intervention 1 (LPS training integrated with PE and YFS) not only created positive changes in knowledge and awareness of safe sex and related skills, but also brought positive changes in attitudes towards premarital sex. However, attitudes toward other reproductive health issues showed

more positive outcomes for intervention [2], and for many indicators, there was no significant difference between the two intervention groups.

There may be reasons why peer education would increase effects of LPS. First, the design of the YFS room and the provision of YFS promoted students' participation in sexual and reproductive health education activities and implementation of peer education. The relaxing and natural atmosphere in the YFS room promoted communication between peers on sexual and RH issues. Secondly, peer education promoted respondents' participation in sexual health education activities and may have increased their awareness and consequently use of YFS. For instance, in order to make the presentation of LPS sessions attractive to students' in content and style, peer educators in intervention group 1 assisted the teachers in making slides that included pictures and music selected by the students themselves.

However, it is still important to note that effects did not differ very dramatically between the two intervention groups. Programmers may need to further investigate the costs and benefits more fully when deciding how to conduct similar programs.

4.3 Recommendations

Sexual and RH education for vocational school students has gained support from many parts of society, including school officials, parents, and the students themselves. This program received positive feedback from students, teachers, and parents. Based on the experience and effectiveness of the intervention activities, as well as opinions and evaluation of the students of the program, we make the following recommendations for sexual and RH education and services among vocational school students:

Use Participatory Approaches

Studies conducted domestically and internationally highlight[2,8-10] that participatory approaches to sexual health education are both effective and welcomed by adolescents. Both teachers and students in the study spoke positively about the interactive nature of the program. Participation is the most vital ingredient in this training process. Through active participation, the students' ability is brought into full play and their enthusiasm for learning is engaged. Meanwhile, participatory approaches give students an opportunity to practice new skills. As a result, students have a deep impression of what they have learned and can call on new behaviors when they need them.

Tailor Contents to Students' Real Needs

The contents of sexual health education should be closely relevant to adolescents' real life— students should help select the topics. All of the topics in the study, such as boy-girl relationships, refusal skills, and contraceptive knowledge, were what students needed, but students complained that these topics were not discussed in enough detail and that other topics they wanted to discuss were not covered. How to tailor topics to the needs of students so as to help them solve real life problems is a challenge for sexual health educators. Course designers and facilitators should have a clear and full understanding of students' real needs. Adolescents should be more involved in program design instead of just program beneficiaries.

Provide Education on Contraception

Advocating abstinence does not conflict with providing contraceptive knowledge. On the contrary, the effects are much more powerful when education and services are combined together. In this study, providing sex-related (and contraception) knowledge led to no significant change in use of contraceptives.

Other international studies have provided clear evidence that comprehensive sexuality education neither increases the occurrence and frequency of adolescent sexual activity nor does it increase the number of sexual partners. In fact, some, but not all, effective and comprehensive sexual health education programs delayed the age of sexual debut, decreased the frequency of sexual activity, and reduced the number of sexual partners, and some have promoted use of condoms or other contraceptives among sexually active adolescents.[6] Knowledge about contraception should not be evaded in sexual health education for vocational school students and other sub-groups with considerable dating and sexual behaviors. Vocational schools should regularly carry out comprehensive sexual and reproductive health education including contraceptive knowledge because it is of great significance to the promotion of sexual and RH of vocational school students.

Use Psychology Teachers as Primary Facilitators

Most problems among vocational school students were related to issues of relationships, so psychology teachers were more competent educators for sexual health education than other teachers. However, lack of educators generally impedes school-based sex education at present. Most schools have only one psychology teacher. If eight sessions of LPS training are carried out in small groups in a school composed of 400 to 500 students in each grade, the problem of inadequate trainers will become prominent. To solve this problem, this program applied a strategy where the psychology teacher played the major facilitation role with assistance of other teachers who were trained by the former. Results indicated that this strategy was an effective way to solve the problem. Furthermore, findings showed that in terms of some sensitive topics such as contraception or sexual intercourse, it would be better to carry out separate sessions for girls and boys to avoid embarrassment and that the sex of educators should be taken into consideration. Generally speaking, same-sex educators are more welcomed by students.

Limit Group Size and Provide More Time

Limiting the number of students to 25 or fewer in each class is preferable for participatory approaches characterized by interactive exercises. Previous intervention studies also indicate that the intervention effects are improved if participatory approaches are applied in small classes.[2] In the two intervention groups in this study, the average number of students in each class was 32 and 36, respectively, which was a little more than the ideal number and may have reduced the effectiveness of intervention. In addition, having only one class period devoted to each topic seemed too short because interactive activities and discussions are time-consuming. Many students said that the class ended just when they had begun to participate. Limited class time might also account for the complaints by some students that some course contents were taught superficially.

Strengthen Peer Education

Participation in the program enriched peer educators' spare time and also built up their organizational and management abilities. Most importantly, with peer educators leading program activities, more adolescents participated directly in implementing the sexual and RH education and services and their sense of being in charge of the program was enhanced. As a result, the impact of LPS training and YFS was strengthened, leading to positive changes in knowledge, attitudes, and skills among adolescents. Therefore, in order to increase the effectiveness of intervention programs, researchers and educators should pay special attention to peer education and other forms of true youth participation.

Provide Access to Contraceptives

Contraceptive use among adolescents is closely related to the accessibility of contraceptive services. In the study, the reason that the intervention did not significantly change contraceptive behaviors among sexually active adolescents is likely related to the fact that YFS in vocational schools focused on counseling without contraceptive services. Studies in other countries indicate that sexual health education integrated with contraceptive services had better effect on teenage pregnancy prevention,[11] and increasing access to condoms or other contraceptives through school-based clinics neither increased nor hastened sexual activity among adolescents. [4,6,12] Therefore, to promote effective use of contraceptive methods among adolescents, the contents of YFS should be further expanded by providing access to contraceptives.

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Appendix 1. Additional Data Tables

Table A-1. Median RH Knowledge Scores

Knowledge scores	Intervention group 1				Intervention group 2				Control group		
	Baseline	Endline	Increase		Baseline	Endline	Increase		Baseline	Endline	Increase
Reproductive physiology	42.86	53.57##	10.71	*	42.86	50.00##	7.14	◆◆	39.29	39.29##	0.00
Contraception	38.89	50.00##	11.11	**	38.89	61.11##	22.22	◆◆	33.33	27.78##	-5.55
STIs	26.67	40.00##	13.33		33.33	46.67##	13.34	◆◆	33.33	26.67##	-6.66
HIV/AIDS	44.44	55.56##	11.12	**	55.56	55.56##	0.00	◆◆	44.44	44.44##	0.00
Total	40.40	49.29##	8.89	**	42.77	53.67##	10.90	◆◆	38.43	33.05##	-5.38

* Kruskal Wallis test among three groups at baseline, P<0.05.
** Kruskal Wallis test among three groups at baseline P<0.01.
◆◆ Kruskal Wallis test among three groups at endline, P<0.01.
Wilcoxon-Mann-Whitney test between baseline and endline, P<0.01.

Table A-2. Knowledge of Reproductive Physiology (Correct Answers Before and After Intervention, %)

Questions	Intervention group 1				Intervention group 2				Control group		
	Baseline	Endline	Increase		Baseline	Endline	Increase		Baseline	Endline	Increase
In which part of the menstrual cycle are women most likely to become pregnant? (14 days before next menses)	12.52	37.15##	24.63	**	13.14	56.38##	43.24	◆◆	13.93	15.64	1.71
Can a girl get pregnant at first sexual intercourse if she has already had her period? (Yes)	27.93	44.97##	17.04	**	24.36	57.49##	33.13	◆◆	21.28	30.66##	9.38
Is a girl fertile after her menarche? (Yes)	52.01	68.23##	16.22	**	44.28	74.72##	30.44	◆◆	52.22	55.14	2.92
Can casual masturbation lead to sexual dysfunction? (No)	28.41	53.13##	24.72		30.08	73.15##	43.07	◆◆	33.08	33.74	0.66
Are wet dreams normal for boys? (Yes)	62.28	82.29##	20.01		69.07	92.39##	23.32	◆◆	67.12	53.70##	-13.42
Can a girl avoid pregnancy by urinating or washing her vagina immediately after intercourse? (No)	13.96	30.38##	16.42		13.56	50.56##	37.00	◆◆	15.47	14.40	-1.07

** Pearson chi-square test among three groups at baseline, P<0.01.
◆◆ Pearson chi-square test among three groups at endline, P<0.01.
Pearson chi-square test between baseline and endline, P<0.01.

Table A-3. Awareness of Contraceptives (Before and After Intervention, %)

Methods	Intervention group 1				Intervention group 2				Control group		
	Baseline	Endline	Increase		Baseline	Endline	Increase		Baseline	Endline	Increase
Withdrawal	39.33	61.46##	22.13		39.41	59.51##	20.10	◆◆	35.20	34.77	-0.43
Rhythm	41.57	58.51##	16.94		43.86	70.92##	27.06	◆◆	39.26	38.07	-1.19
Oral contraceptive pills	76.08	79.69	3.61	**	85.81	88.81	3.00	◆◆	74.85	59.26##	-15.59
Condoms	83.47	85.94	2.47	**	90.25	93.29	3.04	◆◆	81.24	63.17##	-18.07
Suppositories/film	41.57	47.57#	6.00		41.74	50.34##	8.60	◆◆	36.36	28.19##	-8.17
Emergency contraceptives	30.66	56.08##	25.42	*	26.06	66.67##	40.61	◆◆	24.18	25.72	1.54

* Pearson chi-square test among three groups at baseline, P<0.05.
** Pearson chi-square test among three groups at baseline, P<0.01.
◆◆ Pearson chi-square test among three groups at endline, P<0.01.
#,## Pearson chi-square test between baseline and endline, P<0.05, P<0.01.

Table A-4. Awareness About Contraceptive Effectiveness (Correct Answers Before and After Intervention, %)

Knowledge of effectiveness @	Intervention group 1			Intervention group 2				Control group		
	Baseline	Endline	Increase	Baseline	Endline	Increase		Baseline	Endline	Increase
Withdrawal (bad)	19.18	22.60	3.42	15.05##	39.10	24.05	◆	10.44	15.98	5.54
Rhythm (bad)	12.36	12.46	0.10	9.18##	17.35	8.17	◆◆	7.88	10.27	2.39
Oral contraceptive pills (good)	37.97	43.36	5.39	37.04##	46.85	9.81	◆	31.52	35.42	3.90
Condom (good)	51.92	63.23##	11.31	50.23##	72.42	22.19	◆	44.05	44.63	0.58
Suppositories/film (good)	45.56	49.64	4.08	41.62#	56.00	14.38	◆◆	39.89	49.64	9.75
Emergency contraceptives (good)	30.37	30.03	-0.34	23.58#	33.22	9.64	◆◆	32.00	34.40	2.40

◆ Pearson chi-square test among three groups at endline, P<0.05.
◆◆ Pearson chi-square test among three groups at endline, P<0.01.
Pearson chi-square test between baseline and endline, P<0.05.
Pearson chi-square test between baseline and endline, P<0.01.
@ The correct answer rate on a contraceptive was calculated among respondents who were aware of it.

Table A-5. Knowledge About STIs (Correct Answers Before and After Intervention, %)

Questions@	Intervention group 1			Intervention group 2				Control group		
	Baseline	Endline	Increase	Baseline	Endline	Increase		Baseline	Endline	Increase
Can STIs interfere with a woman's fertility in later life? (Yes)	36.25	42.34#	6.09	31.86	43.20##	11.34	◆◆	34.70	37.22	2.52
Does a person infected with an STI always have noticeable symptoms? (No)	20.26	41.19##	20.93	18.60	38.42##	19.82	◆	16.67	15.00	-1.67
Can STIs can be spread through hugging? (No)	83.83	90.80##	6.97	87.44	89.98#	2.54	◆◆	83.56	76.11#	-7.45
Can STIs can be spread through shaking hands? (No)	84.20	90.80##	6.60	86.05	90.69	4.64	◆◆	82.65	75.83#	-6.82
Can STIs can be spread through kissing? (No)	55.39	72.41##	17.02	59.53	65.63	6.10	◆◆	55.94	50.00	-5.94
Can STIs be spread through sexual intercourse? (Yes)	85.32	92.91##	7.59	86.74	93.56##	6.82	◆◆	85.84	80.56	-5.28

◆, ◆◆ Pearson chi-square test among three groups at endline, P<0.05, P<0.01. # Pearson chi-square test between baseline and endline, P<0.05,
Pearson chi-square test between baseline and endline, P<0.01. @ The correct answer rate was calculated among those who were aware of STIs.

Table A-6. Knowledge About HIV/AIDS Transmission (Correct Answers Before and After Intervention, %)

HIV transmission ways	Intervention group 1				Intervention group 2				Control group		
	Baseline	Endline	Increase		Baseline	Endline	Increase		Baseline	Endline	Increase
Shaking hands (No)	78.65	89.06 ##	10.41		83.69	88.81 ##	5.12	◆◆	77.95	67.70##	-10.25
Kissing (No)	41.09	66.32 ##	25.23		48.94	61.52##	12.58	◆◆	47.00	44.03##	-2.97
Sexual intercourse (Yes)	81.86	91.32 ##	9.46	*	88.35	94.63 ##	6.28	◆◆	83.17	71.19##	-11.98
Sharing toilets (No)	26.48	51.74##	25.26		29.87	44.07 ##	14.20	◆◆	22.63	30.04##	7.41
Insect bites (No)	22.63	47.92##	25.29	**	17.80	29.75 ##	11.95	◆◆	20.70	18.72#	-1.98
Sharing telephone (No)	70.95	81.94 ##	10.99		76.48	79.19##	2.71	◆◆	68.47	58.44 ##	-10.03
Blood transfusion (Yes)	87.00	91.15#	4.15		86.44	97.54##	11.10	◆◆	84.14	76.34##	-7.80
Eating together (No)	40.77	67.53##	26.76		45.34	58.39 ##	13.05	◆◆	39.07	39.51 #	0.44
Sharing needles (Yes)	87.32	92.19 #	4.87	*	91.31	94.85 ##	3.54	◆◆	87.23	76.75##	-10.48

* Pearson chi-square test among three groups at baseline, P<0.05. ** Pearson chi-square test among three groups at baseline, P<0.01.
◆◆ Pearson chi-square test among three groups at endline, P<0.01. # Pearson chi-square test between baseline and endline, P<0.05.
Pearson chi-square test between baseline and endline, P<0.01.

Table A-7. Attitudes to Other RH Issues (Before and After Intervention, %)

Attitudes	Intervention group 1				Intervention group 2				Control group		
	Baseline	Endline	Increase		Baseline	Endline	Increase		Baseline	Endline	Increase
It is natural for people my age to be interested in pornographic materials. (Yes)	36.28	50.69##	14.41	*	35.38	52.13##	16.75	◆◆	30.17	33.95##	3.78
I believe it is okay for a girl my age to masturbate. (Yes)	26.00	51.39##	25.39		20.55	59.06##	38.51	◆◆	25.73	30.86##	5.13
I believe it is okay for a boy my age to masturbate. (Yes)	31.78	56.25##	24.47		29.66	67.56##	37.90	◆◆	30.75	35.80##	5.05
I believe it is natural for a girl my age to have sexual fantasies. (Yes)	45.59	66.49##	20.90		46.19	75.39##	29.20	◆◆	47.20	40.95##	-6.25
I believe it is natural for a boy my age to have sexual fantasies. (Yes)	56.18	70.83##	14.65	*	63.35	82.10##	18.75	◆◆	53.38	46.50##	-6.88
I believe it is natural for a girl my age to have sexual dreams. (Yes)	39.97	67.36##	27.39		41.53	73.60##	32.07	◆◆	43.91	41.77##	-2.14
I believe it is natural for a boy my age to have sexual dreams. (Yes)	49.12	73.09##	23.97	*	58.90	84.12##	25.22	◆◆	51.06	47.53##	-3.53

* Pearson chi-square test among three groups at baseline, P<0.05.
◆◆ Pearson chi-square test among three groups at endline, P<0.01.
Pearson chi-square test between baseline and endline, P<0.01.

Appendix 2. Questionnaire

Vocational High School Students in Shanghai (Endline)
(Administered by computer)

Codes

City:

School:

Grade:

Class:

Random Code:

SECTION I. Basic Information

101. What was the date of your birth?
Year 19_____ Month_____

102. What is your gender?
1) Male
2) Female

103. If possible, what is the highest academic degree you'd like to achieve?
1) Senior High/Vocational High School
2) Junior College
3) Bachelor's degree
4) Master/Doctor's degree
5) Uncertain

104. Do you smoke cigarettes?
1) Never
2) Seldom
3) Often but not every day
4) Almost every day

105. Have you been to clubs, bars, cyber-cafés, or parties during the last 3 months?
1) Every week
2) About once a week
3) Seldom
4) Never (Skip to Question 107)

105.1. If yes, with whom have you most usually gone?
1) Yourself alone
2) Parent(s)
3) Relative(s)
4) Friend(s)/classmate(s) of same sex
5) Friend(s)/classmate(s) of opposite sex
6) Friends of both sexes
7) Other (Please specify) _____

106. Have you gone movies or video shows?
1) Every week
2) About once a month
3) Seldom
4) Never (Skip to 108)

106.1. If yes, with whom have you most usually gone?
1) Yourself alone
2) Parent(s)
3) Relative(s)
4) Friend(s)/classmate(s) of same sex
5) Friend(s)/classmate(s) of opposite sex
6) Friends of both sexes
7) Other (Please specify) _____

107. Except for living expenses, how much pocket money does your family give to you monthly?
RMB_____ Yuan_____

107.1. Which of the following are your major activities during your holiday/school breaks?
1) Study
2) Housework
3) Social activities/practice
4) Parties
5) Dating
6) Sports
7) Sleeping
8) Listening to music, reading for entertainment
9) Chatting or playing games through website
10) Other (Please specify) _____

108. How well does each of the following statements describe your feelings about yourself?

	Not at all	Some	Much	Best
A. I feel I am very popular among and respected by my friends.	1	2	3	4
B. I feel I am as important to my family as other members.	1	2	3	4
C. I believe I am capable of achieving many things.	1	2	3	4
D. I am not sure how to feel proud of myself.	1	2	3	4
E. Whatever I do, I can make myself happy.	1	2	3	4
F. I am satisfied with relationships that I have with people surrounding me.	1	2	3	4
G. I know my weaknesses and how to deal with them.	1	2	3	4
H. I feel that many things I do are meaningless.	1	2	3	4
I. I am quite sure what kind of person I will turn out to be in the future and how to achieve my goals.	1	2	3	4
J. I believe that I am a failure in many aspects of my life.	1	2	3	4

SECTION II. Family and Peers

201. Who will you first talk to about things that are important to you?
1) Father
2) Mother
3) Grandfather/mother or other relatives
4) Teachers
5) Sibling(s)
6) Classmate(s)/friend(s)
7) Lover
8) Nobody
9) Other (Please specify) _____

202. Who will you first talk to about sex-related issues (such as physical development, friendship with the opposite sex) that are important to you?
1) Mother
2) Father
3) Sibling(s)
4) Teachers
5) Friend(s) of same sex
6) Friend(s) of opposite sex
7) Professional
8) Nobody
9) Other (Please specify) _____

205. Do you find it is difficult or easy to share your school life with your parents?
1) Very easy
2) Easy
3) Average
4) Difficult
5) Very difficult
6) Don't know

207 Have your parents shown interest in your following activities in the last 12 months?

	Father			Mother		
	Yes	**No**	**Don't know**	**Yes**	**No**	**Don't know**
A. Music or TV programs you like	1	2	3	1	2	3
B. Your appearance: dress and hairstyle	1	2	3	1	2	3
C. Your reading choices	1	2	3	1	2	3
D. Your manners	1	2	3	1	2	3
E. Your life style such as smoking or drinking alcohol	1	2	3	1	2	3
F. Your friends of same sex	1	2	3	1	2	3
G. Your friends of opposite sex	1	2	3	1	2	3
H. Your academic performance	1	2	3	1	2	3
I. Your future career	1	2	3	1	2	3

208. How would you feel talking about sexual issues (psychological, physical, and interpersonal relationships with the opposite sex) with your parents?
1) Very easy
2) Easy
3) Average
4) Difficult
5) Very difficult
6) Don't know

209. How would you describe your parents in terms of their attitudes towards sexual affairs among unmarried youths?
1) Very liberal
2) Liberal
3) Average
4) Conservative
5) Very conservative
6) Don't know
7) Inapplicable

210. How much about your own sexual development (physical development, friendship with the opposite sex, love affairs) do you tell your parents?
1) I tell them almost everything.
2) I tell them only what they would approve of (about both myself and others).
3) I only talk in a general way about sex, not specifically about me.
4) I tell them nothing.
5) Inapplicable.

211. If you have siblings, do you discuss sex-related issues with them?
1) Yes
2) No
3) Don't have siblings

211. If you have siblings, do you discuss sex-related issues with them?
1) Yes
2) No
3) Don't have siblings

212. How many of your close friends are out of school?
1) Most of them
2) About half
3) Fewer than half
4) None

213. Are "dirty" jokes common among your friends?
1) Yes
2) No

214. Have you ever seriously talked about sex-related issues with your best friends?
1) Yes
2) No

215. If you have some sexual concerns about yourself, who will you talk to first?
1) Mother
2) Father
3) Sibling(s)
4) Teachers
5) Friend(s) of same sex
6) Friend(s) of opposite sex
7) Professionals
8) Other (Please specify) _____
9) Nobody

216. As far as you know, about how many youths of your age are dating?
1) Most of them
2) About half
3) Some
4) None
5) Don't know

216.1. As far as you know, about how many youths of your age in your circle are dating?

1) Most of them
2) About half
3) Some
4) None
5) Don't know

SECTION III. Knowledge of Reproductive Health

301. Please indicate whether the following statements about puberty are true or false.

	True	False	Don't know
A. Boys and girls enter puberty at the same time.	1	2	3
B. Although a pattern exists, puberty differs by person.	1	2	3
C. Wet dreams are normal for a boy who has entered puberty.	1	2	3
D. Only boys masturbate.	1	2	3
E. Even occasional masturbation leads to sexual dysfunction in later life.	1	2	3
F. A girl can take a bath during her period.	1	2	3
G. Both boys and girls should pay attention to the hygiene and take care of cleaning their genital areas.	1	2	3

302. During which part of the menstrual cycle is a woman most likely to become pregnant?

1) Before menstruation
2) During menstruation
3) After menstruation
4) About 14 days before menstruation
5) In the middle of menstrual circle
6) Don't know

303. Please indicate whether the following statements about reproduction are true or false.

	True	False	Don't know
A. A girl can get pregnant after her first period.	1	2	3
B. A girl can get pregnant on the first sexual intercourse if she has already had her first period.	1	2	3
C. A girl stops growing after she has intercourse for the first time.	1	2	3
D. A girl can only get pregnant if she has sexual intercourse during those days in the middle of menstrual cycle.	1	2	3
E. Infrequent intercourse cannot cause a girl to become pregnant even if she has experienced her menstruation.	1	2	3
F. A boy who already has had ejaculation or experienced a wet dream can make a girl pregnant the first time he has sexual intercourse.	1	2	3
G. A girl can avoid pregnancy by urinating or washing her genitals immediately after intercourse.	1	2	3

304. Please tell us how much you know about the following contraceptive methods.

A. Contraceptive	B. Have heard of		C. Effectiveness			D. Can prevent STIs/HIV		
	No	Yes	High	Low	DK*	Yes	No	DK
A. Withdrawal	1	2	1	2	3	1	2	3
B. Rhythm	1	2	1	2	3	1	2	3
C. Oral pills	1	2	1	2	3	1	2	3
D. Condom	1	2	1	2	3	1	2	3
E. Injection	1	2	1	2	3	1	2	3
F. Foam	1	2	1	2	3	1	2	3

* Don't know.

305. Have you ever heard of any sexually transmitted infection (STI)?

1) Yes
2) No (Skip to Question 309)

306. Can the following activities transmit STIs?

	Yes	No	Don't Know
A. Sexual intercourse	1	2	3
B. Kissing	1	2	3
C. Shaking hands	1	2	3
D. Hugging	1	2	3
E. Sharing towel or washing utensils	1	2	3
F. Sharing toilet	1	2	3
G. Transfusion	1	2	3

307. "If a person is infected with STIs, he/she will surely have noticeable symptoms" : is that right?

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

308. "STIs may interfere with a woman's fertility in later life": is that right?

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

309. Do you think HIV infection equals AIDS?
1) Yes
2) No
3) Don't know

310. Which body fluids can transmit HIV and lead to AIDS? (Check all that apply)
1) Blood
2) Sweat
3) Semen
4) Vaginal discharge
5) Saliva
6) Urine
7) Milk
8) Don't know

311. Which of the following activities can transmit HIV/AIDS?

	Yes	**No**	**Don't know**
A. Shaking hands or hugging	1	2	3
B. Social kissing	1	2	3
C. Sexual intercourse	1	2	3
D Sharing toilet/bath tubs/swimming pool	1	2	3
E. Insect bites	1	2	3
F. Sharing telephone	1	2	3
G. Blood transfusion	1	2	3
H. Sharing dishware	1	2	3
I. Sharing needles among drug users	1	2	3

312. Can HIV/AIDS be prevented?
1) Yes
2) No
3) Don't know (Skip to Question 314)

313. How can HIV/AIDS be prevented? (Check all that apply.)
1) Exercise more
2) Stick to one sexual partner
3) Use condoms correctly and constantly
4) Improve nutrition status
5) Avoid unsafe blood transfusions
6) Avoid sharing syringes/needles
7) Abstinence
8) Don't know

314. Which of the following can detect HIV?
1) Measure blood pressure
2) Examine genitals
3) Measure body weight
4) Test the blood
5) X-ray examination
6) Don't know

315. "Even a single unsafe sexual intercourse may result in transmission of HIV": is that right?
1) Yes
2) No
3) Don't know

316. "A teenager may get infected with HIV even when he/she has sex for the first time in his/her life": is that right?
1) Yes
2) No
3) Don't know

317. "Using condoms correctly and regularly can greatly reduce the risk of getting HIV/AIDS": is that right?
1) Yes
2) No
3) Don't know

318. Which of the following activities can be seen as using condom correctly?

	Yes	**No**	**Don't know**
A. Select a high-quality and well-known brand condom.	1	2	3
B. Check the manufacture date and expiry date of the condom.	1	2	3
C. Check the packaging of the condom and affirm it is intact.	1	2	3
D. Wash condom completely after use and keep for reuse.	1	2	3
E. Put condom on penis and push air out of front tip bag.	1	2	3
F. Pull penis and condom out of vagina immediately after ejaculation.	1	2	3

SECTION IV. Attitudes and Skills

400. Do you agree or disagree with following statements?

	Agree	Disagree	Don't know
A. I believe it is natural for a boy of my age to have sexual dreams.	1	2	3
B. I believe it is natural for a girl of my age to have sexual dreams.	1	2	3
C. I believe it is natural for a boy of my age to fantasize about sex.	1	2	3
D. I believe it is natural for a girl of my age to fantasize about sex.	1	2	3
E. I believe it is okay for a boy of my age to masturbate.	1	2	3
F. I believe it is okay for a girl of my age to masturbate.	1	2	3
G. It is natural for people at my age to have an interest in pornographic materials.	1	2	3

401. What's your first criterion to select a wife or husband in the future?
1) Academic study/work performance
2) Appearance and figure
3) Social ability
4) Character
5) Family background
6) Position in the society
7) Other (Please specify) _____

402. "I think it is okay for people of my age to go on dates if it does not interfere with their studies": do you agree or disagree?
1) Strongly agree
2) Agree
3) Not sure
4) Disagree
5) Strongly disagree

402.1. How many students of your grade do you think had sexual experience in your school?
1) <5%
2) 5–10%
3) 10–15%
4) 15–20%
5) 20–25%
6) 25–30%
7) >30%

403. When people of your age are dating, is it appropriate for them to engage in the following behaviors? (Check all that apply.)
1) Holding hands
2) Kissing
3) Hugging
4) Petting
5) Sexual intercourse
6) Don't know

404. Do you agree or disagree with the following statements?

	Agree	**Disagree**	**Don't know**
A. Sex is a way to show young people's maturity.	1	2	3
B. People of my age are very unlikely to have sexual intercourse.	1	2	3
C. I feel jealous of people my age who have had a chance to have sex.	1	2	3
D. I think most people of my age wouldn't refuse sex if they had the chance.	1	2	3
E. Sex before marriage is okay if they are really in love.	1	2	3
F. Premarital sex can make a girl lose self-respect and dignity, but not boys.	1	2	3
G. If most people my age have experienced sex, I will also do it in the near future.	1	2	3
H. Providing contraceptive methods to adolescents means you permit sexual behaviors before marriage.	1	2	3
I. If I do not want to have sex at this moment, I am able to refuse it.	1	2	3
J. If I were sexually harassed, I know how to protect myself.	1	2	3
K. If I have sex, I will take some protective measures to prevent pregnancy and diseases.	1	2	3

405. When do you plan to marry? Age____

406. Do you agree or disagree with the following statements?

	Agree	Disagree	Don't know
A. For young people, knowing more about condoms is a sign of caring about oneself.	1	2	3
B. If she insists on using a condom, a woman would be considered by her partner as disrespectful.	1	2	3
C. Asking questions about condoms is difficult because it looks as if I plan to have sex.	1	2	3
D. It is embarrassing for people my age to purchase condoms.	1	2	3
E. The main purpose for using condoms among people of my age is to prevent pregnancy.	1	2	3
F. I do not want to know much about condoms because I don't want to have sex at this moment.	1	2	3
G. If your partner does not want to use condoms, you can do nothing to change her/his mind.	1	2	3
H. If my parents find out that I carry condoms, I will be in real trouble.	1	2	3
I. Using a condom is very difficult for the first sex act.	1	2	3
J. Most young people use condoms during sex.	1	2	3

407. Are you willing to do the following activities with an HIV-infected person?

	Yes	No
A. Eat together	1	2
B. Study in the same class	1	2
C. Patronize the services provided by them	1	2
D. Go to their homes	1	2
E. Use the same telephone	1	2

408. "HIV-positive persons or AIDS patients should be quarantined from the rest of society," do you agree or disagree?

1) Strongly agree
2) Agree
3) No opinion
4) Disagree
5) Strongly disagree
6) Don't know

409. Please imagine what your friend (of the same sex) should do in the following situations.

409.1. He/she is home alone with his/her girlfriend/boyfriend. They start to kiss and touch and don't want to stop. The girlfriend/boyfriend makes a request to have sex, but your friend has no intention to have sex at this age. Check the one thing your friend should do.
1) Stop those intimacies and leave as soon as possible.
2) Keep going and if she/he insists, have sex without a contraceptive.
3) Slow down and try to find a condom and then have sex.
4) Stop and do something else before they go too far, like get something to eat or enjoy a good CD.
5) Tell girlfriend/boyfriend his/her true feelings and do not have sexual intercourse.
6) Tell girlfriend/boyfriend his/her true feelings. But if the partner insists, have sexual intercourse.
7) Don't know.

409.2. Your friend wants to have sex with his/her partner; the partner insists on using a condom but neither of them has one. Check the one thing that your friend should do.
1) Try to convince her/him to have sex without a condom.
2) Go get a condom.
3) Don't have sexual intercourse.
4) Tell her/him to forget about it and not to have sex.
5) Don't know.

409.3. Your friend is home alone with his/her partner. They have had sex with each other before, but your friend does not want to have sex at this age any more. The girlfriend/boyfriend makes the request to have sex again. Check the one thing that your friend should do.
1) Tell girlfriend/boyfriend his/her true feelings and do not have sexual intercourse.
2) Find some other topics and shift her/his attention.
3) Have sexual intercourse if she/he insists.
4) Tell her/him that you are not in the mood, maybe some other day.
5) Just ignore her/his request and leave.
6) Don't know.

410. What would you do if you thought you might be infected with HIV?
(Check all that apply.)
1) Tell your parent.
2) Go to hospital secretly.
3) Avoid contact with friends/classmates.
4) Self-medicate.
5) Go to a private clinic.
6) Keep it secret, live as a normal person.
7) Leave school secretly.
8) Other. (Please specify) _____

411. How confident are you of your ability to deal with peer pressure to smoke or drink?
1) Very confident
2) Somewhat confident
3) Uncertain
4) Not confident
5) Not at all confident

SECTION V. Personal Development and Behavior

507. Have you ever masturbated?
1) Yes
2) No (Please skip to Question 508)

507.1. Have you ever felt guilty or anxious after it?
1) Yes
2) No

508. Have you ever thought about or worried about whether you are normal in terms of your growth and development?
1) Yes
2) No

509. There comes a time when one is attracted to someone of the opposite sex and wants to be physically close to her/him. Has this happened to you?
1) Yes
2) Never (Please skip to Question 511)

510. When did you first have this kind of feeling?
I was _____ years old, when I was in grade _____.
1) Primary school
2) Junior school
3) Senior school

511. Have you ever gone steady with someone of the opposite sex (dated one person and no one else)?
1) Yes
2) No (Skip to Question 513)

512. When did you begin dating a person of the opposite sex?
I was _____ years old, when I was in grade _____.
1) Primary school
2) Junior school
3) Senior school

513. Have you engaged in the following behaviors with a person of the opposite sex during the past 12 months?

	Yes	No
A. Holding hands	1	0
B. Hugging	1	0
C. Kissing	1	0
D. Petting	1	0

514. Have you had sexual intercourse with a person of the opposite sex?
1) Yes
2) No (Skip to Question 523)

514.1. How old were you when you had sex for the first time?
I was _____ years old, when I was in grade_____.
1) Primary school
2) Junior school
3) Senior school

515. Under what condition did your first sexual intercourse happen?
1) It was planned and voluntary.
2) It was planned, but with some opposition from me.
3) It was planned, but with strong opposition from me.
4) It was unplanned, but without any opposition.
5) It was unplanned and not voluntary.
6) It was unplanned and with my strong opposition.
7) Don't remember.

516. Was your first sexual partner of your age, younger, or older than you?
1) More than 3 years younger than you
2) A little bit (within 3 years) younger than you
3) Almost the same age
4) A little bit (within 3 years) older than you
5) More than 3 years older than you
6) Have no idea

517. What was the reason you had sexual intercourse for the first time?
1) Felt physical urge
2) Felt pressure, for most of peers have had sex
3) To satisfy partner's need
4) To express love and intimacy
5) To behave like an adult
6) To gain money or gifts
7) To show maturity
8) Was forced/raped
9) Others (Please specify)_____

518. What was your feeling after you had your first sexual intercourse? (Check all that apply.)
1) Thrilled
2) Proud
3) Regretful
4) Worried about being pregnant
5) Disappointed
6) Angry
7) Fear others will know/ashamed
8) Hurt
9) Wanted to commit suicide
10) Other (please specify) _____

519. Did you or he/she do anything to avoid pregnancy the first time you had sexual intercourse?
1) Yes (Skip to Question 521)
2) No

519.1. Why didn't you use contraceptives when you had sexual intercourse for the first time? (After answering 519.1, skip to Question 521)
1) I knew nothing about contraceptives.
2) I did not know where to get contraceptives.
3) My partner didn't want to use any.
4) I am so young that I can't get pregnant.
5) No need, because you can't get pregnant the first time you have sex.
6) It cost too much.
7) Because I didn't expect to have sex.
8) I was worried about the side effects.
9) Other. (Please specify)_____

520. What method did you use when you had your first sexual intercourse?
1) Condom
2) Pill
3) Injection
4) Withdrawal
5) Rhythm
6) Emergency contraception
7) Other (Please specify) _____
8) Forgot

521. Did you or your partner do anything to avoid pregnancy for the most recent sexual intercourse (first sexual intercourse excluded)?
1) Yes (Skip to Question 522)
2) No

521.1. Why didn't you use contraceptives for the most recent intercourse?
(After answering 521.1, skip to Question 523)
1) I did not know where to get contraceptives.
2) My partner didn't want to use any.
3) I am so young that I can't get pregnant.
4) No need, because you can't get pregnant the first time you have sex.
5) It cost too much.
6) Because I didn't expect to have sex.
7) I was worried about the side effects.
8) Other. (Please specify)_____

522. What method did you use when you had your first sexual intercourse?
1) Condom
2) Pill
3) Injection
4) Withdrawal
5) Rhythm
6) Emergency contraception
7) Other (Please specify) _____
8) Forgot

523. What's the source of your current knowledge on sexual and RH? (Please list the first three)
1) School education
2) Friends and classmates
3) Parents and relative(s)
4) Sibling(s)/peer relatives
5) Medical personnel
6) Scientific readings
7) Leisure reading
8) Mass media
9) Internet
10) Pornography video/novel
11) Ads and posters
12) Other (Please specify) _____

524. What sources do you think are best for adolescent sexual and RH knowledge?
(Please choose top three)
First ___; Second ___; Third ___
1) School education
2) Friends and classmates
3) Parents and relative(s)
4) Sibling(s)/peer relatives
5) Medical personnel
6) Scientific readings
7) Leisure reading
8) Mass media
9) Internet
10) Pornography video/novel
11) Ads and posters
12) Other (Please specify) _____

525. What's the source of your current knowledge on sex and RH?
1) Medical personnel
2) Handouts/pamphlets
3) Books/magazines/newspapers
4) TV/radio
5) Internet
6) School education
7) Friends and classmates
8) Parents and relative(s)
9) Propaganda
10) Other (Please specify) _____

526. Did you receive education (life-planning skills training, LPS training in brief, etc.) on topics below in the school where you are studying now?
1) Yes
2) No (Please skip to Question 601)

526.1. What topics did your school cover in class?
1) Physical development and health care
2) Fertility and contraception
3) STI prevention
4) HIV/AIDS prevention
5) Values clarification and decision-making
6) Interpersonal interaction and communication
7) Drug abuse prevention
8) Dating and marriage
9) Self-efficacy
10) Self protection and refusal skills
11) Sexual morals
12) Pre-marriage sex and consequence of unwanted pregnancy and induced abortion
13) Planning for future of life and vocation
14) Other (Please specify) _____

527. Do you know that there is a counseling service room in your school?
1) Yes
2) No (Please skip to Question 601)

528. Did you go there?
1) Yes
2) No

SECTION VI. Evaluation

601. How many LPS training courses have been carried out until now?

601.1. How many times did you take part in them?

602 Who acted as the LPS training facilitators in your school?

1) Psychology teacher(s)
2) Physiology/biology teacher(s)
3) Moral education teacher(s)
4) Other subject's teacher(s)
5) Other (Please specify) _____
6) Nobody

603. Were the facilitators your head teachers?

1) Yes
2) No

604. What kind of teaching approaches were applied in the LPS training?

1) Participatory and interactive
2) Only teacher's talking
3) Communication between peers
4) No class carried out

605. Were there any problems on LPS training?

1) What we want to know was not mentioned.
2) Something was skipped.
3) The teacher let us learn by ourselves.
4) The teaching was didactic and uninteresting.
5) We felt ashamed because boys and girls were together.
6) The teaching techniques were monotonous.
7) Other. (Please specify) _____
8) There is no problem.

605. Were there any problems on LPS training?

1) What we want to know was not mentioned.
2) Something was skipped.
3) The teacher let us learn by ourselves.
4) The teaching was didactic and uninteresting.
5) We felt ashamed because boys and girls were together.
6) The teaching techniques were monotonous.
7) Other. (Please specify) _____
8) There was no problem.

605.1. How well was LPS training welcomed among students?

1) Very much
2) Generally
3) Not at all
4) Don't know

606. What do you think about LPS training?
1) It is necessary to meet our needs.
2) It is not necessary because we do not need it at present.
3) It is not necessary because we already know it.
4) It is necessary, for it is useful for the future.
5) Other. (Please specify) _____

607. How seriously do you take LPS training?
1) Take it very seriously
2) Take it seriously
3) Pay no attention

607.1. How interested are you in LPS training?
1) Very interested
2) Interested
3) Not interested
4) Indifferent

608. How do you benefit from LPS training?
1) We have a further understanding of ourselves.
2) It strengthens communication with teachers/parents/classmates.
3) It Increases RH knowledge.
4) It sets the aims of life and promotes making correct decisions.
5) We learn to say no and improve self-protection skills.
6) It provides motivation to participate in activities.
7) It improves psychological health.
8) It improves academic study performance.
9) It enhances sexual morals.
10) Other. (Please specify) _____

609. How many handouts or pamphlets on adolescent sex and RH did you receive this semester?
1) I received ____.
2) None (Skip to Question 612)

610. How did you treat the pamphlets?
1) Read all
2) Read most
3) Read the pamphlets that I found interesting

4) Did not read

611. What's your evaluation of the pamphlets?
1) Very useful
2) Generally useful
3) Of no use

612. Please give your answers to the following questions in the table below on other activities you took in addition to LPS training and reading materials.

Type of activities	Frequency (zero means never)	Evaluation		
		Good	Average	Bad
1) Watching VCD and video tapes		1	2	3
2) Listening to lectures		1	2	3
3) Going to exhibition		1	2	3
4) Joining in writing contest		1	2	3
5) Submitting to school papers		1	2	3
6) Listening to school radio		1	2	3
7) Taking part in class activities		1	2	3

613. Except for reading materials and activities organized by school, from what other knowledge resource do you get information on sex and RH?
1) Reading magazines and newspapers
2) Listening to related radio program
3) Watching TV program
4) Browsing internet
5) Watching video tape or VCD
6) Going to exhibition
7) Taking part in big social activity (health promotion)
8) Lectures organized by community
9) Other (Please specify) _____

This is the end of the questionnaire. We thank you for your participation and time!

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