Impact Evaluation for China Youth Reproductive Health Project
--- The Effects of the Life-Planning Skills Training Program

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I. Introduction

The "youth" population, comprising adolescents and young adults, has been growing rapidly in most developing countries, a fact that has significance for demographic and public health. Youth in many developing countries are at acute risk of sexually transmitted infections (STI), human immunodeficiency virus (HIV) infection and unintended pregnancies (Speizer et al. 2003, Alan Guttmacher Institute 1998a). There has been soaring concern over the adverse health and social welfare consequences of the reproductive health challenges faced by adolescents. In response, recent years have witnessed marked increase in adolescent reproductive health programs in developing countries. However, few rigorous impact evaluations of these programs have been documented.

In China, where adolescent sexual and reproductive health (ASRH) issues have long been a taboo, sex education is still not given adequate policy attention. Where Confucian ideas still exist, such as virginity of girls is valued, and sex is not to be discussed overtly, liberalization of sexual relationships at all ages, especially for the young, is seen as an ongoing process (Hoy 2001). Such liberalization is seen as a result of the rapid behavioral and sociological changes in China taking place during the socioeconomic reform era starting from 1980s. Public attention to ASRH issues is building; however, hardly any systematic ASRH education or comprehensive youth development programs are available for Chinese adolescents, who are estimated to have growing unmet sexual and reproductive health needs. ASRH programs addressing the issue are scattered or are small scale. They often fail to address the social environment due to their limited scale, or still adopt a traditional lecture-oriented, didactic approach for educating youth on RH, and therefore, often times, result in only limited impacts in terms of improving adolescents' reproductive health status. In addition, many of these programs either lack sufficient documentation on their effectiveness, or the evaluations are mainly qualitative descriptions of the program. Rigorously designed quantitative evaluation is rare, yet it is imperative to conduct rigorous impact evaluation studies to advance our understanding of "what works" in ASRH programming in China in particular and in developing countries in general, and to launch more effective, sustainable ASRH interventions to address the burgeoning issue of ASRH challenges.

The five-year China Youth Reproductive Health (CYRH) Project, launched in 2000, is a partnership between the China Family Planning Association (CFPA) and PATH. Incorporating cognitive behavior and stages of change theories, it aims to improve RH status (from RH knowledge and attitudes to sexual behavior and final health outcomes, such as prevalence of RH diseases and of unintended pregnancies) of youth ages 10-24 in China by addressing contextual factors for ASRH and changing the didactic approach of RH education to a participatory one. In particular, the project's life-planning skills (LPS) training program employed participatory approaches as well as peer education to offer comprehensive education on sexual and reproductive health to facilitate adolescents' personal development.

What are the impacts of this training program? To what extent has the program achieved its goal of improving adolescents' RH status? To be more specific, with the adoption of participatory approaches, is the program effective in improving youth's reproductive health knowledge, attitudes, practices and skills? Moreover, does effectiveness differ among youth by rural/urban residential status, or working/migration status? Based on the quantitative data collected in 5 of the 14 project sites across the nation, this study is an impact evaluation of the LPS training program of the overall project to answer the questions posed above. By providing quantitative evidence, which is usually undocumented for such programs, this evaluation contributes to a better understanding of the effectiveness of the popular participatory approach applied in a comprehensive ASRH program, so as to help inform future youth reproductive health project design and policy making in China. The study explores knowledge, attitudes, skills, and behaviors of youth in contemporary China, adding to the limited understanding of ASRH issues in China. In addition, findings from the assessment can also lend lessons to ASRH program design and implementation in other developing countries.

II. Background

Studies of ASRH Programs and the Setting for ASRH in China

Adolescence, as a transition point to adulthood, is critical in one's physical and mental development. However, adolescents in many of today's developing countries are under great reproductive health risks. Currently, about one-half of all people infected

with HIV are females under 25 years in the developing world (UNAIDS/WHO 2001). More than 13 million adolescent girls in developing countries have unintended births each year (Alan Guttermacher Institute 1998a). Traditional culture still plays a significant role in these developing countries, with sex and sexuality often remaining taboo topics, and people with reproductive health diseases are often stignatized. Meanwhile, sex education is generally nonexistent in national education systems, where even basic education is not available for many young people, and local governments usually lack resources to address ASRH.

As the developing world's ASRH concerns have been gaining international attention, programs addressing the issue are also increasing (Speizer et al. 2003). However, documented evaluations of these programs are still inadequate. In a study attempting to review the effectiveness of ASRH programs in developing countries, databases for international health/development organizations and major computerized databases (POPLINE, MEDLINE, and ERIC) were searched, and only 41 evaluation studies across the developing countries were identified as having sufficient scientific basis for giving evidence on effectiveness (Speizer et al. 2003). Most of these studies were undertaken after 1990, and a majority are school-based interventions or are oriented towards specific RH issues rather than towards comprehensive youth development. The limited set of rigorously evaluated programs is often short-term and small-scale in nature. Information on the impact of large-scale programs is rare. At the same time, although the participatory approach is becoming increasingly common in ASRH projects, evaluations of such projects are limited, or are mostly qualitative rather than quantitative. The current study is intended to fill such gaps in evaluation studies, attempting to quantitatively assess the impact of the life-planning skills training program in China, a comprehensive large-scale youth development program employing a participatory approach. The study is especially rare in China where large-scale ASRH programs with participatory approaches are new.

In China, adolescents are becoming sexually mature at earlier ages as is the case in many other developing countries. A survey in Zhejiang Province in east China shows that most junior high students have shown special attention to a particular person of the opposite sex, quite a few have started dating and have had physical contacts, with a few

having had sexual relationships (Xu and Liu, 2000). While this is only a survey of high school students, the percentage having sex is likely to be higher when out-of-school teenagers are also included. With premarital sex on the rise, so is teenage pregnancy and the use of abortion as contraception. In 1988 one study reported that the abortion rate for 15-19 year-old women ranged between 46/1000 and 71/1000 across cities in China (Kaufman et. al. 1994). The abortion rate for the same age group in the United States was only 43.5/1000 (Alan Guttmacher Institute, 1998b). This shows that, lacking preventive measures, and under the pressure from traditional culture, Chinese adolescents are at growing reproductive health risk.

In contrast to the increasing early sexual relationships is the young people's general ignorance of the facts of life. A national survey conducted with 3,000 teenagers in major Chinese cities by the Shanghai Academy of Social Sciences reports that, when asked pointed questions about sex, around 80 percent showed basic knowledge gaps (China Daily, 2001). Some girls knew nothing about menstruation when they first experienced it, fearing that they were sick. In rural populations, this ignorance is likely to be even more prevalent. Partnered with this general lack of knowledge about sex and reproductive health are misconceptions regarding sexual and reproductive health, and the lack of skills to address one's own sexual and reproductive health concerns and to protect one from risky sexual practices. As a result, we see the growing unsafe sex, unhealthy sexual practices and other risky behaviors.

ASRH projects are needed to improve Chinese adolescent reproductive health status and to address their growing unmet needs. However, existing ASRH projects are scattered or limited in scale. Sex education is not institutionalized in China; among the scattered sex education available to school students, most still simply use the traditional didactic approach, which does not really engage youth effectively (WHO 2005). In 1998, the Adolescent Reproductive Health Pilot Project, launched by the CFPA under the United Nations Population Fund Reproductive Health/Family Planning (FP) Project, adopted a peer education approach, and showed success in engaging stakeholders, improving community environment and exerting a resounding positive influence (Bjork 2002). However, it was only piloted in two major cities and lacked rigorous evaluation. This very lack of evaluation studies diminishes the value of those scattered and limited

ASRH projects and their sustainability, since we are not able to assess what worked and what did not, making it hard to draw lessons from previous projects in order to improve them in the future. This current impact evaluation is rare in China, being a quantitative assessment of a relatively large-scale ASRH program in China. It will not only inform future ASRH projects in China, but also can help to provide a better understanding of adolescent reproductive health status in contemporary China during its fast socio-economic change era.

Project Background

The China Youth Reproductive Health Project addresses the reproductive health needs of adolescents and is a partnership between CFPA and PATH. CFPA is one of the largest nongovernmental organizations (NGOs) in China and has an extensive national network that reaches to local communities, enabling close interaction with local populations. This five-year project ran from April 2000 to December 2005 and targeted adolescents ages 10 to 24 in 14 project sites (12 urban cities and 2 rural counties) across the country. The project sought to contribute to the improvement of ASRH status by accomplishing three behavioral goals: delaying sexual debut; reducing the number of partners among sexually active youth; and preventing unwanted pregnancy, sexually transmitted infections (STIs), and coercive sex. Specific objectives to reach project goals included:

- Increasing adolescents' self-esteem, awareness of positive gender and human rights values, and safer sexual practices.
- Increasing adolescent access to and use of quality sexual and reproductive health services and counseling.
- Creating a safe and supportive environment for ASRH programming at the national, community, and school levels.
- Improving CFPA's capacity to respond to the reproductive health needs of adolescents.

The project framework focuses on addressing the above four objectives by applying a comprehensive approach with all the various components, such as policy and advocacy, youth-friendly services, sex education, media, and so forth, to improve the

social environment for addressing ASRH. The project's core intervention was life-planning skills (LPS) training, which uses participatory approaches to offer training for youth in order to develop knowledge, attitudes, skills and behaviors that promote youth development and reproductive health. The training course was added to the curriculum schedule of students in selected pilot schools. In support of the training program, peer activities were conducted to engage young people, and RH/psychological counseling support was also delivered to youth. To enable a supportive environment for youth reproductive health, the project developed and disseminated media and education/ information materials to inform youth, parents, teachers, communities and institutions about youth's needs and responses, conducted on-going discussions and forums between youth, parents, schools and municipal authorities, and made efforts to leverage local resources. In terms of capacity building, the project conducted training with service providers (including physicians and nurses at hospitals or family planning clinics, pharmacy personnel, and private practitioners providing RH services) and developed networks of care providers and supporting mechanisms to provide youth-friendly services.

The LPS course covered the following topics: reproductive physiology and psychology, STIs and HIV/AIDS prevention, ethics and morals on sexuality, inter-personal communication skills, friendship and love, fertility and contraception, safe sexual practices, prevention of sexual harassment, and drug abuse prevention. The procedure and the specific content of education was adjusted according to the specific situation of the site, mainly based on the experience of teachers and the feedback information from students in pilot schools. Thus the training program varied across sites, in terms of timing, venue, specific format and content.

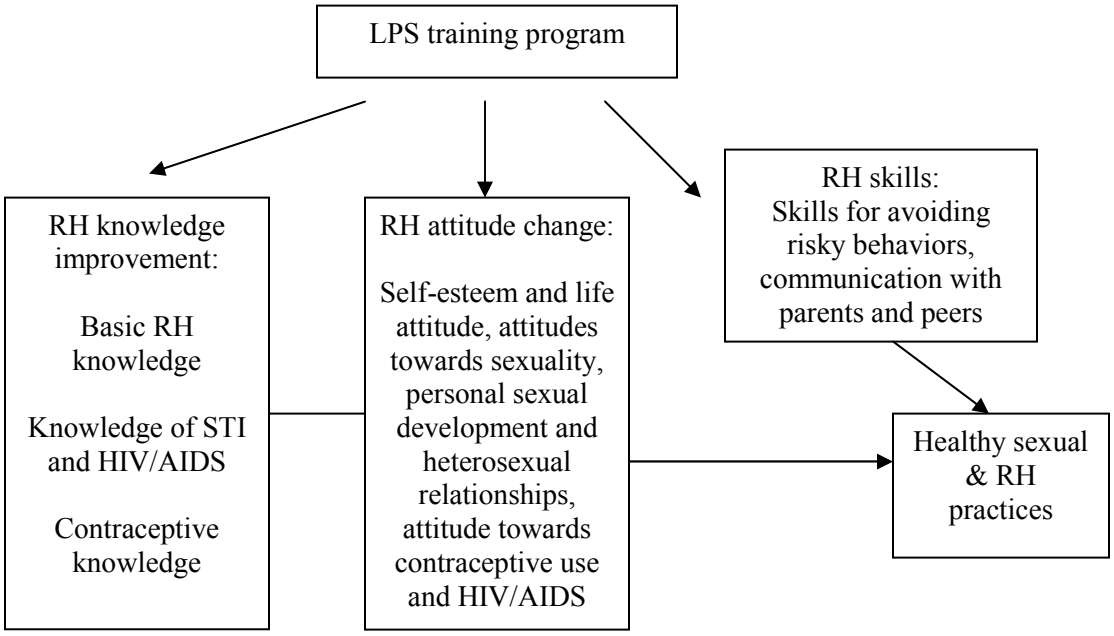
The course was implemented essentially with participatory methods. In the LPS training, a whole set of participatory techniques was applied, including small group discussions, mapping exercises, listing and ranking exercises, role plays, and so forth. A group of facilitators, including school teachers, community workers, or even peers of adolescents, were trained in using these participatory techniques in each site to conduct the training sessions. Usually each session had 20-30 students participating and lasted 45-90 minutes; actual length was dependent on its content and the arrangement of the school.

Using participatory approaches helped engage youth and enabled them to articulate their thoughts. This allowed project staff to better understand youth, while the adolescents were able to increase their knowledge and awareness about RH issues, thus improving their RH status.

The Logical Model and Evaluation Goal

This evaluation study of the China Youth Reproductive Health Project focuses primarily on the impact of the adolescent reproductive health education, the LPS training program, offered by the project. The training program applied the cognitive behavior theory and the KAB (Knowledge, Attitudes & Behavioral) approach. According to the KAB approach, knowledge precedes attitudes and they precede behavior so that we need to attend to each of these areas in order to make a difference (Bandura 2001). Program success is defined not just by changing behavior but also by any movement toward such change, such as improvement in knowledge and attitudes. It is expected that with the improvement in RH knowledge, attitudes and skills, we can also promote the healthy sexual and RH behaviors among adolescents.

Figure 2.1 Logical Model for Life-planning skills program



According to the logical model for the program as depicted above, this evaluation study assesses, in particular, the degree to which the project has achieved its goal of improving Chinese adolescents' reproductive health status, in terms of increasing adolescents' reproductive health knowledge; strengthening their self-esteem and awareness of positive gender roles/relations; improving their ability to accurately assess risks and consequences of sexual activity and ways to reduce risks of negative health outcomes; promoting healthy attitudes regarding sexuality and reproductive health; and promoting healthy sexual behaviors among youth. All the assessments are conducted by comparing pre- and post-intervention changes between intervention and control groups. The study also seeks to examine how the project effects varied across three sets of sites (urban students, rural students, and urban migrant workers) and by different groups of youth --- rural versus urban, in-school students versus out-of-school migrant workers.

Specific evaluation questions are:

- Do the intervention and control groups in each set differ in the changes in RH knowledge? This includes: knowledge on adolescent development, basic reproductive physiology, contraceptive methods, STIs, and HIV/AIDS.
- Do the intervention and control groups in each set differ in their reported changes in self-esteem, positive attitudes about sexuality, RH, gender roles and relationships? These include: perceptions of personal relationships, self-identity and self-confidence, attitudes towards dating, heterosexual relationships, masturbation, premarital sex, condom use, and HIV/AIDS.
- Do the intervention and control groups in each set differ in increases in skills of assessing the risks and ways to reduce risks? These also include the ability to identify options to avoid risky behaviors.
- Do the intervention and control groups in each set differ in the amount of improvement in communication with parents, siblings and peers?
- Do the two groups differ in reducing risky behaviors such as smoking and drinking? And for the sexually active youth, do the two groups differ in the amount of improvement in protected sex?

Given that post-intervention data for the evaluation were collected shortly after the training, it is hypothesized that program effects on knowledge will be the most salient, and that behavioral change may take longer to occur. Therefore, the focus of the evaluation will be on changes in knowledge and attitudes resulting from the intervention.

III. Data and Methods

Study design and site introduction

The design of this impact evaluation was a pretest-posttest nonequivalent comparison group study (Campbell and Stanley 1963). Changes in reproductive health knowledge, attitudes and behaviors were compared and contrasted between the intervention and control groups to identify significant improvements in those reproductive health status indicators that resulted from the project training programs. The design helps to eliminate threats to internal validity, such as testing, history and maturation threats, supporting the hypothesis that any significant improvement in the intervention group is due to the LPS training program rather than some other factors.

Pre- and post-intervention data were collected using self-administered questionnaires in five of the project sites in China: Harbin, Shenzhen, Tianjin, Shanghai, and Shangcai. All are large cities except for Shangcai — a rural county recently identified as having soaring HIV/AIDS cases in the very inland of central China's Henan province. Shenzhen was also noteworthy, since it was the only one among the five sites that targeted working migrant youth[1] instead of in-school students. This was due to the large migrant population of the city, being a southern coastal city designated as the special economic zone by the nation.

In Shenzhen, unmarried youth under 25 were selected from two local factories, one for the intervention and one for the comparison group. The selection process of the two factories was not documented in detail, but efforts were made to ensure that the youth were comparable in terms of key subject characteristics such as age, education, etc. Since most of the factory workers were females, to ensure male representation, all eligible and available male workers were sampled for both factories. Female factory

[1] Here, migrant youth refer to those who do not have their household registration, namely, hukou in Chinese, at their then-current residence places.

workers were randomly sampled — 300 each from the intervention and the comparison factory. This resulted in 242 males and 337 females being included for the intervention, and 124 males and 328 females for the comparison group.

Subjects under study in the other four sites were all high school students selected in a clustered sampling procedure. First, schools were selected in each site to be intervention and comparison groups. Then, within each school, classes were selected in a random sampling process for the baseline survey and were followed for the endline survey shortly after the LPS training program. Specific numbers of schools and classes for each group in each site is presented in Table 3.1 below.

The selection of schools was not documented by the program, but the assignment of intervention schools took into consideration the school's cooperation in implementing intervention activities. Efforts were made to match the comparison and intervention schools, to make them comparable in terms of basic subject characteristics such as age and academic performance level of students.

Table 3.1 Number of Schools and Classes Sampled

Sites	Number of schools		Number of classes	
	Intervention	Control	Intervention	Control
Shangcai	2	1	8	8
Harbin	4	2	8	8
Tianjin	1	2	13	14
Shanghai	2	1	20	14

Data and measures

This impact evaluation was a quantitative analysis of existing data collected by PATH and CFPA for evaluating the LPS training program of their China Youth Reproductive Health Project. Data were collected before and after the LPS training during 2003 and 2004, with about 6 months apart between collection for both intervention and comparison groups. These data were collected through anonymous written questionnaires. In the sites of Tianjin and Harbin students filled out

questionnaires anonymously using computers. The use of computers and self-administered questionnaires were meant to protect confidentiality, and was expected to help raise item response rate and accuracy rate, particularly for sensitive questions. However, since the surveys were anonymous, the follow-up surveys were by classes rather than by individuals. Thus, post-test cases were not able to be linked with individuals in the pre-test, and individual-level evaluation analysis was not possible.

Questionnaires missing important variables like sex and age were classified as ineligible and were eliminated. Sample sizes of cases in the intervention and comparison groups from the final data set for each site are presented in Table 3.2 below. Since the follow-up surveys were by classes rather than by individuals, the number of students in the follow-up surveys may be affected by the number of students transferred into or out of each class.

Table 3.2 Sample size by project sites

Sites	Pre-test		Post-test	
	Intervention	Control	Intervention	Control
Shangcai	717	457	659	441
Harbin	395	370	310	403
Tianjin	524	526	599	534
Shanghai	1095	517	1009	488
Shenzhen	579	452	660	364

While there were some variations across sites in terms of the program content, survey design, and sampling procedure as previously mentioned, the major contents of the questionnaire were generally consistent across sites. Table 3.3 presents each evaluation question, along with the indicators for each question.

Table 3.3 Program outcome indicators and measures

Evaluation questions	Indicators of improved RH status	Measures
Did the program	• Increased knowledge on	• The mean score on the 7 questions on

increase adolescents' RH knowledge?	puberty development • Increased knowledge on basic reproductive physiology • Increased knowledge on STI and HIV/AIDS • Increased knowledge on contraceptive use	puberty development • The mean score on the 8 questions on reproductive physiology • The mean score on the 6 STI transmission and the 9 HIV/AIDS transmission questions and the percent of people giving correct answers to other STI and HIV/AIDS questions regarding disease diagnosis, symptoms and preventions • Percent ever heard of the listed contraceptive methods
Did the program increase positive attitudes towards life and attitudes regarding sexuality and RH?	• Increased self-esteem/self-confidence • Improved positive attitudes towards certain sex-related behaviors • Increased healthy attitudes towards dating and sexual practice • Increased positive attitudes towards condom use • Improved positive attitudes towards HIV infected people	• The mean score* on 10 questions on life outlook and self-esteem • Percent identifying with sexual dreams, sexual fantasy and masturbation positively • Percent disagreeing with statements showing willingness to try sex or agreeing with being cautious • Percent agreeing with pro-condom use statements or feeling comfortable about condom use • Percent willing to conduct a series of activities with HIV infected people or disagreeing with separating AIDS patients from the society
Dif the program increase life skills regarding healthy sexual practice for youth?	• Improved communication with parents and peers • Improved cognitive skills to avoid risky behaviors and protect oneself	• Percent finding it easy talking about sex-related issues with parents or ever talked about such issues with siblings or friends • Percent believing they were capable of refusing sex and protect oneself, and of refusing alcohol or cigarettes
Did the program improve healthy, safe sexual practices?	• Decreased risky behaviors • Decreased sexual behaviors • Increased protected sex	• Percent smoking or drinking frequently • Percent ever kissed or had sexual intercourse in the recent one year • Percent ever used contraceptives or protection in the most recent sex

*: Calculated on a 1-4 scale, with 4 points denoting most strongly agreeing with the positive statement. Otherwise, mean scores (total points) were calculated by summing up across items in a set of questions, with 1 point denoting each correct answer to a question, and 0 points for a wrong answer.

Data analysis

Data analysis was performed using the STATA statistical package. For categorical variables, chi-square test was used to examine if there were significant changes in these indicators (% of correct or positive answers) before and after intervention. Separate tests were performed in the intervention and comparison groups,

and results for the two groups were compared. For numeric variables such as knowledge scores, attitude scales and so forth, mean scores were calculated for all the respondents, and a one-tail t-test was applied to compare these mean scores before and after intervention, with separate tests for the intervention and comparison groups. Significant changes was defined by using the conventional $\alpha = 0.05$ significance level, if not otherwise noted. Evidence of program effects was defined as significant improvements for the intervention, but not for the comparison group. Evidence of program effect also occurred when the intervention group had no significant change, but the comparison group experienced significant negative change.

Given that three of the urban sites — Tianjin, Harbin and Shanghai all surveyed high-school students and share some similar patterns in terms of pre-test/post-test change, data from these three sites were pooled together and only data analysis on the pooled-data were performed. Shangcai and Shenzhen were analyzed individually to identify and distinguish differences in program effects, if any, existed among different youth groups — rural students versus urban students, and local youth versus migrant youth. As a result, three sets of results are presented: the rural student set for Shangcai County, the urban working migrants in Shenzhen, and the urban student set for Harbin, Shanghai and Tianjin.

IV. Findings and Discussions

Basic characteristics of survey respondents

The basic socio-demographic characteristics of the intervention and comparison groups are comparable in average age, gender, and average family economic status across most of the sites, except for gender composition in Shenzhen and Shanghai, where comparison groups had significantly fewer male participants than the intervention groups. As shown in Table 4.1, average age of respondents in 4 of the 5 sites was between 14-17. In Shenzhen, the average age of respondents was 20 years old, which might be related to their working status. The percent claiming that their family economic status is about average, compared to the local standards, is also very similar between intervention and comparison groups across all five sites.

Table 4.1 Basic characteristics of respondents by project sites (at baseline)

Sites	Average age (in years)		Gender (% male)		Family economic status (% in average status)	
	Intervention	Control	Intervention	Control	Intervention	Control
Shanghai	16.57	16.53	54.72	38.32	74.60	74.80
Harbin	17.41	17.05	43.04	48.65	63.04	65.68
Tianjin	14.34	14.37	49.05	52.28	50.00	56.84
Shangcai (rural)	16.14	16.35	59.27	56.24	58.17	54.22
Shenzhen (migrant)	20.68	20.44	41.80	27.43	70.81	73.01

RH knowledge

General RH knowledge: Evidence of program effects is found for urban migrant and urban student sets only. As shown in Table 4.2a, for the rural students in Shangcai, there is a significant increase in knowledge of adolescent development and reproductive physiology for both intervention and comparison groups, which is evidence of no program effect on these two knowledge items.

Tables 4.2b and 4.2c present results for migrant youth and urban students respectively, where significant increases in knowledge in both adolescent development and reproductive physiology are observed for the intervention group only. The increases in Shenzhen are particularly salient. But also note that the intervention group in Shenzhen has higher scores at the baseline than its comparison group does, suggesting that the two groups may not be very comparable. And for the urban students, there is a significant decrease in puberty development knowledge for the comparison group.

Table 4.2a Comparison of mean scores on RH knowledge --- rural students

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
Adolescent development	4.94	5.90**	4.91	5.42**
Reproductive physiology	1.33	2.47**	1.35	1.84**

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.2b Comparison of mean scores on RH knowledge --- urban migrants

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
Adolescent development	5.01	6.34**	3.50	3.32
Reproductive physiology	2.93	6.05**	1.67	1.69

*: significant at the 0.1 level; **: significant at the 0.05 level

Table 4.2c Comparison of mean scores on RH knowledge --- urban students

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
Adolesent development	4.39	4.92**	4.40	4.27*
Reproductive physiology	1.74	2.29**	1.64	1.73

*: significant at the 0.05 level; **: significant at the 0.01 level

STI knowledge: For the percent of people ever hearing of any STIs, evidence of a program effect is observed for all three sets of youth (see Tables 4.3a-c). The increase for the intervention group in Shangcai is the greatest, suggesting strong program effects. The percentage is the largest in Shenzhen (increased to 99% for the intervention group), suggesting a general common understanding of STIs for the youth in intervention groups.

For the percentage of people who correctly answered there might not be noticeable symptoms for STI-infected people, a significant increase is seen for the intervention group only among the working migrant youth and the urban students (see Tables 4.3a, b and c), while no program effect is demonstrated for the rural students. The increase in the intervention group for the working migrants is particularly strong (see Table 4.3b); however, the intervention group also had higher baseline values than the comparison group.

Program effects are also evident in terms of knowledge about the means of STI transmission. There is significant improvement in the mean scores only for the intervention group in all the three sets (see Tables 4.3).

Table 4.3a Comparison of STI knowledge --- rural students

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
% hearing about STIs	78.01	92.35**	74.12	74.25
% knowing STI symptoms	20.75	52.38**	22.19	34.76**
Mean score on STI transmission	2.94	4.65**	2.91	3.06

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.3b Comparison of STI knowledge --- urban migrants

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
% hearing about STIs	87.83	99.09**	73.44	71.70
% knowing STI symptoms	37.92	80.58**	26.51	18.77*
Mean score on STI transmission	2.86	4.25**	1.73	1.84

*: significant at the 0.1 level; **: significant at the 0.05 level

Table 4.3c Comparison of STI knowledge --- urban students

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
% hearing about STIs	84.96	87.70*	82.87	76.35**
% knowing STI symptoms	23.04	33.32**	21.51	21.75
Mean score on STI transmission	3.33	3.86**	3.21	3.05

*: significant at the 0.05 level; **: significant at the 0.01 level

HIV/AIDS knowledge: Program effects exist in all three sets of youth for knowledge related to HIV detection/diagnosis and reducing HIV/AIDS risks: percentage who correctly answered that blood test is the only means for detecting HIV, and the percentage correctly identifying using condoms correctly and regularly can greatly reduce the risk of getting HIV both increased significantly only for the intervention groups among rural students, working migrants, as well as urban students (see tables 4.4). For the HIV test question, the increase is the greatest for working migrants, but since their intervention and comparison groups differed greatly at baseline, the results may be due to selection bias rather than the program; while for the use of condom question, rural students had the greatest increase, but for both the urban migrants and urban students, the comparison groups had much lower baseline values.

Table 4.4a Comparison of HIV/AIDS knowledge --- rural students

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
HIV detection (%)	51.60	69.65**	50.11	55.10
HIV/AIDS can be prevented (%)	51.33	85.58**	56.03	64.16**
Condoms can reduce risk of HIV (%)	31.61	79.87**	33.02	39.12
HIV transmission mean score	4.22	6.32**	4.25	4.62*

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.4b Comparison of HIV/AIDS knowledge --- urban migrants

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
HIV detection (%)	68.05	92.88**	49.34	42.58
HIV/AIDS can be prevented (%)	56.01	94.70**	42.47	36.36*
Condoms can reduce risk of HIV (%)	50.95	90.15**	31.10	25.55
HIV transmission mean score	5.16	7.72**	3.62	3.37

*: significant at the 0.1 level; **: significant at the 0.05 level

Table 4.4c Comparison of HIV/AIDS knowledge --- urban students

Knowledge	Intervention		Control	
	Baseline	Endline	Baseline	Endline
HIV detection (%)	60.03	68.87**	57.96	54.53
HIV/AIDS can be prevented (%)	56.36	68.30**	53.64	55.79
Condoms can reduce risk of HIV (%)	46.33	59.12**	38.78	36.98
HIV transmission mean score	5.73	6.64**	5.64	5.73

*: significant at the 0.05 level; **: significant at the 0.01 level

On knowledge related to HIV prevention and HIV transmission, as presented in the Table 4.4 set above, program effects were found for both migrant youth and urban students, but not for rural students. The percentage of people believing that HIV/AIDS can be prevented and the mean score for HIV transmission both increased significantly for the intervention group only for all except for the rural student set. Given that the site for rural students is where HIV/AIDS has been prevalent, it may be there that there is other attention paid to HIV/AIDS aside from the LPS program in the area. The urban migrants had greatest increase in both knowledge items, but again, the baseline values are much lower for the comparison group in both cases (see Table 4.4b).

Contraceptive knowledge: The set of contraceptive questions were not asked in the site of Tianjin, thus, the merged data on contraceptive knowledge for the urban students only include the sites of Harbin and Shanghai. For these two sites, program effects are evident: there are significant increases for the intervention group in ever hearing about all contraceptive methods listed; while for the comparison group there is either no significant change or there is a significant decrease (see Table 4.5c). The increases for the intervention group are greater when the items have lower baseline values.

Similarly, there are significant increases for the intervention group in ever hearing about all contraceptive methods listed for the urban migrants as well; while there is a

significant decrease in knowing about these methods for the comparison group (see Table 4.5b). The increase is greater for the less commonly known methods of spermicides and emergency contraception (about 40% increases). However, the comparison group had much lower baseline values, suggesting possibly two different groups are compared here.

For the rural students, both intervention and comparison groups have a significant increases in knowing about contraceptive methods including withdrawal, rhythm, oral pill, and condom, indicating no program effect. But for knowing about less common methods, such as spermicides and emergency contraception, the increase is only significant for the intervention group, not for the comparison group.

Table 4.5a Percent ever heard about contraceptive methods --- rural students

Contraception	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Withdrawal	17.21	35.42**	21.78	29.36**
Rhythm	14.35	31.66**	16.89	25.47**
Oral pill	37.91	65.85**	38.58	54.76**
Condom	47.87	82.49**	48.56	64.34**
Spermicides	8.50	19.25**	10.69	12.74
Emergency contraception	8.24	19.03**	10.67	14.29

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.5b Percent ever heard about contraceptive methods --- urban migrants

Contraception	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Withdrawal	56.74	78.48**	45.65	21.70**
Rhythm	62.53	82.27**	46.23	29.67**
Oral pill	79.74	93.94**	55.86	29.40**
Condom	84.43	95.91**	61.84	34.34**
Spermicides	41.45	80.00**	39.02	14.29**
Emergency contraception	46.32	85.15**	38.10	13.74**

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.5c Percent ever heard about contraceptive methods --- urban students

Contraception	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Withdrawal	38.52	51.10**	32.81	32.44
Rhythm	41.01	54.36**	37.32	35.35
Oral pill	81.21	85.52**	76.21	69.25**
Condom	86.98	90.52**	82.64	74.19**
Spermicides	41.01	48.52**	36.98	29.97**
Emergency contraception	27.85	46.93**	23.68	23.01

*: significant at the 0.05 level; **: significant at the 0.01 level

Attitudes

Life outlook and self-esteem: As shown in tables below, program effects on life-attitudes or self-esteem are not very strong. There is some evidence of a program effect for the rural students, in that there is a significant decrease in the score for the comparison group, while no significant change is seen for the intervention group (see Table 4.6a).

Table 4.6a Mean scores for self-esteem/life outlook variables --- rural students

Group	Baseline	Endline	Group Total	t	P>t
Control	28.37(N=439)	27.44(N=422)	27.91(N=861)	2.79	0.01
Intervention	28.45(N=687)	28.07(N=627)	28.27(N=1314)	1.47	0.14

Table 4.6b Mean scores for self-esteem/life outlook variables --- urban students

Group	Baseline	Endline	Group Total	t	P>t
Control	30.78(N=1413)	30.82(N=1425)	30.80(N=1005)	-0.21	.417
Intervention	30.81(N=2014)	30.94(N=1918)	30.88(N=3932)	-0.84	.201

For the urban students, mean scores slightly improved in both groups but were not significant (see Table 4.6b). Yet, it is notable that the mean scores for the urban students are higher than those for the rural students, suggesting possibly higher self-esteem or more positive life-attitude for the urban students in general, compared to the rural students in Shangcai. The life-attitude questions were not asked in Shenzhen for the urban migrants, and as a result there are no findings for this site.

Attitudes towards certain sex-related behaviors: As presented in Tables 4.7a-c below, program effects are strong for both urban students and urban migrants, but not for the rural students, in terms of positive attitudes towards certain sex-related behaviors. Improvement was significant only for the intervention group among the urban students and the urban migrants, while the improvement for the comparison groups in these urban sites was insignificant. One exception exists for urban migrants, where no significant increase is seen for the intervention group in positively identifying with the statement that fantasizing about sex is natural for a boy; but there is significant decrease in agreeing with the statement for the comparison group, suggesting a significant program effect (refer to Table 4.7b). However, the intervention and comparison baseline values vary

greatly for the urban migrants, suggesting the observed post-intervention differences might be due to selection bias rather than the program. Also note that the baseline values for the rural students were lower than those for the other sets, suggesting possibly a more conservative environment regarding sexuality in rural areas compared to urban areas.

Table 4.7a Comparison in attitude changes about sexuality and RH --- rural students

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Masturbation is natural for girls	12.29	40.62**	15.38	27.00**
Masturbation is natural for boys	18.99	49.05**	23.79	32.86*
Sexual dreams are natural for girls	31.01	62.70**	38.60	53.23**
Sexual dreams are natural for boys	43.99	76.46**	49.45	61.97**
Fantasizing about sex is natural for girls	32.54	65.70**	38.73	55.69**
Fantasizing about sex is natural for boys	47.91	76.07**	50.66	63.23**

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.7b Comparison in attitude changes about sexuality and RH --- urban migrants

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Masturbation is natural for girls	39.84	49.85**	28.02	23.63
Masturbation is natural for boys	40.00	50.61**	25.91	23.08
Sexual dreams are natural for girls	51.61	69.24**	31.19	30.22
Sexual dreams are natural for boys	60.56	69.55**	36.92	28.85
Fantasizing about sex is natural for girls	54.83	65.76**	30.46	26.37
Fantasizing about sex is natural for boys	61.74	65.61	36.80	28.30*

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.7c Comparison in attitude changes about sexuality and RH --- urban students

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Masturbation is natural for girls	23.54	36.86**	23.14	26.11
Masturbation is natural for boys	29.79	43.53**	29.02	31.09
Sexual dreams are natural for girls	43.15	57.14**	40.62	41.75
Sexual dreams are natural for boys	52.68	64.65**	47.91	47.44
Fantasizing about sex is natural for girls	46.18	57.98**	43.81	43.30
Fantasizing about sex is natural for boys	57.50	65.33**	52.23	49.75

*: significant at the 0.05 level; **: significant at the 0.01 level

Attitudes towards dating and sexual practices: For all three sets of youth, there is some evidence that the intervention group is less inclined to have sex after the intervention. This is shown in tables 4.8a-c where there are significantly more people disagreeing that sex is a way to show maturity, premarital sex is okay, and that young people would not refuse sex even if they had a chance to have it. Also, there are significantly less people claiming that they admire those who have sex or that they would follow the suit if most young people have experienced sex. As presented in tables below, program effects (significant improvement for intervention group only or significant decline for comparison group and no change for intervention group) are shown in two of the items for the rural students, four of the items for the urban migrants and three of the items for urban students. Such changes for the three youth groups demonstrate a tendency towards delayed sex or a cautious attitude towards sex for the intervention group. This pattern is strongest for the urban migrants.

Table 4.8a Comparison of attitudes towards dating and sexual practices --- rural students

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Sex is not a way to show maturity	50.21	73.44**	49.89	66.36**
I don't admire people who have sex	66.95	68.13	64.77	64.61
Most young people would refuse sex even if there's the chance	45.89	50.15*	44.86	45.66
Premarital sex is not okay	40.59	44.53*	36.54	35.54
I will not follow suit if most young people have experienced sex	69.87	70.86	71.55	68.41

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.8b Comparison of attitudes towards dating and sexual practices --- urban migrants

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Sex is not a way to show maturity	42.11	50.30**	35.49	37.64
I don't admire people who have sex	60.49	76.82**	52.07	55.49
Most young people would refuse sex even if there's the chance	42.7	60.2**	38.8	41.2
Premarital sex is not okay	31.17	48.64**	26.81	35.99**
I will not follow suit if most young people have experienced sex	68.71	81.67**	54.88	54.95

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.8c Comparison of attitudes towards dating and sexual practices --- urban students

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Sex is not a way to show maturity	41.16	45.31*	41.83	39.37
I don't admire people who have sex	65.24	65.95	67.87	62.95*
Most young people would refuse sex even if there's the chance	42.01	45.88*	46.43	44.49
Premarital sex is not okay	24.33	29.98**	31.49	34.25*
I will not follow suit if most young people have experienced sex	65.29	67.21	65.11	61.47

*: significant at the 0.05 level; **: significant at the 0.01 level

Attitudes towards contraceptive use: Program effects on attitudes about contraceptive use were found for the urban migrants and urban students, but the evidence is less compelling for rural students. For urban migrants and students, improvement occurred in positive attitudes towards condom use and an improved sense of self-protection. For these two sets of youth, significant improvement is seen only for the intervention groups in most of the pro-condom-use attitude items (see Tables 4.9b and 4.9c). An exception is found for the urban students, where both intervention and comparison groups had a significant decrease in those feeling that buying condoms is embarrassing.

For Shangcai rural students, significant improvement is seen for both intervention and comparison groups in most pro-condom-use attitude items (see Table 4.9a), suggesting improvement possibly as a result of secular change in the environment rather than the program, though the improvement for the intervention group is much greater than that for the comparison group. However, there is a significant increase in those thinking that buying condoms is embarrassing in the intervention group, an unexpected finding not seen for the comparison group. Conversely, there is a significant positive change for the intervention group only in agreeing that knowing more about condoms is a sign of caring about oneself.

While the urban migrants' intervention group seems to have the most positive attitudes towards condom use at baseline, the rural students seem to have the lowest baseline values, suggesting possibly a more conservative environment in terms of

condom use in the rural area, and possibly greater need for condom use for the urban migrants who are older than youth in the other two sets. However, again note the great difference between intervention and comparison baseline values for the urban migrants; the baseline values of the comparison group for the urban migrants do not vary much from those of the other two sets of youth.

Table 4.9a Comparison of attitudes towards contraceptive use --- rural students

Attitude statements	Intervention (%agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Providing contraceptives to youth does not mean approving of sex	36.96	51.59**	39.17	46.92*
Knowing more about condoms is a sign of caring about oneself	30.26	58.66**	33.92	40.32
Asking questions about condoms is not difficult	30.54	47.26**	33.26	39.64*
It is embarrassing to buy condoms	68.90	77.02**	62.80	58.77
Want to learn more about condoms	19.11	38.41**	22.54	30.30**

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.9b Comparison of attitudes towards contraceptive use --- urban migrants

Attitude statements	Intervention (%agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Providing contraceptives to youth does not mean approving of sex	57.75	72.73**	37.84	39.29
Knowing more about condoms is a sign of caring about oneself	52.93	72.27**	36.32	24.45**
Asking questions about condoms is not difficult	58.02	78.03**	41.50	41.21
It is embarrassing to buy condoms	56.74	48.33**	35.77	30.22
Want to learn more about condoms	52.14	71.21**	32.91	31.59

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.9c Comparison of attitudes towards contraceptive use ---urban students

Attitude statements	Intervention (%agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Providing contraceptives to youth does not mean approving of sex	40.67	44.42*	40.27	42.60
Knowing more about condoms is a sign of caring about oneself	49.85	54.69**	39.35	38.60
Asking questions about condoms is not difficult	36.94	46.51**	37.37	37.54
It is embarrassing to buy condoms	63.85	56.10**	55.63	46.74**
Want to learn more about condoms	21.50	29.20**	21.23	20.07

*: significant at the 0.05 level; **: significant at the 0.01 level

Attitudes towards people living with HIV: Program effects on attitudes towards people living with HIV were observed in all three youth groups. For the rural students in Shangcai, there seems to be a significant increase in acceptance of people living with HIV for both intervention and comparison groups, except for willingness to patronize their services and to go to their homes, where the increases are observed only for the intervention group (see Table 4.10a). Yet, the increases for the intervention group are much greater than those for the comparison group, suggesting that a program effect is possibly still present.

Table 4.10a Comparison of attitudes towards people living with HIV --- rural students

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Willing to eat with person living with HIV	38.90	73.10**	38.90	46.91*
Willing to work with person living with HIV	50.14	81.00**	49.01	59.73**
Willing to patronize services by person living with HIV	20.53	46.58**	22.42	24.71
Willing to go to homes of people living with HIV	25.98	58.05**	28.13	32.49
Should not separate people living with HIV from society	65.4	90.8**	60.3	70.2**

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.10b Comparison of attitudes towards people living with HIV --- urban migrants

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Willing to eat with person living with HIV	26.76	64.55**	20.90	21.98
Willing to work with person living with HIV	49.03	74.09**	40.71	40.11
Willing to patronize services by person living with HIV	12.30	39.24**	10.26	14.01
Willing to go to homes of people living with HIV	28.39	50.30**	24.03	22.25
Should not separate people living with HIV from society	56.66	84.04**	51.09	45.12

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.10c Comparison of attitudes towards people living with HIV ---urban students

Attitude statements	Intervention (% agree)		Control (% agree)	
	Baseline	Endline	Baseline	Endline
Willing to eat with person living with HIV	32.32	48.33**	34.82	40.77**
Willing to work with person living with HIV	48.21	59.70**	48.34	50.11
Willing to patronize services by person living with HIV	25.07	34.31**	28.31	30.18
Willing to go to homes of people living with HIV	27.41	35.77**	28.59	31.02
Should not separate people living with HIV from society	67.56	73.76**	68.87	64.19*

*: significant at the 0.05 level; **: significant at the 0.01 level

For the urban migrants and urban students, as shown above in Tables 4.10b and c, the improvement is significant only for the intervention groups, with exception of being willing to eat together with people living HIV, where both intervention and comparison groups had significant improvement among the urban students. The improvement was substantial for the rural students and urban migrants, suggesting stronger program effects.

Skills

Communication skills: The program had little effect on improving communication with parents. As shown in Tables 4.11 below, for both the rural and urban students, neither the

intervention nor the comparison group had significant improvement in the ease of talking about school life or sex related issues with parents (note that such questions were not asked in Shenzhen among the migrant youth, thus no findings on these two items). One exception is telling nothing about their puberty development, which significantly dropped only for the intervention groups of the rural students and urban migrants, suggesting some program effect on improving the extreme cases of no communication. Yet for the urban students, this program effect is not seen. Also note that rural students seem to have poorer communication with parents compared with the other two youth groups, and particularly poor communication on sex-related issues with parents, suggesting possibly that talking about sex is still a taboo in most rural families. In fact, for all the three sets of youth, there is still much to be improved in terms of open communication regarding sex education in the family.

Also as shown in the tables below, there were no program effects on communication with siblings about sex related issues for any of the three sets of youth. As for communication with friends, significant improvement is seen for intervention groups only among rural and urban students. However, such a program effect is not present for the urban migrants.

Table 4.11a Comparison of communication skills --- rural students

Communication skills	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Easy to talk about school life with parents	57.32	52.20	52.74	49.89
Easy to talk about sex related issues with parents	6.28	7.74	8.10	7.48
Tell nothing about own sexual development to parents	55.51	45.22**	53.61	48.98
Ever talked about sex issues with siblings	12.13	15.33	14.44	15.19
Ever talked about sex issues with close friends	18.27	23.67*	21.66	18.59

*: significant at the 0.05 level; **: significant at the 0.01 level.

Table 4.11b Comparison of communication skills --- urban migrants

Communication skills	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Tell nothing about sex life with parents	37.32	31.52**	30.25	28.02
Ever talked about sex issues with siblings	17.44	22.73	23.37	23.63
Ever talked about sex issues with close friends	33.68	35.91	28.79	26.65

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.11c Comparison of communication skills --- urban students

Communication skills	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Easy to talk about school life with parents	49.75	48.59	48.55	48.14
Easy to talk about sex related issues with parents	15.00	16.11	17.34	17.68
Tell nothing about own sexual development to parents	37.69	33.32**	36.02	33.47**
Ever talked about sex issues with siblings	30.17	28.00	28.99	26.60
Ever talked about sex issues with close friends	27.76	30.55*	27.88	24.84

*: significant at the 0.05 level; **: significant at the 0.01 level.

Cognitive skills of avoiding risky behaviors and self-protection: Program effects on improving cognitive skills of self-protection relating to sex were found for all three sets of youth. As shown in Tables 4.12a-c, for both rural students and urban migrants, those believing they are capable of refusing sex when they do not want it, and those claiming to know how to protect themselves when being sexually harassed increased significantly for only the intervention groups. For the urban students, a program effect is present for the aforementioned two items in terms of prevention from negative change for the intervention group (refer to Table 4.12c). Those who stated they will use protective measures when having sex increased significantly only for the intervention group for all three sets of youth. These increases were substantial, suggesting growing awareness of protected sex as a program result. However, note that while the improvement was the greatest for the urban migrants' intervention group, this group also has higher baseline values than the comparison group, suggesting selection bias. Also, what are assessed here are cognitive skills; it might be a different story when it comes to the practical skills in dealing with a real-world situation. Behaviors are examined in the next section.

In terms of the cognitive skills of refusing alcohol or cigarettes, the rural students had significant improvement only for the intervention group; the urban migrants had significant improvement for both intervention and comparison groups; while neither the intervention nor the comparison group had any significant change for the urban students (shown in Tables 4.12 below). This suggests a program effect for the rural students only.

Table 4.12a Comparison of cognitive skills on self-protection --- rural students

Cognitive skills	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Capable of refusing sex	69.74	74.05**	65.21	61.64
Know how to protect myself when being sexually harassed	65.97	75.42**	66.01	59.45*
Will use protective measures if have sex	31.80	56.30**	30.85	34.93
Able to refuse cigarette or alcohol offered by friends	74.06	78.60*	75.05	72.11

*: significant at the 0.05 level; **: significant at the 0.01 level.

Table 4.12b Comparison of cognitive skills on self-protection --- urban migrants

Communication skills	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Capable of refusing sex	63.84	83.33**	49.39	53.85
Know how to protect myself when being sexually harassed	73.16	87.12**	50.73	57.14
Will use protective measures if have sex	54.48	84.55**	33.33	28.02
Able to refuse cigarette or alcohol offered by friends	76.86	83.18**	67.70	71.18*

*: significant at the 0.05 level; **: significant at the 0.01 level

Table 4.12c Comparison of cognitive skills on self protection --- urban students

Communication skills	Intervention (%)		Control (%)	
	Baseline	Endline	Baseline	Endline
Capable of refusing sex	73.19	75.44	72.97	65.82**
Know how to protect myself when being sexually harassed	72.69	75.23	74.10	65.33**
Will use protective measures if have sex	47.11	57.70**	42.05	40.18
Able to refuse cigarette or alcohol offered by friends	81.63	81.60	80.68	79.93

*: significant at the 0.05 level; **: significant at the 0.01 level.

a: This item was not asked in the site of Tianjin, thus, for this item the merged data only include the sites of Shanghai and Harbin.

Behaviors

Risky behaviors of smoking or drinking: The program had little effect on decreasing the risky behavior of smoking or drinking across the three sets of youth. For rural students, in contrast to the findings above of improved cognitive skills of refusing cigarettes and alcohol, the percent who have ever smoked increased significantly for the intervention group from 13% to 18%, while insignificantly from 19% to 24% for the

comparison group. As for the percent that have ever drunk alcohol, none of the groups had significant change (from 32% to 29% for intervention group and from 33% to 36% for comparison group). For the urban migrants, there is a significant decrease in the percent who sometimes or often smoke for both intervention and comparison groups. The decrease was from 36% to 25% for the intervention group and even greater (from 19% to 9%) for the comparison group. For the urban students, neither group had significant change in smoking behaviors.

Sexual behaviors: No program effect is seen in the actual sexual behaviors for all three sets of youth. For rural students, the percent who have ever kissed in the recent year hardly changed for the intervention group (remained around 7%), and insignificantly increased from 10% to 13% for the comparison group. The percent who ever had sexual intercourse was even smaller and barely changed (was around 4% for the intervention group and around 7% for the comparison group).

For urban migrants, there was a significant decrease in the percent who have ever kissed during the recent year for both intervention and comparison groups. The decrease was from 41% to 32% for the intervention and from 29% to 14% for the comparison group. Again, the intervention group had a much higher baseline value, suggesting that the finding might be due to the differences between the two groups. Similarly, the percent that have ever had sexual intercourse also decreased significantly for both groups (from 29% to 19% for the intervention group, and from 31% to 13% for the comparison group). Given that the question refers to sexual intercourse in one's lifetime, the results might be due to a data problem. There are more respondents in the post-test for this site, and it could be that the new factory workers added in the follow-up were mostly virgins and thus made the average percentage decline. Or possibly, respondents were trying to hide their sexual intercourse experience in the post-test.

For urban students, when it comes to the prevalence of kissing in the past year, the intervention group had a significant increase (from 18% to 22%), while the comparison group had no significant change (only from 17% to 19%). The behavior of sexual intercourse was not assessed in Tianjin (the question of whether youth have ever had sexual intercourse was not asked). For the merged data from Shanghai and Harbin

only, the prevalence increased insignificantly or stayed the same (from 7% to 8% for the intervention group and remained around 5% for the comparison group).

Comparing results across the three youth sets, the prevalence of sexual behaviors was the highest for urban migrants, which may be explained by the older age of these youth. Being migrant workers away from home, these young people also tend to be at greater risk of having unsafe sex. The prevalence of intercourse was very low for both rural and urban students, and might be too low for observing any significant change, and thus, for finding any program effects.

Protected sex: When it comes to the use of protection to avoid pregnancy or STIs during the most recent sexual intercourse, again, as shown above, the number of sexually active youth was too small for the sets of rural and urban student to observe any significant change, and no program effect can be seen. For rural students, the change was from 38% to 24% for the intervention group, and from 50% to 26% for the comparison group, and neither was significant. For urban students, based on data from Shanghai and Harbin only, the use of protection remained around 4% for the intervention group and around 3% for the comparison group. Only for the urban migrants was there evidence of program effect. The percent that ever used protection during the most recent sex increased significantly only for the intervention group (from 55% to 70% for the intervention group, and from 38% to 52% for the comparison group). However, again, the different baseline values may account for these results.

Summary

In brief, Table 4.11 below summarizes all the above findings on knowledge, attitudes, skills and behaviors. It shows that consistent evidence of program effects exist in urban students and migrants sites, but not in rural students' site. The effects on RH knowledge and attitudes are particularly evident, but not much evidence for program effects on communication skills and RH behaviors.

Tables 4.11 Overview of findings by the three youth sets

Categories	Rural students	Urban migrants	Urban students
Knowledge			
Adolescent development	0	++	++

Reproductive physiology	0	++	++
Hearing about STIs	++	++	++
STI symptoms	0	++	++
STI transmission	++	++	++
HIV transmission	0	++	++
HIV detection/diagnosis	++	++	++
HIV/AIDS prevention	0	++	++
Condom use can help prevent HIV	++	++	++
Attitudes			
Self-esteem/confidence	+	/	0
Masturbation is natural for a girl	0	++	++
Masturbation is natural for a boy	0	++	++
Sexual dreams are natural for a girl	0	++	++
Sexual dreams are natural for a boy	0	++	++
Fantasizing about sex is natural for girls	0	++	++
Fantasizing about sex is natural for boys	0	+	++
Sex is not a way to show maturity	0	++	++
No admiration for people with sexual experience	0	++	+
Would refuse sex	++	++	++
Against premarital sex	++	0	0
Will not follow suit to have sex	0	++	0
Pro contraceptive provision	0	++	++
Pro condom use	++	++	++
Asking about condoms	0	++	++
Buying condoms	-	++	0
Want to learn about condoms	0	++	++
Eat with PLWHAs	0	++	0
Work with PLWHAs	0	++	++
Patron services by PLWHAs	++	++	++
Go to home of PLWHAs	++	++	++
Against quarantine PLWHAs	0	++	++
Skills			
Refusing sex	++	++	+
Self-protection in harassment	++	++	+
Use protection during sex	++	++	++
Refusing cigarette and alcohol	++	0	0
Talk about sex with parents	0	/	0
Talk about sex with siblings	0	0	0
Talk about sex with peers	++	0	++
Behaviors			
Prevalence of smoking	-	0	0
Prevalence of kissing	0	0	-
Prevalence of sexual intercourse	0	0	0
Use of contraceptives	0	++	0

++: expected change in the intervention group while no expected change in the comparison group;
+: no change in the intervention group and decrease in the comparison group;
0: no change in both intervention and control groups or both groups improved or declined;
–: the intervention group declined/got worse but the comparison group stayed the same or improved;
/: not available; questions on such items were not asked in the site.

V. Conclusions

This impact evaluation of the China Youth Reproductive Health Project is focused on the life-planning skills training program. Findings demonstrate that the training program of the project does have some benefits to adolescents from the five sites in improving their RH status. Generally, to answer evaluation questions presented at the beginning of this paper, the LPS training program did have beneficial effects in terms of improving knowledge, attitudes, and cognitive skills of adolescents regarding sexuality and reproductive health.

Specifically, the program had the strongest effects on improving the RH knowledge, including knowledge of adolescent development, basic reproductive physiology, STIs, HIV/AIDS, and contraceptive knowledge, for urban migrant and urban student youth groups. For the rural students in Shangcai, program effects are found only in improving more specific knowledge items such as hearing of STIs, STI transmission, HIV/AIDS diagnosis, and using condoms to reduce HIV/AIDS risks.

Strong program effects are also demonstrated for the urban migrants and urban students in improving their RH attitudes, particularly, positive attitudes towards certain sex-related behaviors like masturbation and sexual dreams and fantasies. The program also had some positive effects for these two sets of youth on changing their attitudes towards trying sex, contraceptive use and towards people living with HIV, but the effects are not consistent for all the items. Again, for the rural students in Shangcai, program effects are not found. In terms of improving self-esteem and positive life outlook, the program does not seem to have strong effects for any of the three sets of youth.

The program is effective in improving cognitive skills of self-protection and of avoiding risky behaviors for all three sets of youth. After the intervention, adolescents became more confident to refuse unwanted sex, protect themselves from sexual harassment, and to use protection when having sex. But as for being able to refuse alcohol or cigarettes, the program was not very effective for either urban migrant and urban student groups. Neither does the program have strong effects on improving communication skills for any of the three youth sets. The program seems to have an

effect on improving communication with friends about sex-related issues, but only among rural and urban students. For all three youth sets, the extreme cases of telling nothing about one's own sexual development to parents have significantly decreased with the program intervention, showing some program effects.

In terms of promoting behavioral change, the program was not very effective. The program does not have much effect in decreasing the risky behavior of smoking and drinking, the prevalence of kissing and sexual intercourse, nor does it have effect on increasing protected sex. But as discussed earlier, the program was not specifically targeted at high-risk youth, and there were not many cases of sexual behavior to begin with. Thus, no significant change in the prevalence of sexual behavior and in protected sex can be observed.

If comparing across the three different youth groups, it seems that the program is least effective for the rural students from Shangcai. Positive change in this site seems to be due to some external environmental change, rather than the LPS training program. It could be that the high prevalence of HIV/AIDS in the village has won public attention, and there are other interventions in the area which, although not necessarily targeting youth, have contributed to changes in knowledge and attitudes. Yet, it is not that the program has no effect for the rural student group at all; it is effective in improving certain in-depth knowledge and attitudes towards trying sex and contraceptive use.

The program seems to have the most remarkable effects on urban migrants in Shenzhen. However, as noted before, the large improvements in the intervention group as compared with the comparison group can be due to the fact that the two groups are very different in terms of their original RH status. It could be that adolescents in the control group were at higher risk and had more RH needs at the beginning of the program, and that youth in the intervention group were faster learners to begin with. Thus, we cannot exclude threats to internal validity like history, maturation and so forth. We are not able to tell if the change in the intervention group is due to some trend or external environment change, such as other interventions' spill-over effects, and to determine conclusively if the progress is due to the LPS training program or not.

Similar comparisons reveal that rural students tend to have lower knowledge levels than those of the other two youth groups. Their attitudes towards RH and sexuality

also tend to be more conservative. This has its good side in that the rural students tend to be less interested in trying sex and, presumably have lower rates of risky behaviors, thus it might be easier to promote safe sexual practices among them. Yet, they are also less likely to accept such natural sexual reactions as masturbation, sexual dreams and fantasies, which may impede their physiological and psychological development. The rural students also tend to have less communication with parents or peers about sexuality and RH, possibly due to their conservative attitudes and the relatively conservative social environment they live in. Unlike students living in big cities or migrant youth working in coastal cities, those rural students tend to live in a less open environment where they tend to have less access to RH knowledge and less exposure to those liberal attitudes towards sexuality. It is imperative to improve RH knowledge as well as healthy attitudes regarding sexuality for these rural students.

The migrant youth seem to have higher knowledge levels than the other two youth groups. While we cannot exclude selection bias, the elder age of these youth might explain their higher knowledge levels. However, the tendency towards liberalization of sex also tends to have greater influence on these adolescents living in the coastal city, away from their hometowns. As shown in findings above, these adolescents tend to have higher rates of sexual practices and be more willing to learn more about contraceptives. More interventions are needed to meet their greater unmet RH needs.

As for cross-gender differences, they are generally not that substantial. Program effects do not vary much between boys and girls in terms of improving RH knowledge. It is only on some RH attitude items that there are some gender differences. This is valuable for policy recommendations in that it implies we probably only need one type of program rather than separate, gender-specific programs for boys and girls.

The present study also has many limitations. As mentioned before, the study is greatly impaired by the data collection design. The data collection process of doing follow-ups by classes rather than by individuals makes it impossible to link individuals in the pre-test with those in the post-test, and thus, limits the ability to conduct individual-level evaluation analysis and to build regression models for a deeper investigation of the causes of the post-intervention change. Also, youth in the intervention and comparison groups in Shenzhen tend to be significantly different from each other, introducing

selection threats to internal validity --- observed differences may be due to the differences in the youth rather than the program. As for the other sites, the selection of intervention and comparison schools was not rigidly a random process either, which may also raise questions about how universally applicable the findings are.

To further examine what part of the LPS training program works, how it works, and why the program effects vary across sites, a process evaluation is also needed. However, data collection on the program implementation is very limited. Not much detail is recorded on how the LPS training program was actually implemented in each site. This limits our ability to tell if the observed program effect is generalizable, or if certain features need to be added in certain sites or to certain youth groups to make the program effective. Also, in the present study, follow up was conducted almost immediately after the LPS training program, and we cannot tell the long-term impact of the program or if the observed effects are sustainable. Yet, all this information is valuable for scaling-up the program.

In summary, the program's strongest effect was improving reproductive health knowledge. Positive effects also were found for improving healthy attitudes and cognitive skills (though not necessarily actual skills) regarding RH and sexuality. The program had no effect on reproductive health behaviors. Nonetheless, the changes in knowledge and attitudes are important because, according to the KAB (Knowledge, Affective & Behavioral) approach, knowledge precedes attitudes and they precede behavior; we need to attend to each of these areas in order to make a difference. Thus, program success is defined not just by changing the behavior but by any movement toward such change, such as improvement in knowledge and attitudes. In this sense, the LPS training program is recommended for scaling-up in its implementation, given the findings from the current study. However, further studies of long-term program impacts are needed to determine whether the improvements in knowledge and attitudes remain or erode over time, and whether delayed behavioral change occurs. Better evaluation designs also are needed to conduct individual-level analysis and assess program effects more closely.

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