Effect of Sexuality and Reproduction Education on Health and Poverty Reduction of Adolescent Girls in Rural China
-- The Case study in Gansu Province

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1. Full Proposal

Reproductive Health, Health Risks, and Women's Rights for Migrant Girls in China
-- The Case study in Gansu Province

Abstract

Gansu is one of the poorest provinces in China. More than half of adolescent girls from rural area in Gansu will drop out after they finish secondary school (nine years of education: 6 years of primary school plus 3 years of secondary school), and go to cities to find an off-farming job. Normally they start moving to cities around 16-18 years old. Our survey shows that the average year of migrant girls is 17.2 years old when they start to migrant. They just leave their parents and school to cities, and they are a vulnerable group, more likely to hurt by abortion and sexually transmitted infections (STI) because they are lack of knowledge on reproduction health. This study shows that a good training on sexual and reproductive health can help migrant girls to protect themselves from abortion and STI, reduce health risks, thus have better women’s rights and human capital, which can help them to get a better career and income in the future. Government should provide free education particularly for those adolescent migrant girls on sexual and reproductive health; not only they can get benefit themselves, but also good for the next generation.

1.1 Study overview

With the rapid economic growth in China, central government has been spending more money to improve its nine-year compulsory education system. Starting from the year of 2005, students from rural households are really free (including free text book) to stay at school for nine years until they finish their study in secondary school, which is six years of primary school plus three years of secondary school, nine years in total.

This policy helps female students in poor rural area a lot. There is no social security system in rural Gansu, traditionally, rural parents live with and rely on their sons when they are getting elder, daughters are considered belonging to their husbands’ families after they are married. As the consequence, parents pay much more attention and invest much more on the education of sons than daughters. On average, girls have much less chance of going to school than boys in rural area, caused lots of female dropouts in rural China, especially in poor area like Gansu Province. Nowadays, with free accessing to school for nine years, girls get more chance to stay at school until finishing nine years of education. But female students
still have less chance to go to high school in rural Gansu, because high school is not free any more compared to primary and secondary school, their parents need to pay. According to a survey (Xu, 2006)\(^1\) conducted in Linze county, Gansu Province, about 94% of adolescent girls from rural area can finish their study in secondary school. But tradition is still there, rural parents still give much more chance to boys than girls for going to high school; more than 80% of high school students from rural area are male, and 89.3% of rural girls drop out after they have just finished nine years of schooling, and 85% of dropouts go to cities as migrant workers.

More and more adolescents from rural area are going to big cities to find off-farming jobs after they finish their study at the secondary schools, most of them are adolescent girls around 16 - 17 years old. Our survey from December 2009 to February 2010 in Lanzhou, the capital of Gansu Province, shows that 74% of migrant girls go to work in cities at the age between 16-18 years old for their first time, and the average age is 17.2 years old. Most of them do not have any experience of living in cities before they go; they leave their parents, feel lonely in cities.

Sex and reproductive education is very limited in China, especially at rural secondary schools (Shen et al. 2007; Li et al. 2001). Sex and reproduction are still very sensitive topics in China, especially in poor rural area. Because traditional culture and lack of relevant knowledge of their parents, adolescent girls cannot get enough knowledge and guidance on sexuality and reproduction from their parents. They also seldom discuss these kinds of issues with their female friends. They are really lack of knowledge on sexuality and reproduction, and also have no reliable sources to get these kinds of knowledge. Their relevant knowledge, which is unclear and inappropriate, may mainly come from television and newspaper (Shen et al., 2007; Xie et al. 2006), they do not know how to protect themselves, and this may cause many problems like abortion, STI and raise health risks for them. All these problems will hurt health of adolescent girls, and their human capital. Bad health has negative effects on their income, and even will affect the quality of their next generation.

The 2001 Almanac of China’s Health shows that as many as 10 million induced abortions are formed annually in China, and about 20-30% is provided to unmarried young women. Wang et al. (2005) did the study in the suburban Shanghai with unmarried youth aged 15-24, their data shows that about 26% of female had unexpected pregnancy during the 20-month intervention period. These evidences suggest that teenage pregnancy and abortion have become a big problem of public health in China.

\(^1\) http://www.nn365.org.cn/blog/index.php/18779/viewspace-1122
We do not have any official statistic data on abortion in Gansu Province, but we got some data from a small community hospital in Lanzhou. During 13 months from November 2007 to December 2008, there were 122 induced abortions in total did in the hospital, in which 19.7% was provided to female under 20 years old, and 33.6% under 22. According to the doctor we interviewed in the hospital, most of young women who did abortion there are those adolescent migrant girls from rural area. We also visited a Clinique in Lanzhou. According to the records there, from 2005 to 2008, in four years, there were 75 cases of abortion in the Clinique, in which, more than 1/3 (27 cases) are unmarried young females under 21 years old, most of them came from rural area, because price of abortion at the Clinique is only 1/3 of the price at public hospital. Our findings are quite consistent with that of Wang et al (2005).

These young, less-educated migrant girls from poor rural area belong to a special vulnerable group with high heath risks, a good knowledge on sexuality and reproduction will help them know how to adapt the new environments in cities, protect themselves when they are facing related problems. Therefore, it can reduce their health risks and they are less likely to be hurt by abortion and STI if they have good knowledge on sexual and reproductive issues. Our research will investigate whether the training/intervention on sexual and reproductive issues can reduce their abortion and incidence of STI, improve their health and human capital or not. We will design an intervention which is 10 days comprehensive training on sexual and reproductive issues, and estimate the effect of the intervention by comparing data of two groups of migrant girls: one group with and the other without intervention.

Policy application is obvious. If those adolescent migrant girls can reduce abortion and incidence of diseases significantly after the intervention, get higher income because of having better health and human capital, then, government should definitely spend more money on this type of training to improve health and human capital of those migrant girls. It’s not only good for adolescent girls themselves, but also good for their next generation.

1.2 Main research questions and core research objectives

Main research questions are:

i) Does intervention (training/education on sexuality and reproduction) help adolescent migrant girls to have appropriate attitudes towards relevant issues, and have less abortion and STI, reduce their health risks? What kinds of knowledge and service they need most?
ii) Does intervention (training/education on sexuality and reproduction) help adolescent migrant girls to improve their health and human capital, and to have a better career and high income in the future?

Core research objectives are:

Help us to have better understanding on the relationships between knowledge on sexuality and reproduction, attitude towards relevant issues, probability of abortion and STI, health risks, human capital and poverty of those adolescent migrant girls.

1.3 Literature review

Sex education is about human sexuality. It is about being male and female and is concerned with the interaction of biological, social, and psychological influences. But sex education is still a sensitive topic in many countries. Appropriate knowledge on sexuality and reproduction will reduce abortion, STI and diseases of obstetrics and gynecology. Globally, 20 million unsafe abortions are estimated to take place each year, 19 million of these in developing countries. Unsafe abortion accounts for 13% of all maternal deaths globally, which are 65,000–70,000 deaths annually, and 20 % of the total mortality and disability burden due to pregnancy and childbirth, in terms of disability-adjusted life years (DALYs). Every year, there are close to 5 million women with temporary or permanent disability due to unsafe abortion. Of these, more than 3 million suffer from the effects of reproductive tract infection (RTI), and almost 1.7 million will develop secondary infertility (WHO, 2007). According to an early research of Vlassoff et al. (2004), an estimated 220,000 children lose their mothers each year due to unsafe abortions.

Sexual and reproductive health is becoming more and more important globally, WHO (2006) addresses the sexual and reproductive health needs and problems of more than 1.2 billion adolescents in the world as a crucial element of the WHO Global Reproductive Health Strategy. According to its judgment, in many parts of the world especially the developing countries, adolescents’ needs of the sexual and reproductive health are either poorly understood or not fully valued. There is growing evidence shows that this neglect can seriously jeopardize the health and future well-being of young people. This policy brief highlights what needs to be done for policy-makers to promote and protect the sexual and reproductive health of adolescents.
Sex education programs for adolescent have long been implemented in developed countries. For example, most American students do receive some type of sexuality education by the time they leave high school (Hoff et al., 2000). Topics such as abstinence, and basic information on HIV and other STI, are commonly taught; birth control and how to access STI and contraceptive services are taught less often. In recent years, many evidences show that a comprehensive sexuality education (CSE) is widely supported in the U.S., yet rarely experienced by its youth (Constantine et al., 2007). Landry et al. (2003) analyzed factors associated with the content of sex education in U.S. public secondary school with data on 1,657 respondents to a 1999 national survey of teachers providing sex education in grades 7-12. Their results show that sex education in all U.S. high schools should include accurate information about condoms and other contraceptives. A recent study of Jerman and Constantine (2010) shows that sexual communication is a principal means of transmitting sexual values, beliefs, expectations, and knowledge between parents and children. They used a representative statewide sample of households with adolescents (N = 907) in the United States was employed. Their findings indicate that sexual communication between parents and adolescents can be universally challenging, and parents of both genders, all ages, and all socio-demographic characteristics might benefit from education and support.

Studies also show that ways of doing sex education are quite different in different countries. Lewis and Knijn (2003) compared sex education in the Netherlands and in the UK, they argue that Dutch are successful in terms of much lower teenage pregnancy rates than British, with making use of professional sex educators. Even in America, it is believed that schools alone cannot address sexuality education and that support from families and community was critical (the National Association of State Boards of Education, 1998). Smylie et al. (2008) evaluated the effectiveness of a multi-dimensional Canadian sex education programme using 240 Grade Nine students. Compared with the control group, students in the intervention group showed positive changes in the areas of knowledge, sex-role attitudes, sexual interaction values, and the perception that birth control is important. Their results suggest that a collaborative effort of outside professionals from various community organizations may be a useful strategy.

In recent years, sex education is also becoming an important issue in developing countries. Rashid (2000) discussed an Adolescent Reproductive Health Education programme in Bangladesh in 1995, to provide information about reproductive health to adolescents in rural area, and help to break the silence and shame about the “sensitive” topic. As tradition in Indonesia, many parents, teachers and religious leaders think that youths should suppress their sexuality, and sex education is not good for this purpose. But Holzner and Oetomo
(2004) argue that the risk of young people inflicting harm on themselves can be reduced by providing information and the means to sexual health.

There are some studies in China to discuss the situation of sex education in China, but most of them are about general information of reproductive health related attitudes and behaviors, or demand of sex education of school students, and mainly are published in Chinese journals. For examples, Feng et al. (2009) did a survey for 1,230 adolescents (2/3 are students in schools, 1/3 are out of schools) in rural area of middle and west China, including Shanxi, Gansu, Qinghai and Guangxi. The survey is mainly about adolescents’ reproductive health related attitudes and behaviors. Li et al. (2004) investigated about 400 college students about needs and preferences of sex education. Their study suggests that more comprehensive school-based sex education is needed for Chinese youth, and health educators should consider differences between males' and females' preferred ways for receiving information on sexuality.

There are only few papers about sexual and reproductive education in China which are published in international journals. Lou et al. (2006) evaluate the potential of the Internet as a means of providing sex and reproductive health education to young people in Shanghai, China. There are 1337 students (high school, 15-16; college, 18-19 years old) participated in the study, 624 in the intervention group and 713 in the control group, students in both groups were broadly similar in terms of socioeconomic background characteristics. Their results show that the Internet is an efficient way to conduct sex education for young people in China. Wang et al. (2005) did the study in the suburban Shanghai with 2,227 unmarried youth aged 15-24 enrolled, in which 1,220 in the intervention group and 1,007 in the control group. Their results show that providing comprehensive sex education and reproductive health services to unmarried youth may help reduce rates of sexual coercion, promote increased contraceptive use and help decrease rates of unwanted pregnancy, and community-based intervention is an effective way to do sex education in China. Zheng et al. (2001) carried out a study in 1998-1999 in five cities (Beijing, Shanghai, Guangzhou, Guiyang and Taiyuan) in China, to learn about the reproductive health knowledge and behavior of young female migrant workers. Focus group discussions were conducted with 146 young women aged 16-25 (72 married, 74 unmarried). Most of them didn’t have enough basic knowledge on reproduction and contraception. Only small part of unmarried women were using contraception, so induced abortion was often the outcome of unprotected premarital sex. Their study shows that young female migrant workers in China are badly in need of reproductive health information and services.
Literature on sex education mainly comes from research fields like sociology, education and hygienics. Most of papers are descriptive, not so many studies use sexual and reproductive education as an intervention, and employ empirical methods to estimate effect of the intervention by comparing the control group and the intervention group. There are very few economics studies on how sexual and reproductive education affects youth's sexual behavior and attitude. Oettinger (1999) examined whether and how sex education affected teen sexual behavior in the 1970s by a rational choice model of sexual activity. His study shows that sex education in the 1970s had some causal impact on teen sexual behavior, probably in significant part by providing information that enabled teens to alter the risks of sexual activity. The shortage of his data in the study is obvious. The effects of sex education for the current generation will require more recent and appropriate data. No study on how intervention (training on sexual and reproductive education) can affect reproductive health, health Risks, and Women's Rights of migrant adolescent girls in China.

1.4 Explanation of what are the gaps in this literature

Even more than millions of adolescent girls leave schools and move to cities every year in China, there is no serious study investigate the effects of an intervention like sexual and reproductive training/education on reproductive health, health Risks, and Women's Rights of migrant adolescent girls from rural households who just finished their study at the secondary school and move to cities for their first time, and how abortion, STI and other relevant diseases will hurt their health and have negative effect on their income if they are lacking of knowledge on sexuality and reproduction.

1.5 Explanation of how filling these gaps is relevant to specific country policy issues

China has millions of female adolescents working in the cities who come from poor rural families. If an intervention, like an appropriate education or training on sexuality and reproduction could help them to improve their reproductive health, reduce health risks like unexpected pregnancy and relevant diseases, and get rid of poverty, then the Central government should focus on this vulnerable group of people, providing free information and education on relevant issues.
1.6 Size of the migrant population by age and sex in the targeted city

There is a registry system for migrant population in each police station, but data is distributed separately, we can’t get the whole data from Lanzhou City. But we can use different ways to estimate the size of migrant population.

Lanzhou has about 100 police stations, Chaochangjie Police Station is a middle-sized one, has around 6,000 people registered there, and 40% are females. So, the total migrant population in Lanzhou is about 600,000, in which around 250,000 are females. Chaochangjie Police Station has about 1,000 migrant girls under 21 years old who registered there, so our target population in Lanzhou is about 100,000 in total.

1.7 Evidence of the linkages with the government officials that will be necessary to support the project.

We visited Bureau of Education, Bureau of Health, Family Planning Committee, and Women’s Federation of Gansu Province, officials we met at all those bureaus promised to support our project. Gansu Academy of Social Sciences (GASS) is the best consulting institute of provincial government locally; all projects of GASS can get support from local government.

Other parts of the proposal are similar with the previous proposal, and should be modified according to the requirements of funding institute. See appendix 1, the previous proposal.

2. Intervention

The intervention is twice one-week training (education) on sexuality and reproduction issues conducted for those rural girls who are 17 to 19 years old, have been working in cities less than two years. The training should be a comprehensive one, it may include contents on abstinence, HIV/AIDS, sexually transmitted infections, birth control and contraceptive services, female anatomy/physiology, etc. We will consult with Bureau of Public Health and organize an group of experts (4-5) on birth control, HIV, STI, obstetrics and gynecology, psychology, each of them will give a lecture, and have discussion with those girls. The exact contents should consult with experts, discuss with local officials, and girls in intervention group.
2.1 Development of the course outline

The course outline is as follows:

1) Basic knowledge on human reproduction
   - Structure and characteristics of female sex organ
   - Structure and characteristics of male sex organ

2) Basic knowledge on sex life, pregnancy and contraception
   - What is normal sex life?
   - Why pregnancy? The role of male and female on pregnancy, symptoms of pregnancy, how to determine pregnancy.
   - What is contraception? Usual ways of contraception, their advantages and disadvantages.

3) Diseases and health
   - Gynecological diseases (GDs): characteristics, symptoms, harm to health and prevention
   - Sexually transmitted infections (STI): ways of transmission, symptoms, harm to health and prevention
   - How to keep reproductive health in daily life? How to face diseases? How to make a diagnosis and give treatment when having GDs or STI? What should do and what should not do?

4) Gender psychology
   - Gender difference
   - How to build an appropriate environment for intercourse with male?
   - How to maintain normal relationship with male?
   - How to deal with situations in emergency? Such as sexual harassment, violation, etc., and how to solve problems afterward.

5) Social adaptability
   - The elements of happy life for female in future (in China, especially for rural female, health and kids are basic of a happy life)
   - Why should have restriction (self control) on sexuality?
   - Survive in the environment without control of parents and teachers
- How to overcome lonely and helpless feelings
- Skills of city life, working and communicating with others
- Self protection, how to deal with some emergencies

2.2 Course materials (booklets, handouts, etc.)

After three meetings and discussions, Ms Li Shaoting, Ms Wang Jin and our research group had already completed the preparation of training materials (in Chinese). Two experts have prepared PowerPoint files for their lectures.

- Training Course Material 1 - Take Care the Female Health (PPT in Chinese, See appendix 2)
- Training Course Material 2 - Social adaptability (PPT in Chinese, See appendix 3)

2.3 Decisions about how the course should be delivered, where, and by whom?

According to the original plan, the training was divided into 3 courses, 2 hours per course. But migrant workers are mainly working in service industries, our interviewees are too busy to ask for three leaves and attend our courses for 3 different times. Therefore, we had to compress contents of all lectures and to adjust time needed; then we could put all lectures in one afternoon.

We did the half-day training on January 26th, 2010 (14:00-18:10) in the conference room (on 13th floor) at Lanzhou Victory Hotel. The reason we rent the meeting room in a hotel at the city center is easy for our interviewees to go back after training, otherwise we could have the course in Gansu Academy of Social Sciences.

The training was divided into two parts:

- 14:00-16:00 Lecture 1, “Care for the health of women”
  Speaker: LI Shaoting, Chief physician
- 16:00-16:10 Coffee Break
- 16:10-17:40 Lecture 2, “Mental health and self-protection”
  Speaker: WANG Jin, lawyer
  HU Miao, member of research team
- 17:40-18:10 Evaluation and assessment of the training, interview and discussion
The themes of the training included women's physical health, mental health and basic knowledge of law. The training lasted for more than three hours, included not only relevant knowledge on women's reproductive health, but also covered women's mental health and related law dealing with common problems. Lectures were taught by experts with a large number of typical cases, and combined with psychological testing.

We also paid 100 Yuan for each participant as the compensation of her income loss for half-day off, and invited them to have dinner together with experts and research team. There were only 10 girls participated in the training. There were 6 other interviewees who wanted to attend the training, but couldn't get the approval for half-day leave.

2.4 Background information about the process used to develop the program. Who was consulted? Is this best practice?

We designed the draft contents of the training course in February 2009, and discussed it with experts and relevant government officials at Bureau of Public Health, Bureau of Education, Population and Family Planning Commission, and Women’s Federation of Gansu Province in March 2009 (see the monthly reports from February to April, 2009). Based on the information we got, in May and June, 2009, we worked out a draft outline for interview, and interviewed 9 migrant young females under 20 years old in Chengguan District, Lanzhou City, main contents involved their work experiences in the city, their knowledge on male and female physiology, and their demands on sexual and reproductive knowledge (see the monthly report of May & June, 2009).

In July and August, 2009, we focused on designing the training plan and selecting the suitable training experts based on our previous interview with 9 migrant girls. We contacted three experts (gynecology and obstetrics, psychology, and law for each). They started to prepare the training materials under our research framework after two of them accepted to be the training course experts of our research project. After three discussions between experts and research team, the training materials were ready in October, 2009.

We decided the contents of the course after interview with 9 migrant girls and consulting experts and government officials:

1) Three experts on gynaecology and obstetrics: Ms Xiaotong Sun is from the top public hospital in Gansu; Ms Shaoting Li is retired and has a clinique herself; Ms Peng at a community hospital (Gansu Kangfu hospital at Minjiaqiao). One expert (Professor Shusheng Hao) on woman issues.
2) Officials from Bureau of Education, Bureau of Health, Family Planning Committee, and Women's Federation of Gansu Province; Police Station.

This is a good practice, maybe it's better to also visit and discuss with some secondary schools in rural area and parents of migrant girls to know a bit more of their opinions.

3. Results of a trial intervention

3.1 Recruiting and training a number of girls

According to our original plan, we drew a random sample (sample size: 150) from the list of female adolescents under 20 years old who applied temporary residence permit at the Caochang Street Police Station. They were mainly engaged in catering, hotel, manufactories and other industries.

However, after we started to do the survey, we had a big problem. The area managed by the Caochang Street Police Station is at the edge of the city center in Lanzhou, rents are cheaper than in the downtown, and many people live in the area but work in the downtown. This makes us difficult to find our targeted population. We could find them at home after they were back from their work, but normally it was after 10 pm in the night, and it was too late to do our survey then. After discussed with Debrah, we followed her suggestion, and changed the sampling rule of recruiting migrant girls, we mainly recruited them on workplace-based. We randomly chose some workplaces in two districts in Lanzhou, Chengguan District and Anning District, where our targeted population were concentrated, and did the survey at their workplaces after discussion with the managers.

At last we recruited 146 migrant girls for pre-trial survey with general information, attitudes and knowledge about reproductive health and related questions. Only 10 girls attended training.

3.2 Conducting a pre- and post-trial survey of attitudes and knowledge about reproductive health

The pre-trail survey includes two parts: we asked those female adolescents to complete “the Related Knowledge Test” themselves at the first, after they finished the Test, our investigators started to do the questionnaire survey with them. It is used as the baseline before training.
The post-trail survey was done after the training finished, using almost same questions of “the Related Knowledge Test” in the pre-trial survey, in order to compare the improvement of knowledge on reproductive health after the training.

3.3 Analysis of the pilot results

- The structure of our sample:

1) Age

<table>
<thead>
<tr>
<th>Age in 2009</th>
<th>Percentage</th>
<th>Age when first go out to work</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 years old or younger</td>
<td>9.7%</td>
<td>15 years old or younger</td>
<td>9.7%</td>
</tr>
<tr>
<td>16 years old</td>
<td>1.4%</td>
<td>16 years old</td>
<td>18.6%</td>
</tr>
<tr>
<td>17 years old</td>
<td>12.4%</td>
<td>17 years old</td>
<td>32.4%</td>
</tr>
<tr>
<td>18 years old</td>
<td>15.9%</td>
<td>18 years old</td>
<td>22.8%</td>
</tr>
<tr>
<td>19 years old</td>
<td>20.7%</td>
<td>19 years old</td>
<td>9.7%</td>
</tr>
<tr>
<td>20 years old</td>
<td>24.8%</td>
<td>20 years old</td>
<td>6.9%</td>
</tr>
<tr>
<td>21 years old</td>
<td>23.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 years old</td>
<td>1.4%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The average age is 19.3 years old. Respondents are mainly 18-20 years old. On average, they have been out for work for 2.2 years till to 2010. The every age for first go out to work is 17.2 years old.

Most of respondents (86.8%) are from rural area, only 5.6% and 7.6% are from counties and small cities respectively.

2) Years of education

<table>
<thead>
<tr>
<th>Years of schooling</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=6 (primary school)</td>
<td>8.3%</td>
</tr>
<tr>
<td>7-8.5</td>
<td>13.2%</td>
</tr>
</tbody>
</table>
The average years of schooling of our respondents are about 9.1, a little bit more than secondary school which is 9 years in China. 78.5% of them have an education level equal or higher than secondary school. In general, it seems that education of girls in poor rural China is not a big problem after central government stimulated and subsidized nine-year compulsory education system. But the situation may be not correct for minority ethnic groups. In our sample, only 5 girls (3.5% of total sample) are from minority groups, it seems that young female from minority groups may be less likely to work in big cities like Lanzhou, because according to the fifth national census in the year of 2000, 8.8% of Gansu population are minorities. This may be caused by difference of culture and education level. Average education level of girls from minority groups is 7.4 years, which shows that girls from majority group have higher education level than minority groups at 5% significant level. We may need a bigger sample from minority groups to gain a robust result.

3) Dropout of school and reasons

<table>
<thead>
<tr>
<th>Age when dropped out</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=14 years old</td>
<td>10.5%</td>
</tr>
<tr>
<td>15 years old</td>
<td>9.8%</td>
</tr>
<tr>
<td>16 years old</td>
<td>27.3%</td>
</tr>
<tr>
<td>17 years old</td>
<td>23.8%</td>
</tr>
<tr>
<td>18 years old</td>
<td>14.7%</td>
</tr>
<tr>
<td>19 years old</td>
<td>11.9%</td>
</tr>
<tr>
<td>20 years old</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Nearly 2/3 of our respondents dropped out of school at the age between 16-18, that’s the normal age finished 9 years schooling in rural area.
<table>
<thead>
<tr>
<th>Reasons of dropout</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) I don’t like go to school</td>
<td>61.9%</td>
</tr>
<tr>
<td>2) I can’t go to the higher school because I can’t pass the exam</td>
<td>33.8%</td>
</tr>
<tr>
<td>3) Because of poverty</td>
<td>28.1%</td>
</tr>
<tr>
<td>4) Parents think girls don’t need continue their schooling</td>
<td>7.9%</td>
</tr>
</tbody>
</table>

For reasons of dropout, the most dominant one (nearly 2/3) is that our respondents didn’t like go to school, the second reason is “can’t pass the exam and enter higher school”. Poverty is still a problem for some families to support their kinds for schooling, nearly 30% of our respondents dropped out of school because of poverty. It seems that government still needs do something to help kids from poor family for schooling.

**First time going out**

There are lot of questions about ways and self-feeling of first going out. Table 5 shows the ways of first going out, close 1/3 of our sample went out alone for their first time, most of them went out with somebody they familiar for the first time. In total, there are 86.2% of girls felt homesick when they first went out, but it seems that homesick has no significant relation with the ways of going out, girls felt homesick even they went out with their parents, this may due to they went to cities where they were not familiar with.

<table>
<thead>
<tr>
<th>Ways of first going out</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Percentage of homesick feeling (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) went out alone</td>
<td>43</td>
<td>30.7%</td>
<td>83.3%</td>
</tr>
<tr>
<td>2) went out with parents</td>
<td>7</td>
<td>5.0%</td>
<td>100%</td>
</tr>
<tr>
<td>3) went out with brothers or sisters</td>
<td>27</td>
<td>19.3%</td>
<td>88.5%</td>
</tr>
<tr>
<td>4) went out with other relative</td>
<td>35</td>
<td>25.0%</td>
<td>91.4%</td>
</tr>
<tr>
<td>5) went out with other fellow-villagers</td>
<td>28</td>
<td>20.0%</td>
<td>78.6%</td>
</tr>
</tbody>
</table>

**About reproductive health**
We also asked a lot of questions regarding knowledge and training of reproductive health. The average self-reported age of menophasia is 13.3 years old. It seems that questions about sex, reproduction are still quite sensitive for our respondents, when they answered question: “can you have an open discussion with professionals if you have questions on reproduction and gender issue?” Only 35% of respondents say yes, almost 2/3 of them can’t. We also asked our respondents whether they did abortion before. It is a very sensitive question, even 56.8% of our respondents had boyfriend before, but abortion rate is quite low, only one respondent answered that she did once abortion. It may be that the question is too sensitive, and it is no time for them to know our investigators, our respondents don’t like to tell a truth.

We also did a regression of self-reported knowledgeable (reproduction and gender issues) on some background variables. Where:

Dependent variable: how much do you know about reproduction and gender issues? The answer is in 5-scale, 1 know nothing at all, 2 know a little, 3 know some, 4 know quite some, 5 know a lot. The answer is actually ordered, we also tried ordered Probit model, but the result is very similar, we don’t present it here.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.0120</td>
<td>0.0522</td>
</tr>
<tr>
<td>Years of education</td>
<td>0.0831***</td>
<td>0.0288</td>
</tr>
<tr>
<td>Dummy for minority</td>
<td>0.807***</td>
<td>0.196</td>
</tr>
<tr>
<td>Popularity among friends</td>
<td>0.189**</td>
<td>0.0920</td>
</tr>
<tr>
<td>Feel nervous at menarche</td>
<td>-0.105**</td>
<td>0.0528</td>
</tr>
<tr>
<td>Having boyfriend before</td>
<td>0.0676</td>
<td>0.136</td>
</tr>
<tr>
<td>Constant</td>
<td>2.31**</td>
<td>1.04</td>
</tr>
<tr>
<td>Observations</td>
<td></td>
<td>137</td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td>0.143</td>
</tr>
</tbody>
</table>

*** p<0.01, ** p<0.05, * p<0.1
The result of Table 6 shows that respondents with higher education level, more popular among friends are more knowledgeable on reproduction and gender issues; “feel nervous at menarche” are less knowledgeable.

- **Channel to access and demand of reproductive knowledge**

For their current channels to get knowledge on reproduction in Lanzhou, 41.0%, 25.3%, 6.0% and 26.5% of migrant girls are answered from books, media (TV, newspapers), Internet and older female friends respectively. And 56.2% of girls think that the current channels can meet their demand on knowledge of reproductive health. For the question of their preferred people or institution to provide knowledge on reproduction, there are 50.4%, 10.2%, 30.7% and 8.7% of girls answered family member, school education, professional institute and Women’s Federation respectively, it seems that migrant girls are most like female family member to provide the service, but as a migrant worker from poor rural area, it is hard to find a suitable female family member who are knowledgeable on reproduction and can provide this kind of help to them. Then the professional institute is a good way to teach them relevant knowledge, government can do something helping migrant girls on reproduction health by supporting professional institute to provide free training.

For the question about the willingness of knowing more about reproduction, 5-scaled answer was given: 5 very willing, 4 willing, 3 just so so, 2 not so willing, 1 not willing at all. Table 7 shows Willingness to have more knowledge on reproduction and willingness to attend training, these two are high correlated. More than 2/3 (72.9%) of our sample answered 5 or 4, means that most of them are willing to know more on reproduction. For those more willing to know more on reproduction, they are more likely to attend the training.

**Table 7  Willingness to have more knowledge on reproduction and willingness to attend training**

<table>
<thead>
<tr>
<th>Willingness of knowing more on reproduction</th>
<th>Frequency</th>
<th>Percent (%)</th>
<th>Percentage of willing to attend training (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 not so willing</td>
<td>12</td>
<td>8.3%</td>
<td>58.3%</td>
</tr>
<tr>
<td>3 just so so</td>
<td>27</td>
<td>18.8%</td>
<td>69.2%</td>
</tr>
<tr>
<td>4 willing</td>
<td>65</td>
<td>45.1%</td>
<td>89.1%</td>
</tr>
<tr>
<td>5 very willing</td>
<td>40</td>
<td>27.8%</td>
<td>97.5%</td>
</tr>
<tr>
<td>Total</td>
<td>144</td>
<td>100.0%</td>
<td>85.2%</td>
</tr>
</tbody>
</table>

- **Effect of intervention: test score pre- and post-trail**
Even only 14.6% of respondents don’t like to attend training on reproduction and gender issues, but we only had 10 attendants at the end to attend the training. We also did a regression on attitude to attend training, but no variable is significant.

For 10 girls attended training, there are 17 questions in “the Related Knowledge Test” which we used to test the related knowledge of reproduction, so the total score is 17. Average of pre-trail scores for all sample is 4.7, but for girls who attended training, average of pre- and post-trail scores are 5.5 and 7.5 respectively. On average, girls could answer two more questions correctly after training, the post-trail score is significantly higher than pre-trial at 5% level.

3.4 Recommendations for how the program would need to be modified

- How to minimize attrition of sample

Our targeted populations were more mobile and changed their job more frequent than we expected, we could not find plenty of them in two months after the survey even we have cell phone number of most of them. In order to obtain trust of our respondents and control the loss of sample size for the future project, we need adjust our way of sample selection. The project was originally designed to get our sample from rural secondary schools.

For future program, we can choose two counties, in each county we choose one secondary school as control group, the other secondary school as intervention group, total we choose 4 schools. We target those female students at third-year in the school, who stopped schooling and did not go to high school after finished their secondary school, most of them would go to cities and find a job there shortly after they graduated from the secondary school. With the help of the schools we could do the baseline questionnaire and training for them just before they graduate, and build a long-term relationship with school teachers, targeted girls and their parents. We can observe behavior of targeted girls in next three years, and to check whether our intervention (one week comprehensive training on sexual and reproductive knowledge before they graduate from secondary schools) have effect on their reproductive health, health risks.

The way we used in our previous study have some problems:

1) The time we spent with our targeted populations was very limited in our previous study, it was very difficult to make them understand the purpose of our research well, and difficult to build trust between our research team and our targeted population. Because the sampling population is a very mobile group in cities, has high frequency of changing job and
accommodation, even cell phone number, easily leading to high sample attrition during the research period. If we do the training at school, with help of school teachers and even their parents, we can build a long-term relationship (trust) with targeted girls;

2) We did not have effective primary and backup information of our targeted populations, the sample would be completely lost if she changed her job and cell phone number.

To avoid these problems, the best way may get the sample from those third-year female students in rural secondary schools just before they graduate. With the help of schools, we may build trust with our targeted populations more easily, and we also may get home information of our targeted population, make us relative easy to trace them. The other advantage is that we may be also easy to find a girl through her classmates if we did the sampling and survey in school.

- **Survey time**

To improve the effectiveness of investigation, we need to adjust the time to do our survey and the training. As we mentioned earlier, all industries are very busy during the time period from October to next February (end of a year and Chinese New Year), which is not a good time to do our survey and training. Our future survey and training should avoid this time period, and should be scheduled in March - September.

- **Who should we cooperate?**

We need further cooperation with different institutions and stakeholders in our future research, in order to increasing understanding and trust of our targeted population to our research team and project.

Firstly, we can work together with local governments of our sampling location (counties), including the education sector, women’s federations and village leaders, and parents of our targeted population. The cooperation with local institutions and stakeholders can help the targeted population trust our research team and project, which is more effective to avoid attrition of our sample. But this would also lead to some problems, for example, girls may be more sensitive to ethical standards and do not like to tell us the truth when they are answering some questions; or in the later stage, they are afraid that somebody familiar will know if something like abortion happened, they may avoided us. This requires us to have a further discussion.

Secondly, we can choose some girls who are informal group leaders at the class in the school with strong management and communication skills as coordinators of our project. They may
help us to keep connection with other girls in our sample. Perhaps we need a better reward to attract them, and pay attention to additional peer effect.
Appendix 1: The Previous Proposal

Effect of Sexuality and Procreation Education on Health and Poverty Reduction of Girls in Rural China
- The Case study in Gansu Province, China

RESEARCH PROPOSAL
Presented to
PEP-AusAid Policy Impact Evaluation Research Initiative

By
Wei QU  Qin TU

&

Jing WANG
Miao HU
Qijun LIU
Qiong JIA

COUNTRY
China

Document date
22/05/2008
A short abstract (100 to 250 words)

Gansu is one of the poorest provinces in China. Most of girls from rural area in Gansu will drop out after they finish secondary school (nine years of education), and go to cities to find an off-farming job. Those girls leave their parents, lack of knowledge on sexuality and procreation issues, they are more likely to hurt by abortion and diseases. This study shows that a good training on sexuality and procreation issues can help those girls to protect themselves from abortion and sexually transmitted diseases (STDs), reduce diseases of obstetrics and gynecology, thus have better health and human capital, which can help them to get a better career and income in the future. Government should provide free education on sexuality and procreation issues particularly for those girls, not only they can get benefit, but also good for the next generation.

A. Aims (1.5 pages)

a. Study overview

With the rapid economic growth in China, central government has been spending more money to improve its nine-year compulsory education system. Starting from 2005, students from rural households are really free (including free text book) to stay at school for nine years until they finish their study in secondary school, which is six years of primary school plus three years of secondary school, nine years in total.

This policy helps girls in poor rural area a lot. Traditionally, most of rural parents will live with and rely on their sons when they are old, daughters are considered belonging to their husbands' families after they are married. As the consequence, parents pay much more attention and invest much more on the education of boys than girls. On average, girls have much less chance of going to school than boys in rural area, caused lots of dropout of girls in rural China, especially in poor rural area like Gansu Province. Nowadays, with free accessing to school for nine years, girls get more chance to stay at school until finishing nine years of education. But girls get a very small chance to go to high school in rural Gansu, because high school is not free any more compared to primary school and secondary school, their parents need to pay. According to a survey (Xu, 2006) conducted in Linze county, Gansu Province, about 94% of girls from rural area can finish their study in secondary school. But tradition is still there, rural parents still give much more chance to boys than girls for going to high school; more than 80% of high school students from rural area are male, and 90% of rural girls drop out school after they just finish nine years of study.

More and more young people from rural area are going to big cities to find off-farming jobs after they finish their study at the secondary schools, especially girls around 16 to 18 years old. Most of them do not have any experience to live in cities before they go; they leave their parents, feel lonely in cities. The sex education is very limited in China, especially in rural secondary school. Sex is still a very sensitive topic in China, especially in poor area. Because traditional culture and lack of relevant knowledge of their parents, girls can not get enough knowledge and guidance on sexuality and procreation from their parents. They also seldom discuss these kinds of issues with their female friends. They are really lack of knowledge on sexuality and procreation, and lack of reliable sources to get these kinds of knowledge. Their relevant knowledge, which is unclear and inappropriate, mainly comes from their boy friends, they do not know how to protect themselves, and this will cause many problems like abortion, sexually transmitted diseases (STDs) and diseases of obstetrics and gynecology. All these problems will hurt their health, and their human capital. Bad health has negative effects on
their income, and even will affect the quality of the next generation. We do not have direct data of Gansu, but according to the 2001 Almanac of China's Health, as many as 10 million induced abortions are formed annually in China, and about 20-30% is provided to unmarried young women. Wang et al. (2005) did the study in the suburban Shanghai with unmarried youth aged 15-24, their data shows that about 26% of female had unexpected pregnancy during the 20-month intervention period. These evidences suggest that teenage pregnancy and abortion have become a big problem of public health in China.

These young, less-educated girls from poor rural area are special vulnerable group, a good knowledge on sexuality and procreation issues will help them know how to adapt new environments in cities, protect themselves when they facing related questions. They are less likely to be hurt by abortion and diseases if they have good knowledge on sexuality and procreation issues. Our research will investigate whether the training on sexuality and procreation issues can reduce their abortion and incidence of venereal diseases, improve their health and human capital or not. We will estimate the effect of training by comparing data of two groups of girls: one group with and the other without training.

Policy application is obvious. If those young girls can reduce abortion and incidence of diseases after the training, get high income because of better health and human capital, then, government should spend more money on this type of training to improve health and human capital of those girls. It’s not only good for girls themselves, but also good for the next generation.

b. Main research questions and core research objectives

Main research questions are:

iii) Does training/education on sexuality and procreation help girls to have appropriate attitudes towards relevant issues, and have less abortion and venereal diseases? What kinds of knowledge and service they need most?

iv) Does training/education on sexuality and procreation improve health and human capital of girls, helping them have a better career and high income?

Core research objectives are:

Help us to have better understanding on the relationships between knowledge on sexuality and procreation, attitude towards relevant issues, probability of abortion and venereal diseases, health, human capital and poverty for those young girls.

B. Background and policy relevance (3.5 pages)

a. Literature review directly relevant to main research questions

Sex education is about human sexuality. It is about being male and female and is concerned with the interaction of biological, social, and psychological influences. But sex education is still a sensitive topic in many countries. Appropriate knowledge on sexuality and procreation will reduce abortion, STDs and diseases of obstetrics and gynecology. Unsafe abortion causes an estimated 13% of all maternal deaths globally, and 20-30% result in RTIs, many of which result in infertility (WHO, 2004); an estimated 220,000 children lose their mothers each year due to unsafe abortions (Vlassoff, 2004).
Sex education programs for adolescent have long been implemented in developed countries. For example, most American students do receive some type of sexuality education by the time they leave high school (Hoff et al., 2000). Topics such as abstinence, and basic information on HIV and other STDs, are commonly taught; birth control and how to access STD and contraceptive services are taught less often.

In recent years, many evidences show that a comprehensive sexuality education (CSE) is widely supported in the U.S., yet rarely experienced by its youth (Constantine et al., 2007). Landry et al. (2003) analyzed factors associated with the content of sex education in U.S. public secondary school with data on 1,657 respondents to a 1999 national survey of teachers providing sex education in grades 7-12. Their results show that sex education in all U.S. high schools should include accurate information about condoms and other contraceptives.

Studies show that ways of doing sex education are quite different in different countries. Lewis and Knijn (2003) compared sex education in the Netherlands and in the UK, they argue that Dutch are successful in terms of much lower teenage pregnancy rates than British, with making use of professional sex educators. Even in America, it is believed that schools alone cannot address sexuality education and that support from families and community was critical (the National Association of State Boards of Education, 1998). Smylie et al. (2008) evaluated the effectiveness of a multidimensional Canadian sex education programme using 240 Grade Nine students. Compared with the control group, students in the intervention group showed positive changes in the areas of knowledge, sex-role attitudes, sexual interaction values, and the perception that birth control is important. Their results suggest that a collaborative effort of outside professionals from various community organizations may be a useful strategy.

In recent years, sex education is also becoming an important issue in developing countries. Rashid (2000) discussed an Adolescent Reproductive Health Education programme in Bangladesh in 1995, to provide information about reproductive health to adolescents in rural area, and help to break the silence and shame about the “sensitive” topic. As tradition in Indonesia, many parents, teachers and religious leaders think that youths should suppress their sexuality, and sex education is not good for this purpose. But Holzner and Oetomo (2004) argue that the risk of young people inflicting harm on themselves can be reduced by providing information and the means to sexual health.

Two recent papers discussed the situation of sex education in China. Wang et al. (2005) did the study in the suburban Shanghai with 2,227 unmarried youth aged 15-24 enrolled, in which 1,220 in the intervention group and 1,007 in the control group. Their results show that providing comprehensive sex education and reproductive health services to unmarried youth may help reduce rates of sexual coercion, promote increased contraceptive use and help decrease rates of unwanted pregnancy, and community-based intervention is an effective way to do sex education in China. Li et al. (2004) investigated about 400 college students about needs and preferences of sex education. Their study suggests that more comprehensive school-based sex education is needed for Chinese youth, and health educators should consider differences between males’ and females' preferred ways for receiving information on sexuality.

Literature on sex education mainly comes from sociology. There are very few economics studies on how sex education can affect youth’s sexual behavior. Oettinger (1999) examined whether and how sex education affected teen sexual behavior in the 1970s by a rational choice model of sexual activity. His study shows that sex education in the 1970s had some causal impact on teen sexual behavior, probably in significant part by providing information that enabled teens to alter the risks of sexual activity. The shortage of his data in the study is obvious. The effects of sex education for the current generation will require more recent and
appropriate data.

b. Explanation of what are the gaps in this literature

No study investigate the effects of sexuality and procreation education on the health of young girls from rural household who just finish study at the secondary school and work in cities, and how abortion and relevant diseases like STDs will hurt their health and have negative effect on their income if they are lacking of knowledge on sexuality and procreation.

c. Explanation of how filling these gaps is relevant to specific country policy issues

China has more than ten millions of young girls working in the cities who come from poor rural families. If an appropriate education on sexuality and procreation could help young girls reduce unexpected pregnancy rates and relevant diseases, and get rid of poverty, then the Central government should focus on this vulnerable group of people, providing information and education on relevant issues.

C. Methods (15 pages)

a. General description of the intervention, population to be studied, outcomes of interest, timing of effects, existing data and/or data to be collected, methods to be used to analyze data

General description of the intervention

The intervention is an one-week training (education) on sexuality and procreation issues conducted for those rural girls who are 17 to 19 years old, have been working in cities less than two years. The training should be a comprehensive one, it may include contents on abstinence, HIV/AIDS, sexually transmitted diseases, birth control and contraceptive services, female anatomy/physiology, etc. We will consult with Bureau of Public Health and organize an group of experts (4-5) on birth control, HIV, STDs, obstetrics and gynecology, psychology, each of them will give a lecture, and have discussion with those girls. The exact contents should consult with experts, discuss with local officials, and girls in intervention group.

Population to be studied

Population to be studied are girls from poor rural area who are 17 to 19 years old, have been working in cities less than two years.

Outcomes of interest

Outcomes of interest are: by comparing control group and treated group, we can know whether more knowledge on sexuality and procreation will help them better deal with affairs related to sexuality and procreation, and help them to protect themselves in cities, have less abortion and incidence of venereal diseases, thus, improve their health and human capital, or even help them to get rid of poverty.

Timing of effects
Timing of effects is an important issue, because our expected outcomes of experiment that we mentioned before may have very different timelines. The reduction of abortion and incidence of venereal diseases may need more than one year to be observed, so we will try to do the first medical examination and baseline survey at the end of September 2008, as soon as the questionnaire and experiment design of our project get proved; and do the second medical examination and survey as late as possible at the end of December 2009, then we do have 15 months for intervention period, longer than one year. We will also try to do a relative simple medical examination in the second time, save money for the potential the third medical examination and survey in October 2010, see Timeline part, then we have 25 months as the intervention period, this should be long enough to observe the reduction of abortion and incidence of venereal diseases.

More than half of those girls only work in cities for 5-6 years, for example, from 16 to 22 years old before married, then they go back to their hometown to get married and stay there to take care of their own families, they seldom go to cities after they get married. Two years of our research period is not longer enough, income effects may need 5-10 years to fully materialize, so it is not likely to expect the treatment effect on income during our research period.

One solution is to do the third round survey in October 2010, then we have 25 months between the first and third survey, therefore, we have higher probability to observe income change than only 15 months. The other solutions might be that we include those girls around 20-22 years old who already have been working in cities for more than five years in our sample, making a big control group, test whether knowledge they had on sexuality and procreation issues has effect on their health and income. But the causality is a real problem; we may need a well designed questionnaire and ask them recall many things to solve the problem.

With these two ways we can mainly solve the problem that the expected effect may need more time to observe. If we use these two ways, we also need to adjust the contents of our medical examination, using a relatively simple examination to save budget for the third survey and examination, and make the project feasible for the budget.

Existing data and/or data to be collected

Because the sensity of our research topic, there is not detailed individual data available. We need collect data ourselves. The data to be collected are basic information include family background, score in school, job information, earning, and information about health situation, attitude to sexuality and procreation, experience of sex life. We collect basic information with questionnaire, and health data by medical check in hospital.

Methods to be used to analyze data

We will use multivariate regression to analyze survey data. The dependent variables are likely to be discrete ones, we may use binary/multinomial Probit model to analyze data.

b. The experiment/intervention (experimental projects only)
   i. What experiment/intervention will you do?
Training/education on sexuality and procreation issues in order to help half of our samples (150 girls) get relevant knowledge.

ii. How will this work
1. Who are the beneficiaries?

In short-term, beneficiaries are young girls (17-19 years old) who get training in our experiment. In a long term, if the government spent money on this kind of training, all girls who just finish study in secondary school and go to cities for off-farming job will become beneficiaries.

2. How will they benefit?

After training on sexuality and procreation issues, they can better understand how to deal with issues related to sexuality and procreation, and help them to keep good health. With good health and human capital, they can find better job in cities, and help themselves and their families to get rid of poverty.

3. How do you draw the control group to which you compare the treated group?

We use stratified sampling to select sample in 5 districts of Lanzhou, we will randomly choose 60 girls in each district, who are 17 to 19 years old, and have been working in city less than two years. And we randomly choose 30 girls to be the control group, and the other 30 girls to be the treated group. In total, we have 300 respondents, half in the control group, and half in the treated group.

iii. Who will do it?

Our research team, some medical experts and local officials in relevant institutions, like Bureau of Public Health, the Provincial Women’s Federation, will do it.

iv. What potential problems do you foresee and how will you overcome these?

There are three potential problems:

a) Because questions about sexuality and procreation are quite sensitive in China, especially in rural area;

b) Many information of privacy;

c) Data attrition.
Given the sensitivity of the topic we want to do research, quality of data is crucial. We had experience to collect sensitive data in our previous research, the data of individual farmers how they evaluated the village leaders’ behavior. First, we explained our research goals carefully to villager, saying we were a research team from Gansu Academy of Social Sciences (GASS), we were pure researchers, we promised not to show their data to anybody except our research team, and to keep their answer secretly. After that, we signed an agreement with each of them, we were illegal if we gave any individual data to somebody else and used the data except academic purpose. By this way, we collected the data smoothly.

In order to get a more cleared ideas to solve these problems, we interviewed four girls of our targeted population weeks ago in Lanzhou, discussed the possibility to collect the data for our research. After discuss with them, we have the following strategy to collect good quality data and minimize attrition.

(a) Use experienced female surveyors, mainly researchers from GASS, make girls easy to talk sensitive topics and easy to protect the privacy.

(b) Explain our research purpose carefully, and tell them the research team is from GASS, because GASS has a good reputation of doing research in the province. Then, sign a formal agreement with each of our respondent to protect the privacy, saying we are illegal if spread their individual data.

(c) All surveyors and team remembers should sign an agreement to protect the privacy of our respondents. Only main members from the research team can access to all detailed data.

(d) We will provide a free medical examination each year for all respondents, all of our respondents can get 500 yuan as the bonus if they stay in our sample at the end of our research period.

(e) We will organize a group of experienced experts, including obstetrics and gynecology and psychology, to provide free service to those respondents in treated group.

We have a professional lawyer (certified, 14 years) in our research group, Jing WANG; she will be in charge of protecting privacy in our research. We also discussed our research proposal and the strategy for data collection with one sociologist from Chinese Academy of Social Sciences, and one gynecologist from Lanzhou Renmin Hospital, they all think our procedure is a good way to collect this kind of sensitive data and protect individual privacy.

c. Data collection methods (experimental projects only)
   i. Will a baseline data be collected or will you use existing data for the baseline?
We will collect the baseline data. We will use a baseline survey and medical examination to collect data.

ii. What population will be studied

Girls from rural area who are about 17 to 19 years old and have been working in Lanzhou less than two years will be studied.

iii. Sampling design, sample size and statistical power

We will evenly divide our random sample into two groups: the control group, without training; the treated group, with training. According to Duflo et al. (2006), we set the power of our experiment as 90%, and assume a “medium” effect of 0.5 standard deviation, for one sided test at 5% significant level, the sample size we need is about 140. If we consider the fact that our topic is quite sensitive, the potential attrition rate may be as high as 40-50%, then we need 300 sample size, each group has 150 girls.

We will provide our respondents a free detailed medicinal examination (the cost is around 500 yuan RMB), plus 250 yuan RMB as the participation fee each year (equivalent to two months’ salary), that is 1500 yuan each in total during the period of our research project. See Budget part at the end, it seems that our sample size is feasible within the PIERI budget.

We will randomly select 300 girls around 17-19 years old, who just have been working in city for less than two years, in five districts in Lanzhou, the capital city of Gansu Province. 60 girls will be selected in each district, half of them belong to control group, the other half, the treated group.

iv. Key data to be collected (and how this will be done)

Basic information include family background, score in school, job information, earning, knowledge of sex issues and information about health situation, we collect basic information with questionnaire, and health data by medical check in hospital.

v. Additional data to be collected

Attitude to marriage, sexuality and family life, first time to have sex, time of abortion, and procreation health, experience of sex life, etc.

d. Modeling and testing
i. What model/idea will you test with these methods

Does training/knowledge on sexuality and procreation help girls better to protect themselves and thus improve their health status or even human capital?

Does improvement of health and human capital help those girls find better job and help their families get rid of poverty?

ii. What empirical methods will you use to do this testing

According to sample size and characteristics of data we discussed before, we will use parametric econometric method to analyze our data. We will mainly use regression analysis. Our dependent variables are mainly discrete ones, for example, number of pregnancy-abortion during our research period, it can be considered as an interval or binary variable depending on how many observations have more than one pregnancy-abortion. Then we need use discrete choice model like ordered or binary Probit model to do this testing.

Incidence of venereal diseases is also very likely to be a discrete variable; it may be constructed to a binary or multi-choice variable. Then, we can use binary or multinomial Probit model to do the testing.

We need do more investigation on sample attrition, to check whether sample selection process exists or not. If the data attrition is mainly caused by sample selection, we may use Heckman selection model to correct the biases due to sample attrition.

iii. What empirical problems do you foresee

Questions about sexuality and procreation issues are quite sensitive in China, especially in rural area; difficulty to ask some private questions; mobility of our samples, difficult to trace them.

e. Human subjects concerns
   i. Any ethical, social, gender or environmental issues or risks which should be noted

   ii. Explanation of how project will comply with requirements of local ethics review boards (e.g., how will you do informed consent; how will you ensure that no one comes to any harm; how will you ensure confidentiality etc….)
D. Consultation and dissemination strategy (1 page)

a. How, in the elaboration and execution of your project, will you consult with policy makers, civil society representatives and other parties interested in the research issues you examine?

In this research, the relevant policy makers may be Office of Poverty Alleviation and Development, Bureau of Public Health, Bureau of Education at provincial and county level; civil society representatives are Women’s Federation at provincial and county level, representatives of teachers at school, young girls who are working in Lanzhou and came from poor rural area, their parents and other parties who are interested in this research.

Our research team did a lot of research projects on rural poverty in Gansu Province; we are also very interested in women issues which we did some research on, especially the relationship between women issues and poverty problem, because our team members are mainly female. When we were discussing the topic of this research at the first time, we wanted to combine the poverty and women issues together, but we couldn’t find an interesting topic. After we discussed our research plan with Mr. Cunwen Li, deputy director of Gansu Bureau of Public Health, we got inspiration from him. Finally we came up with our research design with his help.

We also discussed our research plan with others, one official from Gansu Women’s Federation, and two officials from Jingning County Office of Poverty Alleviation and Development during our proposal designing period; they are all interested in our research topic.

Definitely, we will consult with policy makers we just mentioned, and other government institutions and civil society representatives who are interested in our research topic during our research period. We are sure we can reach our research goals with their help.

b. How and where research results will be disseminated to academics, policy-makers and the public: publications, policy briefs, seminars, conferences, etc. (see PEP’s consultation and dissemination strategy for ideas)

For academics, we will write one working paper in English, try to publish it in international journal; and write 2-3 papers in Chinese, and try to publish them in Chinese journals. We will try to organize 1-2 small seminars in Lanzhou to discuss issues relevant to our research and present our papers if the budget is enough. We also will try to submit our paper to relevant international conferences and present our results there if we could find budget support.

For policy-makers, Bureau of Public Health, Bureau of Education and Office of Poverty Alleviation and Development, Women’s Federation at provincial and county level, we already discussed our research project with some of them; they are all interested in our research topic. We will try to involve them during our research, consulting with them, writing report to them, and having seminar together with them.

Gansu Academy of Social Sciences has a channel to submit materials (short, policy oriented report) to Provincial Governor, Chinese Academy of Social Sciences also has a channel to the State Council; we may also use those
channels if our research results will attract them (top leaders at national and provincial level).

For the public, we will try to write 1-2 articles in Chinese newspapers; or ask some journalists to write something for our research. We will also invite some civil society representatives and other parties interested in our research issues to attend our seminar, or send some of our reports to them. We will try to print a booklet with the basic knowledge on sexuality and procreation issues, and send it to girls who are from poor rural area, and are working or try to find a job in cities through Women’s Federation at county or township level and secondary schools.

We did a research on rural poverty and movement of “building new socialist rural area” in 2007, we submitted our report to Deputy Governor of Gansu, and it had some influence on policy-making.

E. The study team (no page restriction)

a. Principal investigator; brief bio and explanation as to why they are well suited to lead this project.

1. FEILD
   Rural Development

2. NAME
   QU, Wei

3. SEX
   Female

4. DATE OF BIRTH
   18 July 1968

5. NATIONALITY
   China

6. PERSONAL ADDRESS
   143 Jiankang Road, An’ning District
   Lanzhou, Gansu Province, China
   TELEPHONE NO.
   +86 13893349270, +86 931-7761134(O)
   FAX NO.
   +86 931-7768029
   E-MAIL ADDRESS
   quwei1996@163.com
   clairmxb@sina.com

7. EDUCATION
   (The years in which various qualifications were obtained must be stated)
   PhD of Human Geography, Resources and Environment College, Lanzhou University, 2008
   Bachelor of Engineer, Hehai University, 1991

8. OTHER TRAINING
   From Sep 1992 to Feb 1993, English training in College of Xi’an Foreign Language

9. LANGUAGE & DEGREE OF PROFICIENCY
   Chinese: Mother Tongue
   English: Good

10. MEMBERSHIP IN PROFESSIONAL SOCIETIES
    Vice-President, Gansu Association of Agriculture Economy
    Director, Association of Gansu Rural Finance Research

11. COUNTRIES OF WORK EXPERIENCE
12. EMPLOYMENT RECORD

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>EMPLOYER</th>
<th>POSITION HELD AND DESCRIPTION OF DUTIES</th>
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<tr>
<td>Feb 2002</td>
<td>present</td>
<td>Institute of Rural Development, Gansu Academy of Social Sciences (GASS)</td>
<td>Center of Poverty Research, GASS Director, Senior Research Fellow</td>
</tr>
<tr>
<td>Jul 1991</td>
<td>Jan 2002</td>
<td>Institute of Agriculture Economy, Gansu Academy of Social Sciences (GASS)</td>
<td>Research Assistant, Research Fellow</td>
</tr>
</tbody>
</table>

ii) Qin TU

Name: TU, Qin

Date of Birth: March 7, 1966

Sex: Male

Place of Birth: Jiangxi, China

Nationality: Chinese

Address: Xibahe Beili 19-302

Beijing 100028, China

E-mail: tuqin1@gmail.com, tuqin@cass.org.cn

Tel & fax: 0086 10 85195354

Educational Background

- September 2000 – December 2004 PhD degree in Economics, Department of Econometrics and Operations Research, Tilburg University, the Netherlands.
- September 1989 – March 1992 Master degree in management engineering, Beijing Graduate School, Wuhan University of Technology, China.
- September 1984 – August 1989 Bachelor degree in engineering, Tsinghua University, China.

Working Experience

- Jul 2006 – now Senior research fellow, head of Economic Development Division, Institute of World Economics and Politics (IWEP), Chinese Academy of Social Sciences (CASS).
- Jan 2005 – Nov 2006 Postdoc researcher, Development Economics Group, Department of Social Sciences, Wageningen University, the Netherlands.
- Sep 2000 – Dec 2004 Research assistant, Department of Econometrics and Operations Research, Tilburg University, the Netherlands.
- May 1998 – Aug 2000 Research fellow, head of Statistic Analysis Division, IWEP, CASS.
- Mar 1996 – May 1998 Deputy Director, Computer Information Center, IWEP, CASS.
- Mar 1992 – Mar 1996 Assistant Research Fellow, Statistic Analysis Division, IWEP, CASS.
Recent publications


- Managing rangelands towards degradation alleviation: a case study of western China, with Shuhao Tan, Ruerd Ruben and Nico Heerink, presented at International seminar on Transition towards Sustainable Rural Resource Use in Rural China, Kunming, China, 22-24th October.


- Factors Affecting the Development of Land Rental Markets in China –A case study for Puding County, Guizhou Province, with Nico Heerink, presented at IAAE 2006 in Australia (26th Conference of the International Association of Agricultural Economists).


Research interests

Microeconometrics, especially modeling household behavior; Behavioral Economics; Experimental Economics; Development Economics.

Knowledge Level of Specialty

Good background on econometric and statistic techniques, computer programming.

Both Wei QU and Qin Tu are senior researchers in development economics for many years, have good relationship with local governments, with plenty of experience on leading research projects and doing field surveys. Wei QU did lot of researches on rural development like poverty reduction, education, gender issue, off-farming labor, self-governance of rural society in Gansu Province. She has very good knowledge on the situation in rural Gansu. Qin TU has a good training on econometrics, did field experiments and many researches on sustainable resources use in rural China. The combination of them can do a good job on leading this project.
b. Other key research staff and their roles. List indicating age (or if they are under 30), sex, prior training and experience in the issues for each of the team members. Description of the research capacities that team members and their institutions are expected to build through their participation in this project: This is an important aspect in the evaluation of proposals and should be presented in some detail. What techniques, literature, theories, tools, etc. will the team and their institutions learn or deepen their knowledge of? Please also indicate what tasks each team member would carry out in executing the project.

Jing WANG age: 39 Female bachelor in law, expert on social security in rural area and rural labor protection. Senior research fellow, has a good experience in her research fields.

Qijun LIU age: 29 Male master in agricultural economics, research interests: poverty, public services in rural area. Junior researcher, has some experience in his research fields.

Miao HU age: 25 Female master in human geography, junior researcher, has limited experience.

Qiong JIA age: 28 Female bachelor in agricultural economics, research interests: off-farming labor. Junior researcher, has some experience.

Huijuan ZHENG age: 35 female master in agricultural economics, research interests: poverty, land tenure, agricultural economics. Junior researcher, has some experience.

Wei QU and Qin TU are senior researcher, both having experience on leading a research team and on working with international experts. The Institute expects them to have more experiences on leading an international research project, having more connections with foreign scholars, doing a high level research, and publish on international journals.

Jing WANG is also a senior researcher, having good experience and research capacities, but she doesn’t have experience to lead an international project, the institute hopes that she can become a good leader of research project especially for an international one after participating in this project.

Qijun LIU has five years of experience to do research, and has some skill to design the questionnaire and analyzing data. The institute expects he can become a potential research project leader in 2-3 years, and learn more knowledge on econometrics and data analysis by using Stata from Dr Qin TU after participating in this project.

Qiong JIA also has five years of experience to do research. The institute expects she can become an experienced researcher in 3-4 years, and learn more knowledge on questionnaire design and data analysis after participating in this project.

Miao HU has only one year of experience to do research, and has some experience to do research. The institute expects she can become an experienced researcher in 5 years. She will learn how to design a questionnaire, how to organize a field survey in an efficient way, and basic knowledge on data processing.
Huijuan ZHENG had seven years of working experience before went for her master study, so she is good at organizing the field survey, she will take part in questionnaire design, field survey, data processing, report writing, and mainly learn how to design a questionnaire, and basic knowledge on data processing. She needs more practice to become a project leader in 3-4 years.

Gansu is in the north-west, less developed area of China. Gansu Academy of Social Sciences does not have any expert on econometrics. With participation in this project, GASS expects the research team members can learn more about quantitative analysis:

1. Learn how to use a popular econometric software – Stata;
2. Linear regression;
3. Discrete choice models, like ordered Probit model and multinomial Porbit model;
4. Data selection model

During our research period, all young team members will get at least one chance to attend conferences (mainly national and international conferences in China, but some may get chance to attend international conference aboard depends on the budget) and present our work there. They will also present our results on seminars organized by our research team.

We have basic knowledge on health economics, we hope we can learn more literature and theories on health economics. Most our team members have good background on economics or agricultural economics, we hope we can learn more literature and theories on other disciplines, mainly in sociology, on poverty alleviation, gender issues, sex education and HIV, STDs controlling.

All young researchers will contribute substantively to all analytical components of the research: questionnaire design, sampling, field survey, data input (coding), data analysis, report/paper writing, and present a paper in conferences. Wei QU and Qin TU will carry out questionnaire and experiment design, organize the experiment and survey, data analysis, report writing; Jing WANG, Miao HU, Qiong JIA, Huijun ZHENG, Qijun LIU will work together on questionnaire design, carry out survey, help to organize the experiment, do data cleaning and basic data analysis; team members will work together to write the reports and papers.

c. Collaborators/consortium arrangements
   i. Are there collaborators involved?
      Yes
   ii. Who does what?
      Wei QU and Qin TU: questionnaire and experiment design, organize the experiment and survey, data analysis, report writing
Jing WANG, Miao HU, Qiong JIA: survey, help to organize the experiment, data cleaning and analysis

Qijun LIU: survey, data analysis, report writing

iii. How will you resolve disputes?

All members of the team have cooperated for a long time, can easily communicate and resolve disputes.

d. Past, current or pending projects in related areas involving team members: list with name of funding institution, title of project, list of team members involved.

Asian Development Bank, “Lanzhou Transportation Project”, Wei QU, Qin TU, Jing WANG, Qijun LIU, Qiong JIA, Miao HU.

National Social Science Foundation, “Investigation of Some National Minority Poverty Counties”. Wei QU

National Social Science Foundation, “Patterns of Rural Poverty Alleviation”. Wei QU, Qijun LIU, Qiong JIA, Miao HU

World Bank, “Research on Management Mechanism of Poverty Reduction in Western Region of China - Rural Publicizing and Educating”. Wei QU, Qijun LIU, Jing WANG

Bureau of Finance, Gansu Province, “Comparative Analysis and Countermeasure Research of Educational Investment in Gansu”. Wei QU, Qijun LIU, Jing WANG, Qiong JIA

Ford Foundation, “Current Condition and Research on Villager Autonomy in Less-Development Region in China”. Wei QU, Jing WANG

Bureau of Science and Technology, Gansu Province, “Approaches and Countermeasures of Transferring the Rural Labor”. Wei QU

Newman Foundation, Germany, “Families Managed by Women: Labor Transfer and Land Right”. Wei QU, Jing WANG

KNAW and MOST, “Water Scarcity and Poverty in Heihe Watershed Area”. Qin TU, Wei QU, Jing WANG, Qijun LIU, Qiong JIA, Miao HU.

KNAW and MOST, “Grassland Degradation and Poverty of Herd Household in Qinghai Lake Area”. Qin TU

Ministry of Finance, “Effects of National Forest Projects on Poverty Reduction”. Qin TU

F. Timeline
August 1 – September 1, 2008: First interim report (survey/experiment design and/or pilot study results)
September 15, 2008: Comments on first interim report
September 20 – October 31, 2008: Baseline survey and medical examination
November 1 – November 30, 2008: Experiment
December 2008: Presentation of survey/experiment implementation at PEP general meeting
January 1 – May 31, 2009: Analysis of baseline data
June 2009: Second interim report (results of analyzing baseline data)
July 2009: Comments on second interim report
November 20 – December 31, 2009: Follow-up survey and medical examination
January 1 – January 31, 2010: Data analysis
February 15, 2010: Draft final report
March 2010: Study visit
May 2010: Final report
June 2010: Presentation of final report at PEP general meeting
September 20 – October 31, 2010: Potential the third round survey. Because results of our experiment may need more time to discover, we may do the third round survey and a simple medical examination.
June-December 2010: Working paper

G. Budget

1. Material costs: CAN $6,000
2. Small workshop in Lanzhou: twice, CAN $3000 each CAN $6,000
2. Data input/analysis: CAN $6,000
3. Field work:
   3.1 Cost of experiment: 1500 * 300 = 450,000 yuan
   3.2 Training: 400 * 150 = 60,000 yuan
   3.3 Survey cost: 60*2*300 = 36,000 yuan
   Total: 546,000 yuan
1 CAN $ = 6.825 yuan RMB
4. Other cost: CAN $4,000
5. Management fee (10%): CAN $10,200

Total: CAN $112,200