

RURAL CHINA: EXPLORING HIV/AIDS SURVEILLANCE AND PREVENTION IN A
DEVELOPING REGION

by

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Abstract

This capstone project was designed to provide a firsthand, true-to-life observational and participatory experience of the planning, structure, implementation, and evaluation of a public health project in a developing, rural setting. It is an in-depth look at a multi-faceted HIV/AIDS surveillance and prevention project taking place in rural China, as directed by the non-governmental organization, Bless China International. Specifically, it examines a project focused on decreasing HIV/AIDS and HIV-related risk behaviors among commercial sex workers, as well as a project focused on HIV/AIDS prevention and awareness and decrease of HIV-related stigmas in ethnic rural villages of southern China.

The importance of these projects is rooted in the complex issues that have caused HIV/AIDS to become a major epidemic in southern China and many parts of Southeast Asia. The combination of illegal injectable drug use, commercial sex work, and a high degree of mobility among the population has created a dynamic environment for HIV to spread throughout the general population. These projects aim to reduce the underlying causes of the spread of HIV, such as poverty, lack of awareness, and problems with stigmas related to HIV infection.

Data regarding ethnic minority knowledge, attitudes, and practices relating to HIV/AIDS and related risk behaviors was collected and analyzed in a pilot project conducted in 92 rural villages. Forty-six target villages received a one-month intervention focused on increasing knowledge and decreasing stigma of HIV. The results indicate that the intervention was successful in increasing HIV/AIDS knowledge among villagers as well as significantly reducing stigmas related to HIV.

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ARV	Anti-Retroviral Drug
BCI	Bless China International
CDC	Center for Disease Control
CSW	Commercial Sex Worker
FGD	Focus Group Discussion
HIV	Human Immunodeficiency Virus
IDU	Injectable (Intravenous) Drug Use(r)
MOH	Ministry of Health
NGO	Non-Governmental Organization
PLA	Participatory Learning in Action
PPS	Probability Proportional to Size
STI	Sexually Transmitted Infection
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session (HIV)
WIC	Women, Infants, and Children

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CHAPTER 1 - Introduction

Purpose

This capstone project was designed to provide firsthand, true-to-life experience of an observational and participatory nature into the planning, structure, implementation, and evaluation of a public health project in a developing, rural setting. It is an in-depth look at a multi-faceted HIV/AIDS surveillance and prevention project taking place in rural China, as directed by Bless China International (BCI), a non-governmental organization (NGO) in Yunnan Province in the People's Republic of China.

The goals of the project included learning how to properly identify community risks and vulnerabilities, using this knowledge to create practical intervention strategies, gaining experience in how to train lay leaders and implement interventions in the community, and evaluating the program based on statistical analysis of qualitative and quantitative survey data. Also, identifying particular challenges to cross-cultural public health strategies was an important consideration while working as an American with a Chinese team in China.

Capstone Project Structure

Operating from the BCI HIV/AIDS headquarters in the Xishuangbanna Prefecture for 6.5 weeks, I was able to observe the daily routine of the HIV/AIDS team in order to be acquainted with all parts of the organizational structure and function of BCI and participate as a member of the HIV team. I was allowed full access to planning sessions and was able to gain one-on-one interviews with several members of the staff to discuss the frustrations and challenges of working in a complex, developing region of China. BCI granted me full access to all data from their projects. At the time of my visit, a three-year village-based HIV prevention project had just

been finished, complete with pre- and post-intervention baseline data on HIV/AIDS knowledge, attitudes, and practices.

During this project, I was able to participate in two of the three HIV/AIDS projects in Xishuangbanna, the commercial sex worker (CSW) project, as well as the village HIV/AIDS prevention and education project, also referred to simply as the village prevention project. Daily activities ranged widely from meetings, data analysis, staff training, personal interviews, and accompanying BCI staff to brothels as part of the CSW intervention. I had the privilege of reviewing the village prevention project data and analyzing differences between pre- and post-prevention knowledge and attitudes within the communities specifically between the opinions of men and women in relation to the achievability of premarital abstinence, achievability of marital faithfulness for men and achievability of marital faithfulness for women. I was also able to accompany a team of BCI staff to several villages for two days to observe their programs, including participatory learning by the villagers.

Administrative Divisions and Healthcare Delivery in China

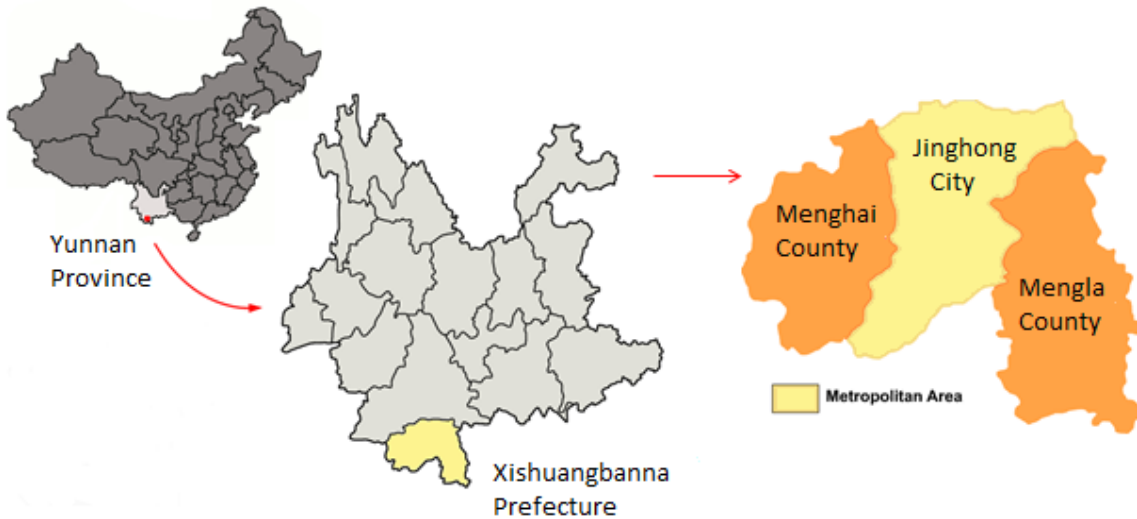


Figure 1.1. A map of the administrative divisions within Yunnan Province.

China is divided into 16 provinces, which are further divided into prefectures, counties, and townships. Each township may be large enough to represent hundreds of villages. In southwest China, Yunnan Province is divided into 16 prefectures, with Xishuangbanna Prefecture at the southern tip, with borders adjacent to Myanmar and Laos. Xishuangbanna is further divided into three counties: Menghai County, Mengla County, and Jinghong County-level City (Fig. 1.1). BCI works in all areas of Xishuangbanna Prefecture.¹²

The Xishuangbanna healthcare delivery system is a three-tier structure, just like the rest of China's prefectures.¹² The three tiers include village stations staffed by "village doctors" (villagers with lay-medical training), township health centers overseen by a physician and run by village doctors and physician's assistants, and county hospitals staffed by physicians.¹² Any person testing HIV-positive is referred to the Prefecture Center for Disease Control (CDC) for

confirmation, and confirmed cases are referred to the Prefecture Hospital, the only facility authorized to give anti-retroviral drugs (ARVs) in Xishuangbanna.

CHAPTER 2 - HIV/AIDS in China

History of HIV/AIDS in China

The first reported cases of HIV in China were in 146 injectable (intravenous) drug users (IDUs) in Yunnan Province in 1989. HIV infection was sequestered to the predominately male IDU population, as needle-sharing was the main mode of transmission. However, by 1995, HIV was spreading with greater momentum among IDU populations, and the virus was found in geographically divergent IDU groups.¹⁴ By 1999, all 16 prefectures in Yunnan were reporting HIV cases, and some areas were reporting a prevalence above 40%, with IDU prevalence peaking at 74.5%, and up to 10% in the commercial sex worker (CSW) population.¹⁴

Nationwide, the picture of the HIV epidemic was startling. Beginning in Yunnan Province with the 146 cases in 1989, the problem rapidly expanded to an estimated 50,000 to 100,000 cases by 1996, with more cases being reported daily. While much of the control efforts were focused on the large number of people infected by illegal blood bank operations in rural areas, the IDU population was still the predominant carrier and spreader of HIV, making up 60-70% of the total number of estimated HIV cases in China.⁴ In 1999, heterosexual transmission accounted for only 7% of cases.

Yunnan Province has been considered one of the highest risk provinces for HIV/AIDS activity since the virus' introduction into China through Yunnan in 1989. The population of Yunnan Province is one of the most diverse in China, home to at least 26 of the 51 ethnic

minority tribal groups living in China, which represent 34% of the Province's population. The proportion of the population in the Dai tribe in Xishuangbanna Prefecture is 70.89%, with Akha and Lahu representing the second and third largest ethnic groups⁵. These ethnic minorities are generally large groups of people that span the borders of southern China, northern Thailand, Myanmar, Laos, and other parts of South, East, and Southeast Asia. Bordering Myanmar and Thailand, both of which have significant IDU and CSW populations, it seems that Yunnan Province is geographically positioned for heavy transmigrations of minority peoples across the borders who will settle into villages of similar ethnicity within China. Because of the overlap of the illegal immigrant population with CSW and IDU populations, Yunnan Province accounted for 34.8% of HIV cases in China in 1999, despite representing only 3% of the population.¹⁴



Figure 2.1 A map of cumulative HIV cases in China by province, 1985 – 2005⁷

Over the past ten years, Yunnan Province has been home to a number of HIV cases well above the national average (Fig. 2.1), and has seen a marked shift in the modes of HIV transmission. Intravenous (IV) drug use as a mode of transmission has decreased from 100% in 1989 to 42.5% in 2007. Heterosexual transmission has taken the lead, and was responsible for 47.4% of HIV cases in Yunnan in 2007.¹⁴ This shift from the predominately male IDU population to the heterosexual population is reflected well by the HIV-positive male to female ratio; at 40:1 in 1989, it decreased to 1.7:1 in 2007.¹⁴ This trend can be accounted for by the rapid infection of the CSW population where the IDU population is most heavily infected. In these areas, the CSW populations have increased in prevalence of HIV steadily, from 1.5% in some communities in 2005 to over 5% just two years later.¹⁴

CSW populations are typically transient, with HIV-naïve women entering the population, as well as naïve and HIV-positive women exiting the population. No data on incidence rate was available at the time of this paper. However, because of the rolling nature of the CSW populations, and the fact that incidence is a function of prevalence and duration of infection over time, we can infer that to maintain the prevalence rate in any given region, new infections must be occurring at the same rate as that of HIV-positive women exiting the population. For an increasing prevalence, as seen in the CSW populations of Yunnan Province, it seems that new infections must be occurring at a higher rate than the rate of HIV-positive women leaving the CSW population.

Current Trends

The problem of HIV in China, and particularly Yunnan Province, is extremely complex. In 2007, the leading cause of new HIV infections changed from IDU to heterosexual transmission. There is strong evidence that a cycle of IDUs patronizing CSWs and CSWs injecting drugs has played a critical role in turning the HIV problem into a heterosexual epidemic.¹⁷ The third major epicenter involved is the traditional heterosexual population, which can be described as ethnic minorities that may be migrant workers at least part of the year, with access to IDU and CSW populations, but who reside in small, traditional villages. One major difficulty in characterizing the HIV epidemic in Yunnan is the significant overlap of these three populations⁹. Compounding the problem is the fact that the IDU and CSW populations are illegal and undocumented, as are the majority of the immigrants from surrounding areas. Sentinel surveillance has been inaccurate at best and has relied heavily on voluntary testing at pregnancy clinics or involuntary testing in incarceration centers and drug rehabilitation

programs. This has left the majority of the at-risk population largely undetected and out of reach for most characterization and prevention efforts.³

Currently, the number of HIV/AIDS cases in China is estimated at 740,000 (450,000 to 1,000,000) by the Joint United Nations Programme on HIV/AIDS (UNAIDS), as reported by the United Nations General Assembly Special Session on HIV (UNGASS).³ Yunnan Province is estimated to have 80,000 to 100,000 of these cases. Within Yunnan, HIV-positive ethnic minorities are overrepresented. The Dai people made up 9% of new HIV cases in 2004, even though they only represented 0.3% of the total population of Yunnan¹⁶.

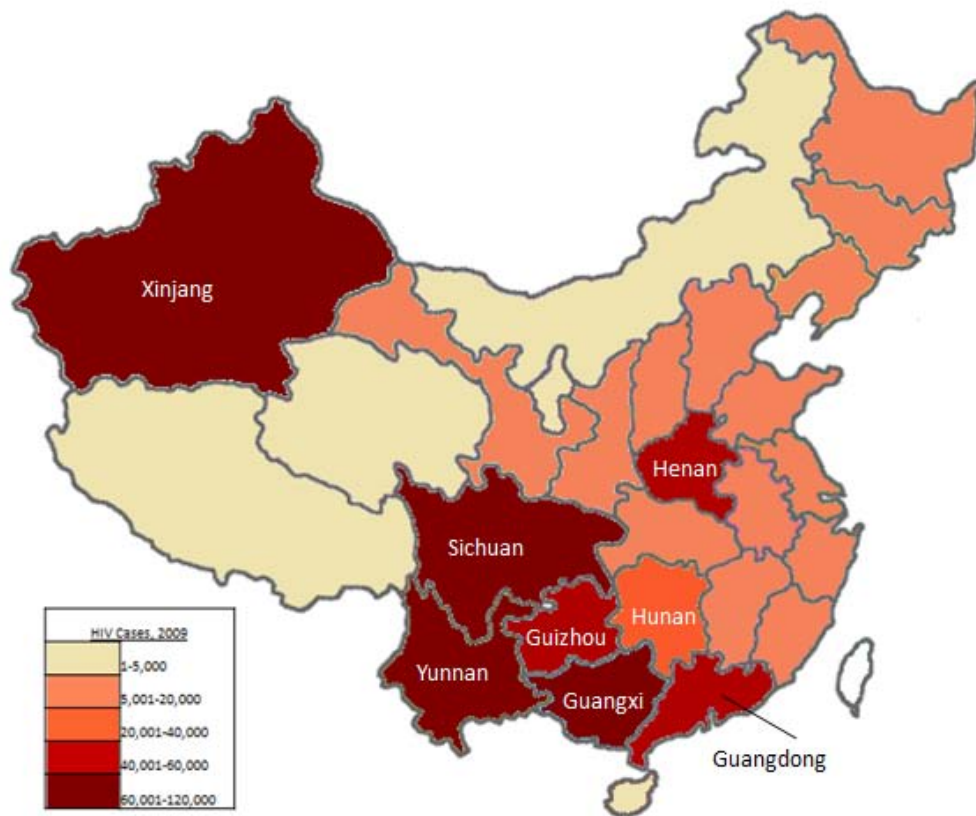


Figure 2.2 A map of HIV/AIDS cases by province in China in 2009⁸

The Chinese government has taken significant measures in surveillance and prevention of HIV/AIDS since 2001. There has been a great effort at the national level to increase awareness, education, surveillance, prevention programming, and healthcare. Again in 2004, efforts were made to increase sentinel surveillance sites across the country. Reporting of HIV cases occurs from governmental sentinel sites, hospitals, pregnancy clinics, and incarceration centers (including prison, drug rehabilitation, work camps, and other involuntary systems), and data is collected at a provincial level.¹ National condom and anti-drug campaigns are commonplace in China. However, in many areas of western and southwestern China, where more traditional populations live, stigma^a regarding HIV/AIDS is high, and the local government may be less likely to correctly implement HIV programs.⁴ The lack of needed governmental intervention in some areas has potentially played a role in allowing these localized HIV epidemics (Fig 2.2) to continue.

^a Examining the difficult issue of social stigmas relating to HIV/AIDS in the cultural context of rural China is beyond the scope of this paper. However, for the purposes of this paper, HIV/AIDS related stigma can be defined according to the Link and Phelan stigmatization model, which suggests that stigma exists when (1) individuals differentiate and label others according to a human variation, (2) prevailing cultural beliefs tie those who are labeled to adverse attributes, (3) labeled individuals are placed in distinguished groups that serve to establish a sense of disconnection between “us” and “them”, and (4) labeled individuals experience “status loss and discrimination” that leads to unequal circumstances. The predominant behavioral consequences observed in society due to stigma include fear of and devaluation of the labeled individuals.¹⁸

CHAPTER 3 - Bless China International

History and Purpose

BCI, a non-governmental organization that has been in existence since 1995, is focused on community development and public health in impoverished rural communities of ethnic minorities in Yunnan Province. With a beginning as a medical clinic in Yunnan's capital city of Kunming, it has expanded to eight sites in Yunnan and has a staff of over 200 people. The group's aim is to provide care to the disabled, the marginalized, the stigmatized, the poor, and those in need of medical help. BCI strives to fulfill its mission statement, "caring for the poor, sharing knowledge, and loving people", by understanding the diverse population of people they serve and finding creative, holistic solutions to the complex problems that affect their lives.

Among the many public health projects that BCI currently maintains is a robust HIV/AIDS surveillance and prevention project that spans five sites in many of the highest risk areas in Yunnan Province. This program includes two university student education projects, education projects for hospital staff on caring for AIDS patients, several rural village prevention and education projects, several CSW prevention and education projects, and a large-scale CSW biochemical surveillance project for HIV and sexually transmitted infections (STIs).

Organizational Structure

BCI operates on a multi-tiered structure with satellite locations dispersed throughout Yunnan Province. Administrative leadership is located at the headquarters in Kunming, with each satellite location working together under this umbrella. Each of the eight branches is tailored to fit uniquely into the social structure of the region in which they work. For example,

some branches have more emphasis on leprosy and university student, while other branches emphasize different aspects of BCI work, such as HIV/AIDS prevention, agriculture, or disabled childrens' programs. In Xishuangbanna, HIV/AIDS is a major focus of the team, with an emphasis on villages and CSWs.

The Xishuangbanna team is structured into several departments, including an administrative office, an orphanage for abandoned disabled children, a leprosy prevention and care division, and a large HIV/AIDS division. The HIV/AIDS division is further specialized into teams, each having responsibility for a particular part of the overall branch objectives. Two teams are dedicated to village HIV prevention and education, while one team is dedicated to CSW prevention and education. Each team has a leader who reports to the branch HIV director. The leadership of BCI is a combination of nationals and foreigners, all of whom have received specialized training. The teams, comprised of 8 to 15 members from the local area, are representative of the ethnic diversity of the culture, and are able to speak the local dialects and understand life in Yunnan Province. The teams are responsible for carrying out plans within the community for HIV prevention, awareness, and education, and are trained in randomized surveying and data collection.

Xishuangbanna's HIV prevention program leadership consists of the HIV Program Director for all five BCI sites involved in HIV work, Chee Hsiang Liow, B. Med., M. Med (PublicHealth), as well as Maxian, a Chinese individual with several years of experience in HIV/AIDS work. Dr. Liow, Maxian, and the team leaders are all responsible for contributing to the program design and implementation of the HIV/AIDS work at Xishuangbanna.

CHAPTER 4 – Commercial Sex Worker Project

Project Objectives

BCI's CSW project began in 2007 for the purpose of identifying effective methods of decreasing the spread of HIV and other STIs among CSWs, and ultimately decreasing the number of girls in the CSW population. There is strong evidence that the CSW population is the most potent force for the spread of HIV in Yunnan Province today.¹²

The objectives of the program are five-fold. First, it seeks to identify CSWs with STIs and offering free treatment through a local hospital, which will increase the likelihood of CSWs to seek HIV testing and treatment. Second, it seeks to select CSWs with leadership ability to become peer educators, training them in knowledge of HIV/AIDS/STI, how to persuade clients to use condoms, and how to encourage other CSWs to seek treatment for STIs. This will enhance BCI's voice in the community and increase trust between BCI and the CSW population in Xishuangbanna. Third, the program seeks to train brothel managers in HIV/AIDS/STI knowledge with the aim of helping them to encourage the CSWs to use condoms. Fourth, it aims to provide high quality condoms, which will further encourage trust between BCI and the CSWs and help to prevent the spread of HIV/STI. Finally, the program seeks to find alternative vocation options for CSWs, a longer-term strategy that BCI would like to explore. Many women enter the CSW population because of poverty. If alternative income-generation is available, many girls may be directed away from sex work and into a safe profession¹².

Project Design and Methods

The CSW project works in conjunction with the Xishuangbanna Prefecture CDC and Ministry of Health (MOH). It began in 2007 with a baseline needs assessment in which three Focus Group Discussions (FGDs) were held to determine barriers to prevent CSW HIV and STIs as well as reasons for CSWs entering the work. These responses helped in shaping a questionnaire specifically designed to identify HIV/STI vulnerabilities and obstacles to changes in HIV/STI-related risk behaviors. A list of currently employed CSWs was generated from each brothel manager and CSWs within the brothel. Quantitative and qualitative data were gathered from every brothel-based CSW, with the aim of including every CSW. Any CSW not included due to inability to contact or refusal to participate was listed as “non-respondent.” The results of the baseline survey were used to shape the training material and interventions in the region and served for comparison in the monitoring and evaluation process.¹²

The intervention strategy is quite complex, as the CSW population even within Jinghong City is not homogenous and has several sub-populations with varying needs. The BCI team has organized themselves into four groups to correspond to zones of Jinghong City in which CSWs are most prevalent. The same staff members always work in the same zones to build continuity and trust among CSWs, who are very suspicious of outsiders. The intervention goals are to increase awareness of HIV/STIs among CSWs, to maintain high condom use, and to build relationships with the CSWs.¹² The team visits a zone twice weekly from 9:30 pm to 12:00 or 1:00 am, and tries to visit as many CSWs in their environments as possible. They aim to build relationships with brothel managers as well, and free condom distribution during this time helps initial relationships to form between CSWs, managers, and BCI staff. The team is trained by

BCI in HIV/AIDS knowledge, FGD techniques, survey techniques for questionnaires, and project management and evaluation practices.

Community trainings are also part of the intervention strategy, where BCI invites all CSWs from a zone to participate in a gathering where HIV/AIDS/STI knowledge is shared. While highly effective in a few cases, the BCI team has found that CSWs prefer the training to be held in their brothels rather than at a central location. This preference has caused difficulties for the team, as the team leader reported territorial and interpersonal aggression among CSWs, as well as unwillingness from CSWs of one brothel to be present in the same setting as CSWs from another brothel, which made multiple trainings necessary within each zone. The training sessions are modeled after participatory methodologies, with CSWs actively participating in role plays and skits as a major part of the lesson. Similar sessions are held for brothel-managers apart from the CSWs, focusing on the same lessons and using similar techniques.

BCI has experimented with alternative income-generating possibilities, particularly knitting. BCI finances the initial purchase of materials, and CSWs knit scarves to be sold for income. However, this project has met with several difficulties, including a lack of demand for the product and an inability to generate enough income to sustain the individual knitters. Recently, BCI has been discussing a broader focus on the revocation of CSWs, including the possibility of opening training centers for running coffee shops or bakeries, dressing hair, and creating greeting cards. This would allow the CSWs to escape their current vocation and gain needed skills to work successfully in a safe environment.

Monitoring and evaluation are done every 6 months, using the baseline survey to determine the impact of the program. The evaluations are based on the results of surveys of randomly selected CSWs within the intervention zones using quantitative questionnaires.¹²

Chapter 5 – Village HIV/AIDS Prevention Project

Project Objectives

The village prevention project seeks to transform rural, ethnic minority villages in villager knowledge, attitudes, and practices of HIV/AIDS risks and risk-behavior. A major objective of the project is to reduce the stigma associated HIV/AIDS among villagers in order to successfully integrate HIV-positive persons within their communities, as well as encourage testing and treatment for HIV and STIs. One of the great obstacles to villagers seeking HIV testing is their risk of subjection to the personal devaluation and discrimination occurring because of the fear-based social stigma that accompanies a positive diagnosis. Reducing HIV-related stigma happens when villagers are well-educated about HIV and its risks. Another objective of the project is to increase the self-risk awareness level of individuals engaged in risk-related behaviors, as well as to reduce the amount of HIV-related risk behaviors practiced in the villages. This can only be accomplished by addressing the attitudes and underlying cultural issues driving the problem in addition to providing HIV/AIDS knowledge.¹³

Project Design and Methods

Baseline Survey

The village project began with a request from the Xishuangbanna Prefecture and Menghai County Health Bureaus to determine an effective program targeting HIV/AIDS prevention in villages. The Health Bureaus then selected the target intervention and control townships in Menghai County. The target township was selected because of its high HIV rate, and the control

township was selected based on its comparability to the target township (according to the Health Bureaus).¹⁰

A baseline needs assessment was conducted in 2006 to determine people's knowledge, attitudes, and behaviors related to HIV/AIDS/STI in the target township; to help shape the intervention and the curriculum used; and to determine the degree of comparability of the target (Mengzhe) and control (Menghun) townships. Local BCI staff were trained in proper survey techniques and were blinded to the study. The Menghai County Health Bureau's information on the village locations and populations sizes, demographics and health statistics were used for each township. The survey included qualitative components, including FGDs, causal diagram exercises, and seasonal calendars.¹⁰

FGDs were held in villages selected by the township health center as being representative of the township. FGDs included 10 to 12 village leaders and sought to gather information on values, perceptions, and behaviors of villagers that could not easily be discovered in a questionnaire format. Causal diagram exercises used a large sheet of paper and several markers in an open, public area where any person could join a discussion and help to create of a rough diagram of factors which played an important role in causing the problem of HIV in the village. Seasonal calendars were mapped out in the villages for different ethnic groups, which enabled BCI to know when the villagers were planting or harvesting, celebrating important festivals, or were most free to participate in BCI interventions.¹⁰

The baseline survey also included a questionnaire, and only respondents between the ages of 15 and 49 were surveyed. BCI staff mapped each village and assigned a number to each house. Then 14 households were selected in each village using a random number generator. Households of a different ethnicity than the majority of the village were excluded (very few households that

were selected qualified for exclusion). Upon entering the selected household, BCI staff rolled a die to determine whether the interview would be conducted with a male or female within the household.¹⁰

Sample size was calculated based on estimates of HIV-risk behaviors. Within the target township, 46 villages were randomly selected and clustered according to size, and weighted on a continuous scale for probability of selection. This method, Probability Proportional to Size (PPS) sampling, ensured larger villages were more likely to be selected as compared to smaller villages, allowing a self-weighted sample. The villages were then stratified into ethnicity: Dai (30), Akha (8), and Lahu (8). The demographics of the control township were significantly different from the target township, making random sampling unhelpful. The control villages were selected purposefully to match one-to-one with the target villages based on size and ethnicity.¹⁰

Village Interventions

The interventions performed in the target villages were created to include issues identified as significant in the baseline needs assessment. The BCI team worked in one village or several small villages over a one month period. The intervention started with building relationships in the village, gathering information on the physical and socioeconomic makeup of the village (houses, water supply, roads, forms of agriculture, income opportunities, etc.), and learning about the local seasonal calendar. The team also sought to locate 3 to 5 thought and opinion leaders in each village, as well as one woman and one youth to be representatives for their populations.¹⁰

The team then performed rapid surveys on HIV knowledge and stigma. Though these questions had already been asked during the baseline survey, there may have been a considerable time gap between the baseline and the intervention, during which time knowledge or attitudes

may have changed. Fifteen men and fifteen women in each village between the ages 15 and 49 were randomly selected to take the survey.¹⁰

The intervention included a variety of PLA techniques (skits, dancing, songs, facilitated discussion, Ten Seed Method [Appendix A]) held throughout the month which addressed topics such as HIV/AIDS knowledge, stigmas associated with HIV/AIDS, tuberculosis knowledge, STI knowledge, HIV-related risks of alcohol consumption, and peer pressure among the youth.

At the close of the intervention, the same questionnaire was again completed by 30 randomly selected villagers. This questionnaire also asked whether the respondent had heard any of the HIV information from the BCI team or not, in order to assess whether there was a difference in HIV knowledge between those who participated in the intervention and those who did not within the same village. The individuals answered questions in a confidential way (Informal Confidential Voting Interview [Appendix B]) in order to limit information bias on sensitive or high-risk behavior questions.¹⁰

At the end of all of the interventions, each village in the target and control populations was surveyed using the same method as the pre-intervention surveys. The questionnaire was modified to elucidate many of the nuanced differences in attitudes between ethnicities, namely attitudes toward achieving abstinence and marital faithfulness. The questionnaire was also repeated among the control population at the end of the interventions.¹⁰

CHAPTER 6 - Analysis and Results

Village HIV/AIDS Prevention Project

The baseline survey was analyzed using SPSS 15 and STATA 10 software for univariate and bivariate descriptive analysis. Logistic regression was also used to produce chi-square values and odds ratios for interpretation.

Demographics

The project surveyed 1,139 men ages 15-49 (50.2% of the total number of surveys), and 1,130 women between 15-49 years old (49.8% of the total number of surveys). Ethnicities reported were Dai (70.38%), Akha (18.82%), Lahu (9.92%), Han Chinese (the ethnic majority of China, 0.62%), and “Other” (0.26%).

Regarding education, 392 (17.3%) respondents reported having no education, 1,534 (67.7%) reported primary school, and 299 (14.2%) reported secondary school as their highest level of education. Only 3 individuals (0.13%) reported having received a diploma of any kind. A significant positive association exists between Han Chinese ethnicity and a higher education level (p-value=0.001). Of the 13 Han Chinese respondents, 0 reported receiving no education (Table 6.1).

Respondents Reporting on Education Level and Ethnicity						
Education Level	Ethnic Group Number (%)					
	Dai	Akha	Lahu	Han	Others	Total
None	213(13.4)	122(28.6)	56(24.9)	0	1(16.7)	392(17.3)
Primary	1139(71.4)	241(56.4)	142(63.1)	8(61.5)	4(66.7)	1534(67.7)
Secondary	212(13.3)	54(12.6)	27(12.0)	5(38.5)	1(16.7)	299(3.0)
High School	4(0.3)	3(0.7)	0	0	0	7(0.3)
Technical School	1(0.1)	0	0	0	0	1(0.0)
Diploma	1(0.1)	0	0	0	0	1(0.0)
Higher Diploma	0	2(0.5)	0	0	0	2(0.0)
Others	25(1.6)	5(1.2)	0	0	0	30(1.3)
Total	1595	427	225	13	6	2266

Table 6.1 Respondents reporting on education level and ethnicity (N=2266). Percentages reported within column.^b

With respect to alcohol consumption, 198 (9.2%) respondents reported drinking every day, 575 (26.72%) reported drinking at least once a week, 1,368 (63.57%) reported drinking less than once a week or never, and 11 (0.51%) reported that they didn't know how often they drank (Table 6.2). There was no significant association between ethnicity and alcohol consumption (p-value= 0.054).

Respondents Reporting on Alcohol Consumption and Ethnicity						
Alcohol Consumption	Ethnic Group Number (%)					
	Dai	Akha	Lahu	Han	Others	Total
Everyday	122(8.0)	44(11.3)	30(13.3)	1(8.3)	1(20.0)	198(9.2)
At least once a week	414(27.2)	112(28.7)	45(20.0)	1(8.3)	3(60.0)	575(26.7)
Less than once a week or never	976(64.2)	232(59.5)	149(66.2)	10(83.3)	1(20.0)	1368(63.6)
Don't know	8(0.5)	2(0.05)	1(0.4)	0	0	11(0.5)
Total	1520	390	225	12	5	2152

Table 6.2 Respondents reporting on alcohol consumption and ethnicity (N=2152). Percentages reported within column.^c

^b Respondents reported on their ethnicity and highest level of education. A positive association exists between the Han Chinese (the ethnic majority of China) and a higher education level (p-value=0.001).

^c Respondents reported on their ethnicity and frequency of alcohol consumption. No significant association exists between ethnicity and alcohol consumption (p-value=0.054).

HIV/AIDS Risk Behaviors

HIV/AIDS risk behaviors were identified as engaging in behaviors that put an individual at a higher risk for contracting HIV. IDU and the patronization of CSWs were risk behaviors included in this survey. Each respondent was asked to quantify the number of times he/she has had sex in exchange for money (0, 1, 2, 3, 4, 5, 10, 100, or don't know), and whether they had used injectable drugs not meant for medical treatment within the last 12 months (yes, no, or don't know). Significant, positively associated behaviors from this data included alcohol consumption, living away from the village (i.e., migrating away from family and community to find work), and education level.

Frequent alcohol consumption was positively associated with patronizing a CSW (p-value=0.001) (Table 6.3) as well as IDU (p-value=0.001) (Table 6.4).

Respondents Reporting on Alcohol Consumption and Having Patronized Commercial Sex Workers										
	Number of Commercial Sex Workers Patronized by Respondent in Past 12 Months (%)									
Alcohol Consumption	0	1	2	3	4	5	10	100	Don't Know	Total
Everyday	156 (9.0)	0	3 (30.0)	1 (14.3)	1 (50.0)	1 (100.0)	1 (50.0)	1 (100.0)	2 (18.2)	166 (9.4)
At least once a week	427 (24.7)	10 (100.0)	6 (60.0)	4 (57.2)	1 (50.0)	0	1 (50.0)	0	7 (63.6)	456 (25.7)
Less than once a week or never	1137 (65.8)	0	1 (10.0)	2 (28.6)	0	0	0	0	2 (18.2)	1142 (64.4)
Don't know	9 (0.5)	0	0	0	0	0	0	0	0	9 (0.5)
Total	1729	10	10	7	2	1	2	1	11	1773

Table 6.3 Respondents reporting on alcohol consumption and having patronized sex workers in past 12 months (N=1773). Percentages reported within column.^d

^d Respondents reported on the frequency of their alcohol consumption and the number of commercial sex workers they had patronized in the previous 12 months. Frequent alcohol consumption was positively associated with patronizing commercial sex workers (p-value=0.001)

Respondents Reporting on Alcohol Consumption and Injectable Drug Use				
	Used Injectable Drugs in Past 12 Months (%)			
Alcohol Consumption	Yes	No	Don't Know	Total
Everyday	1(100.0)	195(9.2)	2(5.7)	198(9.2)
At least once a week	0	571(27.0)	4(11.4)	575(26.7)
Less than once a week or never	0	1341(63.4)	27(77.4)	1368(63.6)
Don't know	0	9(0.4)	2(5.7)	11(0.5)
Total	1	2116	35	2152

Table 6.4 Respondents reporting on alcohol consumption and having used injectable drugs in the past 12 months (N=2152)^e

Living away from the village was positively associated with patronizing CSWs (p-value=0.003) (Table 6.5).

Respondents Reporting on Village Living and Having Patronized Commercial Sex Workers										
	Number of Sex Workers Patronized by Respondent in Past 12 Months (%)									
Living away from Village	0	1	2	3	4	5	10	100	Don't Know	Total
Yes (Living away from village)	337 (19.5)	6 (60.0)	6 (60.0)	4 (57.1)	1 (50.0)	1 (100.0)	0	1 (100.0)	3 (27.3)	359 (20.0)
No (Living in village)	1385 (79.9)	4 (40.0)	4 (40.0)	3 (42.9)	1 (50.0)	0	2 (100.0)	0	0 (72.7)	1407 (79.2)
Don't know	11 (0.6)	0	0	0	0	0	0	0	0	11 (0.6)
Total	1733	10	10	7	2	1	2	1	11	1777

Table 6.5 Respondents reporting on living location (in village or not in village) and having patronized commercial sex workers in past 12 months (N=1777). Percentages reported within column.^f

^e Respondents reported on the frequency of their alcohol consumption and whether they had used injectable (intravenous) drugs for non-medicinal purposes in the previous 12 months. Frequent alcohol consumption is positively correlated with injectable (intravenous) drug use (p-value=0.001).

^f Respondents reported on whether they lived in their village or away from their village, and the number of commercial sex workers they patronized in the previous 12 months. Living away from the village was positively associated with patronizing commercial sex workers (p-value=0.003).

Higher education levels were negatively associated with patronizing CSWs (p-value=0.001) (Table 6.6), but not with IDU.

Respondents Reporting on Education Level and Having Patronized Commercial Sex Workers										
Education Level	Number of Sex Workers Patronized by Respondent in Past 12 Months (%)									
	0	1	2	3	4	5	10	100	Don't Know	Total
None	329 (19.0)	3 (30.0)	1 (10.0)	1 (14.3)	0	0	1 (50.0)	1 (100.0)	1 (9.0)	337 (19.0)
Primary	1239 (71.5)	7 (70.0)	6 (60.0)	6 (85.7)	2 (100.0)	1 (100.0)	1 (50.0)	0	10 (90.0)	1272 (71.6)
Secondary	137 (1.0)	0	2 (20.0)	0	0	0	0	0	0	139 (7.8)
High School	1 (0.0)	0	1 (10.0)	0	0	0	0	0	0	2 (0.1)
Higher Diploma	1 (0.0)	0	0	0	0	0	0	0	0	1 (0.0)
Others	26 (0.1)	0	0	0	0	0	0	0	0	26 (1.5)
Total	1733	10	10	7	2	1	2	1	11	1777

Table 6.6 Respondents reporting on education level and having patronized commercial sex workers in past 12 months (N=1777). Percentages reported within column.^g

Opinion Differences by Gender

The post-intervention questionnaire included a set of questions that were not asked in the baseline survey. These questions asked whether or not participants believed it was possible for a man to achieve premarital abstinence, for a woman to achieve premarital abstinence, for a married man to be faithful to his wife, and for a married woman to be faithful to her husband.^h The data was analyzed using STATA10 software for logistic regression, accounting for the variability of gender, age, education level, ethnicity, and alcohol consumption, as well as for a village cluster

^g Respondents reported on their highest level of education and the number of commercial sex workers they have patronized in the previous 12 months. Lower education levels were positively associated with patronizing sex workers (p-value=0.001).

^h “Premarital abstinence” is defined as having no sex before marriage. “Marital faithfulness” is defined as having a sexual relationship only with one’s spouse.

effect, since respondents from any one village were likely to have similar responses (xtlogit). In each case in which age was a significant variable, the total age range of respondents (15 years old to 49 years old) was categorized (15-20 years, 21-30 years, 31-40 years, 41-49 years) and reallocated as separate variables to determine if the relationship was linear over the whole range. A summary of significant variables influencing the belief of the achievability of premarital abstinence and marital faithfulness for men and women can be found in Table 6.7.

Premarital Abstinence for Men: Men were 0.531 times as likely as women to believe that premarital abstinence was achievable for men (p-value=0.001, 95% CI=[0.375, 0.754]). Age was significantly associated with the belief that premarital abstinence was achievable for men (p-value=0.003). Respondents 21-39 years old did not respond differently than respondents 15-20 years old (OR=0.820, p-value=0.730, 95% CI=[0.462, 1.718]). Respondents 41-49 years old (OR=0.320, p-value=0.001, 95% CI=[0.165, 0.568]) and 45-49 years old (OR=0.521, p-value=0.001, 95% CI=[0.167, 0.608]) were less likely to believe abstinence achievable than the 20-29 year olds, indicating this relationship between age groups is not linear. Dai respondents were 1.89 times as likely as Akha to believe that premarital abstinence was achievable for men as well (p-value=0.001, 95% CI=[1.302, 2.740]). Education level and alcohol consumption were not significant indicators of belief in the achievability of premarital abstinence for men. The p-value for the variance attributed at the village level was 0.094.

Premarital Abstinence for Women: Men were 0.251 times as likely as women to believe premarital abstinence was achievable for women (p-value=0.000, 95% CI=[0.175, 0.358]). Dai respondents were 1.422 times more likely than Akha respondents to believe premarital abstinence was achievable for women (p-value=0.007, 95% CI=[1.099, 1.838]). Age,

education level, and alcohol consumption were not significant. A village cluster effect on variance was not present (p-value=0.201).

Marital Faithfulness for Men: Men were 1.64 times more likely than women to believe that marital faithfulness was achievable for men (p-value=0.027, 95% CI=[1.056, 2.549]). Age was significantly associated with the belief that marital faithfulness was achievable for men (p-value=0.001). Respondents 21-30 years old answered similarly to respondents 15-20 years old (OR= 0.580, p-value=0.074, 95% CI=[0.319, 1.054]). Respondents 31-40 years old (OR=0.306, p-value=0.001, CI=[0.165, 0.568]) and 41-49 years old (OR= 0.318, p-value=0.001, 95%CI=[0.167, 0.605]) were less likely to believe that marital faithfulness was achievable, indicating a non-linear pattern between the age groups. Respondents who consumed alcohol everyday were 0.592 times as likely as respondents drinking alcohol at least weekly or less to believe marital faithfulness was achievable for men (p-value=0.003, 95% CI=[0.422, 0.833]). Education level and ethnicity were not significant. Variance at the village level was significant (p-value= 0.008).

Marital Faithfulness for Women: Respondents who consumed alcohol daily were 0.526 times as likely as those who drank at least once a week or less to believe that marital faithfulness was achievable for women (p-value=0.004, 95%CI=[0.342, 0.810]). Gender, age, education level, and ethnicity were not significant. Variance at the village level was not significant (p-value=0.425).

Modeling for the interactions between gender and alcohol consumption, age and alcohol consumption, and ethnicity and alcohol consumption was attempted, but the model would not converge.

Belief in achievability	Significant Belief Indicators				
	Gender	Age	Education Level	Ethnicity	Alcohol Consumption
Premarital, men	X	X		X	
Premarital, women	X			X	
Marital, men	X	X			X
Marital, women					X

Table 6.7 Summary of significant belief indicators for premarital abstinence and marital faithfulness for men and women.

Intervention Outcomes

The goals of the village prevention project to increase HIV/AIDS knowledge and decrease stigmas were measured during the pre-and post-intervention survey. Each respondent was assigned a nominal score based on his or her correct and incorrect responses regarding HIV/AIDS facts. The scores were modeled in linear regression, adjusting for gender, age, education level, ethnicity, and clustering at the village level. All p-values were less than 0.001. Knowledge increased in both the target and control townships, although the increase in knowledge in the target township was significantly greater than the control township (Figure 6.1). Other sources of HIV information could account for the increase in the control township¹³. (Data and results were compiled and interpreted by BCI.)

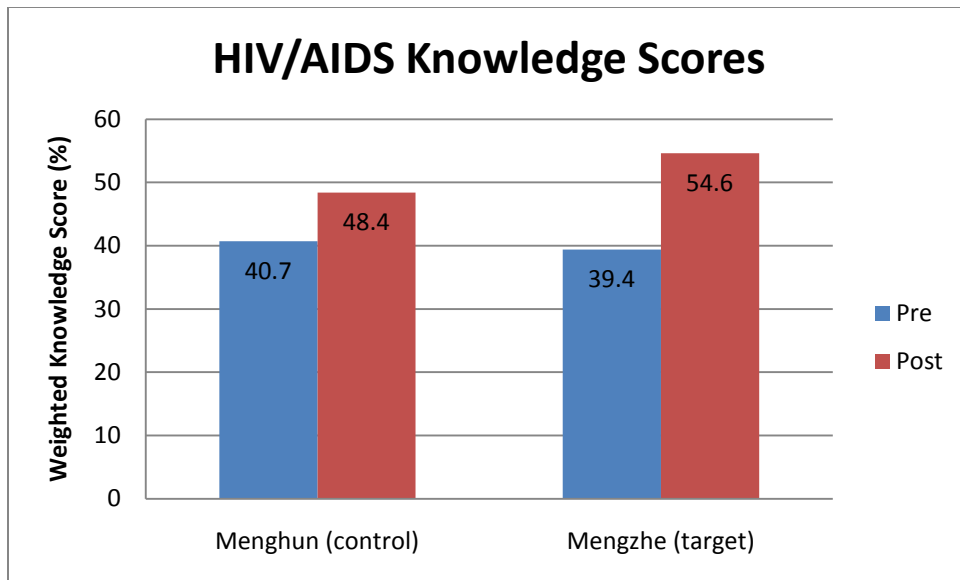


Figure 6.1 HIV/AIDS Knowledge Scores. (BCI data results).

Stigma significantly decreased only in the target township (Figure 6.2).

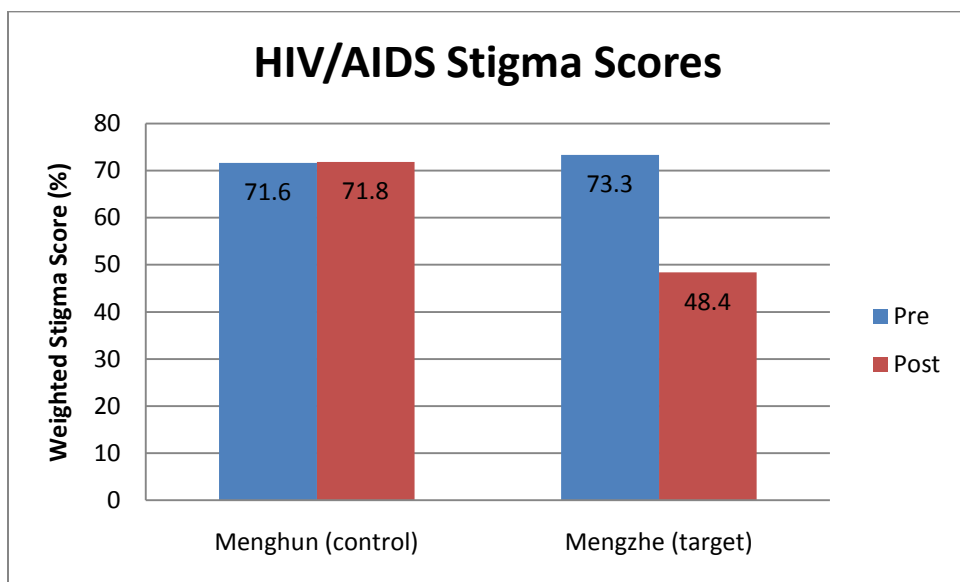


Figure 6.2 HIV/AIDS Stigma Scores (BCI data results).

CHAPTER 7 - Discussion

Village HIV/AIDS Prevention Project

The pre- and post- surveys included a mixture of qualitative and quantitative data. The advantage to this approach is that it provides a well-rounded look into the issue of HIV/AIDS in rural villages. The qualitative data (causal diagrams, FGDs, Ten Seed Method) allow a deeper understanding of the cultural context in which these issues are planted. This is useful for discovering underlying cultural themes which may be helping to drive the HIV epidemic. The qualitative data is also useful in constructing the questionnaire in order to obtain specific and relevant information regarding HIV/AIDS among ethnic minorities in the villages. Both qualitative and quantitative data is prone to volunteer bias. In this project, the qualitative data relied on willing participation of individuals in a discussion. It is possible that the subset of individuals willing to partake in this event were not representative of the population. The quantitative data, such as the questionnaire, was also likely to incur some volunteer bias. Data collected on sensitive topics such as HIV risk behaviors tends to be less accurate and reliable as some reporting bias is observed.

The opportunity for other sources of bias was likely. Misinterpretation or mistranslation of the questions was possible. The survey was originally written in Chinese and then translated into each ethnic language, and then was conducted orally by BCI staff. Though the BCI staff is trained in conducting surveys and questionnaires properly, there is opportunity for response bias. One method used to reduce the amount of response bias was the Informal Confidential Voting Interview (Appendix B).

The pre-intervention surveys were randomized as described previously, and the post-intervention surveys were completed in the same randomized way. Neither the pre- nor the post-intervention survey respondents were required to attend the intervention activities. There are advantages and disadvantages to this design as compared to a paired design in which the respondents from the pre-intervention survey were questioned again at the end of the project. The advantage is that the data can be useful to infer the amount of change on a village level, not on a personal level. Randomizing the post-intervention survey ensured that the likelihood of surveying attendants and non-attendants was proportional to the village population attendance. The post-intervention questionnaire included a portion to determine whether the respondent had heard any of BCI's intervention material or if they had gained any HIV knowledge from other sources. However, there was no question regarding previous activity in the baseline survey. The disadvantage to not asking this question is not being able to identify whether previous knowledge of the survey questions contributed as a confounder to a false elevation of HIV knowledge and also a drop in stigmas. There is also the possibility of selection bias occurring in the survey. It is plausible there is an inherent difference in the attitudes toward HIV between those who were willing to attend the intervention and those who were unwilling to attend. If the individuals willing to participate were more willing to change their attitudes about HIV than were those who were not willing to even attend the intervention, this may be interpreted as a high level of impact on HIV stigma reduction and an overestimation of the impact at the village level.

CHAPTER 8 - Conclusions

Commercial Sex Worker Project

BCI's CSW project operates amidst complex, difficult, and constantly changing conditions. Several factors work together to create an environment which is not conducive to improvement. The CSWs themselves are transient, staying in the sex industry for a relatively short time and potentially moving around within the industry. Several sub-populations of CSWs work in very different conditions and have different intervention needs. Interpersonal and intergroup dynamics among the subgroups cause major fractures within an already heterogeneous population. The local government's role in regulating the illegal sex industry is inconsistent. While little is done to control the trade on a normal basis, sporadic raids through heavily-trafficked areas force the CSWs underground and raise suspicions regarding any outside influences, including well-intended projects such as BCI's.

The bedrock of a program in this type of environment is a foundation of consistent personal relationships, and BCI does this extremely well. The CSW team aims to become personally acquainted with as many CSWs and managers as possible and is dedicated to establishing caring, steady contact with them. They choose regular hours to visit the zones where they work, and take peer educator CSWs with them who help to build contacts with new CSWs and also advocate the work that BCI is doing. Once relationships are established and trust in the CSW team is built, the doors for education, training, and help start to open. BCI has successfully held workshops and other events for the CSWs and their managers on the basis of these relationships.

The team leader of the CSW project has stated that one of the greatest turning points in their program was finding and training peer educators. The peer-educator CSWs not only act as an in-road into the large network of CSWs in Jinghong City, but also as a voice of influence among their peers. These girls can be powerful allies in helping to spread important training on condom use, self-protection, and overall empowerment for the CSW population.

The BCI team currently has three CSWs working as peer educators. Expanding the peer educator team to include several CSWs per zone, each of whom can act as an advocate for CSW rights, health and wellbeing, and can connect this diverse population, would be helpful to the overall goals of the project. This would also be an inexpensive, less time-intensive way to train others. With the proper support from BCI, including leadership training, HIV/AIDS/STI education, organizational support, and potential incentives such as free condoms, there is a possibility for change to occur from within the CSW population itself.

Village Prevention Project

The village prevention project operated on the hard work of relatively few individuals on the BCI staff. The HIV teams dedicated themselves to this project for 3 years, living in the villages for weeks at a time in order to accomplish their goals. The advantage to this structure was the consistency that was achieved by the interventions and the surveying done by the same people in all of the villages. Each village received the exact same information as every other village in the project. However, the disadvantage to this set-up was the labor-intensive nature, and because of this, a lack of reproducibility for a sustainable program throughout Yunnan Province. The ultimate goal should be to use this program's intervention to train those living in the villages to be peer educators and advocates in their own regions. Another key need for this program is follow-up. As time passes and as populations change, local knowledge regarding

HIV/AIDS will once again decrease and stigma will increase. Reinforcement of the message is important for lasting change in the villages. This is not possible at an adequate level with the current system.

The program could develop audience-specific messages on HIV knowledge and stigma. The original intervention message could be tailored to specifically address the gender differences in belief of achievability of premarital abstinence and marital faithfulness, two major components of the training on HIV risk behavior reduction. Also, the Akha seemed to have a need to address premarital abstinence as part of an intervention to help decrease the spread of HIV among their ethnicity. Age-specific messages or divisions between single and married groups could be useful. Alcohol consumption seemed to affect perceptions of female promiscuity. Further research into this observation would be beneficial in order to address underlying issues.

The results of BCI's HIV/AIDS village prevention project are comparable to similar smaller projects aiming to increase knowledge and decrease stigma among target populations in other geographical regions through information-based interventions. BCI's program had a much broader target population than other studies, and a much larger sample size, which helps to strengthen the interpretation of the impact of the program.

Hue and Kauffman used workshop trainings, one-on-one interviews and community concerts with teens (N=320) in Jamaica in an effort to reduce stigmas associated with people living with HIV/AIDS. Pre- and post-intervention questionnaires, FGDs and direct observations were used to evaluate the impact of the interventions. There was a significant increase (p-value<0.001) in the teens' favorable attitudes towards people affected by HIV/AIDS after participating in the intervention.¹⁹

Ashworth's study in 1994 in Georgia among poor black women (N=217) participating in the Women, Infants, and Children (WIC) Program enrolled the participants in one of three groups: a control group receiving the usual written material on HIV/AIDS, a group receiving a 15 minute video presentation, and a group receiving a 15 minute presentation by a black female nurse. A survey before the presentation as well as a survey immediately after the presentation and a second survey 2 months post-intervention were conducted to evaluate the impact of the programs. The control groups scored significantly lower ($p\text{-value} \leq 0.003$) in AIDS knowledge on both post-tests. Tolerance towards AIDS patients was significantly higher ($p\text{-value} \leq 0.025$) after both the video and nurse-led presentations.²⁰

The NGO's Role in Public Health

The role of NGOs in Chinese public health depends to a large degree on the local government. Maintaining a stable, working relationship with the local and regional Ministries of Health, as well as the police department, is critical to BCI's ability to continue their efforts. It is important to remember that an NGO's work does not replace or supersede the government's public health projects, regardless of the quality, magnitude, or public reception of such work. A good working relationship is maintained by developing projects which emphasize the government's strengths while working together to improve areas of vulnerability in the public health structure. BCI demonstrates this principle well in their CSW project: by utilizing the healthcare delivery system already in place to encourage HIV/STI testing, they reinforced trust in the governmental system and emphasized the positive aspects of the system such as availability of testing and low patient costs.

BCI also deferred to the government's decision regarding the locations of the townships for the target and control in the Village Prevention Project. While data showed that the control

township chosen was not a good match for the study's target township, BCI used creative problem solving and worked within the set parameters in order to respect the Xishuangbanna Health Bureau's decision. Problem solving and flexibility in all aspects of the work was a great ally to the NGO. BCI includes government input in their mid-term evaluations on all projects in order to adjust their programs as necessary. Additionally, many of BCI's projects across Yunnan Province are currently interrupted due to new registration mandates. It is necessary to design projects with the possibility of interruption in mind, as well as find new areas of work to move into during the waiting periods.

High quality work is also essential to maintain a good relationship with the government. An NGO's work should enhance the ability of the government to provide high quality services to citizens. The Chinese government recognizes that BCI is an asset to Yunnan Province and that the work that BCI produces could not be accomplished otherwise. BCI strives to preserve their high standard so that the government will be eager to work with them on future projects. With this in mind, a high level of transparency is also required of the NGO which may or may not be reciprocated by the government. Again, creative problem solving and flexibility are key issues.

Estimations of HIV in China

China began to use UNAIDS' Workbook method for estimating populations exposed to and infected with HIV in 2003. The Workbook method is a series of spreadsheets designed to estimate HIV prevalence in countries with concentrated epidemics. It uses high and low estimates for at-risk populations such as CSWs and IDUs to reflect the uncertainty of the numbers, and then imports the data into Spectrum, UNAIDS' statistical modeling software. In 2003, only 194 national sentinel sites were collecting data on HIV prevalence, and the 2003 final estimation was 840,000 (650,000 to 1,020,000) people living with HIV in China.⁶

By 2005, sentinel sites in China had expanded to 749 national and provincial sites, making data much more available, especially in HIV-concentrated areas. Using the same Workbook/Spectrum method, estimates averaged that roughly 650,000 (540,000 to 760,000) people were living with HIV. Not only was this a much lower estimate, but the variance was also decreased⁶.

In 2007, UNAIDS adjusted the Spectrum modeling software based on global HIV data¹, resulting in a 2007 estimate that 700,000 (550,000 to 850,000) people were living with HIV in China¹⁵. The software was further modified in 2009 according to new global estimates on HIV, and at the end of 2009, an estimated 740,000 (560,000 to 920,000) people were living with HIV in China².

HIV estimation methods in China are constantly evolving. Sentinel surveillance has increased, providing more data on the HIV status of the overall population. UNAIDS is actively adjusting their models to put out more precise estimates according to global trends. It is difficult to accurately estimate the population size of CSWs and IDUs in China particularly due to the underground nature of these populations and the rolling nature of the CSW population. It is difficult to discern whether the difference in the national HIV estimates from year to year is due to trend changes in the population, the impact of intervention methods, or a change in the model used. With the ever-increasing sophistication of modeling available, and the expanding effort to accurately describe the populations living with HIV/AIDS, hopefully we can continue to hone in on more accurate estimations of people living at risk and infected with HIV/AIDS.

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Appendix A - Ten Seed Method

The Ten Seed Method (Figure A.1) is a Participatory Learning in Action (PLA) technique used to gather qualitative data on the perceptions of a community. It was designed to encourage participatory discussion by illiterate people living in the villages to reduce volunteer bias among those willing to participate: usually the literate. The method begins with FGDs and causal diagrams to map out the issues being discussed. In this case, FGDs and causal diagrams are used with villagers to generate a web of causes that contribute to the HIV/AIDS epidemic among villagers in southern China. These ideas are mapped out pictorially, usually on a large sheet of paper or in the dirt. Then, each villager is given ten seeds to place on the causal map in any areas he/she chooses, in the proportions that most represent his/her opinion. The result is groups of seeds placed over various causes which represent the village's collective opinion about the causal factors of HIV. The proportions over each cause give a sense of weight to each area, and are a visual explanation of the village's perception which everyone can fully understand.¹¹



Figure A.1. An example of Ten Seed Method in use. Photo courtesy of World Vision China.

Appendix B - Informal Confidential Voting Interview

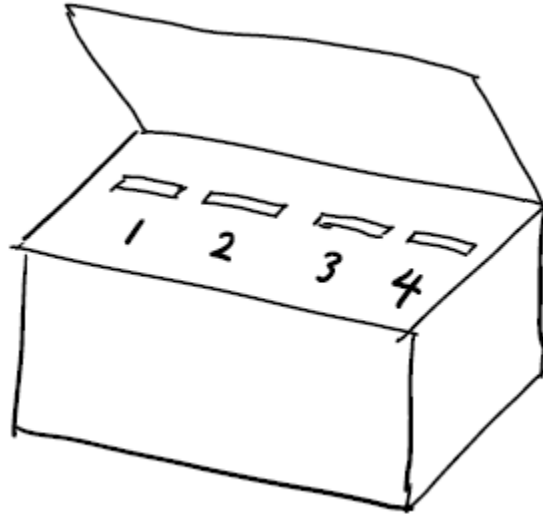


Figure A.2. A schematic of the ICVC box used in the villages for questionnaires.

The Informal Confidential Voting Interview is a tool used to decrease reporting bias while surveying individuals regarding sensitive topics. It maintains the data's integrity through a coding system which uses readily available decks of cards. The interviewer is shielded from the respondent's answer by an angled lid.

The box is divided into four inner compartments to correspond with the number of possible responses to each question asked. Thirteen questions regarding sexual behaviors are asked, and each question corresponds to a particular card, Ace through King, in a deck of playing cards. Males are given black cards, and females are given red cards. At the end of the day, each compartment can be opened and the cards can be identified by question, response, and gender of the respondent.¹⁰