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## An evaluation of hiv/aids incidence reduction and awareness-raising interventions inspired by the sonagachi project and the 100% condom use program

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AN EVALUATION OF HIV/AIDS INCIDENCE REDUCTION AND  
AWARENESS-RAISING INTERVENTIONS INSPIRED BY THE SONAGACHI  
PROJECT AND THE 100% CONDOM USE PROGRAM

by

NICOLE FERNANDEZ

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Health Sciences  
in the College of Health and Public Affairs  
and in The Burnett Honors College  
at the University of Central Florida  
Orlando, Florida

Spring 2012

Thesis Chair: Dr. Michael Rovito

# ABSTRACT

In the past thirty years, HIV/AIDS (Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome) transformed from a mysteriously lethal disease affecting limited portions of the population to a true global pandemic. Although HIV/AIDS is responsible for the deaths of approximately 30 million people worldwide, prevalence rates are now increasing significantly due to increasing survival rates. However, overall increasing incidence rates now serve as a primary concern for researchers. Avert (2011) suggests that there is a lack of behavioral interventions and prevention programs aimed at decreasing the number of newly affected individuals. This is problematic as it may create not only physical and mental stress upon patients but also a source of financial and resource stress upon service organizations.

In Asia, HIV/AIDS is primarily apparent in three high-risk groups: sex workers, men who have sex with men, and intravenous drug users (Avert, 2011). Service organizations target these high-risk groups with prevention programs in order to decrease infection rates and raise general awareness of the disease.

This study aims to evaluate two HIV/AIDS prevention program theories (the Sonagachi Project and the 100% Condom Use Program) and the studies that implement them. This proposed evaluation assesses the effectiveness of these HIV/AIDS prevention programs in reducing infection rates and raising awareness of the disease. Due to the widespread use and apparent effectiveness of the 100% Condom Use Program and The Sonagachi Project, this study aims to assess the interventions in lessening HIV infection rates and critique the methods outlined by both. This thesis also employs a systemic review of the literature by using the program theories of The 100% Condom Use Program and The Sonagachi Project.

*This thesis is dedicated to all the women  
who have contracted HIV due to  
oppression against their will.*

# ACKNOWLEDGEMENTS

To my thesis chair and mentor, Dr. Michael Rovito, I would like to express my deepest gratitude for all of your guidance. You have been invaluable to me throughout this thesis process and beyond. I would also like to thank my thesis committee, Dr. Bernardo Ramirez and Matthew Robinson for taking the time to assess my thesis and provide useful oversees.

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# BACKGROUND AND SIGNIFICANCE

## A Brief History

Acquired Immune Deficiency Syndrome (AIDS) is the world's most prominent transmittable disease, which has taken the lives of approximately 30 million people globally. AIDS is the most advanced stage of a retrovirus called Human Immunodeficiency Virus (HIV). (WHO, 2011) HIV/AIDS is present in every country, but is most prevalent among the lower to middle income population. According to the World Health Organization's Global Report (2009), there were 33.3 million people infected with HIV/AIDS worldwide with 2.6 million people defined as newly infected and 1.8 million people dying from complications of the disease. Over the last several years, among certain populations, the amount of infected people has remained stable due to an increase in the number of awareness-raising and prevention campaigns. Less people die annually from AIDS due to antiretroviral therapy thus decreasing incidence rates and increasing survival rates. However, incidence rates increase annually among populations that do not benefit from prevention programs, or have limited access to information services.

HIV/AIDS was first detected as a health impairment in New York in 1981. (Avert, 2011) Physicians began to notice several cases of an aggressive form of Kaposi's Sarcoma in homosexual male patients. At the time, Kaposi's Sarcoma was only viewed as a benign cancer that affected older people, but now it is recognized as a symptom of AIDS (Di Lorenzo, 2007). After identifying more individuals with the disease, the term Acquired Immune Deficiency Syndrome was implemented as the proper name in 1982 due to the seemingly lack of immune

systems seen in patients with an advanced version of the infection. Once discovered in United States, other countries were able to identify patients who had AIDS as well. By the end of 1986, the World Health Organization had reported 38,401 cases of AIDS in 85 countries. (Avert, 2011)

### Etiology and Transmission

HIV infects the cells of the immune system, which in result progressively impairs their bodily functions. The immune system is responsible for protecting the body from becoming diseased by terminating foreign and infectious agents. Therefore, as HIV progresses and the immune system deteriorates, an infected person becomes more susceptible to other diseases and infections.

AIDS is the final stage of HIV and is apparent when an infected individual is easily vulnerable to 20 or more opportunistic infections or related cancers and when an infected person has a T-cell count of less than 200. T-cells are white blood cells that are vital to the strength of one's immune system and the average healthy person has a T-cell count between 600 and 1500. (WHO, 2011) Only apparent in humans, HIV can be spread through sexual fluids, blood, and breast milk. Currently the most common transmission of the virus is through vaginal intercourse. Symptoms include persistent fatigue, fever, chills, night sweats, unexplained weight loss, swollen lymph nodes, blotches on skin, and Kaposi's sarcoma. (Webel, 2009)

Since discovered, HIV has been mostly transmitted as a sexually transmitted disease (STD). Unprotected sexual intercourse that can result in someone being newly infected with HIV includes vaginal, anal, and oral sex. (WHO, 2011) The second way that HIV can be transmitted is through a blood transfusion with blood already contaminated with HIV/AIDS. Currently this method of acquiring the disease is not common because donor blood is tested for HIV. However,



this was not implemented in countries until 1985 so any blood donated pre-1985 was a highly potential source of HIV. The most common way to contract HIV is via blood contact associated with intravenous drug use via needles and syringes. This method accounts for approximately 10% of new HIV cases annually. (Avert, 2011)

The final way of becoming infected occurs between a mother positive for HIV and her infant. According to the World Health Organization's Global Report (2009), there are approximately 2.5 million children living with HIV/AIDS. Infected mothers can pass HIV to their offspring during pregnancy, childbirth, or breastfeeding (Newell, 2004).

Contracting HIV through the process of mother to child transmission is currently very preventable. If taken by the HIV positive mother, antiretroviral medication can greatly reduce the risk of an infant becoming infected. (Newell, 2004) Children are still becoming infected annually because antiretroviral medication is not accessible everywhere and because HIV positive pregnant women were never tested. In 2008, only 45% of pregnant women with HIV took antiretroviral medication (WHO, 2011).

### The Geography and Epidemiology of HIV/AIDS

#### *Sub-Saharan Africa*

The most affected region on Earth is Sub-Saharan Africa, which represents 68% of the world's HIV infected population. Africa is also where HIV originated, and the leading conclusion for how the virus reached humans is through interaction with the simian population. (Avert, 2011)

According to the World Health Organization's Global Report (2009), there is an estimated 22.5 million people living with HIV in Sub-Saharan Africa including an estimated 2.3

million children. In 2009, 1.3 million people died in Sub-Saharan Africa and 1.8 million people were newly infected. Sub-Saharan Africa is the only area in the world where more women are living with HIV than men comprising nearly 60% of cases. (WHO, 2011)

In other parts of the world HIV/AIDS primarily affects the health sector. However, in Africa, its influence reaches into the education, industrial, agricultural, transport, human resources, and economic sectors. (Avert, 2011) This is due to the extremely high percentage of people infected with HIV in Sub-Saharan Africa. Decades of work and effort in order to improve the African economy have been devastated by HIV/AIDS.

The disease has also directly influenced the life expectancy in Africa, which is currently around 50 years old. The declining financial situation in Africa also makes the epidemic extremely challenging to overcome because it limits available resources. Fewer than half of the people who need antiretroviral therapy in Africa are currently receiving it. (Creese, 2002)

### *The Western Hemisphere*

In the western hemisphere, AIDS is mainly transmitted among sexual relations, anal sex, between homosexual men. There are approximately 2 million people living with HIV in Latin America and 1 million people in the United States. Even though the United States has many prevention efforts and awareness, the rate of newly infected people increases every year within the homosexual community, and 54,000 Americans were newly diagnosed with HIV in 2009. (WHO, 2011)

### *Europe*

Western and central Europe only accounts for 820,000 people living with HIV and like the United States, it is mostly apparent within the homosexual community. (WHO, 2011) Eastern

Europe and neighboring countries in Central Asia has 1.4 million people living with HIV. (WHO, 2011) This area has an extreme issue with illegal substance abuse, and is the only area where HIV is predominantly transmitted through injection drug users. (Avert, 2011)

### *Asia*

Asia is the second most populated continent with individuals infected with HIV. The World Health Organization's Global Report (2009) estimated that there are 4.1 million people living with HIV in South and South-east Asia and 770, 000 people in East Asia. HIV did not heavily affect Asia until the 1990's consequently making it the last continent to respond to the pandemic. (Ruxrungtham, 2004)

In Asia, AIDS mainly exists among people associated with certain high-risk groups, which includes sex workers and injecting drug users. (Ruxrungtham, 2004) Intervention among these high-risk groups is essentially what is needed in to reverse the AIDS epidemic in Asia. Unlike Africa, which is a region that needs a lot more efforts because AIDS affects the whole sexually active population. In East Asia, which mainly includes China, the primary high-risk group responsible for the spread of HIV is injection drug users. In South and South-east Asia, which is the region that is most heavily populated with HIV, the main high-risk group responsible for the AIDS epidemic is sex workers. (Avert, 2011) Throughout Asia, there are many programs that provide education on HIV prevention, and the number of people with AIDS has reduced throughout the continent. The Sonagachi Project and the 100% Condom Use Program are the two most successful HIV prevention programs.

## Treatment and Incidence Reduction Methods

### *Clinical Treatment*

The first antiretroviral drug was introduced to patients in 1997. Antiretroviral therapy prevents the HIV virus from increasing count and replicating in an infected person (WHO, 2011). Although there is no cure for AIDS, antiretroviral therapy helps to delay the HIV infection from progressing into AIDS. Immune cells are able to live longer, which allows HIV positive people to have more improved lives than ever before.

### *Community Outreach and Public Health*

Globally there are many challenges and major obstacles to terminating the AIDS epidemic. Countries most affected with AIDS also have shortages of health workers and limited resources available to them. Condom promotion and sex education are not supported in many countries because of cultural attitudes against pre-marital sex. (Avert, 2011) Often people living with HIV are shunned from their communities or abused by others. This prejudice against HIV discourages people from seeking treatment and getting tested. In order for the AIDS pandemic to continue improving, more efforts that both prevent new HIV infections and treat people already infected need to be created, such as The 100% Condom Use Program and The Sonagachi Project.

The 100% Condom Use Program was first established in Thailand due to increasingly HIV infection rates that kept increasing annually. The program promotes that condoms be used in all sex establishments 100% of the time and also provides access to condoms for all citizens, but particularly the most at risk populations. (Rojanapithayakorn, 2006) HIV infections have declined annually since the 100% Condom Use Program first launched in 1989, which demonstrates the success and effectiveness of the program. For example, in 1991, there was an

estimate of 143,000 new cases of HIV. In 2009, the amount of newly HIV infected people dropped to 12,000. (Rojanapithayakorn, 2006) Before the program was implemented there was an annual average of 400,000 sexually transmitted infection cases, and the numbers have dropped to less than 15,000 cases a year since 2000. (Rojanapithayakorn, 2006)

Thai health officials decided that an intervention against the spread of AIDS was needed in 1989 and Thailand was also the first country in Asia to acknowledge that it had an AIDS epidemic and respond with an intervention. (UNAIDS, 2000) Shortly after the first medical cases of AIDS appeared in Thailand in 1984, health officials feared that the popularity of sex establishments throughout the country would spread AIDS rapidly. (UNAIDS, 2011) Mandatory HIV testing and behavior studies in Thailand resulted with the conclusions that most new HIV infections came from association with commercial sex work. Sex work is illegal in Thailand, but still prevails because it is a lucrative business that can provide finances to local authorities in order to not be bothered. (Avert, 2011) Closing illegal businesses in developing countries is hard and this is especially apparent in Thailand since there are thousands of sex establishments.

Condom use has to be a necessity in all sex establishments in order to decrease the HIV infection rate substantially. Because of the illegality of sex work condom use could not be made mandatory. Thai officials then created the 100% Condom Program in order to promote the use of condoms in all sex establishments in Thailand. The program was first piloted in Ratchaburi, a province in central Thailand in November of 1989, and then it slowly expanded to other nearby provinces. (UNAIDS, 2000) The Thai National AIDS Committee and the Prime Minister of Thailand then recognized the success of the program, and in August of 1991 the 100% Condom Use program was implemented throughout Thailand. (Rojanapithayakorn, 2006) Since the

establishment of the program in Thailand, the 100% Condom program has also expanded to Cambodia, Viet Nam, China, Myanmar, Philippines, Mongolia, and Laos (WHO ROWP, 2004).

The Sonagachi project is an HIV/STD prevention program that started in Kolkata, India in 1992. (Swendeman, 2009) Kolkata is the capital of the Indian state, West Bengal, and is also notorious for its red-light areas, of which the largest is an area called Sonagachi. The program started as an intervention against the increasing HIV infection rate amongst sex workers and those associated with them in Sonagachi. (Swendeman, 2009) According to UNAID, the HIV prevalence rate among sex workers in Sonagachi has dropped from 30% in 2001 to currently being at 4%. Since first implemented, the success of the Sonagachi project has caused the program to expand to over 60 communities in West Bengal. (Swendeman, 2009) The Sonagachi Project also serves as a model for other HIV prevention programs such as the Bill and Melinda Gates Foundation, which promotes HIV prevention among high-risk groups in India. (Swendeman, 2009)

Dr. Smarajit Jana and the All India Institute of Hygiene and Public Health founded the Sonagachi project because they believed that implementing a program to prevent HIV infection among sex workers would in return improve occupational safety and occupational health in India. (Jana, 2004) The Sonagachi Project first started as an STD clinic that mostly targeted sex workers in the area, and has over time expanded into a successful HIV prevention program that involves women empowerment throughout the community. (Swendeman, 2009) Three HIV prevention programs for sex workers were started in the early 1990's and the Sonagachi Project is the only one that still exists today. (Jana, 2004) This thesis will evaluate the 100% Condom Use Program and the Sonagachi Project through a comprehensive evaluation.

# METHODOLOGY

## Overview

This study proposes to conduct a comprehensive evaluation of the Sonagachi Project and 100% Condom Use program theories and studies utilizing them in terms of effectiveness in two core areas of HIV/AIDS community intervention programming: 1) reduction of HIV/AIDS incidence rates and 2) raising awareness and knowledge among the population being served. From this evaluation, a best-practices model on community-wide HIV/AIDS interventions will be offered.

## Study Design

An exhaustive literature search will be conducted in peer-reviewed articles (published and non-published), dissertation materials/gray literature, inter-governmental organization (IGO) reports, and non-governmental organization (NGO) reports on the implementation of either program in a selected population.

An analysis instrument (See Appendix) will be devised in order to assess the selected literature and will contain: primary independent and dependent variables, success rates, population affect size, information distribution, and program theory implementation. The original assessment tool was designed to measure the effectiveness of the 100% Condom Use Program and The Sonagachi Project in terms of HIV infection rate reduction and knowledge increase. The tool measured such results, with Yes, No, or not available (n/a) as responses to a series of 0-8.

Along with assessing and analyzing the literature, summaries that document the effectiveness of the methods used in the prevention programs will also be provided. Based on the evaluation, recommendations for community-based (particular to Asia) HIV/AIDS incidence reduction and awareness-raising interventions will be presented.

Information regarding the program theory of The 100% Condom Use Program and The Sonagachi Project will allow us to assess if the studies followed them accurately. Also we will be able to evaluate the effectiveness of certain methods based on the results acquired from the studies analysis.

#### Inclusion/Exclusion Criteria

This review of the literature and evaluation of HIV/AIDS reduction interventions includes any randomized controlled trials (RCTs), quasi-experimental (QETs) trials, community-based interventions, and other research projects that utilize the program theory of the Sonagachi Project and/or 100% Condom Use Program. The search and review will include both English language and non-English language publications, if applicable. Studies will be excluded from the study if they are descriptive, cross-sectional, and/or non-intervention studies.

In order to assess the efficacy of studies utilizing the program theories of the Sonagachi Project and/or 100% Condom Use Program and produce a best methods model for HIV/AIDS incidence rate reduction and awareness-raising efforts in community-based interventions, only those studies that experimentally assessed an outcomes approach will be systematically reviewed. Due to the possible lack of available intervention research in peer-reviewed journals, gray literature will be included in the literature search.



### Search Strategy

The search strategy will use the Ovid Medline (1950 to present), CINAHL (1982 to present), PsycInfo (1806 to present), All EBM Reviews, Ovid Healthstar (1966 to present), ERIC, and Google Scholar (2011-2012) databases to locate relevant literature. The World Health Organization and UNAIDS publications will also be researched and assessed if viable literature is provided. Further, the review will conduct ancestry and gray literature searches to ensure full capture of relevant intervention research. The gray literature searches will be confined to conferences and dissertation research concerning the Sonagachi Project and/or 100% Condom Use Program. All databases except for Google Scholar and ERIC will use OVID Gateway. Google Scholar will use its own searching catalog while ERIC will employ EBSCOhost.

### Screening Procedure

Primary Screening: Screening of titles and abstracts for relevance utilizing the program theory of the Sonagachi Project and 100% Condom Use initiatives.

Secondary Screening: Screening of full articles for relevance. Articles that include descriptions about the program theory and/or applicable studies will be kept. Articles before 2000 will be excluded.

	The Sonagachi Project	The 100% Condom Use Program
Primary Screening	15	27
Secondary Screening	5	8

## Review of Methodological Quality and Production of BPM

One reviewer will analyze the literature. A panel of experts will assess the analysis and verify its findings. The panel of experts includes Dr. Michael J Rovito, a research methodologist.

Extracted data for each study will include source citation, brief content summary of intervention, sample size, key outcomes (including significant findings with  $p < 0.05$  serving as the threshold), and summation of the main findings highlighting the effectiveness of the study utilizing the program theory of the Sonagachi Project and/or 100% Condom Use Program.

The reviewer will provide a comprehensive analysis on two main variables from the selected interventions: 1) reduction of HIV/AIDS incidence rates and 2) raising awareness and knowledge among the population being served. This analysis will provide the information necessary to produce a best-practices model on conducting community-wide HIV/AIDS reduction and awareness interventions. This model will then be offered to the larger scientific community as consult on how to conduct large-scaled, community-wide HIV/AIDS reduction and awareness interventions.

# RESULTS

## Sonagachi Project Program Theory Evaluation

### *Overview*

In order to reduce rates of HIV prevalence and STD infections annually, the Sonagachi Project established an approach empowering sex workers within the red light district of Sonagachi. The components of the Project include health care, financial services, and an HIV/STD intervention program for sex workers. Swendeman (2009) outlines the prevention program goals of the Sonagachi project as: 1. To provide a frame to motivate change; 2. To increase knowledge of risk and protective factors; 3. To build cognitive, affective, and behavioral skills; 4. To reduce environmental barriers to change; and 5. To build ongoing social support to sustain change over time. The success of the Sonagachi Project ultimately is derived from the program's ability to adapt and respond to the communities needs.

### *Specific Focus: Sex Workers Education*

The Sonagachi project continues to evolve in accordance with the obstacles faced such as suppression of feminine empowerment and HIV prevention. (Jana, 2004) The stigma that is placed on sex workers in India is an ongoing struggle that the Sonagachi Project attempts to alleviate. In India, sex workers are seen as being the very bottom of the caste system and are limited to resources essential to livelihood. (Basu, 2004) This includes a limited amount of educational resources, health care, and economic opportunities that possibly could propel their departure from the sex industry (Basu, 2004). The Sonagachi project believes that the feminine empowerment approach will provide sex workers with more respect from the traditionally

discriminating Indian community. By reducing the stigma placed on them, the sex workers will benefit from resources irrespective of annual income. Prior to success, the Sonagachi Project observed a decrease in rates of HIV incidence when alleviating caste system discrimination.

A goal of the Sonagachi project is to increase literacy amongst sex workers and to provide more educational opportunities for them and their families (Jana, 2004). The Sonagachi Project realized that by providing literacy and educational opportunities, sex workers would be prone to learning more about HIV prevention and be more confident with using safe sex practices. Instituting a loan program and providing sex workers with better access to traditional banking is another example of the Sonagachi Project adapting to what is needed for sex workers to endure empowerment and ultimately decreasing HIV incidence rates (Jana, 2004).

Sex workers rarely have access to traditional banking, mostly because of Indian stigma and illiteracy. When seeking out an alternative lifestyle, the sex workers are often forced to take out high priced loans from banks or wealthy people with interest rates as high as 50% (Jana, 2004). Sex workers also seek out lending money from madams and peers, which often leaves them vulnerable to theft and debt (Swendeman, 2009). Financial issues leave the sex workers more likely to not use a condom as foregoing a condom often resulted in a tip from the client. Tempted to just receive the money the sex workers are at high risk of infection of STDs and HIV (Jana, 2009). In order to ensure sex workers were practicing safe sex more frequently, the Sonagachi Project set up a secure savings and loans department (Swendeman, 2009).

### *Staffing and Methods*

The professional staff of the Sonagachi Project negotiated a loan service with local credit unions for the sex workers. As a result, loans were established with 15% interest rates and

feasible payment arrangements (Jana, 2004). The Usha Multi-purpose Cooperative was established as a part of the Sonagachi project, and serves as its own department (Swendeman, 2009). Usha was specifically designed to help the financial limitations of sex workers, and currently runs like a business organization. Usha employs sex workers who are looking for an alternative lifestyle as field tellers. (Swendeman, 2009) Field tellers are very beneficial to the organization because they provide comfort to the sex workers and encourage them to use a savings plan, make bank deposits, provide loan information, and other banking resources. The sex workers are likely to use this valuable resource without embarrassment because the employees were once sex workers and they can relate to them. Employing sex workers is also more cost effective than having regular staff as well.

A part of the Sonagachi Project's success came from making the sex workers feel comfortable enough to use the prevention programs resources. Other HIV interventions in Sonagachi have failed primarily because sex workers were not properly drawn to the beneficial aspects of them. One program used the police to recruit the sex workers to an STD clinic in order to be tested. (Jana, 2004) This only brought fear of incarceration and physical violence and in return they avoided these services as much as possible. Another program left the sex workers humiliated and embarrassed by just providing STD testing and treatment. Sex workers avoided this program due to its lack of prevention resources, and because they would rather not be tested than suffer the shame and embarrassment. (Jana, 2004)

The staff and peer outreach workers of the Sonagachi project were trained by professionals in order to assure that everybody had respectful and non-judgmental attitudes towards their clients, which included sex workers and their families. (Jana, 2004) This was a

necessity due to India's prejudice on sex workers, and was present even in people employed with an HIV intervention program. The group training was costly, but proved to be successful since sex workers did use the resources of the health clinics. The Sonagachi project was more financially resourceful in other ways, such as employing sex workers to be peer outreach workers.

Peer outreach workers are older sex workers, who were recruited and trained by the Sonagachi project to work as employees. Although the peer outreach workers received a monthly stipend, this was more cost effective than hiring a staff to do the same tasks. (Evans, 2008) Hiring sex workers also gave them alternative forms of income, which added to less instances of unprotected sex. Having sex workers as employees also benefited the Sonagachi project because it provided a staff that could relate and bring comfort to clients. Sex workers felt console in seeking out the services of the Sonagachi project, mainly because of guidance from their peers. There was not as much discomfort and awkwardness as in comparison to the failed HIV interventions in the area. Sex workers were also given hope that their lives could improve and role models to look up to through their relationships with peer outreach workers. (Jana, 2004)

The Sonagachi project employed older sex workers, who met certain criteria to be peer outreach workers. The selection standards included being articulate, having good social skills, and having desire to empower themselves as well. (Jana, 2004) These women were able to give the Sonagachi project an accurate inside perspective, and an enhanced accessibility with sex workers and sex establishments. Peer outreach workers wore a green or white coat as their uniform, and were each given a caseload of sex workers that they attended to. (Jana, 2004) This was efficient for making sure that sex workers were receiving STD treatments, and antibiotics

for other infections. In order to stay cost effective, the peer outreach workers had to document their sex workers symptoms and treatments provided. (Jana, 2004) The health clinics were very strict with giving the sex workers medication because at often times they would sell them due to financial compensation. (Jana, 2004) Peer outreach workers were assigned to visit their sex workers weekly, in order to alleviate this dilemma by encouraging the sex workers to take their medication and report the progress of treatments.

Peer outreach workers were also employed as educators and promoted condom use. The peer outreach workers used visual flip charts in order to provide health education about AIDS, STDs, and condoms. (Evans, 2008) This was a successful method because it provided information to sex workers, even if they were illiterate. Sex workers who reported difficulty with condom use were given extra attention and additional inputs from their peer outreach workers. (Evans, 2008) This included being present during the condom negotiation of the sex worker and babu. Babus are nicknames for men that are frequent clients of sex workers, and peer outreach workers would often utilize this time in order to discuss STD treatments and the benefits of condom use with them as well. (Jana, 2004) Peer outreach workers were also responsible for educating the sex workers with all of the healthcare services accessible to them, and encouraged them to visit the clinics that were set up fairly close to sex establishments and within the red light districts. (Evans, 2008)

Sex workers were often under close watch by their madams, and therefore it was important for the Sonagachi project to set up health clinics within the red light district in order to ensure access. Sex workers are frequently beat and are at many times not allowed to travel passed a proximal distance from their sex establishment in fear that they will run away. Madams

are women in sex establishments who are in charge of the sex workers schedules and for arranging their work. (Jana, 2004) In order for the Sonagachi project to operate initially there needed to be a consensus among madams and other sex industry stakeholders.

Land owners, madams, babus or fixed clients, and police are all considered stakeholders because they are apart of the finances and business aspects of the sex industry. Landowners own the brothels and rent rooms to sex workers. (Jana, 2004) Babus often serve as the main source of support for some of the sex workers, and their business is especially needed in the sex industry as in comparison to other clients. The police financially benefit from the sex industry as well because they are often paid off by brothels in order to keep them from being shut down. (Jana, 2004) A lot of unethical practices and illegal crimes occur within the sex industry such as kidnapping girls and drug abuse.

Dr. Smarajit Jana, the founder of the Sonagachi project, devised a strategy in order for the stakeholders of the sex industry as well as government officials and local politicians to be in agreement with an HIV intervention. (Jana, 2004) Dr. Jana and his professional colleagues discussed how increasing HIV infection rates amongst sex workers could inhibit financial profits gained by the sex establishments. They explained how HIV infection could cause the red light district, Sonagachi, to have a negative reputation for being filthy and disease infested. (Jana, 2004) Fewer clients would come to the sex establishments due to the negative reputation and this would threaten the economics of the sex industry. The stakeholders were eventually in agreement with the Sonagachi project, and supported the idea of HIV prevention.

Dr. Jana and his professional support staff, which included respected and educated members of the community, also served as voices for the sex workers and their rights. They also



advocated HIV and STDs as threats to the livelihoods and health of the whole community. In 1995, peer outreach workers along with Dr. Jana and the professional staff created an organization called the Durbar Mahila Samanwaya Committee (DMSC). (Evans, 2008) DMSC's main purpose is to fight for sex worker's rights and respect. The organization developed the term sex worker as a more appropriate title and demands that sex work be considered as valid work. (Swendeman, 2009).

The Sonagachi project has also helped to incorporate sex workers into the community by creating a set of principles specifically for them. These principles have helped to redefine sex work as a form of employment and have increased ability for decision-making among sex workers. (Jana, 2004) According to the article, "The Sonagachi Project: A Sustainable Community Intervention program," the set of rights designed for the sex workers in the red light district, Sonagachi, include:

1. Sex work is work.
2. Sex workers have the right to speak out.
3. Sex workers and their children deserve an education.
4. Sex workers deserve good health.
5. Sex workers can have freedom of movement.
6. Sex workers deserve fulfillment in a sexual relationship.

The New York Times recognized the Sonagachi project in 1999 as an HIV prevention program that is credible for accomplishing important work. (Jana, 2004) This allowed the Sonagachi Project, HIV intervention, and its vital empowerment approach to be recognized all over the world as beneficial. The World Health Organization has also acknowledged the Sonagachi Project and has provided financial support for the program along with other international donors. (Jana, 2004) Economic components that also add to the duration of the

Sonagachi project include the local lending institution established for sex workers and condom sales that were eventually developed as means of profit.

The Sonagachi Project became successful enough with condom promotion, that the community viewed them as routine and vital to intercourse with sex workers. Ultimately instead of distributing condoms freely to sex workers, they were sold at a reduced rate. (Jana, 2004) The sex workers then sold the condoms to clients, and profits were generated both for the Sonagachi project and for the sex workers. Success of the Sonagachi project can also be addressed in its desire to be replicated in other red light districts. (Jana, 2004) The Sonagachi project suggests the acronym CURES, which incorporates five basic components necessary for an intervention program to succeed among sex establishments in India. CURES is according to the article, “Next Generation of Preventive Interventions” by authors Rotheram-Borus and Duan, and proceeds as:

C: cost effective  
U: useful  
R: realistic  
E: evolving  
S: sustainable

### 100% Condom Use Program Theory Evaluation

#### *Stated Goals*

The 100% Condom Use Program is an HIV intervention program that aims to reduce the rate of Human Immunodeficiency Virus (HIV) and sexually transmitted infections (STIs) among the sex worker community and clients. The main objective of the program relates to its catchy title and is recognized as follows, to promote the use of condoms 100% of the time in 100% of risky sexual relations, and in 100% of the sex entertainment establishments where the program is implemented. (WHO ROWP, 2004) The objective refers to risky sexual relations as any sexual

acts that involve the risk of exposure to bodily fluids. This in return eliminates the spread of HIV and sexually transmitted disease that can be contracted through sexual intercourse. Sex entertainment establishments refer to all places where sex is sold, negotiated, and most of the time conducted. Establishments also refer to places that are under a general supervision of a higher authority such as an owner or manager. When the program is implemented at a national level, the intervention finds it more conventional to expand this goal to everyone in the population as well. (Rojanapithayakorn, 2006)

While assuring high condom use between sex workers and their clients, the 100% Condom Use Program also infiltrates female empowerment. A goal of the intervention is to address the vulnerability that sex workers have in negotiating condom use, and give them more opportunity in protecting themselves from HIV. The program believes that male clients hold an ample amount of power, which often results in unprotected intercourse because of the discomfort of condoms. The intervention aims to relieve the power imbalance that occurs usually between sex workers and male clients by making condoms mandatory in sex establishments and by promoting condom use. Empowerment occurs when sex workers are given the opportunity to say, "No condom, No sex". (Rojanapithayakorn, 2006)

Dilemma occurs because male clients often view condoms as unacceptable while paying for sexual deeds. Therefore the 100% Condom Use Program aspires to inform men that using a condom during sexual intercourse with a sex worker is required and essential for protecting themselves against HIV and other sexually transmitted diseases. An objective of the intervention is for male clients to view condom usage while paying for sex as acceptable and expected.

Initially the 100% Condom Use Program was designed to alleviate the financial burden that was put on the health care system in Thailand from HIV and sexually transmitted diseases. Since implementation, the intervention has proven to be economically cost effective, with the successful results of lower HIV incidence rates annually. HIV epidemics can be very costly for health care systems and providing treatments for everybody infected with sexually transmitted diseases is an unaffordable cost for many countries in Asia. A goal of the 100% Condom Use Program is to increase the number of healthy non-diseased people in every area where it is implemented in order to reduce the finances supplied by health systems. (WHO WPRO, 2000)

#### *Staffing and Methods*

The 100% Condom Use Program is a public health program that involves the cooperation of local authorities and sex entertainment establishments. Local authorities include health services, the police, and local government in the area where there is a desire for the intervention. Within the area, a pilot site for the 100% Condom Use Program to initially launch out of is chosen strategically. The program begins this process by advising that the pilot site be in an area where there is a strong political commitment that includes cooperation between local political officials, law enforcement, the health sector, and the stakeholders of sex entertainment establishments. (WHO WPRO, 2000) A demonstration project is usually enforced at one or two of the suggested pilot sites that include a strong political commitment to the intervention. Then during this experimentation period, the 100% Condom Use Program usually selects the site by the following criteria: a high prevalence of HIV/STIs, low consistent condom use rates among sex workers, and high numbers of establishment-based sex workers. (Rojanapithayakorn, 2006) With these resources and conditions, the 100% Condom use program believes that the pilot site

will have a great chance of being successful, gaining recognition, and eventually be able to expand to surrounding areas.

After the pilot site is secured, meetings with the local authorities and sex establishment stakeholders are necessary before implementation. Presented in these meetings is a situation analysis of the HIV/AIDS epidemic, which includes projections of future infections, and the estimated impact of the epidemic on the health, education, and economic sectors of the area if a successful intervention is not established. Meetings are used also to educate local authorities and stakeholders on the risk of increased HIV infection and to discuss the benefits of decreased HIV rates. (WHO WPRO, 2000) A Multisectoral committee is then established, responsibilities of different sectors are delegated, and a work plan for implementation is developed. A policy statement is developed and approved by the highest local authority, who is usually a governor, secretary of health, or provincial health official. This individual usually shows their full support of the program by hosting a final meeting prior to implementation and the policy statements are posted and made accessible in all sex entertainment establishments. (WHO WPRO, 2000)

The multisectoral committee is comprised of a variety of individuals that facilitate the coordination of policy development and implementation strategies. Committees include but are not limited to community, political, business, and professional leaders; staff from government sectors such as local administrator, health, police, and public security; representatives of the sex work industry such as stakeholders and sex workers who serve as peer educators, and nongovernmental organizations that involve condom promotion and funding. (WHO ROWP, 2004) The 100% Condom Use Program has management requirements that the committee must

follow and abide by upon implementing an intervention in a certain area, which includes members meeting regularly to discuss progress and address issues.

Committee responsibilities vary upon program location but mainly consist of working directly with the sex establishments to supervise successful program implementation, make regular visits, organize outreach educational activities for sex workers, and enforce sanctions against non-cooperation. Specific tasks and duties are established for the different government sectors involved, which is why a high-level political commitment is necessary for the success of the intervention. The theory behind this is that the intervention will be taken more seriously if the following government sectors are involved and work in collaboration; the local leaders which is usually a governor or mayor's office, the health sector, and the police sector. Government officials usually do not prefer to work with sex workers because of the stigma associated with them and their status in society. Importance therefore lies in their understanding of infiltrating HIV prevention into sex work in order to better their communities.

The local leaders are essential for approval of the program, for gaining recognition, and for involving local authorities such as the police and public security. In Thailand sex work is illegal and many commercial sex establishments obey police and even pay them compensation in order to keep their businesses intact. When developing the 100% Condom Use Program originally in Thailand, enabling the police in the program was a strategy implemented in order to receive better cooperation from sex establishments. This approach has been used in every country that the intervention is currently executed. The main duty of the police is to make sure that condoms are being used in all risky sexual practices and that all establishments are following the policies of the 100% Condom Use Program responsibly. The police are also assigned to

threat permanent or temporary closure to the owners and managers of sex establishments who fail to oblige with the objectives of the intervention. (Jeffreys, 2011)

The Health sector is responsible for providing an adequate condom supply, STI services for sex workers and clients, and health education. The sector also collects data on condom use and provides evaluation data for the 100% Condom Use program. With the implementation of the intervention, finances are usually invested in the health sector in order to upgrade health clinics with additional staff, equipment, and treatment. STI services also strengthen and additional staff training is typically necessary in order to provide successful counseling and prevention education to sex workers. (Rojanapithayakorn, 2006) Depending on the countries and areas involved with the program, other individuals may be valuable as well. Government sectors that involve social welfare, culture, and registration of the entertainment industry in their work are proven to be beneficial to the program if applicable to the area. Additional health services such as family planning and Non-Government Organizations involved with condom social marketing, sex worker self-help groups, media, and donor agencies can be involved. (Rojanapithayakorn, 2006) No available resources that can help lower HIV rates should be disregarded.

Sex worker education services is an important part of the empowerment aspect of the 100% Condom Use Program. Services are provided by the health sector and by peer education programs and include ample training in negotiating condom use, education about HIV, AIDS, and STIs, and safe sex practices. (WHO ROWP, 2004) Peer educators are sex workers who work with the 100% Condom Use Program as a part of the multisectoral committee. They are usually older, articulate, supportive, and an important task for them to follow is to approach new sex

workers in establishments and provide them with information about the intervention. Peer educators distribute health education materials such as posters or visuals and encourage sex workers to fully comply with the program. (WHO ROWP, 2004)

Condom distribution is an essential part of the program, and it is vital that a supply of quality condoms be readily available for sex workers and clients. In Thailand, condoms are provided and distributed by the Ministry of Public Health for example, and all of the logistics and arrangements for condom supply should be sorted out properly before implementation. (UNAIDS, 2000) This could include social marketing programs, private vendors, international organizations, and public distribution systems.

A unique and innovative strategy of the 100% Condom Use Program is to implement the policies in all sex establishments in a large geographic area such as a town or city. This strategy is used because it gives owners and managers more of an incentive to abiding by the policies since other sex establishments are doing the same. Also the strategy restricts male clients from just simply going to another establishment that does not require condoms. This method was originally implemented in Ratchaburi in 1989 when the Regional Communicable Disease Control officials realized that requiring all establishments to use condoms could be fundamental for HIV prevention. (UNAIDS, 2000)

In Mongolia, the 100% Condom Use Program was adjusted in order to accommodate freelance sex workers into obtaining the intervention objectives. Sex workers' self help groups and peer sex workers are especially utilized in Mongolia for condom distribution, HIV/AIDS awareness, and prevention education. A strategy is also to use membership cards, also known locally as green cards because of their color, to indicate a sex workers participation in the



program. The provincial health department encourages the sex workers to receive monthly STI check-ups at local STI clinics. Condoms are often viewed as disgraceful in Mongolia, and being caught carrying them can often result in punishment and arrest. Local police officers are trained to not arrest women with membership cards for being supplied with condoms publicly.

(Rojanapithayakorn, 2006) This also gives other freelance sex workers incentive to join the program.

Success of the 100% Condom Use Program in lowering HIV incidence rates additionally came from a series of evaluation methods and techniques that provided applicable feedback. An evaluation method used by the 100% Condom Use Program in areas with a well-functioning STI service system was to interview male clients that were receiving treatment.

The program was successful because it included a series of evaluation methods that helped secure the implementation of the intervention. The 100% CUP monitors the use of condoms as one of its policies. Information obtained included possible sexual contacts, locations of most recently bought sexual services, and condom use during sexual encounters.

(Rojanapithayakorn, 2006) This was vital for evaluating the efficiency of the intervention and knowing which establishments needed better supervision by local authorities. An alternative method was also to use mystery clients in order to assess if policies were followed in the sex establishments. Clients would deliberately attempt to purchase sex without a condom and if successful the multisectoral committee could revisit the establishment and provide more resources. Tracking the number of condoms provided to establishments and matching it with the number of sex encounters between sex workers and their clients also established efficiency of the intervention. (WHO WPRO, 2000)

## Analysis of Studies

The following information stems from the systemic review of interventions using the 100% Condom Use Program and on the Sonagachi Project program theories. The aim was to determine if each study was effective in 1. reducing HIV infection rates and 2. raising Knowledge/awareness of HIV/AIDS, specifically.

### *100% Condom Use Program*

Jeffreys, Elaine and Su, Gang (2011)

#### *Overview*

The article evaluates aspects of the intervention in the People's Republic of China (PRC). The 100% Condom Use Program was implemented in four rural towns and one major industrial city. The intervention was proven to be successful and authorities are currently discussing implementing the program nationally. Since the implementation of the intervention there has been a decrease in STI incidence rates and an increase in local condom sales. These measures are significant for preventing the spread of HIV/AIDS, and also the 100% Condom Use Program encouraged local authorities to contemplate the ideas of condom promotion and more condom distribution.

#### *Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	No
2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	Yes
4. Were the authors successful in raising knowledge and awareness of HIV?	Yes
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	No
6. Did the authors present a clear outline of the program theory in the write up?	Yes
7. Did the authors follow the program theory of either project as outlined in the	Yes

original implementation of the programs?	
8. Did the authors provide HIV reduction rates?	No

Knowledge Increase	n/a
Condom Use Increase	26.7%
Sample size (n)	n/a

The condom use rate of female sex workers while engaging in commercial sex work was presented in the study as 41.4% in 2006. This was an improvement from the rate before the implementation of The 100% Condom Use Program which was 14.7% in 2001. The authors commented that there was a significant increase in knowledge awareness of HIV transmission and prevention as a result of the intervention, but they neglected to provide any data or values that confirmed an increase. HIV reduction rates and sample size were also not provided in the study.

Wong, M.L., Lubek, I. et al (2003)

*Overview*

The knowledge increase rate and condom use rate in Cambodia are assessed in this article. One Hundred and Forty sex workers were interviewed with a behavioral questionnaire in a health center in 2001, while being tested for STIs and HIV. The women were asked about consistent condom use and condom negotiation with clients and non-paying sex partners. The condom use rate from this study is not lower than the rate in Thailand, and the authors believe that this is from a lack of female empowerment and sex workers' negotiation skills.

*Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	No
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2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	Yes
4. Were the authors successful in raising knowledge and awareness of HIV?	n/a
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	Yes
6. Did the authors present a clear outline of the program theory in the write up?	No
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	No
8. Did the authors provide HIV reduction rates?	No

Knowledge Increase	n/a
Condom Use Increase	24.5%
Sample size (n)	140

The study discussed that sex workers were tested for STIs and HIV, but there are no results presented regarding these values. Results concluded that 90.7% of the sex workers were aware of the effectiveness of condoms in preventing HIV/AIDS and 77.9% reported consistent condom use while engaging in commercial sex work. This is an improvement from Cambodia reporting a condom use rate of 53.4% in 1998 among sex workers. This article did not provide any values for an increase in knowledge awareness or an increase in condom use rate.

Sopheab, Heng, Morineau, Guy et al (2008)

*Overview*

Data measuring the effectiveness of the intervention in Cambodia is analyzed in the article. Representing eight different provinces in Cambodia, 1079 sex workers participated in the study that took place in 2005. The women were interviewed and tested for several different sexually transmitted diseases including Syphilis, Chlamydia, and Gonorrhea. Incidence rates for

various sexually transmitted diseases have declined and condom use rates have increased as a result of the 100% Condom Use Program according to this study.

*Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	No
2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	n/a
4. Were the authors successful in raising knowledge and awareness of HIV?	n/a
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	Yes
6. Did the authors present a clear outline of the program theory in the write up?	No
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	No
8. Did the authors provide HIV reduction rates?	No

Knowledge Increase	n/a
Condom Use Increase	n/a
Sample size (n)	1079

Eighty percent of the female sex workers reported always using condoms with clients within a week before the study took place. STI rates were presented in the article and have decreased since the implementation of the program. There was no data regarding HIV reduction, and increase in knowledge awareness, or an increase in condom use rate presented in this article.

World Health Organization Western Pacific Region (2006)

*Overview*

The article evaluates and provides information about the implementation of the intervention in Mongolia. The article discusses unique strategies used in Mongolia in order to adapt to a different environment from Thailand and discusses the effectiveness of the program.

As evaluated by the article, condom use rates among sex workers in a province called Darkhan-Uul have increased to 87% in 2004. The rate was measured at 13% in 2001. Rates of various STIs were presented in the study and have declined since the implementation of the program.

*Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	No
2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	Yes
4. Were the authors successful in raising knowledge and awareness of HIV?	n/a
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	Yes
6. Did the authors present a clear outline of the program theory in the write up?	Yes
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	Yes
8. Did the authors provide HIV reduction rates?	No

HIV Reduction	n/a
Knowledge Increase	n/a
Condom Use Increase	74%
Sample size (n)	200

Although the methods for raising knowledge/awareness were explained and commuted on by the author, there is no data in the article regarding how this was tested and if proven to be efficient.

*The Sonagachi Project Studies' Analysis*

Basu, Ishika, Jana, Smarajit etal (2004)

*Overview*

The program theory of the Sonagachi project was examined in the article and implementing the program in one community and comparing rates to a control community where the intervention is not in affect tested the intervention. Data about condom use was collected from the two communities and compared.

*Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	Yes
2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	Yes
4. Were the authors successful in raising knowledge and awareness of HIV?	n/a
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	Yes
6. Did the authors present a clear outline of the program theory in the write up?	Yes
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	Yes
8. Did the authors provide HIV reduction rates?	No

Knowledge Increase	n/a
Condom Use Increase	39% (p value= 0.03)
Sample size (n)	100

The community with the intervention reported having a 39% increase in condom use rate during risky sex practices over a time period of 15 months. The control community only had an 11% condom use increase over the same time period. The proportion of sex workers who knew at least one HIV/AIDS prevention method was 67% for the intervention community and 41% for the control community at the beginning of the study. A significant p-value (0.002) was displayed in the article for the value of knowledge awareness and a percentage for an increase in any sort

of knowledge awareness was not included in the study. The sample size (n) was 100 for each community at the start of the study, which results in a total of 200 sex workers.

Gangopadhyay, Dwijendra Nath, Chandra, Mitra etal (2005)

*Overview*

The efficiency of the Sonagachi Project is evaluated by comparing it to an area that only encompasses the National AIDS Control Organization intervention. Randomly selected female sex workers were chosen to participate in the study and each one was tested for various sexually transmitted diseases. The women were also asked questions about safe sex practices and about HIV/STDs in order to gain a clear understanding of their knowledge and attitudes towards the subject.

*Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	Yes
2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	n/a
4. Were the authors successful in raising knowledge and awareness of HIV?	n/a
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	Yes
6. Did the authors present a clear outline of the program theory in the write up?	No
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	Yes
8. Did the authors provide HIV reduction rates?	No

Knowledge Increase	n/a
Condom Use Increase	n/a
Sample size (n)	173



The data in this study was not presented as an increase in knowledge awareness and condom use rate, instead it was portrayed as a comparison between the two communities. The study calculated knowledge awareness scores in both communities and the results concluded in being similar values. The sex workers in The Sonagachi Project had a more optimistic attitude towards HIV prevention and this was assessed with a p-value < 0.04. Authors conclude that the optimistic attitude is mostly a result of empowerment strategies. The results for the condom use rate were that 11% of the sex workers in the Sonagachi Project were more likely to use condoms consistently with clients in comparison to the National AIDS Control Intervention community.

Swendeman, Dallas, Basu, Ishika etal (2009)

*Overview*

This article evaluates the significance of The Sonagachi Project’s empowerment strategies in reducing the incidence rates of HIV/STDs. This study was based off of the previous article achieved by Basu in 2004. Sex workers were asked a series of questions about STD/HIV knowledge, finances, participation in social and political aspects of the community, and negotiation skills for condom use.

*Analysis*

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	No
2. Did the authors comment on knowledge/awareness-raising methods?	Yes
3. Were the authors successful in raising condom use rates?	Yes
4. Were the authors successful in raising knowledge and awareness of HIV?	Yes
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	Yes
6. Did the authors present a clear outline of the program theory in the write up?	Yes
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	Yes
8. Did the authors provide HIV reduction rates?	No

Knowledge Increase	21%
Condom Use Rate	44%
Sample Size (n)	110

Knowledge awareness and Condom Use rate did increase as a result of the study. The initial percentage of sex workers who knew that condoms prevent AIDS was 67% and the final percentage, assessed at the end of the study was 88%. The percentage of sex workers who used condoms consistently at the beginning of the study was 25% and the final assessment was 69%.

# DISCUSSION

## 100% Condom Use Program

Necessary implications of reducing the HIV incidence rates were evaluated, although there was no data pertaining HIV rate in sex workers within the studies. Perhaps challenges rose in obtaining accurate assessments of this data among sex workers. Authors might have not found it necessary to include HIV rates since the 100% Condom Use Program is already reputable for lowering HIV incidence rates. Although HIV reduction rates were not calculated in the studies, the 100% Condom Use Program is successful in the sense that the program *promoted the behaviors that assist in lessening HIV rates*, i.e. increasing condom use.

100% Condom use program was implemented in China and Mongolia in order to prevent HIV infection rates from reaching high levels. Mongolia is very vulnerable to increasing HIV incidence rates, and the government sought out the 100% Condom Use program as a way to alleviate a future epidemic. The 100% Condom Use program is essential as a prevention program as well, and not just solely an HIV intervention program. Countries seem to be implementing the program on a basis of raising knowledge awareness and condom use rates. All four studies tested sexually transmitted disease rates and it seems apparent that the intervention is being implemented heavily in order to prevent STI cases as well.

Significant p-values were not presented in any articles of the 100% Condom Use program. P-values determine the reliability of data and without them values can be insignificant. The authors should have strived more to include p-values in order to justify the figures presented in the articles. However, the authors did comment and explain knowledge/awareness methods in

all of the articles for the 100% Condom Use Program. A sample size was issued in every article except in the literature presented by Jeffreys. The sample size as well as how the study was conducted is information essential to every article.

All of the articles except the study presented by Sopheab reported being successful in raising condom use rates. The article by Wong did not report a condom use rate as a result of the study, but did report an increase from Cambodia's national condom use rate among sex workers in 1998. Sopheab reported 80% as the value for sex workers who always use condoms with clients, but did not compare this percentage to anything and no condom use rate increase was provided either. An increase in condom use is a value that establishes successful HIV prevention and should be included in every study.

Wong, The World Health Organization Western Pacific Region, and Sopheab did not report information about the studies being successful in raising knowledge and awareness of HIV. The article by Jeffreys reported that there was a significant increase in knowledge awareness of HIV transmission and prevention as a result of implementing the 100% Condom Use Program. However the study did not include any data to represent this significant increase. All studies should assess knowledge and awareness of HIV in order to show how successful the 100% Condom Use program's methods are in preventing HIV. This can be easily tested by a survey or questionnaire given to sex workers, before the implementation of the program and at a later date.

Jeffreys and the World Health Organization Western Pacific Region portrayed a clear outline of the program theory and the other authors neglected to provide this information in their articles. All of the articles indicated that The 100% Condom Use Program's methods and

program theory were followed in the studies, however Wong and Sopheab neglected to follow the evaluation methods. The condom use rate in these two articles were determined by surveying sex workers, and a method of the 100% Condom Use Program is to evaluate this rate by tracking the number of condoms distributed to sex workers or brothels and matching it with the number of sex encounters between sex workers and clients. Surveying the sex workers is not a reliable source because there could be misinterpretations or they could feel ashamed and provide false answers. The studies should have followed the evaluation method of the 100% Condom Use Program in order to obtain more accurate results.

### The Sonagachi Project

Consistent Condom Use rates and knowledge awareness both were displayed when combining the results of the studies analysis of the Sonagachi Project. Although HIV reduction rates were not calculated, the studies all displayed successful in preventing HIV prevalence. The reasons for why HIV reduction rates were not provided in the articles are the same as the description provided for the 100% Condom Use Program.

Significant p-values for rates pertaining information about increasing the condom use rate and raising knowledge/awareness of HIV were provided in two out of the three articles. Swendeman did not provide these significant p-values, however it was great that most of the authors for the articles of the Sonagachi Project did, as they are essential for the accuracy of the data. Sample sizes and target populations were identified in all the articles. All of the authors successfully followed the program theory of the Sonagachi project, however Gangopadhyay neglected to include a clear outline of the program theory.

All of the articles commented and explained the methods behind increasing knowledge and awareness of HIV, however only one article reported data that concluded in success of knowledge increase. The article by Swendeman reported a higher percentage in the final assessment for how many sex workers knew that condoms prevent AIDS in comparison to the initial assessment. The article by Basu did report that the percentage of sex workers who knew at least one HIV/AIDS prevention method within the intervention community was higher than the control community. However an initial value at the beginning of the study should have been provided and a rate for how much knowledge of HIV/AIDS increased should have been assessed.

Gangopadhyay was the only author who did not provide information regarding success in increasing condom use rates as a result of the Sonagachi project. The author did however report that the sex workers from the Sonagachi Project were more likely to use condoms with clients in comparison to the sex workers from the National AIDS Control Intervention community by 11%. The condom use rate should have been assessed before the implementation of the Sonagachi Project in order to successfully determine an increase and efficiency of the program theory.

### Best Methods Model

A combination of program theories from the 100% Condom Use Program and the Sonagachi Project should be used in order to assess a Best Methods Model for HIV prevention and intervention in Asia. Involving local authorities is an essential aspect of the 100% Condom Use Program and a method that should be used in all HIV prevention and intervention programs that target sex workers. Sex establishments operate closely with local authorities because in many countries they are illegal or if they are legal sex establishments usually have to abide by a

strict protocol. Financial compensation is typically provided to police in order to keep the establishments open and operating for clients, therefore stakeholders often listen and abide by their policies.

The evaluation methods provided by the 100% Condom Use Program are essential in ensuring the success and efficiency of the program. The methods are very economical and concise for determining which establishments are not thoroughly abiding by the objectives of the intervention. The main objective of The 100% Condom Use Program, which is that condoms must be worn 100% of the time in all sex establishments, should be implemented in all HIV prevention and intervention programs. The programs should strive to not rely on condom negotiation skills from sex workers due to the reduced respect that they receive from male clients as well as society.

Filling in job positions with sex workers is a cost-effective method that was originated by the Sonagachi Project. This strategy should be present in all HIV intervention programs regarding sex workers because it helps to involve more people with the program. Sex workers are also less expensive to employ as compared to professional staff. The empowerment opportunities displayed in the Sonagachi Project such as sex workers rights and affordable banking are recognized as beneficial to HIV prevention and intervention. Displaying female empowerment is essential for all sex workers in Asia.

### Conclusion/Future Directions

The 100% Condom Use Program and The Sonagachi project both portray very similar strategies and methods in their attempts to lower the HIV incidence rates among the high-risk group, sex workers. These include utilizing peer outreach workers, providing health care

services, and working directly with sex establishment stakeholders. Both intervention programs are also similar in their abilities of reducing health care costs by lowering HIV incidence rates and STI cases.

Intervention programs are necessary in order to promote condom usage and educate lower demographics on the dangers of enduring in unprotected sexual intercourse. The 100% Condom Use Program and The Sonagachi Project are examples of two interventions that proved to be successful in increasing knowledge and increasing condom promotion.

Along with HIV prevention programs, countries in Asia should focus on alleviating the stigma that sex workers and sex establishments endure. More resources should be dedicated to educating male clients on the necessity of condom use while purchasing sex in order to prevent HIV incidence rates. Program theories from The 100% Condom Use Program and The Sonagachi Project should be used in HIV intervention and prevention programs all over the world.

### Limitations

This thesis included limitations in research and in the analysis instrument. Articles were possibly missed during the research phase due to a flawed search strategy. The analysis instrument could have been more detailed, as a panel of experts limited it. Many of the studies included data about sexually transmitted disease rates, and the thesis was limited by not including this data in the studies analysis portion of the Results section.



# APPENDIX

## Analysis Instrument

1. Did the authors provide significant p values (p-values < 0.05) in rates for raising condom use or raising knowledge/awareness of HIV?	
2. Did the authors comment on knowledge/awareness-raising methods?	
3. Were the authors successful in raising condom use rates?	
4. Were the authors successful in raising knowledge and awareness of HIV?	
5. Did the authors clearly identify the target population, including size, type of population/demographics (i.e. sex workers), sampling methodologies?	
6. Did the authors present a clear outline of the program theory in the write up?	
7. Did the authors follow the program theory of either project as outlined in the original implementation of the programs?	
8. Did the authors provide HIV reduction rates?	

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