

Jeunes, Sains et Conscients
A Program and Evaluation Plan for Youth Sexual and Reproductive Health in Gabon

By

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I. INTRODUCTION

Adolescents in sub-Saharan Africa face many challenges when it comes to reproductive and sexual health (RSH). HIV/AIDS is currently the number one killer of young people in this region and rates are worse for young women than young men (Lloyd, CB, 2005). The adolescent fertility rate (women 15-19 years old) in 2010 was 111 per 1,000 women on average for sub-Saharan Africa, whereas developed countries had rates as low as 6 per 1,000 in Germany and 30 per 1,000 in the US (WorldDataBank, 2010). Gabon is a country in Central Africa that, despite its wealth is still troubled by high adolescent fertility rates and other related issues. In an analysis of DHS data that looked at 27 sub-Saharan countries, Gabon had the second highest overall adolescent fertility rates and the highest rate when looking only at the sub-group of girls who are in school (Lloyd CB, 2010). Furthermore, the rural and urban gap in Gabon on this subject is very large, with rural adolescents giving birth at a rate of 199 per 1,000 women and 83 per 1,000 in urban areas (MEASURE DHS, 2012).

The high rates of adolescent fertility reflect a problem of many adolescents in sub-Saharan Africa and in Gabon in particular having unprotected sex has many consequences. When a young woman gets pregnant and tries to deliver, her pelvic outlet may be too small for the baby's head which leads to obstructed labor. Obstructed and prolonged labor in turn can lead to infant mortality and obstetric fistula (Hofmeyr, GJ., Haws, RA., Bergstrom, S., et al, 2009). Another negative consequence of unprotected sex in young women is that often they do not want a pregnancy and for fear of rejection from their families and/or society they resort to "traditional" home abortions which can result in infection, sepsis and maternal mortality (Hofmeyr, GJ., Haws, RA., Bergstrom, S., et al, 2009). In fact, the risk of a girl in sub-Saharan Africa perishing from an unsafe abortion is 75 times more likely than for a girl living in a

developed country (Michielsen, K. Chersich, M. et al, 2010). Additional risks associated with unprotected sex include HIV and STI transmission which have been mentioned above.

Whenever adolescents engage in sexual activity without protection and they become pregnant there is also the risk of opportunities lost in education and employment advancement. Many of these girls leave school after they become mothers; this in turn can lead to lower job placement and lower income, which is the social determinant of so many other health outcomes. There is evidence that suggests that school dropout may not only be a result of unprotected sexual activity in youth, but also a cause (Lloyd CB, 2010).

The factors that affect these risks involve societal norms and access to SRH services, among others. Some of the societal norms customary in parts of sub-Saharan Africa, including Gabon, have young girls marrying at a young age, which leads to early sexual activity and early age at childbirth. Recently, the trend seems to be changing across the region and now age of first marriage is increasing, though age of first sexual encounter in unmarried girls is decreasing or in some cases staying the same (Lloyd CB, 2005). Stigmatization of unmarried youth for their use of contraceptives is another factor that affects this issue. When it comes to receiving reproductive health services, unmarried adolescents receive harsher treatment by some disapproving health care providers. Studies in Ghana and Malawi used “mystery clients” to examine why these youth were being turned down. The results showed that large numbers of these adolescents were denied services on the basis of beliefs by the providers that contraception would cause problems focusing in school, foment promiscuity, or have harmful side effects (Stanback J, Twum-Baah K, 2001; Tavrow P, Namate D, Mpemba N, 1995). This can lead to youth avoiding these encounters at all and choosing traditional contraceptive methods and practices if anything at all.

Early sexuality as a result of low-socioeconomic status can present itself in the form of favors to people in power in exchange for protection or other assistance. It has been shown that teens living in poverty are 1.7 to 4 times more likely to give birth than their wealthier counterparts in the same developing country (Gwatkins DK, Runstein S, et al, 2007). Thus poverty may perhaps be the biggest risk factor for engagement in early sexual activity in teens and when coupled with a low education level and support system the likelihood of these young women knowing and having access to contraceptive methods goes down, making them a vulnerable population.

In 2012, I participated in the Albert Schweitzer medical fellowship that takes places at the hospital by the same name in Lambarene, Gabon. This experience was enriching in many ways, one of which allowed me to see the need for action when it comes to adolescent sexual health. At the hospital I saw high volumes of cases related to complications from clandestine abortions, STI, and HIV in teenage-girls. I was also witness to some of the barriers faced by adolescents who wish to engage in safe sex practices including medical staff animosity and little social support. I met these young men and women in Lambarene, they were my neighbors and friends for the duration of my stay, and from this bond came mutual understanding and an interest in studying different ASRH interventions taking place in Sub-Saharan countries to diminish the negative consequences of unprotected sex in adolescents.

It is by taking all this into account that I decided to work on the development of a program to improve the sexual and reproductive health of youth in rural Gabon: *Jeunes, Sains et Conscients* (JSC) which translates to Young, Healthy and Conscientious.

The paper's first section presents a systematic review which helps identify and present some of the literature on curriculum development, training, evaluation techniques, and the use of community-based participatory programs that deal with adolescent reproductive health. The second section goes on to present the Jeunes, Sains et Conscientes program, which includes a context overview, rationale, the use of theories for the program as well as the goals, objectives and implementation. Third, the paper includes an evaluation plan, which encompasses a study design, the methods to be used, and specific questions for the objectives. A dissemination plan and IRB considerations are also included in the evaluation plan. The final section is a discussion of the barriers and enhancers to a successful implementation of this plan and illustrates the steps to be taken in order to make this theoretical program and evaluation plan a reality.

II. SYSTEMATIC REVIEW

Introduction

The primary purpose of this literature review is to identify programs aimed at improving youth health through the prevention of unwanted pregnancies and HIV and STI acquisition, with a particular focus in sub-Saharan Africa. By the 1990s, family planning programs had boomed in most of the developing world with the support of NGOs and conscientious governments taking steps to reduce high morbidity and mortality that come from issues caused by unprotected sexual intercourse. In spite of the developing world making strides to reduce fertility rates, HIV transmission rates, complications from teenage pregnancies and deliveries, and septic abortions; African nations still lagged behind in planning and implementing programs that advocated for safe sex practices (Caldwell, 2007) It has taken even longer for these programs to begin targeting unmarried youth who have been encouraged to practice abstinence without much success; in fact,

young females are now the fastest growing group with newly diagnosed HIV, accounting for 58% of new cases in some African countries (ICF International, 2012).

The programs that we have encountered in this review are helpful in shaping the youth reproductive health program in Gabon Jeunes, Sains et Conscientes (JSC). The supportive features of those programs include:

1. The target population is African youth (11-19).
2. The goal is to increase the number of teenagers using condoms and/or other modern methods of contraception to prevent unwanted pregnancies (and their complications) as well as reduce the number of newly transmitted HIV infections in the young.
3. Identify challenges to reaching goals and objectives.
4. Integrate community members into assessment of needs and designing and adaptation of program activities.
5. Include peer educators, "edutainment", or social marketing as program activities.
6. Improve youth-health services access.
7. Integrate government participation from the beginning of program planning.

Search Methods

Research Question: With this literature review, I am attempting to answer the following research question: Are there programs in the developing world, with a particular interest in sub-Saharan Africa, which can be helpful in the planning of a youth reproductive health program in Gabon through a community-participatory approach?

Search Strategy: Search took place on PubMed database. The programs reviewed in the literature had to meet certain criteria: (1) it was published in 2000 or after; (2) it had to include 2 or more

interventions (one of them being peer educators or teachers); (3) program interventions had to have lasted 6 months or more; (4) program setting had to be that of a community, either urban or rural; (5) and the program was located in a sub-Saharan African country preferably. Finally, the programs also had to show quantitative and/or qualitative outcomes. **Search terms:** evaluation or impact or result, AND pregnancy or STI or HIV, AND prevention or education or risk reduction or behavior AND youth or adolescent AND Africa NOT American. This search yielded 1475 publications out of which 5 programs were selected: Youth-to-Youth in Kenya (Y2Y), 100% Jeune in Cameroon, MEMA kwa Vijana in Tanzania, Stepping Stones in South Africa, and the Nyeri Youth Health Project in Kenya. Additionally, the Youth Reproductive Health (YRH) in Nepal was also selected from the references of the Y2Y program as it is considered an exemplary participatory community program.

Results

The literature review provided useful information for both the program plan and the evaluation plan and key ideas from the different programs reviewed will be integrated into the Jeunes, Sains et Conscients program.

Community-Based Participatory Approach: When community members get to be an important part of the decision-making team, having their input and feedback valued, the chances of the program being successful increases based on the added support to the goals, objectives, and activities from the community (Tautz, 2011; Mathur, Mehta and Malhotra, 2004; Erulkar AS, Ettayang LIA, et al, 2004). Their participation can also lead to unique interventions that deal with the issues at hand from a different angle, such as the concerned adults in a Kenyan Y2Y club, who suggested teaching income-generating skills to young ones since financial support seemed

to be a cause of sexual encounters for some of the youth there (Mathur, Mehta, Malhotra 2004). Having separate meeting times and forums for adolescents and adults in the community is an important avenue to engage the local citizens while maintaining confidentiality for adolescents which is important for them to express freely (Mathur, Mehta, Malhotra, 2004). Taking into account the community's opinions also includes respecting cultural preferences and implementing them into the program. In the Nyeri Youth Health Project, the community-based approach showed that members of the intervention town preferred to have ASRH information and services delivered not by a youth peer but by a trusted adult (Erulkar AS, Ettyang LIA, et al, 2004). Though the question remains as to whether young people were influenced by their parents to state that preference or not, the fact that this was culturally acceptable and that program planners sought this information forges a strong bond with the community and program. Having the community buy into the program, believing in it and wanting it to succeed can only happen if we engage them from the beginning and take into consideration their thoughts and opinions for the interventions and evaluation to take place in their towns.

Curriculum: It is important to have a curriculum that presents ASRH knowledge in an effective and culturally acceptable way. The curriculum used by the Stepping Stones program in South Africa was reviewed and selected and will be adapted to serve as the basis for the JSC program. The reason for this is its widespread use by a multitude of reproductive health programs for adolescents throughout sub-Saharan Africa and its completeness; in addition to covering the appropriate topics of ASRH, the participatory dynamics of the class make it an effective tool for teaching life skills. (Jewkes R, Nduna M, et al, 2008). This curriculum's interactive learning style consists of didactic exercises that helps build not only knowledge on the topic, but also problem-solving and critical thinking skills (Jewkes R, Nduna M, et al, 2008). Participatory learning can

take on different forms, among those are discussions and role playing, educational games, storytelling, debates. Together these serve to influence attitudes and practice and develop the skills they will need in the real world such as negotiation and refusal skills (WHO,2003).

The duration of the intervention in the case of Stepping Stones was shorter in duration overall, but more intense in its intervention , with about 50 hours of participatory learning throughout 8 weeks (Jewkes R, Nduna M, et al, 2008). In contrast the duration of another program reviewed, MEMA kwa Vijana in Tanzania, had lessons that lasted about 40minutes weekly, for 12 weeks for 3 years (Doyle AM, Ross DA, et al, 2010; MEMA kwa Vijana, 2013). Since the WHO recommends for education programs to be at least 8 hours of intense work, or 15 hours of classwork annually, then a duration closer to the one used in MEMA kwa Vijana will be considered as it is the one that works well under limited resources. Both of these programs originally aimed for young people of ages 10-13, however, Stepping Stones ended up recruiting participants between the ages of 15-26 because they were the ones attending schools, and this was a school-based program primarily (Jewkes R, Nduna M, et al, 2008). Since it is preferred that people are exposed to the intervention before the risky behavior begins, efforts will be made to recruit people of the age ranges of 10-13 specifically, but we will also be inclusive to all that are within the ages of 10-19 (WHO, 2003).

Finally, the decision of being all inclusive has moved us towards having a school-based site for learning, as well as a community-based site. In this way we seek to reduce the selection bias seen in other programs that ended up having participants who go to school only, a group which may already be privileged by continuing to be in school at that age (Jewkes R, Nduna M, et al, 2008; Doyle AM, Ross DA, et al, 2010). To compensate those young ones who work and will forego time at work or at home assisting with house chores, a small sum of money could be

considered to be given to those who assist the lessons. However, this would depend on funds available and whether the stakeholders involved agreed upon this. Otherwise, light refreshments and beverages could be provided to provide a supportive atmosphere.

Community-interventions: In addition to the lessons mentioned above, the success of the program will depend on whether the community takes ownership of it, and whether mostly everyone, adults included, believe the principles and activities behind it. This is why we would like to provide the community the opportunity to decide which activities to undertake to promote healthy sexual behaviors. The income generating activities were mentioned earlier, as something that originated from members of the community, these included giving them microloans to start up small convenience stores or renting a plot of land on which the participants learned to farm and sell produce in the markets (Mathur, Mehta and Malhotra, 2004). Though this idea will be brought up to the initial meeting with the stakeholders, in the case of Gabon, these activities may not be necessary as they are in a comfortable economic position; however, participation in sports, dance and drama are community events that can attract many and spread the message and acceptance of safe sex practices for adolescents (Plautz and Meekers 2007; MEMA kwa Vijana, 2013; Tautz, 2011).

Recruitment, Training and Retention of Program Staff: When thinking about the recruitment of staff, important aspects were brought to light from the literature review including the paid versus volunteer nature of the staff, the use of peers versus trusted adults to deliver messages of reproductive health to teenagers, and the need for a liaison to the established medical system and services in the area. Though many programs utilize responsible peers to deliver this type of information, the Nyeri Youth Health Project took a different approach and used adults to deliver the message as a result of community consensus that it would be the culturally appropriate method

(Erulkar AS, Ettyang LIA, et al, 2004). Nevertheless, peer education provides the added benefit of creating comradery and provides an equal relationship where the participant can feel free to ask questions without fear of upsetting an adult or the social norms conventional amongst the older adults (Youth-to-Youth, 2013). Because of this, we believe that selected peers would be the best to provide peer education and support for the JSC program. When it comes to the decision of whether to have paid or volunteer staff, we have seen that the adults in the Nyeri Health Project had a high dropout rate until they started to be compensated for their time (Erulkar AS, Ettyang LIA, et al, 2004). That problem has not been present to the same degree in the volunteer peers; instead, in ongoing programs, it has been seen that the peers who eventually “graduate” from the program replace the prior peers who are moving onto advocacy at a larger scale thus there is a revitalization of peer educators at all times (Youth-to-Youth, 2013; Tautz, 2011).

It would be important though to have an overseeing person who could be on the ground at all times to provide coordination amongst incoming and outgoing peers, as well as to provide logistic support. This person would hold the title of program coordinator and would be part of a salaried staff. For more detailed information in this please see budget on Appendix D. In addition to the need for a logistic support person, we also have seen the need for someone to coordinate clinical efforts. For this, a nurse specialist would be recruited and function as paid staff for our program in addition to maintaining her job as a nurse. Having this support system in place will help not only with the organization of the program, but also will make it more pleasant for the volunteer peer staff and will help with staff retention (Paul, Smith, Whitford, O'Kelly, & O'Dowd, 2007).

Training of peer educators would be a combination of MEMA kwa Vijana and Stepping Stones models, last for 10 days and ending with didactic practices plus one skills examination (role playing) and another one checking for knowledge only (MEMA kwa Vijana, 2013; Jewkes R, Nduna M, et al, 2008).

Program Evaluation: A few takeaway points from the programs reviewed are: whenever possible, collect baseline data; don't forget to use focus groups and other underutilized qualitative methods; and, consider biological measures as a gold standard and know some good alternatives (Tautz, 2011; Plautz and Meekers, 2007; Jewkes R, Nduna M, et al, 2008; Doyle AM, Ross DA, et al, 2010). On the case of the biological measures to check for the impact a program has in adolescent reproductive health, the two programs used HIV and HSV-2 markers. An important finding shared by both programs is the no significant difference in HIV prevalence in both the control and intervention group (Jewkes R, Nduna M, et al, 2008; Doyle AM, Ross DA, et al, 2010). MEMA kwa Vijana also had no difference in HSV-2 prevalence among groups, this, in spite of having shown significant changes and improvements in knowledge, attitudes and self-reported behaviors. On the other side, Stepping Stones did find a significant improvement in the prevalence rates of HSV-2 in the intervention group compared to the control group.

A review of the effectiveness of ASRH interventions in developing countries, done in 2003 by Drs. Speizer, Magnani, and Colvin also found that though knowledge and attitudes seemed to change positively following ASRH interventions, actual behaviors tended to remain steady (Speizer IS, Magnani RJ, Colvin CE, 2003). What this and the results from the programs mentioned indicates is that measuring self-reported attitudes are not enough to get a true depiction of the program's impact. Because collecting and testing for HIV and HSV-2 in participants would be both an ethical and a resource requirement challenge, an alternative to be

utilized in JSC is reviewing clinical documents. The program evaluator will go over the in-patient and outpatient data of the hospitals and health centers in the area of Lambarene (intervention site) and control, checking for STI and HIV diagnosis in the age group relevant to us. This will serve to calculate the incidence in the intervention and control sites for the duration of the program and ongoing for a total of 5 years in the desired age group. Though this will not take into consideration those people who do not seek out medical treatment, given the similarities in access to health facilities and social norms in both sites, the numbers should be similar in both towns.

III. PROGRAM PLAN

Overview

Jeunes, Sains et Conscients is a theoretical program at the moment. The plan presented is being done with the hope to achieve funding and implementation in the near future. The groundwork being done is expected to facilitate both of those. The program plan includes having JSC established utilizing a community-based participatory approach. As demonstrated in the literature reviewed, this approach increases the chance of success by creating a sense of community ownership of the program. The primary goal will be that of improving the physical and the mental well-being of Gabonese youth, ages 10 to 19, through the reduction of unwanted teenage pregnancy and STI, and HIV. The program plan is designed to have as demonstration site Lambarene, a rural area of Gabon, as it would be easier to implement there because of the connections already present with clinical and non-clinical staff. In time, we would expect to see a scale-up of the program to national level, with the support of the ministry of health.

Context for JSC Program in Gabon

There are several enablers and challenges to setting up a SRH program for Gabonese adolescents. This section will describe them in detail.

Enablers: Financial, Political and Structural Stability

Gabon is an oil-rich country, and as such it is one of sub-Saharan Africa's wealthiest countries with a per capita income of \$16,300 which places it 88th in the world per capita income (CIA, 2013). Though the wealth is not equally distributed, the state of health of the citizenry at large is good with health indicators such as a maternal mortality rate of 230 deaths per 100,000 live births and infant mortality rate of 49 deaths per 1,000 live births (CIA, 2013; Clifton, D. Kaneda, T. Ashford, L. 2009). The financial resources available in Gabon make it favorable to consider the creation, and most importantly, the sustainability of a youth sexual and reproductive health program in this nation, independent of foreign aid.

The political atmosphere in Gabon is that of a young republic which is trying to purge itself of the corruption which characterized the thirty year presidency of Omar Bongo. The current president, Mr. Ali Ben Bongo Ondimba, has pledged to improve the lives of those in the "Gabon profond" that part of the country away from the major privileged cities (The Gabonese Republic, 2013). In fact, this government has already taken important steps with the delivery of nationwide health insurance coverage to all low-income families, including free and more convenient access to better trained midwives (The Gabonese Republic, 2013). Given the fact that rural youth is at a greater disadvantage, the program *Jeunes, Sains et Conscients* could harness support of governmental entities that seek to help reduce rural hardships.

There is also a well-structured health system in Gabon that has public hospitals in key areas of the country and community health centers spread throughout small villages (WHO, Gabonese Republic, 2009). Though the infrastructure is set up so that people in even the smallest villages have access to health care, some of these health centers are actually closed due to a lack of staff or shortages in medications and equipment (WHO, Gabonese Republic, 2009). However, these deficiencies could be alleviated if the government continues its comprehensive reform of health care and increases rural healthcare worker recruitment (WHO, Gabonese Republic, 2009). In addition, these remote centers could be important in allowing access of services provided by our program in addition to the primary care normally provided there.

Challenges: Providers Attitudes, Policy, and the Church

It was mentioned earlier that poverty is strongly linked with unprotected sexual encounters in youth and with subsequent pregnancy, HIV, and STI transmission. Furthermore, Gabonese youth come across other barriers that inhibit access and discourage the usage of modern contraception such as historical pro-natalist policies, health care providers' negative attitudes and the Catholic Church. Providers in rural areas of Gabon largely consists of males who do not readily discuss contraception with young unmarried females. Biases against youth SRH are shared throughout sub-Saharan Africa.

During his presidency, Omar Bongo mandated a pro-natality policy that prohibited the use of oral contraceptives (OCPs) in Gabon (Chesa-Moutandou S, Tiemeni Wantou S, 2001). This may have had a large influence in the negative way in which some women and men view modern contraceptives even to this day. In 1995, a study by a Gabonese team showed that 20% of those using contraceptives in the capital were between the ages of 13 and 18, but of these

young women, the vast majority used traditional methods (Chesa-Moutandou S, Tiemeni Wantou S, 2001). More recent data shows that utilization of contraceptive methods remains low among young women (15-19 years old) with only 25% of them using some (either traditional or modern) form of contraception. The good news is that now the preferred method for these young women are condoms and OCPs (16%) and a fewer number (9%) chooses the traditional contraceptive methods (MEASURE DHS, 2012).

The concern over young people accessing contraceptives can be controversial in a country with a Christian population of 55-75% which has been known in the country for advocating for abstinence rather than modern contraceptives (CIA, 2013; MEASURE DHS, 2012). The church and other conservative entities have advocated for many years for abstinence as the solution to the problem. Even Western NGOs that develop SRH programs for African youth focus a large part of their efforts on encouraging abstinence. Studies show that though the youth understanding of the consequences of unprotected sex may be better after exposure of those programs, their behavior does not tend to change (Lloyd CB, 2010). Thus the best route in this case may be to find common ground with the church in a strategy that does not involve abstinence, but rather some other intervention that we know is effective. Studies have shown that encouraging and facilitating young girls to stay in school is an effective way to prevent early pregnancy and this is something that could have the support of the church and other major stakeholders (Lloyd CB, 2010).

Behavioral Theory for Program Plan

In order to design the JSC program there are two views that need to be taken into account: that of the community where the program will take place, and that of the individuals

who will participate in the program. Here we explore how different behavior theories fit the needs of our program planning.

Community Organization

When designing a program in a community one must be aware that even if the target population is a particular subgroup of the community, in this case Gabonese youth in rural communities, the community at large is still affected by the program in place. Thus, the program planners ought to seek a partnership and collaboration with community members at large. The community organization theory emphasizes that the program should be guided by the people in the communities rather than outsiders. It emphasizes community empowerment and ownership of the issue at hand and selection of the interventions that they believe are important when addressing the problem (Rimer BK, Glanz K, 2005). This theory is appropriate in the development of JSC because the specifics of the program need to be left to the people that will be affected most by it. Whether to focus for example on sexual education for youth, school retention for girls, contraceptive use, or some combination of the above will be decided by members of the community, making sure that all stakeholders have a say in this and other important program resolutions. Having the support of the community members and joining their skills and experience with that of the program planners ought to ultimately enhance the program's effectiveness.

The Health Belief Model

When considering changes that will need to be made by individuals it is important to understand what the obstacles are so that we may create a way to tackle them. The Health Belief Model provides an insight into perceptions of susceptibility to the issue common in teenagers

such as: “I can’t get pregnant/HIV/ an STI, on my first/few times having unprotected sex”. This model also seeks to identify the cues to action for youth and how to increase confidence and overcome perceived barriers so that they begin and continue the recommended behavior (Janz NK, Becker MH, 1984; Rimer BK, Glanz K, 2005). A study in Ghana demonstrated that the factors described in the health belief model are strong indicators of whether a young person uses a condom regularly or not (Adih WK, Alexander CS, 1999). Therefore, understanding this information can also be helpful in setting up awareness campaigns to debunk myths and state facts about risks of unprotected sex.

Communication Theory

Determining how to best reach and communicate with our target population is very important in developing an effective program plan. Communication theory explains not only about the different media that can be used but also about the framing of the “product” or intervention (Rimer BK, Glanz K, 2005). The use of “*edutainment*” (an education and entertainment mixture) has been shown to be a powerful way to get messages across to youth in South Africa through the Soul City program. It consists of a radio “soap opera” that incentivizes adolescents both to try to abstain but also to use contraceptives methods when engaging in sexual activity; it also aims to reduce intimate partner violence amongst youth (Health and Development Africa, 2007). This program is innovative and is having a positive impact on health outcomes for several years now (Health and Development Africa, 2007). JSC could similarly utilize media to raise awareness about the problems generated by unprotected sex in youth, to press for policy changes that would implement factual and comprehensive sexual education courses in all schools, and to promote and advocate easier condom and contraceptive pill access for teenagers.

Goals and Objectives for JSC

Goal

The *Jeunes, Sains et Conscients* program has as a principal goal that of improving the physical and mental well-being of Gabonese youth, ages 10 to 19, through the reduction of unwanted teenage pregnancy and STI, and HIV.

Short-term objectives:

1. By month 2, program manager to meet with stakeholders of pilot town Lambarene to ask for input and collaboration for the program's activities. **Activities:** Planning team is to meet with members of the community (adolescents and adults) to get input on specific needs regarding adolescent sexual and reproductive health (ASRH). A set of activities (peer education, edutainment, income generating activities, improve access to ASRH services, train and partner with youth-friendly providers) will be brought forth by program planners and we will suggest the community to see if any of those could be useful if adapted to fit the local needs.
2. By month 3, recruitment and training of staff. **Activities:** Recruitment of 4 peer educators, 1 program coordinator, and 1 program nurse who will serve as clinical back-up person. Training will likely include using and adapting the resources from the program Stepping Stones, which we identified in our literature review. Also, as a team we will study the health belief model with respect to ASRH and we will look for solutions to potential barriers faced by adolescents who want to use birth control.
3. By month 4, create a partnership between local health centers' staff and JSC program staff to increase condom distribution to youth by 20%. **Activities:** Program coordinators

to maintain condom stock at health centers (and potentially also oral contraceptives depending on community consensus). Peer educators to team with center workers to give joint talks about youth reproductive health once every two months. Talks are to normalize and promote condom and other contraceptives use in sexually active teenagers, and to focus on the benefits of safe sex practices.

4. By month 12, increase regular condom use amongst sexually active teenagers who live in Lambarene so that it is 30% more than that of a neighboring control town in the Moyen-Ogooue region. **Activities:** Peer educators to give talks to all kids in schools ages 11 to 19 in the Lambarene area. They will also have “field talks” at soccer matches and dance team meetings. They will also host live performances of school adolescents promoting prevention of teenage pregnancy and/or a contest to reward the most creative group and the best performance.

Long-term objectives:

1. By year 5, see an adolescent fertility rate (AFR) of less than 25 per 1000 in the Lambarene area.
2. By year 5, see a 30% decline in number of complications in adolescent abortions.
3. By year 5, see a 20% decrease in STI in the Lambarene youth.
4. By year 5, see a 10% decrease in HIV contraction in girls in the Lambarene region.
5. By year 5, see a 10% increase in secondary school graduation for Lambarene girls.
6. By year 5, peer educators will retain 70% of original information. **Activities:** They will receive optional-yearly review sessions and mandatory quiz to assess their retention of information. Those who get below a 70% will be offered re-training.

Program Implementation

The *Jeunes, Sains et Conscients* (JSC) program is expected to start as a demonstration program in the rural area of west-central Gabon, in the rural town of Lambarene. The primary focus of this program is to reduce the number of unwanted teenage pregnancies and their negative consequences as well as the STI and HIV rate in Gabonese youth. The activities that will be used consist of meeting with stakeholders in order to perform a needs-assessment on the subject of adolescent reproductive health; recruiting and training of staff members; collaborating with local health officers; and providing peer education and support in ASRH in schools and in the community.

Needs-assessment meeting with stakeholders

This activity should achieve the first short-term objective of obtaining collaboration and the community leaders' buy-in of the program by month 2. The key members of Lambarene to include in this meeting are the mayor, both of the secondary school directors, the HIV center coordinator, physicians that work with adolescents at the 3 local hospitals, the hospital directors, the head nurse of the Protection Maternelle et Infantile (PMI) and 4 adolescents who can represent their peers. At this meeting, the project staff will present data on the issue at hand and will present the group with series of activities that have had some success in other countries and ask for their thoughts on adapting and implementing these to meet Gabon's particular needs.

Recruitment and training of staff

To meet the second short-term objective the program planners will recruit and then train staff members by month 3. For the recruitment of peer educators we will look at suggestions from the community about potential youth that can serve the position. Leadership skills, caring

personality and a desire to learn and transfer knowledge to others are a must. There will be 4 peer educators chosen from the Lambarene community with an age range of 13-17, with equal gender distribution. The peer educators will be part of our volunteer staff. One program coordinator will also be recruited, this person will be a paid staff member who is enthusiastic about our mission and has experience working with youth groups. Nurses in local hospitals and *dispensaires* will be provided with youth-friendly reproductive services training if they voluntarily sign-up. In collaboration with hospital directors, we will ask to recruit 1 of the nurses who attends the course as our clinical back-up charge nurse. She will meet with peer educators once a month to answer any clinical questions they may have. The peer educators, the program coordinator and the program planners will all together revise and adapt the WHO's Guide to Family Planning for Community Health Workers and their Clients (2012). The adaptation will be made so that it is more specific to rural Gabon. The revised version and the original will then be sent to stakeholders, particularly local clinicians, to get feedback. The training will include an understanding of the different contraceptive methods, their mechanism of action as well as their local availability. It will also include motivational interviewing skills among other behavior techniques.

Collaboration with local health officers

Nurses in the hospitals and in the local health centers will be encouraged to participate in youth-friendly reproductive health classes as mentioned earlier. Additionally, the program coordinator will safeguard the continuous stock of barrier methods at all local health facilities and will coordinate the distribution with nurses in charge of distribution at those posts. Teen-friendly practices will be encouraged at these sites especially with regards to privacy and easy-access of these services for teens. If oral contraceptives are allowed to be distributed by nurses

and/or peer educators then program coordinator will also help maintain a stock of these. Nurses will also take care of physician referral for long-term contraceptive methods. Peer educators will work in conjunction with PMI nurses to incorporate youth reproductive health topics in their information talks to women in the community emphasizing importance of barrier method to protect against both unwanted pregnancies and STI/HIV. This accomplishes short-term objective three.

Peer education

Peer educators will give informational talks to school-aged kids between the ages of 11 and 19 in a school setting and in a community setting. The school-based talks will be convened to take place either during school or after-school depending on the consensus at the first stakeholders' meeting. The peer educators will also hold talks outside of school; these will likely take place at youth soccer matches and dance team meet-ups. The talks will cover the following topics: proper use, risks and benefits of contraceptive methods commonly used by teenagers; possible complications of pregnancy at a young age for both the mothers and fetus; facts about STI and HIV. Moreover, peer educators will be encouraged to organize local edutainment events that will reward best performance (singing, dancing, acting, or other) by a youth group that promotes prevention of teenage pregnancy and STI acquisition. The program coordinator will help get local sponsors for these events. This will help achieve short-term goal number four.

IV. EVALUATION PLAN

Evaluation Rationale

It is important for the *Jeunes, Sains et Conscientes* program to be evaluated since it will allow us to know the direction the program needs to go in the future: whether there are modifications to be made and whether certain components need to be all together stopped or

expanded upon. The program evaluation lends an understanding to the efficiency in reaching the short- and long-term objectives. With this evaluation we will be able to carry on quality improvement efforts internally as well as accountability towards the granting foundation, the community members, and other stakeholders such as hospital administrators and physicians (Bamberger M., 2012).

Evaluator's Role: The Schweitzer Foundation sends MPH fellows from different U.S universities every year. Each of these fellows spends on average 3-5 months in Lambarene taking on a short-term project of their own (Schweitzer Fellowship, 2011). We suggest these fellows act as internal evaluators for JSC as the program will be heavily connected to the Schweitzer hospital in Lambarene. The advantage is that there is at least one fellow on site year-round, and that person will become familiar with the program, the staff, the participants and the community at large. The specific characteristics surrounding the evaluators include: ability to adapt to the work environment of Lambarene, a fluency in French, an interest in adolescent sexual and reproductive health issues, able to engage and collaborate with all stakeholders, and familiarity with concepts of program evaluation, community-based participatory research and peer support.

Stakeholders' Role: The key members of the community that need to be involved in this evaluation include: the adolescent participants and non-participants, the peer educators, the program officer, the nurse in charge, physicians from local hospitals who treat these adolescents, the outreach PMI nurses, and the adults in these communities including the church leaders. We will engage all stakeholders in the evaluation from the start by asking specifically what each expects out of the program evaluation (Bamberger M., 2012). Particular attention will be placed on data utilization for each one of the stakeholders. For example, we expect the funding organization to be interested in the process evaluation to see if resources were used effectively,

and in outcomes to measure the program's success and consider continuing funding. In the case of the participants' parents, they are likely to want information on their community's outcomes, in comparison to the non-participants community to see if they will support the program in the future.

Potential Challenges: There are several potential challenges to this evaluation. The evaluator turnover is a probable problem as no one person will be there to see the evaluation from beginning to end and information may be missed. Fortunately, they will each be there for several months at the time which should enable them to spend enough time so that they can connect with stakeholders and perform a thorough evaluation of the program. In order to minimize problems arising from discontinuity, good communication between evaluators is key. This can be enhanced by monthly progress reports to be shared between evaluators (incoming and outgoing) and with program manager, so that she may oversee the continuation of the work being done.

It is also noteworthy that different evaluators will have various levels of comfort with conducting a program evaluation, as many of the fellows are still MPH students and others recent graduates of their programs, with diverse levels of training in the subject. To ensure that the evaluation is done properly, in addition to the evaluation plan, an evaluation protocol will be in place to reduce the burden on the less experienced evaluators. Furthermore, a backup person should be designated to provide logistic support to the evaluators. This could be someone at their home institution or someone who has agreed to be a consultant for JSC's program evaluation. This remains to be determined but if it were to happen it would be someone who is independent of the program but who would agree to do this work ad honorem. We acknowledge that this person will have to be committed to the program for its entirety in order for IRB approval to be feasible.

Evaluation Design

Plan Design: Because we are designing the evaluation prior to the program's implementation we have flexibility in picking the optimal evaluation study design. A quasi-experimental design has been selected as it will likely yield high results in a less resource-intensive way than a randomized control trial. Additionally, the program planner has connections in the intervention too, which makes it for easier access to the community, and finding a nearby town that has matching characteristics is a feasible task (Issel, 2009). In greater detail, within the quasi-experimental design we will use a non-equivalent groups study design that will yield the greatest certainty to measuring our objectives (Trochim, 2006). Observations and measurements will be made pre- and post- intervention in both the group that receives the intervention (N_T) and the non-equivalent control group (N_C) that will be chosen by matching for population size, geographic area, population age and gender distributions, educational attainment and ethnic groups (Trochim, 2006).

While this will allow for comparison between individuals that received the intervention and some who did not, the groups were not randomly assigned which leaves room for selection bias and different attrition rates that endanger the internal validity of the evaluation (Trochim, 2006). On the other hand, having the control group helps reduce testing and instrumentation bias, as well as gives us an idea of the program's effectiveness attempting to control for other confounding variables by trying to match for geographic area and similar population size and demographics (Issel, 2009; Trochim, 2006).

The indicators to be measured include implementation and impact outcomes of the JSC. The impact outcomes to be measured include adolescent fertility rates, advanced STI rates, abortion-related medical complications, and HIV incidence rate. These outcomes will be measured by using medical records and surveys. The specific evaluation techniques that will be used will be discussed in a later section.

As part of the implementation outcomes we will account for training and knowledge of JSC's staff, training on youth-friendly practices to medical staff (non-JSC), and condom delivery. Also as part of the implementation we will assess whether the initial meeting with stakeholders took place and the effectiveness of the meeting as well of the strategies used to engage all parties, and the challenges and benefits that this meeting brought about. Through this process we expect to complete a thorough examination of the participation, challenges, effective strategies, and lessons learned from the program.

Evaluation Methods

In order to make this a comprehensive evaluation we will use mixed methods to collect data and in this way make sure that we are measuring multiple aspects of the program's process, outcomes, and impact (Bamberger M., 2012).

Qualitative: The qualitative methods that will be used include observation, focus groups, and unstructured open-ended interviews. More specifically, observation will be used to assess the flow of events in peer-led sessions as well as the interactions between leaders and participants making special note of the class didactics. Open-ended interviews with program leaders and peer educators will also be done to examine the outputs resulting from the program activities in a more private setting than that of the focus group. Focus groups with participants, program

leaders, teachers and community leaders will be done independently to assess their engagement in the program, their views on specific activities as well as of the overall goals of the program (Bamberger M., 2012; Trochim, 2006).

Quantitative: The quantitative methods to be used include pre- and post- knowledge tests, document review, surveys including open and closed ended questions, and adaptations of standardized attitudinal assessments. The tests will be done to assess adolescent sexual and reproductive health knowledge of peer educators, as well as participants (Issel, 2009). Surveys will be given out to community members to measure their awareness of the Jeunes Sains et Conscientes program, as well as their opinion and acceptance of the program's activities and mission. We will also utilize standardized assessments for sexual attitudes and behaviors in adolescents that have been validated for use in other sub-Saharan countries and we will adapt to our context if necessary (Bamberger M., 2012). Lastly, we will review several program documents including attendance sheets, meeting notes, training curriculum, and class materials. A revision of clinical (in-patient and out-patient) documents will also be performed to check for outcomes including condom distribution, use of adolescent sexual and reproductive health services such as counseling and STI testing, records of STI and HIV diagnosis and treatments, and records of adolescent pregnancies and deliveries.

Limitations for techniques: There are several limitations with the techniques chosen. The major limitation we come across is a lack of measurement for biological markers. As seen in our literature review, positive results for change in attitudes and behaviors do not always translate to a decrease in HIV and HSV-2 incidence rates for adolescents who participate in this type of program (Doyle et al., 2010). Self-reporting of sexual attitudes and behaviors for the tests and focus groups with adolescents may be liable to reporting bias which could endanger the internal

validity of the evaluation (Issel, 2009). We expect that having access to medical records will give us an accurate estimate of rates of conditions that will triangulate the findings of the self-reporting (Bamberger M., 2012).

Another potential challenge consists of the accuracy of the data available via medical records and other documentation to be observed. This could be an issue as not all the hospitals and clinics record data accurately, with a common mistake being duplicate or missing entries (Bamberger M., 2012). To help counter this problem, the evaluating team will identify these problems when auditing the data and will engage the personnel in charge of data collection in capacity building for more accurate data recording. Lastly, not having data from adolescents who do not attend clinics and hospitals is a major limitation in having an entire representation of the population of the area.

Evaluation Planning Tables

Short-term Objective 1: By month 2, program managers meet with stakeholders of pilot town Lambarene to ask for input and collaboration for the program's activities.

Evaluation Questions	Participant	Evaluation Method
Did the program managers meet with stakeholders in Lambarene to ask for input and collaboration for the program?	Program managers	Open-ended interview, meeting minutes.
Did the stakeholders in Lambarene meet with the program manager to collaborate and provide input for the program's activities?	Stakeholders	Open-ended interview, meeting minutes.
Did any stakeholders decline to participate? Why?	Stakeholders	Open-ended interview.
Did the stakeholders feel that	Stakeholders	Focus group, open-ended

they had sufficient input into the activities chosen and the way they were to be implemented and adapted?		interviews.
What were the pros of this collaboration?	Program managers and Stakeholders	Focus group, open-ended interviews.
What were the cons of this collaboration?	Program managers and Stakeholders	Focus group, open-ended interviews.
What could have been done better/differently?	Program managers and Stakeholders	Focus group, open-ended interviews.
Was(were) the(se) meeting(s) useful/productive?	Program managers and Stakeholders	Focus group, open-ended interviews.
What were the final products of the(se) meeting(s)?	Program managers and Stakeholders	Focus group, open-ended interviews.

Short-term Objective 2: By month 3, program managers will recruit and train staff, including 4 peer educators, 1 program coordinator and one program nurse.

Evaluation Questions	Participant	Evaluation Method
Did program managers recruit and train 4 peer educators, 1 program coordinator, and 1 nurse, by month 3?	Program managers	Open-ended interviews, internal program documents.
What were the methods used for recruitment of the different staff members?	Program managers	Open-ended interviews.
Were the methods used for recruitment effective in reaching the target population?	Program managers	Open-ended interviews
Were youth from Lambarene receptive to being recruited as peer educators?	Youth	Focus group.
How was the program coordinator recruited?	Program managers and coordinator	Open-ended interview
How was the program nurse recruited?	Program managers and nurse.	Open-ended interview
Did the program managers	Program managers	Open-ended interview,

provide training to staff by month 3?		internal program documents.
Did any of the staff members not participate in the training? Why?	Peer educators, program coordinator and nurse	Focus group, open-ended interviews.
Were the staff members satisfied with the training's content? With the training's structure?	Peer educators, program coordinator and nurse.	Focus group, open-ended interviews.
Were the key training points understood during the training?	Evaluator, peer educators, program nurse, program coordinator	Focus group, open-ended interviews, Pre- and post-tests.
What would the program managers or staff do differently/change about the training?	Program managers, peer educators, program coordinator and nurse	Open-ended interview, focus group, open-ended interviews.

Short-term Objective 3: By month 4, partner with local health centers staff and JSC program staff, and increase their condom distribution to youth by 20%.

Evaluation Questions	Participant	Evaluation Method
Did a partnership with the local health centers staff and program staff form by month 4?	Program coordinator and program managers	Open-ended interviews, review of internal documents.
Was there any local health centers staff that did not partner with JSC? Why?	Health centers' staff	Open-ended interviews
Was there an increase in condom distribution to youth? If so by how much?	Evaluator	Internal documents review.
How was the partnership achieved?	Program coordinator and program managers	Open-ended interviews.
Were there any benefits to the partnership?	Health centers' staff and program coordinators	Open-ended interviews
Were there any negative consequences to the partnership?	Health centers' staff and program coordinators	Open-ended interviews
Was an increase in condom	Health centers' staff	Open-ended interviews

distribution to youth desired by the health center staff prior to partnership? After partnership?		
How was the increase in condom distribution to youth achieved?	Program managers, program coordinators, health centers' staff	Open-ended interviews
What went well in the intervention to increase condom distribution?	Program coordinator and health centers' staff	Open-ended interviews
What could be improved in the intervention to increase condom distribution?	Program coordinator and health centers' staff	Open-ended interviews

Short-term Objective 4: By month 12, increase regular condom use amongst sexually active teenagers who live in Lambarene so that it is 30% more than that of a neighboring control town in the Moyen-Ogooue region.

Evaluation Questions	Participant	Evaluation Method
By month 12, was there an increase in condom use amongst sexually active teenagers who live in Lambarene as compared to the control town? By how much?	Evaluator	Adolescent self-report survey on behaviors and attitudes.
How was the increase in condom use attempted?	Program managers	Open-ended interviews
How was this objective perceived by the adults in the community?	Adult family members, church leaders, school teachers and school principals, medical providers	Focus group
What were the challenges of the interventions taken to achieve this?	Program coordinator, peer educators, program participants	Open-ended interviews and focus groups.
What worked well in the interventions taken to achieve this?	Program coordinator, peer educators, program participants	Open-ended interviews and focus groups.
Was there a change in condom use in the control town? How	Evaluator	Adolescent self-report survey on behaviors and attitudes.

much?		
Was it comfortable to self-report condom use?	Program participants, control participants	Focus groups, open-ended interviews.
What could have been done differently to achieve this objective?	Program participants, program coordinators, program managers, peer educators	Focus groups, open-ended interviews.

Long-term Objective 1: By year 5, see an adolescent fertility rate (AFR) of less than 25% in the Lambarene area.

Evaluation Questions	Participant	Evaluation Method
By year 5, has the adolescent fertility rate dropped to less than 25% in Lambarene?	Evaluator	Review of clinic, health centers, and hospital records.

Long-term Objective 2: By year 5, see a 30% decline in number of recorded complications for adolescent abortions.

Evaluation Questions	Participant	Evaluation Method
By year 5, has there been a 30% decline in recorded complications of adolescent abortions?	Evaluator	Review of clinic, health centers, and hospital records.

Long-term Objective 3: By year 5, see a 20% decrease in STI in the Lambarene youth.

Evaluation Questions	Participant	Evaluation Method
By year 5, has there been a 20% decrease in STI in the Lambarene youth?	Evaluator	Review of clinic, health centers, and hospital records.

Long-term Objective 4: See a 10% decrease in HIV incidence during year 5, in Lambarene youth.

Evaluation Questions	Participant	Evaluation Method
Was there a 10% decrease in HIV incidence in Lambarene youth during year 5?	Evaluator	Review of clinic, health centers, and hospital records.

Long-term Objective 5: By year 5, peer educators will retain 70% of original information

Evaluation Questions	Participant	Evaluation Method
Did the peer educators retain 70% of original information by year 5?	Evaluator, Peer educators	Pre- and post-tests. Open-ended interviews.

Dissemination Plan

The results of this evaluation will demonstrate if the program is working, to what degree and in which areas. Having this information will help shape the future of the program, whether it is to alter it, continue it as is, or halt it completely. The results will be presented in different forms and timeframes to the different audiences which make up the program's stakeholders (Bamberger M., 2012). To the funding institution we will present progress reports semi-annually from year 1 as well as a final report at the end of the 5 years. The funding organization will also be given the option of joining the quarterly debriefings with program staff. The program staff will have quarterly debriefing meetings where the evaluator will use charts and graphs as well as findings from qualitative sources. Physicians and medical staff will be invited to participate in at least 2 of these quarterly debriefings per year. All of these meetings will be interactive and will seek to get stakeholders' opinions and the evaluation will adapt to the needs and questions of those attending (Bamberger M., 2012; Issel, 2009).

It is also our intent to involve Gabon's ministry of health (GMH) in the program evaluation as their support is necessary to scale up the program nationally. The evaluator will

present the evaluation plan to a GMH representative and will ask for feedback to maximize data utilization by GMH (Bamberger M., 2012). The results will be presented to GMH at midpoint and at the end of the program via formal presentations and a final evaluation report. The adolescent participants and non-participants, and the parents and other concerned adult members of the community are the most important stakeholders of this program, and as such they must be included in the dissemination of evaluation results. The presentation of this information will come in the form of semi-annually public forums explaining the progress and results to them and asking for comments and suggestions. The presentation for the adolescents will also be held in forum style and supplemented by posters, separate from the adults, and either quarterly or semi-annually depending on what they decide as a group. Finally, the program managers and evaluators may consider presenting the results to wider audiences via a poster presentation or an article in a peer-reviewed journal but this is yet to be determined.

IRB Considerations

In order to protect participants in the study we will require a full IRB review. This evaluation is not eligible for an exemption because even though it is a demonstration research project it involves minors and it seeks to collect primary data that is intrusive of the privacy of participants. Some of the risks identified in this evaluation are concerns for confidentiality of data for both primary and secondary collections. However, primary data will not contain any identifiers for the participants, peer educators and community members. This will be harder to do when interviewing the program managers and program coordinator as they are few and easier to identify. Nevertheless, the privacy of the program's participants will be protected. This is also the case for the secondary data which will be de-identified and instead of their medical numbers

we will assign them evaluation numbers which will be stored securely and separate from the research data (Issel, 2009).

The consent to participate in this study will be obtained from parents and the adolescents separately. The information about JSC, risks and benefits of joining of the study, the volunteer nature of participating and the assurance of privacy will be given at first in an introductory open-house type meeting. Flyers will be given to those who come to the meeting to think it over and share information with the rest of the family. All the information will be given in French and if needed in Fang, the other common language in Gabon (CIA, 2013). Then a second meeting will be scheduled this time by visiting people's houses and addressing concerns one by one. Thirdly, all who express interest will be invited to come to the center and at that point informed consent will be obtained from the adolescent and at least one parent.

The potential risks that come from participating in the program are minimal. There is a risk of being harassed or ostracized for participating in a program which promotes safe sex practices which would then be a risk for psychological and social harms (Issel, 2009). This could be particularly true if the adolescent chooses to engage in edutainment activities that are meant to raise awareness to the general public. However, having an open discussion with the community from before the program starts should help get their support and address any concerns they may have about the program (Bamberger M., 2012). No other legal, physical, or economic risks have been identified.

V. DISCUSSION

HIV/AIDS is currently the number one killer of young people in sub-Saharan Africa with rates that continue to be worse for young women than young men (Lloyd, CB, 2005). Gabon,

though one of the wealthiest countries in the region, with a GDP greater than many South American countries and African countries, is one of the countries with higher adolescent fertility rates in sub-Saharan Africa (CIA, 2013; WorldDataBank, 2010). This is alarming because this signifies that a large number of Gabon's youth is having unprotected sex, a practice which if it is to continue could have various negative effects including HIV and STI contraction in these young ones, labor and delivery complications from potential pelvic obstruction, etc . Because of this, I am interested in make this issue a priority in Gabon's agenda and to start I would like to run a demonstration program in the rural town of Lambarene Gabon, which will use a community-based participatory approach to improve physical and mental well-being of Gabonese youth, through the reduction of unwanted teenage pregnancies STI and HIV.

Strengths

The Jeunes, Sains et Conscients program has numerous strengths that put it in a favorable position for success. First, the program will utilize multiple interventions to transmit information as well as to gain social support and acceptance for the use of barrier contraceptive methods. The program also aims to use participatory learning to increase the perception of HIV, STI, and pregnancy as consequences of unprotected sexual activity, and to increase self-efficacy in making decisions about their sexuality and their effective use of contraceptives. Importantly, the community members will be invited to participate in the selection of specific activities in the program and will be kept updated of the program's evaluation results. In addition to this community approach, JSC will also use the Health Belief model to help address challenges that may arise for adolescents to use effective contraceptive methods that fit their needs and risk factors. An added strength is the relationships that already exist with clinical and non-clinical personnel in the area of Lambarene as well as access to infrastructure and some other local

resources. A series of MPH fellows will be on the ground for years to come and are anticipated to play the role of the evaluator which is advantageous as it will allow for continuity and familiarity with the program. Given the fact that this program evaluation is being done before the program's implementation it will allow for a comprehensive evaluation with baseline and endline data collection and the use of mixed methodology.

Weaknesses

The JSC program has several weaknesses as well. The most notorious one is that this is a theoretical program as of right now due to lack of secured funding for it. There are proposals that may allow for this program to take off and be implemented but until then no action may be taken. Secondly, though the Schweitzer hospital in Gabon (one of the 3 would-be partners in the Lambarene region) is accustomed to working with foreign researchers, achieving cooperation can be difficult at times, particularly when the local staff feel that interventions are being imposed on them. This sentiment is expected to be diminished by the participatory nature of the program where all interested members of the community will have a say in this program.

Evaluation challenges: There are a few challenges in relation to the program evaluation. There will not be a measurement of biological markers such as HIV and HSV-2 as in other programs mentioned in the literature review. Though this weakens the results some, we will counter this with documentation review as previously mentioned. The MPH students or professionals that will serve as program evaluators will come with various degrees of experience and interest in program evaluation. However, this could be seen as a way of linking the work of several MPH fellows; in the past there have been comments about the lack of continuity in the work done at

Schweitzer and this could be a way to connect everybody in addition to any other project the fellows may want to engage on their own.

Recommendations

It will be important for the program's success that true partnerships are formed between hospitals, health centers, parents and teenagers. Even if the ASRH services are available to the adolescents, they will need to feel supported by their families in going to access them and welcomed and not judged by those providing the services. It has been stated that this is a program made to be a demonstration so that the government of Gabon may be enticed from the results of this program to expand it to the rest of the country. Personnel in the ministry of health have strong ties with members of the Schweitzer foundation and it would be important to introduce them all to this program and discuss the opportunity for a scale-up if the evaluation results back favorable. Expansion could be modeled after the MEMA kwa Vijana , which started as a pilot program and continued to expand with governmental support. Importantly, the program evaluator will present quarterly reports to the corresponding stakeholders; it will be very important to make sure that this monitoring is leading to action and continuous internal quality improvement efforts. Lastly, in order to truly promote SRH and wellbeing in Gabon's youth there is a need to address other prominent issues such as the excessive alcohol consumption which is associated with disinhibiting behaviors and this in turn can be related to unprotected and unwilling sexual relationships in young males and females.

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Appendix A –Systematic Review

Youth-to-Youth (Kenya)

Basics: The Youth-to-Youth (Y2Y) initiative in Kenya is a program established by the German Foundation for World Population (DSW) that supports local youth clubs in this country. The goal of the Y2Y initiative is to help young people live healthy lives by avoiding unwanted pregnancies, STIs and HIV infection (Tautz, 2011). Girls in Kenya have their first sexual encounter at the median age of 18; however there is a large percentage that begins at 15 years old. Though the adolescent fertility rate here has declined from 147 to 103 births per 1000 women ages 15-19 (DHS Kenya, 2010; DHS Kenya, 2004) is still high. The Y2Y program in Kenya was implemented by selecting elements from a package put together by the DSW. There are many youth clubs present throughout the country in both rural and urban sites.

Strategy, Implementation and Evaluation: The program was designed using an integral model that combines adolescent sexual and reproductive health (ASRH) knowledge and access, financial enablement, and empowerment in leadership and organizational skills (Tautz 2011). The target population is young people, ages 10-19 that engages or is at risk for engaging in sexual activities at this early age. The adolescents are approached by in- or out-of school youth clubs where they received ASRH education by peer educators. Individual clubs have a choice in whether to touch on additional subjects (i.e. FGM, early marriage) or target specific populations (such as young mothers or sex workers). Additional services provided by peer educators are one-on-one counseling, distribution of male condoms (and in some club centers also female condoms and oral contraceptives). Furthermore, some of the clubs also provided voluntary counseling and testing (VCT) for HIV, and those who did not had the ability to make a referral to a youth-friendly provider who could (Tautz, 2011).

An important activity of the Y2Y program is the training given to young people to develop income generating activities (IGAs). A no-interest loan is also given to them to complement and help to start up their IGA. Some of these activities involved selling condoms, providing delivery services, and farming among many others (Youth-to-Youth, 2013). Edutainment activities both increased a sense of ownership among the young participants and raised awareness among the other members of the community not directly related with the youth clubs. They did so by the use of theater, dance performances, writing newsletters, designing cartoons and other art forms (Tautz, 2011; Youth-to-Youth, 2013).

The Y2Y Kenya has government support in the form of provision of facilities for the meetings and funds given to them in order to set up the IGAs. The municipal governments also collaborate with the clubs by showing their support and approval and participating in the community-wide events (Tautz, 2011). Program evaluation for Y2Y Kenya was conducted via a mixed method approach that used quantitative and qualitative data. There were 9 co-ed and 1 all-girl club evaluated. Semi-structured group interviews were conducted amongst club members (total <250) and individual interviews for health professionals, teachers, NGO representatives, amongst other key stakeholders.

Results: There was increased demand for condoms by males and females, increased use of ASRH services such as contraceptive counseling and STI/HIV checks, and earlier treatment of STIs (no numerical data reported). There were also more deliveries in the hospital, a decrease in

adolescent pregnancies, and more girls returning to school after delivery (Tautz, 2011). Positive findings amongst communities involved an increased open-discussion about SRH, fewer stigmas about HIV and SRH, greater female involvement in activities and edutainment events. Some of the positive findings amongst young people's perceptions are increased knowledge, empowerment, and the creation of safe spaces.

Discussion and Challenges: There are many challenges faced by this program. These include resistance of parents to let girls join the club, further need to establish better rapport with health centers near clubs so that more providers may be trained in "youth-friendly" practice. The evaluation lacked baseline data at the intervention sites which is a major limitation (Tautz 2011). Undoubtedly, another challenge to the Y2Y initiative has to do with its sustainability since the funding depends almost entirely in the DSW. The lack of clear objectives with result indicators is also another major challenge to building a better program (Tautz, 2011). Lastly, this evaluation did not provide us with any numerical data or statistical analysis and simply stated results as outcome data.

Analysis: Youth-to-Youth has several examples of activities that can go beyond the typical school-based interventions and involves the community at large in the selection process of these activities. This is an important take away point from this program that will likely be emulated for the JSC program. Another learning point from this is the extreme importance of having a well-designed evaluation in place before the program starts that can account for baseline and endline differences as well as a control site. Additionally, relying solely on foreign government aid is seen as unsustainable, for JSC to be long-lasting we will look for the support of Gabon's government from the beginning.

Youth Reproductive Health (Nepal)

Basics: The YRH program had as a goal that of addressing deficits in ASRH knowledge and services, and delaying the age at marriage and childbearing for young females. The initiative took place from 1998 until 2003 and was designed as a quasi-experimental study by EngenderHealth and the International Center for Research on Women (ICWR) with the cooperation of Nepali partner organizations (Mathur, Mehta and Malhotra, 2004). It is important to note that one third of Nepal's citizens are between the ages of 10 and 24 years old and that the vast majority of girls here marry at the age of 16 on average. Fifty-two percent of these girls will then begin childbearing before the age of 20 years old. At the beginning of the YRH, only 12% of young married women were using a birth control method, and fewer even were using an actual modern method (Mathur, Mehta and Malhotra, 2004). It is with all this background information that this program was launched, to try to prevent young people from experiencing the negative effects of unwanted early pregnancies and the infection with HIV or another STI.

Strategy, Implementation and Evaluation: The program used a participatory approach. In this case the participants of interest were both adults and adolescents in the community. The adult involvement was sought after by the realization that "the lives of youth are integrally connected to, and affected by adults...thus (their) approval and buy-in is essential for achieving (lasting) youth participation or behavioral change" (Mathur, Mehta and Malhotra, 2004). This program had 1 urban and 1 rural site where 8 interventions were implemented, and 1 urban and 1 rural site which served as control sites, where only 3 interventions were implemented (the traditional, non-participatory ones). The 8 interventions included the following: providing adolescent-friendly

services, peer education and counseling, information and education campaign, adult peer education, youth clubs, street performances on social norms, skills that generate income, and teacher education. Of these, the 3 that crossed over to the control sites were adolescent-friendly services, peer education and counseling and teacher training (Mathur, Mehta, Malhotra 2004).

The input community members had in the initial design and implementation of program's activities was facilitated by the use of advisory groups, one made up by adolescents and the other by adults (ACT and PAC respectively). This participatory approach was strategic as it allowed for the "doorkeepers" of the community to approve the activities of the program and facilitated resources rather than get in the way of the program's activities (Mathur, Mehta, Malhotra 2004). A quality needs-assessment was also done in order to design important components of the program taking the needs of the people into consideration. As a result of the planners listening to the PACs, the training in IGA was incorporated as one of the core program activities. This was important to members of the communities whom argued that lack of income often lead to early sexual encounters in exchange for financial security or favors (Mathur, Mehta, Malhotra 2004). The evaluation of the program also used a mixed methodology of quantitative and qualitative methods (surveys, interviews, focus groups, and tests, all done at baseline and endline in both control and intervention sites).

Results: The findings of the evaluation were grouped into 3 categories: basic reproductive health outcomes (STI, HIV, premarital sex, contraceptive use, and service access), reproductive health outcomes relevant to Nepal (early marriage and childbearing) and development of new norms regarding YRH as well as community empowerment and sustainability of the project.

Overall, the basic reproductive health outcomes were only slightly more favorable in the study group than in the control group with fewer interventions. The more notable changes in outcomes were for females in the rural study site were seeking an organization for family planning advice more than doubled (from 18.9 to 40.8), as did the use of contraceptive at first premarital sex (from 30 to 62.5). Self-reporting of STI in females went up in rural sites (both study and control), this could be explained by increased awareness of symptoms and disease, but it went down in urban sites with a larger decrease at the study site (Mathur, Mehta, Malhotra 2004).

When looking at broader gender and YRH norms, it was also found that a larger percent of girls in the participatory intervention sites completed six grade or higher education than those in the control sites (baseline rural intervention 37.2 to 57.7 control 32.5 to 44.1). There were many more males and females involved in the intervention groups both in the rural and urban settings (Mathur, Mehta, Malhotra 2004).

Discussion and Challenges: This evaluation broke down challenges by different program stages. In the planning stage the challenge was the large amount of time and resources this program took to get started. A potential way to deal with this is to do more careful pre-planning so that the actual planning can be seamless. Also members of the PACs and ACTs had a hard time finding activities that could be used to address problems. It is perhaps a better idea to provide "sample" or template activities to the groups and for them to choose which ones work and how to adapt them to fit their needs.

Analysis: The use of a needs-based assessment that took into consideration the desires of the community is an important point that is not typically described to detail in other youth reproductive health programs. Particular attention can be paid to the groups of adults and adolescents involved and how that positively affected the program. JSC will also strive to use a similar participatory approach to the selection of interventions, coming-in to the community with suggestions but looking for new ideas and adaptations appropriate for this particular community.

100% Jeune (Cameroon)

Basics: This program has as its main goal the reduction of high levels of HIV/STIs and unwanted teenage pregnancy in urban youth in Cameroon. The program's interventions took place between the years of 2000 and 2003 with the financial support of the Bill and Melinda Gates Foundation and ran by the Programme de Marketing Social au Cameroun (PMSC) which is affiliated to Population Services International (PSI). The evaluation was commissioned by the PMSC and it was implemented by the Institut de Recherche et des Etudes de Comportements (IRESCO) in 2000 and 2002, by Forum Camerounais de Psychologie (FOCAP) in 2003. The program specific objectives were to increase consistent condom use and to promote abstinence (Plautz and Meekers 2007). Cameroon has a high rate of young people infected with HIV (11.5% prevalence among 15-19 year old pregnant girls), a similarly high prevalence of STIs in the young, and a large number of school drop-outs associated with early pregnancy (Plautz and Meekers 2007). 100% Jeune was created to combat these statistics and change behaviors amongst Cameroonian youth.

Strategies, Implementation and Evaluation: This program used a theory-based approach and adapts the activities of other ASRH programs which in turn used the Health Belief Model as a way to better target desired behavior modification (Plautz and Meekers 2007). The activities used included peer education sessions, a weekly radio call-in show, a monthly magazine, a serial radio drama, a billboard campaign, and the creation of youth-friendly condom outlet stores (Plautz and Meekers 2007). The objective measures of program success included program exposure, sexual activity indicators, condom use indicators, and reproductive health indicators. The other measures included: perceived severity of health issue, perceived risk, perceived benefits and disadvantages of condom use, self-efficacy, and perceived social support (Plautz and Meekers 2007). The evaluation used surveys and focus groups with adolescents and adults who lived in the 2 cities where the intervention took place. Statistical analysis adjusted for confounding variables such as education level, age, school enrollment status, and others.

Results: Statistically significant differences between groups with low, medium and high exposure in terms of condom use and number of sexual partners (Plautz and Meekers 2007). Interestingly, perceived social support did not increase during the first 2 years of the intervention. Social support assessment questions showed that adolescents did not discuss family planning with parents, friends, or others, and that parental support of condom use was low. The program received this information at a mid-way evaluation report and they changed their activities to include encouragement to get parents discussing sexual health concerns with their children.

Discussion and Challenges: The greatest challenge remains in dealing with altered perceptions of who is at risk for HIV/AIDS, with young people feeling like they are not at risk in spite of infrequent condom use. The program's focus can be geared towards educating everyone in the community about the truth and to debunking myths. Another problem is the continued social taboos of adults and adolescents engaging in open discussions about ASRH. This program could have benefited from a bigger emphasis on adult engagement in the program as to encourage communication and information being shared between the 2 groups. This evaluation separated findings by males and females and showed how females were still less confident in the ability to purchase and correctly use condoms (Plautz and Meekers 2007).

Analysis: Important lessons to be learned from this program include the following: higher degree of exposure which comes from various social marketing techniques yields greater perception of condom attributes and access, self-efficacy, understanding, social support and condom use. The use of media to reach the community at large and provide information of risk factors of HIV for example, can also be considered as an important way to increase general awareness. Focus groups were used to evaluate certain aspects of this program, this qualitative method tends to be under-utilized when evaluating YRH programs; one could consider using this for JSC as it provides more in-depth information on subjects such as thoughts and perceptions of participants and supporters alike.

Stepping Stones (South Africa)

Basics: This program was conducted to decrease HIV prevalence in rural South Africa via participatory teaching of ASRH and an emphasis on the development of communication and critical thinking skills (Jewkes R, Nduna M, et al, 2008). The program has been ongoing in different parts of rural South Africa since 1998 but the program was formally evaluated in an intervention that took place in Eastern Cape Province during the years 2002-2006. A total of 70 villages were involved, with a total of 1360 men and 1416 women between the ages of 15-26 distributed among intervention and control towns. The implementation organization was Planned Parenthood Association of South Africa (PPASA) and the evaluation was conducted by the Medical Research Council (MRC) of South Africa. The program was founded by several organizations including the Harry Frank Guggenheim Foundation, the WHO, the National Institute of Mental Health (NIMH) part of the NIH (Jewkes R, Nduna M, et al, 2008).

Strategies, Implementation and Evaluation: The planning team had a thorough recruiting plan for youth in Eastern Cape, including presenting program at community meetings, schools, and spending time individually with families of potential participants. Consents were read aloud and checked for understanding in the Xhosa language spoken by many in the area (Jewkes R, Nduna M, et al, 2008). The intervention consisted of about 50 hours of participatory learning after school spread through 6 to 8 weeks. Most of these sessions were done in single sex groups but a few were done in mixed groups and 1 was done as a community meeting (Jewkes R, Nduna M, et al, 2008). The control groups received only one 3-hour session that covered some of the same topics and used the same curriculum as the intervention groups. The sessions were given by peer educators who were roughly the same age as the participants and were considered to be non-judgmental and well-liked by their peers. These educators received 3 weeks of training, had 2 practice groups to demonstrate their ability to lead the group and to be open-minded. The curriculum used was adapted from the original manuscript developed for youth in Uganda in 1995.

The evaluation of this program included a questionnaire that sought after knowledge of the ASRH topics covered in the curriculum, self-reported sexual behavior and importantly biological markers of HIV and HSV-2 as well as STI checks by a clinician; all of this at baseline and endline (24 months), as well as a repeat of the questionnaire portion at 12 months (Jewkes R, Nduna M, et al, 2008). The primary outcomes measure was HIV incidence, the secondary outcomes measure were HSV-2 incidence, report of unwanted pregnancy, report of sexual practices, depression level, report of substance abuse and intimate partner violence.

Results: No lower HIV incidence for intervention group compared to control group: adjusted incidence rate ratio 0.95, 95%CI 0.67-1.35 over 2 years. There was a reduction of approximately 33% of HSV-2 incidence with an aIRR of 0.67, 95%CI 0.46-0.97 over 2 years. There were also improvement in the reported behaviors for men including lower IPV, decreased transactional sex, decreased drinking problems at 12 months. Women however, did not as well in this self-reported aspect of the results, most of them were not found to have significant differences. The only difference found was towards an increase in transactional sex in the intervention group (Jewkes R, Nduna M, et al, 2008).

Discussion and Challenges: An important distinction between this program and many others is that it had biological measurements. This adds a deeper layer to the evaluation and value to the intervention because the validity of self-reported behaviors, and particularly of sexual behaviors in adolescents, is very susceptible to bias towards socially desirable behaviors, particularly after an intervention has taken place (Arnold H, Feldman DC, 1981). Another important element in this program is the integration not only of reproductive health education but also the introduction of critical thinking skills and communication skills in regards with this issue and at large. This could explain the partial success of this program as far as decreasing HSV-2 incidence.

Though the program's primary outcome to see a reduction in HIV was not achieved, it is important to notice that both HSV-2 and IPV were reduced, which are key contributors of HIV acquisition (Jewkes R, Nduna M, et al, 2008). However, a challenge that this study faced were the null and negative self-reported behavior changes for the intervention groups. This could be explained as those girls that participated were more open and comfortable discussing their sexual behavior in comparison to the control group. A deeper look at the program's effects on girls is needed and perhaps a second evaluation focusing on them as well. A weakness of the program is that it took place after school, which meant that participants were mostly involved in school to begin with (leaving out other interested/eligible members of the community). Even within those who were in school, many girls could not participate because of restrictions at home about having to be back soon after classes ended. This could have introduced selection bias in that only girls who either did not have "strict" parents were joining, or who had supportive parents who wanted their girls to have access to this information and skills.

Analysis: This program has many take away points in regards to the JSC program: the curriculum has been used widely and has had different levels of success in many countries throughout the world (Jewkes R, Nduna M, et al, 2008). This includes participatory teaching activities and lists other great resources in English and French. Thus, this curriculum could be adapted to Gabon's specific needs. The WHO encourages this sort of life skills learning to have a long lasting impact and more likely behavioral changes as opposed to solely attitudes and knowledge change (WHO, 2003).

This program also uses cluster RCT for their outcomes evaluation and it adds biological markers. This model can also be considered for the JSC evaluation. From it we can also learn that there needs to be a multi-factorial approach to increase the involvement of non-school-attending adolescents in the communities, as well as to generate support from within the community so there isn't selection bias against a group (in this case it seemed to be specific girls that were left out of the program).

Nyeri Youth Health Project (Kenya)

Basics: The Nyeri Youth Health Project (NYHP) in Kenya is based in Central Province. The program set out to accomplish sexual onset delay, the prevention of negative consequences of early sexual activity, and the creation of a service environment that was responsive to informational needs of young people (Erulkar AS, Ettyang LIA, et al, 2004). The target population was young unmarried people between the ages of 10 and 24 and the adults who affected their milieu. There were 2 towns involved the intervention and control, both mostly of Kiyuyu ethnicity, both within similar distance from Nairobi and with similar demographics and infrastructure. The pilot program ran for 36 months, between 1997 and 2001. The program was implemented by the Family Planning Association of Kenya (FPAK). The evaluation was funded by the Rockefeller Foundation and it was done internally. It is important to mention that at the moment of this program's inception, the country of Kenya was in a state of complete negation towards reproductive health information being distributed to youth, and condoms were commonly burned and girls who got pregnant were expelled from school (Erulkar AS, Ettyang LIA, et al, 2004). Also of note, the Central Province in which the program took place had an overall prevalence of contraceptives use of 61% compared to only 39% of Kenya as a whole (Erulkar AS, Ettyang LIA, et al, 2004).

Strategies, Implementation and Evaluation: NYHP used a community-based approach that took into consideration the general public's opinions on how to deliver ASRH information to youth. Formative studies were done in this community which determined that young people as well as their parents preferred to get information not from youth peers but from trusted adults known for helping in rites of passages in this ethnic community (Erulkar AS, Ettyang LIA, et al, 2004). So the supporters in this case became known as "Friends of Youth" and worked to educate adolescents and parents alike on ASRH issues after receiving training on life skills and ASRH curricula. Importantly, though the counselors were selected for their traditional roles, the curriculum included information on harmful traditional practices (Erulkar AS, Ettyang LIA, et al, 2004). The counselors group was composed of 18 women and 7 men, and there was 1 counselor per 300 adolescents. They did an impressive job at going house-to-house in order to introduce themselves and the project and to seek eligible adolescents in all the households in the community. The counselors also visited schools, church youth groups, and sports and other youth clubs. Though at beginning the Friends of Youth were assigned as volunteers, they ended up being under the paid-staff umbrella after 10 of the original group dropped out after 6 months. Those counselors were replaced by members who were paid (Erulkar AS, Ettyang LIA, et al, 2004).

Besides the life-learning skills provided by the counselors, the Nyeri Youth Health Project also approached clinical staff and provided STI and youth-friendly services. This activity was selected also as a consequence of the formative study done in the community that showed that youth were most likely to come in contact with clinical personnel when seeking STI

treatment and it showed that more people would be willing to go if the services were less judgmental and friendlier (Erulkar AS, Ettyang LIA, et al, 2004). Counselors also distributed coupons for subsidized services for clinics and hospitals to incentive assistance to clinics in case of illness. This program and its comparison group were designed in a quasi-experimental manner with measures done at baseline and endline in both project and control sites. The measurements were qualitative and included self-administered questionnaires and interviews with program evaluators on topics including sexual initiation, safe-sex behavior, and frequency of discussion of reproductive health issues with adults (Erulkar AS, Ettyang LIA, et al, 2004).

Results: These included reported behavior change which differed by gender, with females more likely to adopt secondary abstinence and less likely to have 3 or more partners while males were more likely to use condoms. There were no biological health measurements or outcomes. One of the findings of the evaluation also indicated an increased communication with parents and other adults for both males and females alike.

Discussion and Challenges: Though the study design was overall a good one, some questions come to mind about the preliminary research and whether the presumed preference for trusted adults to deliver ASRH information by young people could have been influenced by their parents and more information on the preliminary studies is needed to help sort this out. It was also interesting to see how the majority of counselors were female, and it would be important to know whether the results varied for young men and women depending on the gender of the counselor. The self-reported behaviors of condom use, delay in sexual debut, secondary abstinence and reduction in number of sex partners were treated as definite indicators of the program's success in ultimate prevention of STIs, unwanted pregnancy and HIV (Erulkar AS, Ettyang LIA, et al, 2004). However, one must be cautious in the reliability of self-reported behaviors and their implications as they may contain susceptibility bias. A particular deficit of this study is the lack of evaluation done regarding the work done training clinical staff and facilitating access to health care facilities via coupons and referrals, and it would be important to know if those have the desired impact.

Analysis: A couple of important take-away points arise from this study. The use of volunteers versus paid counselors/supporters/educators is an important one to discuss as this may influence the success of the program. In dealing with a limited budget, the overall expense of the volunteer increases if they drop-out and the training time and expenses go away with them. But rather than jumping into conclusion of contracting these counselors one can try to analyze the reasons for them to leave which in many cases include a lack of ongoing support and back-up protocols (Rahman, Malik, et al, 2008). The evaluation could have included other data collection methods that would further validate the results and included more information on the other aspects of the program besides from the counseling. A strong point for this program that is useful to the JSC program is the importance given to the community's input and taking the local culture into account. It is also important that this program focused on engaging not just the youth but also the adults of the community, strengthening the community buy-in of the program.

MEMA kwa Vijana (Tanzania)

Basics: The MEMA kwa Vijana program or “Good things for young people” in Swahili, has been in place in rural communities in Tanzania since 1999. The program intervention and control sites were assigned via a cluster randomized control trial. The program's main goal was to

reduce HIV infection in Tanzania's rural youth (Doyle AM, Ross DA, et al, 2010). The program's collaborators included the African Medical and Research Foundation (AMREF) Regional Secretariat, the local government authorities of Mwanza, the London School of Hygiene and Tropical Medicine, the Liverpool School of Tropical Medicine and the MRC Social and Public Health Sciences Unit, Glasgow. The program's donors included the EC, Irish Aid, the UK MRC, UNAIDS, and UK DFID (MEMA kwa Vijana, 2013).

Strategy, Implementation and Evaluation: This program was carefully crafted and includes principles of social learning theory as well as a cluster randomized control trial that includes an a consideration for risk strata depending on the prevalence of HIV and Chlamydia trachomatis in the communities to reduce selection bias. A total of 10 communities received the treatment and 10 others were used as controls (Doyle AM, Ross DA, et al, 2010). Overall the program recruited 13,814 youth, who at the time of the evaluation were between the ages of 15 and 30 years old, who had attended primary schools during the pilot phase of the program under study. (Doyle AM, Ross DA, et al, 2010).

The interventions activities included a teacher-led and peer-assisted in-school ASRH education, provision of youth-friendly health service, community-wide activities to raise awareness of YRH, youth condom promotion and distribution. The pilot intervention being evaluated occurred during the years of 1999 until 2002. The provision of youth-friendly services consisted on training and supervision of health workers in health facilities to meet youth-friendly standards as determined by program planners. The community-wide activities included an annual youth health week. The teaching sessions included participatory learning such as student coordinated dramas. The 12 teaching sessions lasted on average 40 minutes and happened yearly in primary schools for the 5th, 6th and 7th grade (Doyle AM, Ross DA, et al, 2010; MEMA kwa Vijana, 2013).

The evaluation has been done in stages, the first evaluation was a process one, done between the years 1999 and 2002 and it showed "high intervention quality and coverage" (Doyle AM, Ross DA, et al, 2010). In the year 2002 an impact evaluation showed no impact on primary outcomes of HIV incidence and HSV-2, but positive outcomes on SRH knowledge and reported attitudes as well as some improvement in reported sexual behaviors (Doyle AM, Ross DA, et al, 2010). The latest evaluation done between the years 2007-2008 was done to check for an effect in health outcomes that may have taken longer to show as a result of an "upstream effect" of the changes in attitudes and knowledge (Doyle AM, Ross DA, et al, 2010). This evaluation involved going back to the 20 trial communities and identifying young people who was involved with pilot program (either control or intervention) between 1999 and 2002. Some nearby towns and major migration zones were also visited to make maximize identification of original program's participants. Blood and urine specimens were collected from those identified participants and a clinician checked for STI symptoms and examined males for STIs's signs (Doyle AM, Ross DA, et al, 2010). The program went on to scale-up in other rural areas of Tanzania beyond Mwanza and has also been implanted in Zambia and a few other countries in the region.

Results: The intervention was not found to significantly reduce the risk of HIV or HSV-2. Adjusted prevalence ratio for HIV in males was 0.96, 95%CI 0.50-1.65, for females it was 1.07, 95%CI 0.68-1.67. HSV-2 for males had an aPR of 0.94, 95%CI 0.77-1.15 and for females 0.96, 95%CI 0.87-1.06 (Doyle AM, Ross DA, et al, 2010).

Discussion and Challenges: This program, like most, was able to change attitudes; reported behavior and knowledge concerning ASRH, however, biological measurements of health outcomes (HIV and HSV-2) did not show the consequential expected improvement. These findings are disappointing because this program has been carefully crafted and the evaluation design was outstanding. The challenges that may be related to these outcomes are an unknown amount of community buy-in from this. It would be important to know how involved the participating communities were in the program's curriculum and activities. Another important piece of information missing is the level of participation achieved by the classes, and the level of youth-friendliness achieved by health centers. Again, it is known that in order for reproductive health to improve in the youth a series of actions need to happen simultaneously, and without data on actual "customer satisfaction" from mystery clients for example, it is difficult to assess a true change in the services provided and ease of access for youth (Stanback J, Twum-Baah K, 2001). Also, because this program was school-based and youth had to have reached the 5th grade at least, it leaves out a large number of adolescents and youth who do not attend school or reach that level of education which is a program's weakness.

Analysis: Important points to take away from this are the inclusion of biological markers here too (as in the Stepping Stones program) because with the self-reported behaviors and attitudes alone, one may not be able to tell accurately the actual program's impact. This program had fewer contacts with the participants in the sense of teaching time than the Stepping Stones one, and it would be important to see if this or details in their teaching-style or curriculum made a difference in the outcomes.

Overall Analysis

All 6 programs reviewed here have important characteristics, strategies and implementations that may be useful to help design Jeunes, Sains et Conscientes. The Youth-to-Youth program in Kenya provides a good example of a program that gives plenty of freedom to each of its chapters to add or leave out or modify the program's activities. The in-depth descriptions of the activities in Y2Y and YRH are helpful to use these as "base interventions" which can later be presented to groups as potential solutions to problems identified in the needs-assessment. The Stepping Stones program and Nyeri Youth Health program had different approaches to imparting ASRH education, one using peer educators and using respected adults in the community. Both programs report positive changes in self-reported behavior. Thus it would be important to bring the option of using either a peer educator or a respected adult to the Lambarene community stakeholders and see which one they would be more receptive off.

The biological measurements done for both MEMA kwa Vijana and Stepping Stones are important components that make these evaluation much more reliable and thorough. Though with this level of depth also comes an increased cost and ethical responsibility towards those who are found to be HIV positive. Different protocols for dealing with these complicated cases were used for both programs. Another important point of these two programs is their emphasis on life-skills, though the amount of time spent on Stepping Stones was larger than that of MEMA kwa Vijana, both underlined the relevance of these skills in order to have long-lasting effects on youth.

Salient aspects of the different programs are participatory approach, the importance of adult involvement from the very beginning and the use of social marketing. All of these are important tools to consider when planning JSC. It is also imperative to remember the settings of each one of these programs as the location may affect the way it is received. Though Y2Y and 100% Jeune are both African programs, Y2Y is in an Eastern African country with different cultural practices from Gabon. The other program is in Cameroon, and though it is a neighboring Central African country, 100% Jeune took place in urban setting and JSC would start up in a rural area. Also, we are unsure how will Nepal's YRH model be received in Gabon, however, because of its participatory nature; it would be interesting to try to adapt it to this area.

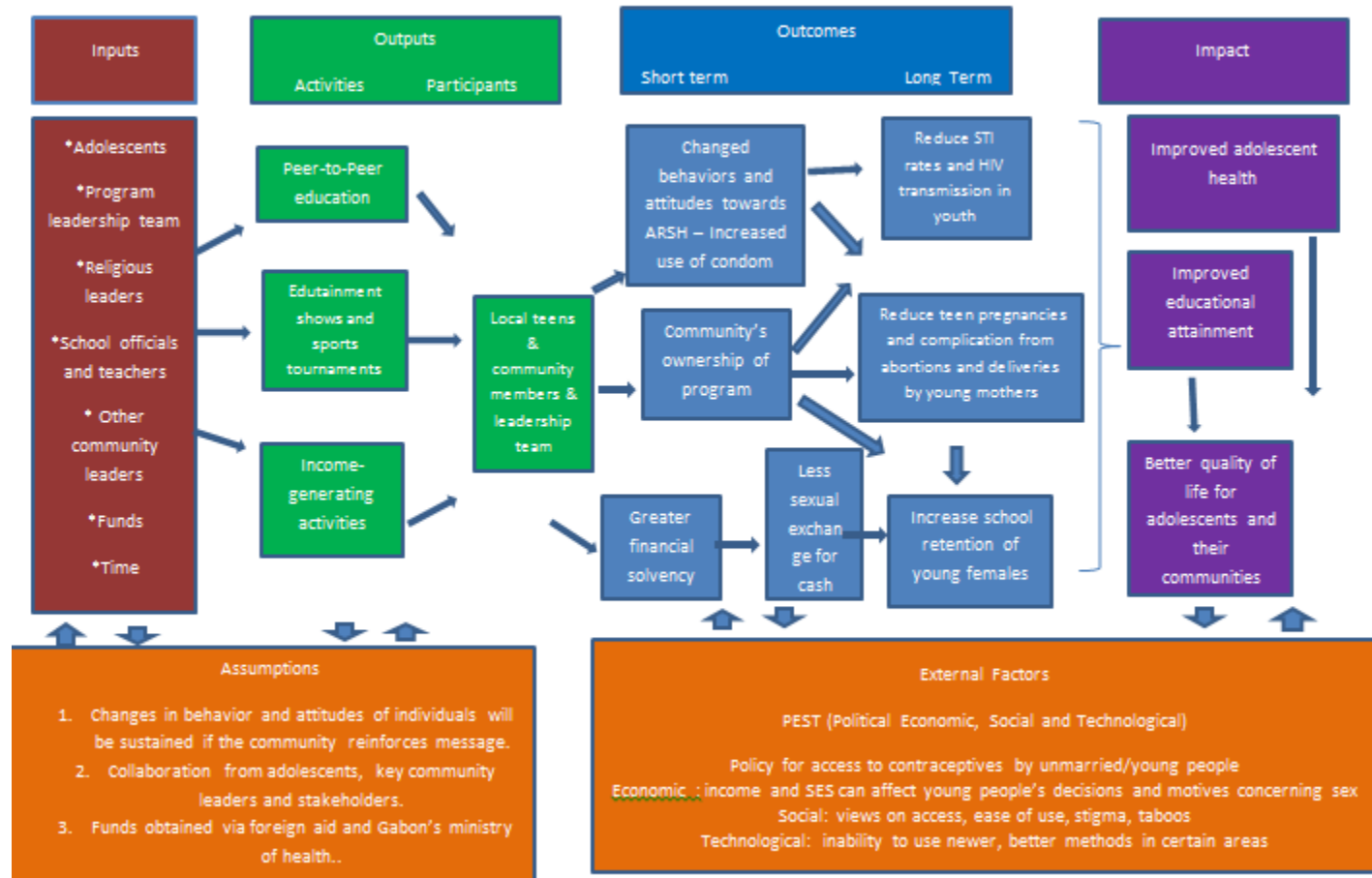
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Appendix B- Logic Model

Logic Model for Jeunes, Sains et Conscientes Gabon



Appendix C- Timeline

Months 0-2: Program manager to meet with stakeholders of pilot town Lambarene to ask for input and collaboration for the program's activities. Find a control town that matches key characteristics and ask for their participation in program as control.

Month 0: Collect baseline data for evaluation in both control and intervention town.

Month 1-12: Collect data and present mini analysis every quarter to the designated stakeholders.

Month 2-3: Recruitment and training of staff.

Month 3-4: Create a partnership between local health centers' staff. Increase condom distribution.

Months 3-12: Foster community participation in community-wide activities.

Months 4-6: Provide peer education on ASRH.

Year 1-5: continue to collect data on prevalence of STI and HIV. Present it at 3 years and 5 year mark to corresponding stakeholders.

Appendix D- Budget

Budget Proposal for JSC: 12 Months

Item	Details	Approx. Cost	Quantity	Totals
Plane fare	Round trips for program leader	\$1800	3	\$5400
Training equipment	Posters	\$20	10	\$200
	Manuals	\$30	4	\$120
	Handouts	\$15	6	\$90
	Videos	\$40	3	\$120
Health center contraceptives	Condoms	\$0.30 a piece	1000 per month	\$300 x 12= \$3600
	*OCPs	TBD		
Office supplies	Copies	\$50 per month		\$50 per month x 12=
	Writing materials			\$600
	Misc.			
Personnel	Program coordinator	\$ 350 per month		\$450 per month x
	Peer educator 1	volunteer		12= \$5400
	Peer educator 2	volunteer		
	Peer educator 3	volunteer		
	Peer educator 4	volunteer		
	Charge nurse	\$100 per month (in addition to her regular salary)		
Other	Cell phone credit	\$100 per month		\$180 x 12= 2160
	Internet	\$ 80 per month		
TOTAL COST for 12 months				\$17,690

***OCP distribution by PMI nurses or Peer educators not yet confirmed. May be obtained only through a hospital at a specific rate for them.**

Appendix E- Sample survey questions for adult community members (to be translated to French)

**Survey about Jeunes, Sains et Conscients
For Adult Community Members**

1. Have you heard of the Jeunes, Sains et Conscientes program?

☐ Yes ☐ No ☐ Not sure

2. Are you familiar with any of the activities they host locally? If so which ones?

☐ Yes ☐ No ☐ Not sure

Activities known: _____

3. If you answered YES to question 2 answer the following. Otherwise skip to number 4.

Do you consider these activities useful? Do you support these activities?

The program aims to prevent the consequences of unprotected sex in adolescents including unwanted pregnancy, STIs including HIV, and in this way improve the health of these young members of the community. The activities it uses are varied and they seek feedback from members of the community.

4. Do you support the aim of the program? Why or why not?

5. Would you be interested in participating in the committee that helps decide which

interventions are helpful for the teenagers in your community?

☐ Yes ☐ No ☐ Not sure