Findings from the Replication of an Evidence-Based Teen Pregnancy Prevention Program

EVALUATION OF ATEYAPI IDENTITY MENTORING PROGRAM IN SOUTH DAKOTA

Final Impact Report for

Rural America Initiatives
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Evaluation Abstract: Ateyapi Identity Mentoring Program

Grantee

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Intervention Name

Ateyapi Identity Mentoring Program

Intervention Description

The Ateyapi Identity Mentoring Program (Ateyapi Program) is a tier 2 program designed to reduce participants' risk behaviors, including sexual activity, substance use, and antisocial activities. The Ateyapi Program, an adaption of *Project Adult Identity Mentoring (Project AIM),* is composed of mentoring, classroom-based, after-school youth development lessons, and a variety of out-of-school activities focusing on learning and practice of the Lakota language, traditions, and games. The Ateyapi Program adapted Project AIM by adding 4 lessons on human sexuality, birth control methods, and sexually transmitted inflection (STI)/ Human Immunodeficiency Virus (HIV) prevention to the original 12 lessons curriculum, in addition to grounding the classroom lessons in Lakota culture and adding out-of-school time activities to reinforce the program model.

The after-school classroom instruction involves 16 Lakota cultural-based lessons designed to encourage young people to think about their desired future and how current risky behavior choices can adversely affect it. By envisioning future possible selves, youth can form an identity that could be threatened by risky behaviors, thereby motivating them to avoid risky behavioral choices. The Ateyapi Program provides additional lessons on human sexuality, birth control methods, and (STI)/HIV prevention. All of the lessons are integrated with Lakota practices, values, and traditions in helping adolescents make healthy choices. The classroom instruction is offered in groups of approximately 20 same-sex youth, with two groups running (one male and one female) in early fall, one in the winter, and one in the spring. Youth are assigned to the groups based on schedule availability. Youth can also make up missed workshops in the summer. The Ateyapi Program includes mentoring of the students during and after school. The mentors/facilitators, like the youth, are Lakota and serve as role models to the students during the after-school workshop and activity sessions. Students are committed to one year of active participation, with an additional year of mentor support.

Counterfactual

Mentoring

Counterfactual Description

The comparison group had access to the same mentors as the intervention group, but during the school day only. Currently, the Ateyapi Program is the only teenage pregnancy prevention program or youth development program being offered during or after school at the high school.

Primary Research Question(s)

(1) What is the impact of the Ateyapi Program on recent sexual intercourse nine months after the offer of the program?

(2) What is the impact of the Ateypai Program on the use of safe sex practices nine months after the offer of the program?

Sample

At the beginning of each school year in one high school in South Dakota, American Indian students were recruited for the evaluation. The focus of the recruitment is 9th and 10th graders, but 11th and 12th graders were not excluded. Among the consented youth, half were randomly assigned to the intervention group and half to comparison group. Each year approximately 240 youth consented, yielding a randomized pooled sample of 722 youth (365 treatment, 357 control) over a three year period.

Setting

The target population was American Indian students enrolled at a large high school in Rapid City, South Dakota. The high school has a total enrollment of 2,008 students composed of 70.3 percent white, 21.6 percent American Indian, and 8.1 percent other minority groups. The distribution of American Indian students from 9th to 12th grades ranges from 46.3 percent (9th grade) to 10.8 percent (12th grade). This distribution reflects the low retention and graduation rates of the American Indian students over the four years of high school.

Research Design

This study is a randomized controlled trial (RCT), with assignment of individuals to the intervention or comparison groups.

Method

Random assignment occurred in the fall of each year for three years, after completion of an active consent form signed by parents and completion of a pre-intervention survey (baseline). Participants were randomized equally between the intervention and comparison groups. Randomization was stratified by grade level and gender, to ensure equivalent distributions of those characteristics within the intervention and comparison groups.

Survey data were collected three times: pre-intervention (baseline), post-intervention (9 months post-random assignment), and a follow-up (15 months) post-random assignment. The surveys were administered online in the fall and spring of each year.

The intent-to-treat (ITT) sample had high attrition at 9 months and 15 months after participation in the Ateyapi program. Significant differences in baseline characteristics were found for all ITT analytic samples. Propensity score matching was used to identify an intervention group and a comparison group from the ITT sample that did not have significant differences on baseline characteristics. The propensity score matching sample was generated using optimal matching algorithm involving Mahalanobis Distances within a caliper radius for producing a matched pair sample.

Impact Findings

There was no evidence the program contributed to reduction of recent sexual intercourse (past 90 days) for the full and matched samples who completed one year of the program. The rates of recent sexual intercourse between the intervention and comparison groups were not statistically significant at the 9 months and 15 months after program implementation.

There was a moderate decrease at 9-month and 15-month data collection points in the recent use of safe sex practices (past 90 days) for the full and matched samples of the intervention and comparison groups. The rates of recent use of safe sex practices for the intervention group was greater than the comparison group. There was no significant difference in the mean proportions at the 9-month between intervention and comparison groups and at the 15-month measures between the two groups in the use of safe sex practices at the 0.05 alpha level.

Implementation Findings

The Ateyapi Program included significant adaptations to Project AIM in the in the pilot year. Once the adaptations were approved, all facilitators were trained in the Ateyapi Program by the Project AIM creators. A total of 112 lesson were delivered in each of the three years – 96 during the school year and 16 in the summer as make up sessions. For each lesson the facilitator completed a fidelity self-assessment log, which was reviewed by the program coordinator, Executive Director, and evaluator. Additionally, ten percent of the lessons each year were observed by the Executive Director and evaluator. Based on the observations, Ateyapi Program was delivered as intended with summary ratings exceeding 4 on a five-point scale each year. Interactions between students and facilitators were rated above average 51% of the observed sessions. Student engagement was rated excellent in 67% of the observed sessions. Students attend sessions regularly with a median attendance rate of 84%. These findings suggest the Ateyapi Program was implemented as intended.

Schedule/Timeline

Sample enrollment and random assignment for the last cohort ended in September 2014. Post-intervention data collection ended in May 2014 and the follow-up data collection ended in December 2014. The Office of Adolescent Health final evaluation report) focused on post (9 months) and follow-up (15 months) intervention and comparison groups' data collected over the three years of program implementation.

EVALUATION OF ATEYAPI IDENTITY MENTORING PROGRAM IN SOUTH DAKOTA: FINDINGS FROM THE REPLICATION OF AN EVIDENCE-BASED TEEN PREGNANCY PREVENTION PROGRAM

I. INTRODUCTION

A. Study Overview

American Indian (AI) high school youth residing in the northern plains region have been identified with having many challenges which include poverty, domestic violence, substance use, sexual health issues (high pregnancy and sexually transmitted infections (STI) rates) and low graduation rates. This study aimed to address sexual health issues among AI students using a culturally relevant intervention that is a modification of the Adult Identity Mentoring Project (Project AIM). [1]

The Project AIM is a twelve session program based on the Theory of Selves. It hopes to motivate youth by supporting them in creating images of their future self. The future self is prepared to make healthy decisions and deal with obstacles, challenges, setbacks, and disappointments. Clark et al. research on Project AIM showed that:

- Adolescents participating three months after the intervention were significantly less likely to report having had sexual intercourse.
- There was no statistically significant program impacts on sexual intercourse for subgroups of youth defined by gender or baseline sexual experience.
- A year after the intervention ended males participating in the intervention were significantly less likely to report having had sexual intercourse.
- There was no statistically significant program impacts on sexual intercourse for females, youth were not sexually experienced at baseline or the full study sample.

This study examined the effectiveness of a culturally-based pregnancy program, the Ateyapi Identity Mentoring Program (Ateyapi Program). The Ateyapi Program uses the ten sessions from Project AIM as the foundation for an intervention that supports the development of positive future selves by Lakota youth by instilling Lakota values, norms, and traditions in youth. The Ateyapi Program included the twelve Project AIM sessions and added four additional sessions based on the Sexual Health and Adolescent Risk Prevention (SHARP) curriculum [2].

In addition, the students were encouraged to participate in cultural events, traditional practices, and language acquisition so they learn more about the history and heritage of the Lakota people.

Graduation rates for all high school students in South Dakota was 83% while for the American Indian students in Rapid City it was 47% [3]. Among the reasons for not completing high school was student engagement in sexual and other risk behaviors. Public health, specifically the Office of Adolescent Health, has focused on reducing the risk behaviors that can lead to unintended pregnancies, sexually transmitted infections (STI), and HIV. Thirty percent (30.3%) of the AI teen youth (14 - 18 years) as compare to 25.4% White teen youth reported being currently sexually active in South Dakota. Seventeen percent (17%) of the AI students reported not using a condom and 9.5% of the females reported having sex without any effective contraception. Among the non-Indian students 11% females reported having sex not using an effective contraception, while 9% of the males reported not using a condom. With these differences in the protected sex, there is a significant difference between the teen pregnancy rates and STI rates between AI (19%) and non-Indian (11%) youth [4].

This study explored whether a culturally-based intervention with a mentoring component can make a difference in the lives of high school American Indian youth. A comparison between two groups of students helped to answer four research questions.

B. Primary research questions

The Office of Adolescent Health funded the Ateyapi Identity Mentoring Program (Ateyapi Program), a project of Rural America Initiatives and an adaptation of the evidence-based Project Adult Identity Mentoring (Project AIM) [1], to address the high pregnancy and STI rates among American Indian youth in Rapid City, South Dakota. In this study, the randomized control trial (RCT) investigated the effectiveness of the Ateyapi Program on reducing sexual behaviors and safe sex practices for AI high school students. The primary research questions addressed in this part of the study were:

i. What is the impact of the Ateyapi Program on recent sexual intercourse nine months after the offer of the program?

ii. What is the impact of the Ateyapi Program on use of safe sex practices nine months after the offer of the program?

C. Secondary research questions

The secondary research questions for this study were:

i. What is the impact of the Ateyapi Program on using safe sex practices 15 months after the offer of the program?

ii. What is the impact of the Ateyapi Program on use of safe sex practices 15 months after the offer of the program?

II. Program and comparison programming

A. Description of program as intended

The Ateyapi Program is based on the evidence-based program, Project Adult Identity Mentoring (Project AIM). Similar to Project AIM, the Ateyapi Program includes twelve 50-minutes sessions delivered to groups of 10 to 20 adolescent youth. The intervention is divided into four parts: (1) group discussions and interactive activities; (2) future career exploration connected by completing a career interest inventory, developing resumes and participating in interviews; (3) communications and decision making; and (4) goal setting and learning how to overcome potential obstacles to achieving goals. The Ateyapi Program, like Project AIM, is based on the Theory of Possible Selves, which states that a person's motivation is determined by a balance of positive and negative ways in how one sees themselves in the future [5]. The Theory of Possible Selves shows that youth are motivated in their current life and situation by creating images of possible future selves. This motivation is promoted by a positive self that is prepared to make healthy decisions, deal with obstacles, challenges, setbacks and disappointments. Both Project AIM and the Ateyapi Program offered mentoring to participants. The Ateypai Program extended the offer of mentoring to be both in-school and after-school and to last for more than one academic year.

The Ateyapi Program includes additional lessons on Lakota culture, human sexuality, birth control methods, and STI/HIV. Additionally, all 16 lessons are integrated with Lakota practices, values, language, and traditions in helping adolescents make healthy choices.

In order to strengthen the implementation of the Theory of Possible Selves, the Ateyapi Program provides American Indian adolescent youth an opportunity to learn, explore, discuss and practice Lakota traditions, language, and values that affirms what it is to be Lakota. The activities are embedded in the original lessons with extended practice times after the lesson period. The additional lessons added to the original Project AIM focus on substance use, sexual health and various Lakota traditional experiences. Lakota traditional experiences included participation in a Lakota drum and singing group, performing as a pow wow dancer, engaging in some aspect of the Sun Dance activities, and being a participant in an inipi (sweat lodge). The Ateyapi Program offered a longer session to enable youth to experience a vision quest, a rite of passage providing time for a person to develop a deep communion with the fundamental forces and spiritual energies of creation and their self-identity. During this time of intense spiritual communication a person can receive profound insight into himself or herself and the world around them.

Students participated in a school-based mentoring program and an after-school curriculum for a period of 36 weeks (one academic school year) and 8 weeks during the summer. During this period, students were able to access in-school tutoring and mentoring, offered 15 classroom-based lessons and a six-hour Vision Quest activity in an 11-week period, and the opportunity to participate in a number of activities focusing on learning and practice of Lakota culture and practices. After-school programming, whether classroom-based lessons or cultural activities, were offered from 3 to 6 p.m. Students not actively involved in the classroom-based lessons participated in a set of Lakota cultural activities and practices during the year as part of the after-school program and occasionally on weekends. During the summer weeks, students were able to attend classroom-based lessons they missed, work with their mentors, and participate in additional cultural activities.

Youth spent about 1,110 minutes in classroom-based lessons (15 lessons @ 50 minutes each = 750 minutes plus 1 lesson designated as a “Vision Quest” = 360 minutes), 160 hours on

Lakota activities (4 hours per week @ 40 weeks = 160 hours) and about 72 hours on mentoring (as needed: about 2 hours per week @ 40 weeks = 80 hours). During the summer, youth were involved in about 2 hours of content lessons and 6 hours of cultural activities per week (or 16 hours of content and 48 hours of cultural activities per summer).

The Ateyapi Program facilitators were young adults who had completed college or in college pursuing a degree. All facilitators served as mentors, were enrolled members of a tribe, and were required to model exemplary behavior in terms of alcohol and social behaviors. Ateyapi Program facilitators delivered curriculum and provided adult supervision during Lakota cultural activities to intervention students and served as mentors to both intervention and comparison students. Mentoring was provided to both the comparison group and the intervention group members during and after school between the hours of 8 a.m. and 6 p.m.

The Ateyapi Program partnered with a number of other agencies in the area that shared resources and provided services to the target population. Rapid City Central High School provided space or the classroom-based lessons as well as office space for the mentors, secretary, and coordinator. The staff and administration at the high school also supported the program by referring American Indian students to the program and collaborating with the facilitators to address student issues. Finally, the Ateyapi Program partnered with the Indian Health Service, Black Hills United Way, Pennington County Community Health Services, Rapid City High School (Alternative High School), and Aberdeen Tribal Health Board by providing medical examinations (pregnancy test, STI/HIV tests, etc.), health education, and financial support for the students and program.

B. Description of counterfactual condition

Although both intervention and comparison youth had access to the same mentors, the comparison group did not receive any classroom-based lessons from the Ateyapi Program and the intervention participants had additional time with the mentors in the after-school program. The comparison group were not invited to participate in any of the Lakota cultural activities during the school year or in the summer nor did they participate in any of the classroom-based lessons about the Lakota traditions and culture. Each participant whether in the intervention group or comparison group, had similar opportunities to work with the same group of mentors

during and after school. The dosage of mentoring was not recorded for either group. During the time of implementation, Ateyapi Program was the only teenage pregnancy prevention program or youth development program being offered after-school or during school at Central High School. Students may have received mentoring from teachers, counselors, coaches, or administrators.

III. Study design

A. Sample recruitment

The target population for the program was the American Indian students enrolled at Central High School. The primary focus was ninth graders (age 14-16 year), but students from the other grades were not excluded. The only exclusion was if the student had previously participated in the program. In the beginning of the school year, program staff held information and recruitment meetings as part of the school orientation for freshman and special assemblies for AI students. At these presentations the staff provided an overview of the Ateyapi Program and the services that would be provided to all students who enrolled in the program. Students were informed of the random selection of about 120 students to actively participate in a curriculum that could be helpful to them as they journeyed through their high school education.

When students signed up for the program, they were required to complete two forms: a Rural America Initiative intake form and an active consent form with their parent's or guardian's signature. After the students completed the intake and active consent forms, then the students completed the pre-intervention questionnaire. Only those students and parents who completed the active consent form and appropriate intake forms participated in the program. Students were stratified by gender and grade. Random assignment was conducted with a stratum using a 1:1 assignment ratio with a target sample size of 120 students per group.

The intervention group and comparison group assignments were given to the program coordinator who then contacted the individual students to inform them of their assignment. Since the curriculum was offered three times throughout the year, students were placed in one of the three cycles that is amenable to their class and extracurricular schedules. For the three years of recruitment there were a total of 722 students recruited with 365 assigned to the intervention

group and 357 assigned to the comparison group. There were options for students to drop out the program without penalty.

B. Research design

This study used a randomized control trial (RCT) design. After assignment to the intervention group, students completed 16 lessons of the Ateyapi Program curriculum, and participated in Lakota cultural activities. Similar to the comparison group, they had access to an adult mentor, who was a member of a Lakota tribe. Students were committed to one-year of active participation with a one year follow-up of assessments and mentor support. The comparison group had no direct access to the Ateyapi Program classroom lessors or the Lakota cultural activities.

Although an RCT, there was a high attrition at both the 9 month and 15 month follow-up assessments. There were significant differences on baseline characteristics in the 15 month analytic sample. Propensity score matching was used to identify an intervention group and comparison group for the 9-month and 15-month analyses. The matching of the data from the intervention group and comparison group involved the use of an optimal data matching algorithm. The algorithm created a 1:1 intervention-comparison match using the Mahalanobis distance within propensity score calipers distance metric. [6, 7] This matched data set then was used to analyze the data. More details on the propensity score matching approach can be found in Appendix F.

C. Data collection

1. Impact evaluation

Demographic, attendance, fidelity, and observation data were collected by the staff members. Pre, post and follow-up questionnaires were administered online to all students and demographic information was requested at each data collection point (race, ethnicity, gender, age, and grade level). The baseline data were collected in the Fall when each cohort entered the program (i.e., Fall 2011, Fall 2012, and Fall 2013). At the end of each school year (May) a post questionnaire was administered to both the intervention and comparison groups. The same groups completed a follow-up questionnaire the Fall of the following year before December 15.

The Data Collection Efforts and Implementation Evaluation Data Collection Tables show the data collection timelines and addresses how the implementation of the data collection processes addressed the research questions (Appendix A).

2. Implementation evaluation

Data for the implementation evaluation included data focused on adherence – both attendance and fidelity, quality, counterfactual, and context. Details for each type of data collection can be found in Appendix B.

For example, to understand the adherence, after each lesson, a fidelity self-assessment log was completed by the facilitator in which all topics required for the lesson were checked off if they had been delivered. The fidelity self-assessment logs were reviewed by the program coordinator and program evaluator. Additionally, at least 10% of the lessons delivered during the year were observed by an external observer (Executive Director, Program Coordinator, or Program Evaluator). The Program Coordinator made sure that each facilitator was observed at least 3 times during the year delivering different lessons. Using the External Observation Assessment Tool, facilitators were ranked by an external observer from poor (1) to excellent (5) on ten measures focusing on lesson delivery, timing, poise, and confidence. The results of these observations were shared with each of the facilitators to improve implementation. The Program Coordinator provided pedagogical guidance wherever it was necessary.

The External Observation Assessment Tool is a 15-item observation record. Each item has a response scale from 1 (lowest point) to 5 (highest point). Items are tailored for particular sessions prior to the observation. One item captures whether the topics in the session were covered. One item captures whether all planned activities were completed as planned. Two items record the interaction between the facilitator and the students. Two items capture student engagement from the beginning to the end of the session. The observer completes the tool while observing the session. Additional comments can be captured to share with the facilitators for addressing any areas requiring improvement or highlighting areas of strength.

D. Outcomes for impact analyses

Outcomes were collected using an online survey. Outcomes were constructed from a set of performance measure asking about sexual behaviors. As seen in Tables III.1 and III.2, three items were used to construct the outcomes of interest: sexual activity in the past three months and use of safe sex practices in the past three months.

In this study sexually active was defined as participating in any form of sexual intercourse including vaginal intercourse, anal intercourse, or oral sex (sexual activities involving the stimulation of sex organs by the use of mouth, tongue, teeth, or throat). Safe sex practices were defined as taking steps before and during sex that prevented a person from getting an infection or disease, or from giving one to his or her partner, in addition to avoiding an unwanted pregnancy. Use of safe sex practices could mean abstaining from sexual activity or using effective birth control during sexual activity including condoms, IUD (Mirena or Pragard), birth control pills, the ring (NuvaRing), the patch, the shot (Depo Provera), implant (Implanon), the rhythm method, vasectomy, and tubal ligation.

Table III.1. Behavioral outcomes used for primary impact analyses research questions

Outcome name	Description of outcome	Timing of measure relative to program
Had Recent Sexual Intercourse	*The variable is a yes/no measure of whether a person has ever had sexual intercourse. The measure is taken directly from the following item on the survey:* • *"Have you ever had sex in past 3 months?"* *The variable is constructed as a dummy variable where respondents who respond yes they have had sex are coded as 1 and all others are coded as 0. Students who responded they had never had sex were logically imputed as 0 (no) for this item.*	*At the end of the intervention (9 months)*
Safe Sex	*The variable is a yes/no measure of whether a person has used a protected sex method:* • *In the past 3 months, have you had sexual intercourse without using a condom?* • *In the past 3 months, have you had sexual intercourse without using an effective method of birth control?* *The variable is constructed as a dummy variable where respondents who respond yes they have used some form of protected sex or abstained from sex was coded as 1 and coded as 0 for not using any protected method. Students who responded they had never had sex were logically imputed as 0 (no) for this item.*	*At the end of the intervention (9 months)*

Table III.2. Behavioral outcomes used for secondary impact analyses research questions

Outcome name	Description of outcome	Timing of measure relative to program
Had Recent Sexual Intercourse	*The variable is a yes/no measure of whether a person has ever had sexual intercourse. The measure is taken directly from the following item on the survey:* • *"Have you ever had sex in past 3 months?"* *The variable is constructed as a dummy variable where respondents who respond yes they have had sex are coded as 1 and all others are coded as 0. Students who responded they had never had sex were logically imputed as 0 (no) for this item.*	*Follow-up at 15 months after baseline and the completion of the intervention.*
Safe Sex	*The variable is a yes/no measure of whether a person has used a protected sex method:* • *In the past 3 months, have you had sexual intercourse without using a condom?* • *In the past 3 months, have you had sexual intercourse without using an effective method of birth control?* *The variable is constructed as a dummy variable where respondents who respond yes they have used some form of protected sex or abstained from sex was coded as 1 and coded as 0 for not using any protected method. Students who responded they had never had sex were logically imputed as 0 (no) for this item.*	*Follow-up at 15 months after baseline and the completion of the intervention.*

E. Study sample

For the three cohorts of students that agreed to participate in the Ateyapi Program, the average enrollment (9^{th} to 12^{th} grade) for Rapid City Central High School was 1,949 with an average enrollment of 441 American Indian students. From this population, 722 consented to participate in the program for one year. Approximately, half of the students (n = 365; 50.5%) were randomly assigned to the intervention group and the other half of the students (n = 357; 49.5%) to the comparison group.

The 9-month intent to treat (ITT) sample included 524 students who completed the nine months (post) questionnaire of which 312 students were in the intervention group and 212 students were in the comparison group. The 15-month ITT sample of 337 students completed the follow-up questionnaire with 179 participants from the intervention group and 161 students from the comparison group (Appendix C).

The sample size that was identified through propensity score matching, and is used in the analyses presented in this report, was slightly smaller than the ITT sample. For the analyses focused on the 9-month outcomes, the propensity score matching sample included 195 intervention students and 195 comparison students. The 15-month outcome analysis used a propensity score matching sample that included 148 intervention students and 148 comparison students.

F. Baseline equivalence

Baseline equivalence was examined for the following analytic samples: ITT sample at 9-month, ITT sample at 15-month, propensity score matched sample at 9 months, and propensity school matched sample at 15-month. The following baseline characteristics were examined:

- Age (in years) with standard deviation and sample size
- Female (%)
- Race (%): Lakota (AI) and non-Lakota (Asian, Black, White, and two or more races)
- Recent sexual intercourse in the past three months
- Use of safe sex practices in the past three months.

The mean or percentage, standard deviation, and p-value for a t-test or chi-square test are report in Tables III.3a and III.3b. Focusing on the ITT sample, significant differences between the intervention and comparison groups were found on baseline characteristics in the analytic sample for the 15-month follow-up. No significant differences were found for the ITT analytic sample focused on the 9-month outcomes. Focusing on the propensity score matched samples, no significant differences were found between the intervention and comparison groups for the 9-month and 15-month analytic sample.

Table III.3a: Summary statistics of key baseline measures for youth completing Ateyapi Identity Mentoring Program Nine-Month Questionnaire – Propensity Score Matching

Baseline measure	Intervention Mean or % (standard deviation)	Comparison Mean or % (standard deviation)	Intervention versus comparison Mean difference	Intervention versus comparison *p*-value of difference
Age or grade level	15.28 (1.125)	15.36 (1.152)	0.087	0.4500
Gender (female)	48.72%	48.21%	0.51%	0.9193
Race/ethnicity				
Lakota (AI)	74.46%	73.08%	1.38%	0.8180
Ever Had Sex	34.36%	39.49%	5.13%	0.2953
Recent Sexual Intercourse (Past 3 months)	17.95%	24.62%	6.67%	0.1083
Use of Safe Sex Practices (Past 3 months)	90.72%	86.15%	4.57%	0.1598
Sample size	195	195	0	

Table III.3b: Summary statistics of key baseline measures for youth completing Ateyapi Identity Mentoring Program 15-month (Follow-up) Questionnaire – Propensity Score Matching

Baseline measure	Intervention Mean or % (standard deviation)	Comparison Mean or % (standard deviation)	Intervention versus comparison Mean difference	Intervention versus comparison *p*-value of difference
Age or grade level	15.25 (1.089)	15.24 (1.110)	0.01	0.8159
Gender (female)	48.65%	47.30%	1.35%	0.8168
Race/ethnicity				
Lakota (AI)	80.41%	73.12%	6.60%	0.1690
Ever Had Sex	27.70%	33.11%	5.41%	0.3137
Recent Sexual Intercourse (Past 3 months)	14.19%	20.95%	6.76%	0.1275
Use of Safe Sex Practices (Past 3 months)	96.62%	93.92%	2.70%	0.2745
Sample size	148	148	0	

G. Methods

1. Impact evaluation

Effects of Ateyapi Program were estimated using a logistic regression model and a linear probability model. The model included group assignment (intervention versus comparison) and the five covariates (predictors): age, gender, race, sexual initiation, and recent sexual intercourse. An estimated probability equation was generated to answer the research questions based on the five predictors and assignment to either the intervention group or comparison group.

The covariates are listed in **Table IV.** The covariates were used to establish propensity score matching and as predictors in the analysis of the findings which was included in the linear probability model. In this study analyses were performed with adjustments to the data set as a primary approach to answering the research questions to obtain baseline equivalence between the intervention and comparison groups. The analyses were complete case analyses so there were no cases with missing.

Given that there are two outcomes examined for the primary research questions, we implemented a multiple comparison adjustment using the Bonferroni methods, so a p-value needs to be less than 0.025 to be statistically significant.

Table IV: Covariates Included in Impact Analyses

Covariate	Description
Male	. Individuals who are male are coded 1 while females are coded 0 and serve as the reference category.
Lakota (AI)	Individuals who are Lakota are coded 1 while non-Lakota individuals ae coded 0 and serve as the reference category.
Sexually Active	Baseline measure of whether an individual was sexually active. Individuals who said yes were coded as 1 while those who reported never engaging in sex were coded as 0.
Age	The age ranges from 14 to 19 years of age.
Recent Sexual Activity	Baseline measure of sexual activity in the past three months. If the response was rest, then it was coded as 1. If the response was no, then it was coded as 0.
Use of Safe Sex Practices	Baseline measure of whether the individuals had abstained or used a safe sex practice when they were sexually active in the past 3 months. Individuals who had abstained or always used a safe sex practice when sexually active were coded as 1. Individuals who were sexually active and reported that they had sex in the past 3 months without using a safe sex practice were coded as 0.

Additionally, two sensitivity analyses were conducted to determine the findings were robust. The response rates sensitivity analyses showed that at baseline and the two follow-up data collection points the differences in rates between the intervention and comparison groups were not statistically significant in the ITT sample and the propensity score matched sample. The logistic regression sensitivity analyses showed similar results, no significant differences in the estimated probabilities at baseline and the two follow-up data collection points for the primary and secondary questions. More details on the sensitivity analyses can be found in Appendix E.

2. Implementation evaluation

The implementation evaluation focuses on four concepts: adherence, quality, counterfactual, and context. Summary statistics – for example the number of sessions hosted or the average attendance rate – were calculated as described in Appendix D.

IV. Study findings

A. Implementation study findings

1. Adherence

Each year a total of 112 lessons were delivered, which was the total number of lessons planned each year. Students attended 83.58% of lessons with a range of 57.67% to 100%. The percentage of students who completed 75% or more of the lessons within a cycle was 79.17% with a range of 58.33% to 100% over the three year implementation period. Overall, the average number of sessions attended by the participants was 13.5. Depending upon the session, the number of topics covered in a lesson varied from 2 to 4. There were a minimum of 11 observations per year. In all the sessions observed, the facilitators covered 100% of the topics required for a lesson.

The program had six facilitators who were trained to deliver the program. Each year there were about two new replacement facilitators that were trained to teach the program when training opportunities occurred during the year.

2. Quality

Based on observations using the *External Observation Assessment Tool*, the mean rating for all the observations in the first year of implementation was 4.38; in the second year of implementation the mean rating was 4.74; and in the third year of implementation, it was 4.55. The direct observation scores and comments were shared with the facilitators.

The same observation tool was used to capture data as an indicator of staff-participant interactions. In 48.7% of the sessions observed, the staff members were rated as having excellent interaction with the participants, while in 51.4% of the observed sessions the interactions between the facilitator and participants were above average.

An indicator of youth engagement was rated as the level of participation by the participants in the discussions and activities during the observation of the sessions. In 67.6% of the sessions observed, the participants were rated as having excellent engagement in the sessions, while in 29.7% of the observed sessions the engagement between staff member and participants were above average. In 2.7% of the sessions observed, the level of youth engagement was rated below average.

3. Counterfactual

Based on facilitator observations of school programming and conversations with school administration there were no other sex education programs at the high school.

4. Context

Both the intervention and comparison groups received mentoring and tutoring from the facilitators, who not only delivered the lessons, but served as mentors. Some of the students received referrals for individual situations regarding personal problems, educational support, or other situations.

The Rapid City School District was very supportive of the Ateyapi Program and provided dedicated office and classroom spaces for the program within the high school premises. The presence of the program within the high school has been very positive and there was a desire for the program to continue.

B. Impact study findings

Primary Research Questions

There were no significant findings at 9 months. Based on the propensity score matched sample, 82.20% of the intervention group and 75.29% of the comparison group reported using safe sex practices in the past 3 months [$t(387) = 1.608$; $p < 0.1088$]. There was not a significant difference on recent sexual activity: 21.17% of the intervention group and 28.24% of the comparison group reported having sexual intercourse in the past 90 days [$t(387) = 1.490$; $p < 0.1371$].

Table V.1. Post-intervention estimated effects using data from Ateyapi Program: 9-Month Questionnaire to address the primary research questions - Propensity Score Matching

Outcome measure	Intervention Mean or % (standard deviation)	Comparison Mean or % (standard deviation)	Intervention compared to comparison Mean difference (p-value)
Recent Sexual Intercourse – 9 months	0.2147 (0.4117)	0.2824 (0.4515)	0.0677 (0.1371)
Safe Sex Practices – 9 months	0.8220 (0.3835)	0.7529 (0.4326)	0.0690 (0.1088)

Secondary Research Questions

No significant differences were found at 15-month for either recent sexual activity or use of safe sex practices. Based on the propensity score matching sample, 23.65% of the matched intervention group and 31.72% of the comparison group reported having sexual intercourse in the past 3 months [$t(291) = 1.546$; $p < 0.123$]. For the use of safe sex practices, 86.49% of the high school students in the intervention group and 80.41% of the comparison group reported using safe sex practices every time they had sexual intercourse in the past 3 months [$t(294) = 1.407$; $p < 0.1604$].

Table V.2. Post-intervention estimated effects using data from Ateyapi Program: 15-Month Questionnaire to address the secondary research questions - Propensity Score Matching

Outcome measure	Intervention Mean or % (standard deviation)	Comparison Mean or % (standard deviation)	Intervention compared to comparison Mean difference (p-value)
Recent Sexual Intercourse – 15 months	0.2365 (0.4264)	0.3172 (0.4670)	-0.0807 (0.1231)
Safe Sex Practices – 15 months	0.8649 (0.3430)	0.8041 (0.3983)	0.0608 (0.1604)

Additional analyses were conducted to assess sensitivity of the benchmark or main analysis. The findings are similar to the benchmark analysis. Appendix E shows that the ITT

analyses found non-significant differences for all outcomes at all time points except for the 9-month outcome on the recent use of safe sex practices.

V. Conclusion

The Ateyapi Program implemented in Rapid City Central High School to help AI students develop a positive future self and make healthy choices regarding sexual activity. The adaptation of the Adult Identity Mentoring Program included the introduction of lessons on safe sex and the prevention of sexually transmitted diseases and pregnancy. The curriculum was supplemented with Lakota cultural activities and practices.

Two outcomes – recent sexual activity in the past 3 months and use of safe sex practices in the past 3 months – were examined at two points in time – 9-month and 15-month post intervention. No significant differences were found. The lack of significant differences were found in a study that had strong implementation with students and facilitators adhering to the program and in the absence of other school-based pregnancy prevention programs.

There are a number of possible explanations for the lack of significant findings. First, both the intervention and comparison students had access to the facilitators as mentors. It is possible that during the mentoring conversations comparison youth were given information and support to help them make similar choices to intervention youth. Additionally, the degree to which the intervention youth may have shared the knowledge they gained in classroom-based activities with comparison youth is not known. No data were collected to support an analysis of the amount of mentoring or content of mentoring sessions. The other possible explanation that cannot be discounted with the available data is other pregnancy prevention programming in the community. It is not known whether students were offered pregnancy prevention programming in settings other than the school. It is also possible that there other Lakota programs working to increase knowledge of history and traditions in the community at large.

Research has identified a number of factors that contribute to engaging in safe sexual practices. Factors have been noted to be complex and occur at multiple levels – individual, family, peer, community, social and cultural systems. The majority of factors fall into one of four themes: (1) biological factors such as age, physical maturity, and sex; (2) disadvantage, disorganization, and dysfunction in the lives of teens and their families, peers, and communities; (3) sexual values and norms expressed or modeled by teens themselves or by their families, romantic partners, peers, faith communities, schools, and communities; and (4) teens' connection to groups or institutions that discourage risky sexual behavior, encourage responsible behavior,

or both [9].

The Ateyapi Program provided the participants with skills for making healthy decisions, understanding the importance of goals and values in the context of Lakota norms and traditions, and providing a mentor. The program did not address many of the other contributing risk and protective factors that are part of any adolescent life.

As a result of these findings, the program implementers are investigating the curriculum to determine if it is giving enough time and emphasis on safe sexual practices or the avoidance of sexual activity. The current curriculum spent about 8% of the allocated time on topics related to sexually transmitted disease, condom use, and birth comparison methods. Studies have emphasized the importance of providing time on an evidence-based pregnancy prevention and contraceptive effectiveness program for adolescents that is comprehensive medically accurate, and relevant [10, 11, 12]. By increasing curriculum time allotted to safe sex education, future evaluation and research will determine if this was a major contributor to a lack of significant increase in intent to use effective birth comparison methods.

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Appendix A: Data Collection Efforts

There were three cohorts of students recruited in the Fall of 2011, 2012 and 2013. Before the students could complete the baseline questionnaire online students had to submit a signed parent consent form. Staff members were trained by the evaluator on how to administer the questionnaire during the recruitment period.

The baseline or pre-questionnaires were administered in September, while the first follow-up (post – 9-month) questionnaires were administered in May after the completion of the intervention. The second follow-up questionnaire (15-month) was administered from mid-November to mid-December. The web online questionnaire was designed to minimize any missing responses. Students were required to answer all the questions on a page before they could advance to the next page. The questionnaire administrators or the evaluator were always present in the school computer laboratory and provided any assistance when requested.

Table A.1. Data collection efforts used in the impact analysis of Ateyapi Identity Mentoring Program and timing

Data collection effort	Cohort 1	Cohort 2	Cohort 3
Start date of programming	*10/01/11*	*10/01/12*	*10/01/13*
Baseline survey (Pre-Intervention)	*09/01–09/30/11*	*09/01–09/30/12*	*09/01 – 09/30/13*
9 month Survey (Post)	*05/01–05/30/12*	*05/01–05/31/13*	*05/01–05/31/14*
15 month Survey (Follow-up)	*11/15-12/15/12*	*11/15-12/15/13*	*11/15-12/15/14*

Appendix B: Implementation Data and Analysis Tables

Table A.1. Data used to address implementation research questions

Implementation Element	Types of data used to assess whether the element of the intervention was implemented as intended	Frequency/sampling of data collection	Party responsible For data collection
Adherence			
(1) How many and how often were sessions offered: e.g. number of sessions delivered, average duration, average frequency	*MIS record of session delivered for each of the 16 Ateypai Program Lessons*	*Facilitators completed the MIS log for each session documenting the data, lesson number, and length of lesson.*	*Program staff*
(2) What and how much was received: e.g. average number (percent) of sessions attended, percentage of sample that did not attend at all (no-shows)	*MIS record of student attendance at each of the 16 sessions.*	*Facilitators completed a session specific form in the MIS log documenting which students attended the session. If student's made up a session during the summer, the log was updated to indicate they had received the session.*	*Program staff*
(3) What content was delivered to youth: e.g. total number of topics covered, proportion of material that was ultimately discussed in sessions	*Session specific log documenting whether a specific topic in a session was covered.*	*Facilitators completed session specific Fidelity Self-Assessment Logs.*	*Executive Director* *Program Staff*
(4) Who delivered material to youth: e.g. # and type of staff delivering the program to participants, position requirements or qualifications, % of staff trained and receiving ongoing support	*Personnel records were kept for each facilitator, including whether they were an enrolled members of a tribe, had completed college, and had knowledge and experience in Lakota practices and traditions.*	*Personnel records were available to Program Coordinator and Executive Director.*	*Executive Director* *Program Coordinator* *Program Staff*
Quality			
Quality of staff-participant interactions	*Observation logs developed by the evaluator were completed by non-facilitators at the time of observation*	*Convenience sample of 10% of classroom sessions (n = 96) were selected for observation*	*Executive Director* *Program Evaluator*
Quality of youth engagement with program	*Observations logs contained a rating scale using the YPQA format and a qualitative comment section for lesson delivery improvement.*	*Random sample of 10% of all sessions were selected for observation by a non-facilitator.*	*Executive Director* *Program Evaluator*

Counterfactual			
Experiences of counterfactual condition	*Participants completed four questionnaires included items that asked about other pregnancy prevention programming.* *Staff spoke with school administrators and community leaders to learn what other teen pregnancy prevention programming may have been offered in the community.*	*Participants completed surveys four times in two years.* *Annual conversations were held with school administrators and community leaders.*	*Program Evaluator* *Program staff*
Context			
Other TPP programming available or offered to study participants (both T and C)	*Staff spoke with school administrators and community leaders to learn what other teen pregnancy prevention programming may have been offered in the school or local community.* *Both intervention and comparison groups received mentoring and tutoring support during the school day and after school.*	*Annual conversations were held with school administrators and community leaders.* *Mentors tracked the number of students receiving services and the amount of time spent per student.*	*Evaluation staff* *Program staff*
External events affecting implementation (for instance school turnover, budget cuts, etc.)	*Evaluation staff spoke with program and school staff to identify external events that may have affected implementation*	*Annual conversations were held with program staff, school administrators and community leaders.*	*Program Coordinator* *HS Principal* *Executive Director*
Substantial unplanned adaptation(s)	*Session specific fidelity logs documented unplanned adaptations.*	*Facilitators completed session specific fidelity logs following each session.*	*Program Coordinator* *Program Staff* *Program Evaluator*

Appendix C: Study Sample

	Time period	Total sample size	Intervention sample size	Comparison sample size	Total response rate	Intervention response rate	Comparison response rate
Number of Cohorts							
1. Cohort 1	*2011-13*	*339*	*120*	*119*			
2. Cohort 2	*2012-14*	*245*	*123*	*122*			
3. Cohort 3	*2013-15*	*238*	*116*	*116*			
Number of Youth							
4. Baseline	*9/11;9/12;9/13*	*722*	*365*	*357*			
5. 9 month follow-up (post)- ITT Sample	*5/12;5/13;5/14*	*524*	*312*	*212*	*72.6%*	*85.5%*	*59.4%*
6. 9 month follow-up – PSM Sample		*390*	*195*	*195*	*54.0%*	*53.4%*	*54.6%*
7. 15 month follow-up – ITT Sample	*12/12;12/13;12/14*	*337*	*179*	*161*	*46.7%*	*49.0%*	*45.1%*
8. 15 month follow-up – PSM Sample		*296*	*148*	*148*	*41.0%*	*40.6%*	*41.5%*

PSM = Propensity Score Matched

Appendix D: Implementation Evaluation Methods

Table A.2. Methods used to operationalize each implementation element

Implementation Element	Methods used to operationalize each implementation element
Adherence	
(1) How many and how often were sessions offered: e.g. number of sessions delivered, average duration, average frequency	*The total number of Ateyapi Program sessions offered is a sum of the session offered captured in the MIS log..* *Average session frequency of Ateyapi Program sessions (by cohort) is calculated as the sum of the total number of sessions offered each week divided by the total number of active classes (per cohort). Statistics will be reported for each of the possible 16 sessions by year. Both numerator and denominator are captured by the MIS log.*
(2) What and how much was received: e.g. average number (percent) of sessions attended, percentage of sample that did not attend at all (no-shows)	*Average number of Ateyapi Program sessions attended per participant will be calculated as the sum of the total number of sessions attended by each participant divided by the total number of participants assigned to the Ateyapi Program conditions. (Note: A participant may attend a maximum of 16 sessions.)* *Percentage of participants who attended at least 75% of Ateyapi Program sessions will be calculated as the number of participants who attended at least 12 of the 16 sessions divided by the number of observations.*
(3) What content was delivered to youth: e.g. total number of topics covered, proportion of material that was ultimately discussed in sessions	*The percentage of topics covered for each session will be calculated as the number of topics covered divided by the total number of topics in that session.* *The percentage of sessions in which 100% of topics were covered will be calculated as the number of session for which 100% of topics covered divided by the total number of sessions for which topic coverage was calculated.*
(4) Who delivered material to youth: e.g. # and type of staff delivering the program to participants, position requirements or qualifications, % of staff trained and receiving ongoing support	*Using the facilitator position description and personnel records, the percentage of facilitators who met each criteria in the position description will be calculated as the number of facilitators who met the criterion divided by the total number of facilitators.* *The percentage of facilitators trained in the Ateyapi Program curriculum will be calculated as the number of facilitators who completed training divided by the total number of facilitators sent to training.*
Quality	
Quality of staff-participant interactions	*The overall quality of staff-participant interactions was calculated as the average score of relevant questions from the External Observation Assessment Tool. These items uses a scale of poor (1) to excellent (5).*
Quality of youth engagement with program	*The overall quality of youth engagement was calculated as the average score of the relevant questions from the External Observation Assessment Tool. These items uses a scale of 1 (little participation) to 5 (active participation).*
Counterfactual	
Experiences of counterfactual	*Percentage of participants who report in the post questionnaire if they have participated in any TPP program in addition to the Ateypai Program. The percentage is calculated by dividing the number of*

	students who report past year TTP program experience by the total number of students who complete the questionnaire.
Context	
Other TPP programming available or offered to study participants (both intervention and comparison groups)	***Percentage of participants self-reporting past-year exposure to reproductive health education will be calculated as the total number of participants who report past-year exposure to reproductive health education divided by the total number of participants who completed the questionnaire.*** ***Percentage of participants of self-reporting past-year experiences with other TPP programs will be calculated as the total number of participants who report past-year experiences with other TPP programs divided by he total number of participants who complete the questionnaire.***
External events affecting implementation (for instance school turnover, budget cuts, etc.)	***A list of external events that did or may have affected program implementation will be described in the final report.***
Substantial unplanned adaptation(s)	***A list of any substantial unplanned adaptations to the program, for which adaptation requests were made to OAH, will be described in the final report.***

Appendix E: Sensitivity analyses

Response Rate Analyses

The sensitivity analyses compared the proportional differences of responses between the intervention and comparison groups for each data collection point. The Student t-test was used to test the significance of the differences at the alpha 0.05 level. The benchmark, 9 months and 15 months data sets are presented for the ITT sample (Table E.1) and propensity score matched sample (Table E.2). In the ITT sample there was a significant difference reported for the use of safe sex practices at the 9 months data collection point, but taking into consideration multiple comparison adjustments, no significant difference was noted.

Table E.1. Sensitivity of impact analyses using data from Ateyapi Program Questionnaires to address the primary and secondary research questions – ITT Sample

	Benchmark approach		Student t-test 9 months		Student t-test 15 months	
	Diff.	*p*-value	Diff.	*p*-value	Diff.	*p*-value
Intervention compared with Comparison						
Recent Sexual Intercourse	0.0828	0.0092	0.0443	0.2521	0.0877	0.0694
Use of Safe Sex	0.0633	0.0117	0.4132	0.0412	0.0641	0.1073

Table E.2. Sensitivity of impact analyses using data from Ateyapi Program Questionnaires to address the primary and secondary research questions – Propensity Score Matched Sample

	Benchmark approach		Student t-test 9 months		Student t-test 15 months	
	Diff.	*p*-value	Diff.	*p*-value	Diff.	*p*-value
Intervention compared with Comparison						
Recent Sexual Intercourse	0.0530	0.0922	0.0677	0.1371	0.0807	0.1231
Use of Safe Sex	0.0470	0.0729	0.0690	0.1088	0.0608	0.1604

Logistic Regression Models

A logistic regression model was used to predict the probability of the dichotomous outcomes for research questions on recent sexual intercourse and the use of safe sex practices [13, 14]. The predictors for the model were age (continuous), gender (male = 1 and female = 0), race (American Indian = 1 and not American Indian = 0), and group assignment (intervention = 1 and comparison = 0). The logistic model was applied to fit the data from each data collection point (9 months and 15 months).

The logistic regression model was defined as:

$$logit\ [\Pr(Y = 1|X = C)] = \beta_0 + \beta_1 * Age + \beta_2 * Gender + \beta_3 * Race + \beta_4 * Group + \beta_5 * Sexually\ Active$$

Where C = the covariates (predictors) as defined above.

The estimated probability was defined as:

$$\hat{p} = \frac{e^{\beta_0+\beta_1*Age+\beta_2*Gender+\beta_3*Race+\beta_4*Group+\beta_5*Sexually\ Active}}{1 + e^{\beta_0+\beta_1*Age+\beta_2*Gender+\beta_3*Race+\beta_4*Group+\beta_5*Sexually\ Active}}$$

The sensitivity analyses of the logistic regression equation models generated for each data collection point was tested by calculating the estimated probability for two examples – intervention and comparison. The probability was based on two American Indian males, age 15, who were sexually active. One male was assigned to the intervention group and the other male was assigned to the comparison group. The difference of estimated probabilities between the two groups were tested using the z-scores. Tables E.3 and E.4 show that there were no significant differences noted between the groups and between the ITT samples and Propensity Scoring Matched samples.

Table E.3. Sensitivity of impact analyses using data from Ateyapi Program Questionnaires to address the primary & secondary research questions – ITT Sample

	Benchmark approach		z-test 9 months		z-test 15 months	
	Diff.	*p*-value	Diff.	*p*-value	Diff.	*p*-value
Intervention compared with Comparison						
Recent Sexual Intercourse	0.0177	0.5400	0.0211	0.5521	0.0172	0.7153
Use of Safe Sex	0.0661	0.0592	0.0459	0.2109	0.0355	0.4730

Table E.4. Sensitivity of impact analyses using data from Ateyapi Program Questionnaires to address the primary & secondary research questions – Propensity Score Matched Sample

	Benchmark approach		z-test 9 months		z-test 15 months	
	Diff.	*p*-value	Diff.	*p*-value	Diff.	*p*-value
Intervention compared with Comparison						
Recent Sexual Intercourse	0.0172	0.5472	0.0211	0.5845	0.0231	0.6423
Use of Safe Sex	0.0544	0.1178	0.0459	0.2552	0.0932	0.0752

Appendix F: Propensity Score Matching

Propensity score matching is a method to reduce bias in non-randomized and observational studies. Since in this randomized study baseline equivalences for the pre-intervention, 9 months, and 15 months in its ITT samples had significant differences in some of the selected covariates, propensity score matching was used in order to create sample sets with no significant differences in all the selected covariates (age, gender, race, Hispanic, sexually active, sexual intercourse in the past 3 months, use of condoms in the past 3 months, and use of birth control methods in the past 3 months). Another consideration for using propensity score matching was the high attrition rates at each data collection point.

Gu and Rosenbaum (1993) compared the greedy and optimal algorithms and found that the optimal matching was better in producing closely matched pairs [16]. Therefore, the optimal algorithm was used in this study in order to generate matched samples for the proposed analyses. Using this approach, pairs of intervention and comparison subjects were formed such that the difference in propensity scores between matched subjects differed by at most a fixed distance (the caliper width). The algorithm used a caliper width equal to 0.2 of the standard deviation of the logit of the propensity score [17]. The optimal algorithm generated a 1:1 match taking advantage of the smaller group (in most cases the comparison group) to create the matched sample. The choice of caliper reflected the variance-bias and resulted in the matching of more similar subjects.