

**Summary of the
Evaluation of the Pono Choices Program—
A Culturally Responsive Teen Pregnancy and
Sexually Transmitted Infection Prevention Program
for Middle School Youth in Hawai‘i**

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Evaluation of the Pono Choices Middle-School Sexual Health Curriculum in Hawai'i

The University of Hawai'i at Mānoa Center on Disability Studies (CDS) received funding from the U.S. Department of Health and Human Services' Office of Adolescent Health to develop and implement a culturally responsive middle-school sexual health curriculum in Hawai'i, and to conduct a rigorous evaluation of its effectiveness. CDS partnered with ALU LIKE, Inc. and Planned Parenthood to develop the curriculum. IMPAQ International, LLC served as the independent external evaluator of the program.

Why Was Pono Choices Developed?

Youth in Hawai'i had the lowest rate of condom use in the nation in 2011 – only 44% of high school students reported using a condom in their last intercourse, compared to 60% nationwide. Hawai'i had the tenth highest teen pregnancy rate in 2010 (6.5% of 15 through 19 year-old females, compared to 5.7% nationwide) and the 12th highest chlamydia rate. Before Pono Choices, no state-approved curriculum explicitly incorporated the unique values and perspectives of the Hawaiian host culture into sexual health instruction.

Overview of the Pono Choices Program

Pono Choices is a culturally responsive teen pregnancy and STI prevention program featuring:

- Medically accurate information
- Character education
- Traditions and practices of the Hawaiian host culture.

The curriculum introduces students to Hawaiian cultural terms, practices and concepts that stress positive character development, including making “pono” or “right” choices. It was designed as an intervention that could be implemented in any community setting where youth congregate, targeting middle school youth ages 11 through 13. Cultural responsiveness is supported through:

- Introduction of Hawaiian cultural values
- An original cultural story
- Cultural practices
- Locally produced videos.

Hawaiian cultural values were introduced in each lesson to reinforce lesson content and expanded through an original cultural story. The story served as an access point into the curriculum content from the viewpoint of two adolescents preparing for an important journey. Stories throughout the curriculum connected students to their community, and homework activities engaged their families.

The curriculum was delivered in group sessions to 7th and 8th grade middle school students as part of their regular health curriculum. It was a 9.5 hour program with 10 modules delivered in sequential order for a total of approximately 600 minutes of instruction. The curriculum focused on:

- Personal goal setting
- Reproductive anatomy
- Reproduction
- Correct condom use
- Other birth control and methods to prevent sexually transmitted infections
- Understanding healthy relationships
- Developing refusal skills.

How Was Pono Choices Evaluated?

The University contracted with IMPAQ International, LLC as independent evaluator, to conduct a randomized controlled trial evaluation. Participating schools were randomly selected to be in either the Pono Choices program or to be in control schools that continued their regular sexual health curriculum. Students completed surveys before and after completing their sexual health curriculum.

Study Sample

The sample consisted of 36 randomly assigned middle schools. All public regular and public charter middle schools in Hawai'i were eligible to participate, except those that included 6th grade (which were being considered for another study). In the first year of the project (Fall 2011), 19 schools were recruited and randomly assigned. In May 2012, an additional 17 schools were recruited and randomly assigned. Of the 36 schools recruited and randomized into treatment and control groups, 34 participated in the study. Prior to random assignment, each participating school identified one health teacher to participate. In schools where the participating teacher taught more than two periods of sexual health, the first two classes of students were enrolled in the study.

The target sample included all students who were enrolled in the target health education classes in study schools in Spring 2012, Fall 2012 and Spring 2013, whose parents consented to their participation in the study. The study included 1,783 students across three semester cohorts. (See Figure 1.) Of 1,783 students with parent consent (81% of the students in participating classrooms) 1,735 (97%) took the baseline survey, and 1,548 (87%) took the one-year follow-up survey (997 in the program group and 551 in control the group).

Figure1: Study Sample

| Study Sample | 34 Schools | | 1,783 Students | |
|--------------|-----------------|-----------------|------------------|------------------|
| | Program Schools | Control Schools | Program Students | Control Students |
| O'ahu | 6 | 5 | 481 | 245 |
| Big Island | 7 | 7 | 492 | 230 |
| Kaua'i | 2 | 2 | 4 | 20 |
| Maui | 1 | 1 | 143 | 121 |
| Moloka'i | 1 | 1 | 38 | 9 |
| Total | 17 | 17 | 1,158 | 625 |

The sample sizes were different between the program and control groups because:

- The total number of classes in the intervention group was 56, while total number of classes in the control group was 35 (8 schools in the program sample had 2 classes of students, compared to only 3 of the control schools having 2 classes; 5 program schools delivered sexual health instruction all three semesters, compared to only 1 of the control schools).
- The average class size was larger in the intervention group, compared to the control group (21 vs. 18).

The total sample size for the study was sufficient that the difference in sample sizes between program and control groups did not pose any difficulty for measuring program effectiveness.

Study Design

The study was designed as a randomized controlled trial. Schools were randomly assigned to the program and control groups. Schools assigned to the control group continued to provide the sexual health curriculum they had already been providing and would have continued to provide in the absence of the study (business as usual). Teachers in the program schools were trained in how to deliver the Pono Choices curriculum and received ongoing support from program staff throughout the three semesters of implementation.

Data Collection

The Pono Choices study was implemented across 34 schools over three semesters from Spring 2011-2012 through Spring 2012-2013.

- At each school, up to three cohorts of students participated in the study, over the course of three semesters (Spring 2012, Fall 2013, and Spring 2013).
- Only students whose parents provided informed consent were eligible to participate.
- Student survey data was collected at baseline prior to the beginning of sexual health curriculum and one year after baseline. For students in the Pono Choices group, surveys were also collected at the end of the 10-module curriculum. Survey data was also collected at two years after baseline, for a smaller sample of students.
- Student surveys were conducted in the schools using a consistent script. Individual surveys were administered by mail for students unable to attend school administration.
- Phone and email follow-up were used to maximize the response rate for students unable to attend group survey administration (including students who had changed schools at 1-year follow-up). The study achieved a 97% response rate for the baseline survey and an 87% response rate for the one-year follow-up.
- The survey instruments and data collection procedures were identical for treatment and control schools.

How Well Was Pono Choices Implemented?

Before examining the effectiveness of the program, it is helpful to look at how well the curriculum was implemented, to rule out the possibility that the outcomes were affected by the way the curriculum was used in the classroom. To assess how well the program was implemented, the

IMPAQ evaluators conducted 128 classroom observations (22% of total lessons), using a detailed observation instrument that staff were trained to use with 95% inter-rater reliability.

Based on the results of these observations, it was clear that the Pono Choices program was implemented with high fidelity and quality. Teachers completed 98% of intended activities across all three semesters of implementation, and a comparison of teachers’ reports vs. observer assessments showed 98% concurrence. Ninety-eight percent of students completed at least 75% of the curriculum, and the average attendance was 94% across all three semester cohorts.

For these 128 classroom observations the average quality rating was 4.25 on a scale of 1 to 5, where 5 is excellent. The average student engagement score was 4.6. The percentage of lessons with a student engagement score of 4.0 or higher was 84%.

What Were the Student Outcomes?

Overall, the results from comparing before and after surveys for students participating in the Pono Choices program suggest that the program achieved its intended effects on students’ knowledge, attitudes, skills and intentions. Program participants increased their knowledge, improved their attitudes towards healthy sexual behaviors, increased their skills, and showed an increased intent to abstain from sex or engage in safe sex after participating in the program. The tables below show results for the 965 Pono Choices students who completed all three surveys (before, after, and one-year follow-up.)

Students’ Knowledge of Sexual Health

Students showed significant gains in knowledge across all 10 knowledge items after participating in the Pono Choices curriculum. (See Figure 2.) Although there was a small decrease in the knowledge gained in the program over time, for 8 of the 10 items students’ knowledge one year later was still significantly higher than it was before participating in the program. For two items (which is a viral STI, and what type of birth control prevents ovaries from releasing eggs – in bold below), the percentage of students answering correctly was actually lower one year later than it was before participating in the curriculum. This reflects that fact that more students were unsure of the answers to these items, with a higher percentage of students skipping these two questions than the other knowledge items on the survey when they were completing the survey at one-year follow-up.

Figure 2: KNOWLEDGE: Percentage of Program Students Answering Knowledge Questions Correctly

| Survey Items | Before Pono Choices (N=965) | After Pono Choices (N=965) | 1 Year Later (N=965) |
|---|--------------------------------|-------------------------------|-------------------------|
| Pregnancy and STI Prevention | | | |
| 1. 100% effective way to prevent pregnancy | 78.4% | 91.1%** | 89.9%** |
| 2. Behaviors associated with high risk of HIV | 32.8% | 94.5%* | 85.0%* |
| 3. Which is a viral STI | 60.6% | 61.7%** | 45.7%** |
| 4. How you can tell if person has STI | 61.8% | 94.0%** | 85.2%** |

| Survey Items | Before Pono Choices (N=965) | After Pono Choices (N=965) | 1 Year Later (N=965) |
|--|--------------------------------|-------------------------------|-------------------------|
| 5. Pregnancy can occur from... | 78.8% | 91.2%** | 90.3%** |
| 6. How to prevent spread of STI | 59.8% | 88.6%** | 80.2%** |
| 7. Effective condom use [average % correct of 9 items for follow-up]*** | 38.4% | 88.4%** | 60.5%** |
| 8. Refusal skills include... | 58.8% | 89.4%** | 76.2%** |
| 9. Which bodily fluid can transmit HIV | 47.8% | 86.7%** | 74.4%** |
| 10. What type of birth control prevents ovaries from releasing eggs | 32.7% | 46.9%** | 31.1%** |
| Average Percentage Answered Correctly Across Items**** | 55.0% | 83.3%** | 71.8%** |

* Difference between baseline survey and later surveys is significant at the 95% confidence level using a Pearson's chi-square test.

** Difference between baseline survey and later surveys is significant at the 99% confidence level using a Pearson's chi-square test.

*** Nine items asked at follow-up were summarized into a composite score, testing for differences using a t-test.

****Difference in average percentage rated Important or Very Important across items was tested using a t-test.

Students' Attitudes toward Healthy Sexual Behaviors

Students showed significant gains in attitudes across all 10 attitude items after participating in the Pono Choices curriculum. (See Figure 3.) Although there was a small decrease in the these attitude gains, students' attitudes one year later were still significantly improved compared to before participating in the program.

Figure 3: ATTITUDES: Percentage of Program Students Rating Items as Important or Very Important

| Survey Items | Before Pono Choices (N=965) | After Pono Choices (N=965) | 1 Year Later (N=965) |
|--|--------------------------------|-------------------------------|-------------------------|
| How important sexual behaviors are... | | | |
| 1. Not having sex until I am ready | 88.0% | 94.3%** | 92.2%** |
| 2. Avoiding risky sexual behavior | 89.8% | 92.3%** | 90.5%** |
| 3. Preventing unwanted pregnancy as a teenager | 91.6% | 94.8%** | 97.1%** |
| 4. Knowing what kind of birth control methods I can use to prevent an unwanted pregnancy | 88.3% | 95.1%** | 94.9%** |
| 5. Taking personal responsibility for my sexual health | 94.8% | 96.8%** | 96.5%** |
| 6. Communicating openly about sexual intent with my partner | 74.8% | 93.2%** | 90.0%** |

| Survey Items | Before Pono Choices (N=965) | After Pono Choices (N=965) | 1 Year Later (N=965) |
|---|--------------------------------|-------------------------------|-------------------------|
| 7. Knowing multiple ways to prevent STIs and HIV | 94.3% | 97.4%** | 96.7%** |
| 8. Using condoms to prevent STIs and unwanted pregnancy | 90.3% | 96.4%** | 95.7%** |
| 9. Using alternative ways to show affection other than having sex | 81.9% | 89.0%** | 90.2%** |
| 10. Understanding changes that happen during puberty | 86.2% | 87.8%** | 89.4%** |
| Average Percentage Rated Important or Very Important Across Items*** | 87.9% | 93.7%** | 93.0%** |

* Difference between baseline survey and later surveys is significant at the 95% confidence level using a Pearson's chi-square test.

** Difference between baseline survey and later surveys is significant at the 99% confidence level using a Pearson's chi-square test.

***Difference in average percentage rated Important or Very Important across items was tested using a t-test.

Students' Skills in Managing Relationships and Choices

Students showed significant gains in skills across all 5 skills items after participating in the Pono Choices curriculum. (See Figure 4.) Although there was a small decrease in these gains in skills, a higher percentage of students still rated skills items as Easy or Very Easy one year later than before participating in the program.

Figure 4: SKILLS: Percentage of Program Students Rating Items as Easy or Very Easy

| Survey Items | Before Pono Choices (N=965) | After Pono Choices (N=965) | 1 Year Later (N=965) |
|--|--------------------------------|-------------------------------|-------------------------|
| Level of Difficulty in Relationships and Choices | | | |
| 1. Effectively communicating with partner about intentions about sexual activity | 42.8% | 59.1%** | 53.2%** |
| 2. Refusing unwanted and/or unprotected sex | 74.0% | 72.4%** | 85.9%** |
| 3. Identifying if a relationship is healthy or unhealthy | 76.0% | 84.7%** | 84.9%** |
| 4. Following the steps for correct condom use | 75.8% | 94.0%** | 90.5%** |
| 5. Getting/buying condoms or other birth control | 45.1% | 69.1%** | 45.7%** |
| Average Percentage Rated as Easy or Very Easy Across Items*** | 62.7% | 75.7%** | 74.4%** |

** Difference between baseline survey and other surveys is significant at the 99% confidence level using a Pearson's chi-square test.

***Difference in average percentage rated Easy or Very Easy across items was tested using a t-test.

Students' Intentions about Future Sexual Activity

Students showed significant gains in intentions to delay or avoid high risk sexual activity across all three intention items after participating in the Pono Choices curriculum. (See Figure 5.) Although there was a small decrease in these two of these intention items, a higher percentage of students reported intent to use condoms or other methods of birth control a year later than before participating in the program. Intent to have sexual intercourse in the coming year actually went in the reverse direction, with a higher percentage of students reporting an intent to have sex a year after participating in the program than before.

Figure 5: INTENTIONS: Percentage of Program Students Responding Yes

| Survey Items | Before Pono Choices (N=965) | After Pono Choices (N=965) | 1 Year Later (N=965) |
|--|--------------------------------|-------------------------------|-------------------------|
| Level of Difficulty in Relationships and Choices | | | |
| 1. Intent to have sexual intercourse in the next 12 months | 14.9% | 13.3%** | 17.2%** |
| 2. Intent to use a condom if having sexual intercourse in the next 12 months | 88.9% | 94.6%** | 93.1%** |
| 3. Intent to use hormonal birth control | 82.3% | 88.5%** | 88.2%** |

** Differences between baseline surveys and other surveys significant at the 99% confidence level using a Pearson's chi-square test.

Did Pono Choices Students Have Better Outcomes than Control Students?

While the previous section shows gains for students who participated in Pono Choices, simply looking at these measures before and after the program does not tell us whether these gains are due to Pono Choices or what the impact was of the Pono Choices program. To test whether Pono Choices had better outcomes than students in control schools, we conducted a rigorous impact study based on randomly assigning schools to program and control groups and collecting exactly the same baseline and follow-up data in exactly the same way.

Comparison between Pono Choices and the Control Group

As shown in Figure 6, students who participated in Pono Choices had significantly higher scores on 9 of the 10 knowledge questions one year after baseline than the control group. Only the question about which STI is viral showed no significant difference between Pono Choices students and controls.

Figure 6: KNOWLEDGE: Percentage of Program vs. Control Students Answering Items Correctly At One-Year Follow-up

| Survey Items | Program Students (N=997) | Control Students (N=551) |
|---|--------------------------|--------------------------|
| 1. 100% effective way to prevent pregnancy | 89.1% | 84.9%* |
| 2. Behaviors associated with high risk of HIV | 84.6% | 45.0%** |
| 3. Which is a viral STI | 45.7% | 47.0% |

| Survey Items | Program Students (N=997) | Control Students (N=551) |
|---|--------------------------|--------------------------|
| 4. How you can tell if person has STI | 84.7% | 63.5%** |
| 5. Pregnancy can occur from... | 90.0% | 85.8%* |
| 6. How to prevent spread of STI | 79.8% | 56.4%** |
| 7. Effective condom use [9 questions]*** | 60.3% | 42.7%** |
| 8. Refusal skills include... | 75.2% | 54.1%** |
| 9. Which bodily fluid can transmit HIV | 73.9% | 52.5%** |
| 10. What type of birth control prevents ovaries from releasing eggs | 30.7% | 25.4%* |
| Average Percentage Answered Correctly Across Items**** | 72.8% | 57.2%** |

* Difference between baseline survey and later surveys is significant at the 95% confidence level using a Pearson's chi-square test.

** Difference between baseline survey and later surveys is significant at the 99% confidence level using a Pearson's chi-square test.

*** Nine items asked at follow-up were summarized into a composite score, testing for differences using a t-test.

****Difference in average answered correctly across items was tested using a t-test.

As shown in Figures 7-9, there was very little difference between students participating in the Pono Choices curriculum and students in the control group in terms of their attitudes towards healthy sexual behaviors, increase in skills, and increased intent to abstain from sex or engage in safe sex after participating in the program. This indicates that while the Pono Choices program achieved its intended outcomes in these areas, for most measures, Pono Choices was not more effective in these three domains than the sexual health programs already being used in control schools.

Figure 7 shows that a higher percentage of Pono Choices students rated two of the behaviors as Important or Very Important than did the control students: 1) communicating openly about sexual intent with partner, and 2) using alternate ways to show affection other than sex. Figure 7 also shows that on average, there was no significant difference between program students and control students in the percentage of items students rated as Important or Very Important at one-year follow-up.

Figure 7: ATTITUDES: Percentage of Program vs. Control Students Rating Items as Important or Very Important at One-Year Follow-up

| Survey Items | Program Students (N=997) | Control Students (N=551) |
|--|--------------------------|--------------------------|
| 1. Not having sex until ready | 92.3% | 91.7% |
| 2. Avoiding risky sexual behavior | 90.7% | 89.8% |
| 3. Preventing unwanted pregnancy as a teenager | 97.2% | 95.6% |

| Survey Items | Program Students (N=997) | Control Students (N=551) |
|--|--------------------------|--------------------------|
| 4. Knowing what kind of birth control methods to prevent an unwanted pregnancy | 94.9% | 94.4% |
| 5. Taking personal responsibility for sexual health | 96.5% | 95.8% |
| 6. Communicating openly about sexual intent with partner | 89.9% | 86.2%* |
| 7. Knowing multiple ways to prevent STIs and HIV | 96.6% | 97.0% |
| 8. Using condoms to prevent STIs and unwanted pregnancy | 95.7% | 95.8% |
| 9. Using alternative ways to show affection other than having sex | 90.2% | 86.5%* |
| 10. Understanding changes that happen during puberty | 89.6% | 91.0% |
| Average Percentage Rated Important or Very Important Across Items | 93.0% | 92.0% |

* Difference between program and control students is significant at the 95% confidence level using a Pearson's chi-square test.

As shown in Figures 8 and 9, there were no significant differences between program and control students for measures of skills in managing sexual behavior, and intent to abstain from sex or engage in safe sex after participating in the program.

Figure 8: SKILLS: Percentage of Program vs. Control Students Rating Items as Easy or Very Easy at One-Year Follow-up

| Survey Items | Program Students (N=997) | Control Students (N=551) |
|--|--------------------------|--------------------------|
| 1. Effective communication with partner about intentions about sexual activity | 52.8% | 48.8% |
| 2. Refusing unwanted and/or unprotected sex | 85.9% | 85.7% |
| 3. Identifying if a relationship is healthy or unhealthy | 84.9% | 82.3% |
| 4. Following the steps for correct condom use | 90.4% | 89.8% |
| 5. Getting/buying condoms or other birth control | 46.1% | 40.1% |
| Average Percentage Rated as Easy or Very Easy Across Items | 74.3% | 72.8% |

Figure 9: INTENTIONS: Percentage of Program vs. Control Students Responding Yes at One-Year Follow-up

| Survey Items | Program Students (N=997) | Control Students (N=551) |
|--|--------------------------|--------------------------|
| 1. Intent to have sexual intercourse in the next 12 months | 17.0% | 18.0% |
| 2. Intent to use a condom if having sexual intercourse in the next 12 months | 6.9% | 6.4% |
| 3. Intent to use hormonal birth control | 12.2% | 14.2% |

How Do We Know Changes in Knowledge are Due to Pono Choices?

As shown above, although Pono Choices seems to be similar to existing curricula in improving students’ attitudes, skills and intentions, Figure 6 suggests Pono Choices made a much bigger difference to students’ knowledge of sexual health than the current curricula in control schools. In order to be absolutely sure this difference can be attributed to Pono Choices, we conducted multivariate regression analysis controlling for many other factors that could possibly affect these results including students’ survey responses at baseline, their age, gender and ethnicity, whether they and their parents speak English in the home, the island where they live and go to school, and whether their school was a regular public school or a public charter school¹. The result was that even taking all these factors into account, Pono Choices had a significant impact on students’ knowledge – that is, the differences in knowledge gains between Pono Choices and control students can be attributed to the differences in the content and delivery of the sexual health curriculum.

The study did not find that Pono Choices made a difference to students’ engagement in high-risk sexual behavior one year after baseline (defined as intercourse with neither condom nor effective method of birth control). Nor did we find that Pono Choices made a difference to students’ delaying initiation of sexual intercourse. This may be due to the fact that most students were only 13 years old at one-year follow-up, which may simply have been too young to be sexually active, or for knowledge gains to be reflected in either delaying initiation of sexual intercourse or using condoms and other forms of birth control.

Two-Year Follow-up Findings

Due to restrictions on data collection imposed by the Hawai’i DOE it was not possible to collect two-year follow-up data for two of the three semester cohorts of students. The sample of students for whom two-year follow-up data are available includes only 557 students, or 31% of the total sample. Thus the two-year follow-up findings are not representative of the study as a whole.

However, although we cannot consider the two-year follow-up data to be conclusive, we found the two-year impact on the knowledge measure was statistically significant. While the second year sample was only about one-third the size of the first year sample, the findings at two years

¹ The one private school that participated was grouped with the charter schools.

were very similar to the one-year impact. This result suggests that Pono Choices' effect on students' knowledge of pregnancy and STI prevention persisted for at least two years after the initial implementation of Pono Choices. As was true at one year after baseline, the two differences in attitudes (communicating openly about sexual intent with partner, and using alternate ways to show affection other than sex) persisted, and no other differences in attitudes, skills, intentions or sexual behaviors were observed.

What Were the Key Findings?

- The results of comparing before and after surveys for students participating in the Pono Choices program suggest that the program achieved its intended effects on students' knowledge, attitudes, skills and intentions.
- Overall, the gains in knowledge, attitudes, skills and intentions students decreased over time, but program students still had a significantly higher level of knowledge at follow-up than before participating in the program.
- Pono Choices had a much stronger effect on students' knowledge of sexual health than existing curricula being used in control group schools.
- Pono Choices was generally equally effective as the control group in improving on students' attitudes, skills and intentions. For two of the attitude items (communicating openly about sexual intent with partner, and using alternate ways to show affection other than sex) Pono Choices students showed more improvement than the control group.
- Pono Choices did not have a significant effect on students' engagement in high-risk sexual behavior one year after baseline (defined as intercourse with neither condom nor effective method of birth control), or on students' delaying initiation of sexual intercourse.
- For the smaller sample of students for whom two-year surveys were collected, the impact findings were very similar to the one-year results. Gains in knowledge were still evident at the two-year follow-up for the small percentage of students for whom two-year data were available.

Conclusion

Pono Choices achieved its intended effects on students' knowledge, attitudes, skills, and intentions, and was much more effective at increasing students' knowledge of TPP/STI prevention among middle school students than the current curricula at control schools. Pono Choices did not have a significant effect on students' engagement in high-risk sexual behavior or on students' delaying initiation of sexual intercourse during the observation period, which was one year for the majority of students, and two years for 31% of the sample. These results call for an exploration of longer-term outcomes to assess whether the effects on knowledge would be retained and whether eventual behavioral changes could be found.