Evaluation of Berhane Hewan

A Pilot Program To Promote Education & Delay Marriage in Rural Ethiopia

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The Federal Democratic Republic of Ethiopia
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Annabel S. Erulkar
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Executive Summary

The Berhane Hewan Program was developed to sensitize community members to the dangers of child marriage, prevent early marriage among unmarried adolescents and provide support for girls who are already married. The program included social mobilization of adolescent girls aged 10 to 19 into groups led by female mentors; support to stay in school or convening of groups outside of school including non-formal education and livelihoods skills; and community-wide conversations on early marriage and reproductive health issues affecting girls. In addition, economic incentives were provided to families who did not marry off their daughters during the project period; unmarried girls who participated in the groups and remained unmarried for the duration of the project were presented with a goat at the graduation ceremony.

The program was pilot tested in Mosebo Village, Amhara Region, from 2004 to 2006. Population-based surveys were conducted immediately before the implementation and two years afterwards, in both experimental and control areas, to measure changes associated with the Berhane Hewan program. Implementation of the program was extremely effective with the vast majority of girls in the experimental area having heard of the program (92 percent), having been part of groups (85 percent), and having attended a community conversation (73 percent). At the same time, no girls in the control area had heard of the program, reflecting no contamination of the control site. This report describes changes associated with the program by comparing baseline and endline characteristics in the experimental (Mosebo Village, Yilimana Densa District) and control (Enamirt Village, Mecha District) areas.

The impact evaluation focused on four main areas: social networks and participation, education, marital status, and reproductive health. The program made significant impacts on all the areas of interest. Impacts were particularly apparent for younger adolescent aged 10 to 14. After controlling for marital status, age and socioeconomic status, Mosebo girls in this age group were nearly three times more likely to be in school, compared to girls in the control area. Multivariate analysis revealed the considerable impacts on the timing of marriage for younger adolescents, aged 10 to 14. Younger Mosebo girls were 90 percent less likely to be married compared to Enamirt girls in the same age group. In addition, not one girl aged 10 to 14 in Mosebo had been married during the previous year. On the other hand, marriage seemed to accelerate for older girls in Mosebo, after the age of 15, perhaps due to the social expectation for marriage during adolescence and its linkage with the status of the girl's father.

Compared to girls in the control site, girls in the project site demonstrated improved knowledge on HIV, sexually transmitted infections, and family planning methods, and were more likely to have communicated with a close

friend on these issues. Family planning use increased in both areas, but more so in the experimental site. There were no significant differences in use of family planning methods at baseline. At endline, however, Mosebo girls were nearly three times more likely to have used any family planning method compared to controls, after adjusting for demographic factors.

Berhane Hewan is a package of interventions including multiple components at the community and individual levels. High levels of exposure to all project components make it difficult to ascertain if specific program components were more influential in bringing out change than other components. The Berhane Hewan experiment demonstrates that significant impacts can be made on the social, educational, and health status of adolescent girls in a short period of time, through well designed and implemented support programs for girls.

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I. Background

Ethiopia has one of the highest rates of early marriage in sub-Saharan Africa. Rates of marriage during early adolescence, by age 15, are the highest on the continent, with 19 percent of Ethiopian girls married before their 15th birthday.[1] Amhara Region in northern Ethiopia is the second largest region in the country with a population of 19 million people. The region has the lowest median age at marriage in the country, 14.4 years.[2] At the same time, the legal age of marriage in Ethiopia is 18 for both girls and boys, and the Ethiopian Constitution states that: "Marriage shall be entered into only with the free and full consent of the intending spouses."

While most programs for youth address unmarried adolescents, married girls have distinct needs and vulnerabilities. Marriage marks the beginning of frequent and unprotected sexual activity, often leading to an early and risky first birth.[3] In many settings, marriage represents increased risk of HIV infection. A study in Kenya and Zambia using biological markers and behavioral data found that married adolescent girls have 50 percent higher rates of HIV compared to girls who are unmarried and sexually active, with elevated rates associated with more frequent intercourse, virtually no condom use, and older partners more likely to be HIV+.[4]

Generally, girls married early have less education and fewer opportunities, and patterns of early marriage compound girls' vulnerability. The younger a girl is when married, the greater the age difference with her partner. On average, married girls in Ethiopia are nine years younger than their spouses.[5] After marriage, girls' social isolation increases, likely due to greater domestic duties and control by husbands and senior household members.[6] Delaying marriage gives girls the opportunity to complete schooling and explore positive livelihood choices.

Interventions designed to increase the age at marriage have been largely confined to the Asia region.[7] For example, in India, programs in several states provide families with economic incentives to delay the marriage of

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[1] Clark, S. Bruce, J. Dude, A. 2006. *"Protecting Young Women from HIV/AIDS: The Case Against Child and Adolescent Marriage."* International Family Planning Perspectives, 32(2):79-88.

[2] Central Statistical Agency and ORC Macro. 2006. Ethiopia Demographic and Health Survey 2005., Addis Ababa, Ethiopia and Calverton MD.

[3] Haberland N, Chong E, Backen H, and Parker C. 2005. *"Early Marriage and Adolescent Girls"* Youthnet: Youth Lens on Reproductive Health and HIV/AIDS, April.

[4] Clark S, 2004. "Early marriage and HIV risks in sub-Saharan Africa" Studies in Family Planning, 35(3) 149-160. Glynn, JR, et al. 2001. Why do Young Women have a much Higher Prevalence of HIV than Young Men? A Study in Kisumu, Kenya and Ndola, Zambia, AIDS, 2001; 15 (suppl 4): S51-S60.

[5] Bruce J. Clark S. 2004. "The Implications of Early Marriage for HIV/AIDS Policy," brief based on background paper prepared for the WHO/UNFPA/Population Council Technical Consultation on Married Adolescents. New York: Population Council.

[6] Haberland N. op. cit.; Bruce J. Clark S. Ibid.

[7] National Research Council and Institute of Medicine. 2005. Growing Up Global: The changing Transitions to Adulthood in Developing Countries. Panel on Transitions to Adulthood in Developing Countries. Cynthia Lloyd, ed. Washington DC: National Academies Press.

a girl, with incentives given if the girl remains unmarried until the legal age of 18. These programs, however, have not been evaluated. Another program in Nepal combined several approaches including peer education, adult education, youth clubs and theater, with one of the stated goals as increasing marriage age. The impact evaluation suggested impacts on marriage age in the urban area, but not in the rural site.[8] However, the descriptive analysis was insufficient to establish conclusively that the program had made a difference.

Few programs in sub-Saharan Africa have been focused on increasing marriage age with none, to our knowledge, including a rigorous evaluation framework. In addition, the study took place in a region of especially high rates of early marriage, making the development of tested interventions critical for this setting. This report describes a program to delay marriage and support girls who are already married, pilot tested in rural Amhara, Ethiopia, and evaluated after two years of intervention.

[8] Mathur S. Mehta M. Muhotra A. 2004. "Youth Reproductive Health in Nepal: Is Participation the Answer?" New York & Washington: EngenderHealth and ICRW, January.

II. Berhane Hewan Program in Rural Ethiopia

Berhane Hewan is a program of the Ethiopia Ministry of Youth and Sport, and Amhara Regional Youth Bureau in partnership with UNFPA; technical assistance is provided by the Population Council. In early 2004, a baseline survey was conducted among adolescent boys and girls aged 10 to 19 in rural Amhara.[9] The findings underscored the high rates of marriage for girls in the region. In addition, the transition to marriage, for girls, was often traumatic, unwanted, and included forced sexual initiation. Married girls were socially isolated, with limited contact with same age peers or supportive adults. As a result, the Regional Youth Bureau and the Population Council jointly designed a program to address the high rates of child marriage in the region, as well as to support girls who are already married.

Berhane Hewan (meaning 'Light for Eve' in Amharic) is the name given to the program by the community members of Mosebo Kebele Administration, the site of the intervention. Berhane Hewan targets married and unmarried girls aged 10 to 19. The overall goal of Berhane Hewan is to establish appropriate and effective mechanisms to protect and support girls at risk of forced early marriage and married adolescent girls. Specific objectives include: 1) to reduce the prevalence of early, child marriage among adolescent girls; 2) to create safe social spaces for the most vulnerable and isolated girls, including access to education, and 3) to increase use of reproductive health services among sexually experienced girls. The intervention included three components: 1) social mobilization and group formation by adult female mentors, 2) participation in non-formal education and livelihoods training for out of school girls, or support to remain in school, and 3) 'community conversations,' a technique engaging the community, at large, in discussion on key issues, including early marriage, and collective problem-solving. The pilot project was undertaken in one kebele administration (KA) and pilot-tested over two years, from mid 2004 to 2006.


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Social mobilization & group formation

In the initial stages of the intervention, four female mentors were recruited. Mentors were leaders in the community and all had a minimum of 10th grade education; many had experience in providing non-formal education. Mentors were trained over five days in providing non-formal education, reproductive health, HIV/AIDS, and facilitation techniques. Following training, mentors went door-to-door in Mosebo KA, identifying married and unmarried girls aged 10 to 19, and sensitizing the community to the Berhane Hewan project. Ultimately, eligible girls were invited to participate and permission was sought from their parents or guardians.

[9] Erulkar A. Mekbib T. Simie N. Gulema T. 2004. "The Experience of Adolescence in Rural Amhara Region, Ethiopia," Accra: Population Council.

Participation in girls' groups & support to remain in school

Participating girls were given three options for involvement in the program. Girls who were still in school were supported to remain in school with school materials such as pens, notebooks, and educational material. In addition, out-of-school girls who wanted to return to formal schooling were supported with the same materials. For other out-of-school girls, or girls who had never attended school, groups were formed to meet with mentors, providing non-formal education, livelihoods skills and activities, and reproductive health education. Girls were separated into groups of married and unmarried girls. Because of constraints on their time, married girls groups met once a week, generally on Sundays. Unmarried girls groups met five times per week. Meetings were held in community halls or kebele facilities. Sessions included non-formal education and livelihoods skills such as agricultural techniques, poultry rearing, and construction of household items, including mud seats and household partitions. Young women who wanted family planning and other reproductive health services were referred by mentors to the health center in a nearby district town, Adet.

When girls registered for the program, commitment of the parents or guardians was sought. Both the participating girl and her guardian were required to sign the registration form. Among girls who were unmarried, registering parents agreed not to marry them during the two years duration of the program. They also agreed to allow girls time to attend the program. Families who did not marry girls during the two year period were promised a goat at the end of the period, to be presented jointly to the girl and her family.

Community conversations on harmful traditional practices, including child marriage

At the community level, neighborhood meetings were held to discuss child marriage and other issues affecting the well-being of adolescent girls. 'Community conversations' (CC) is a technique developed in Ethiopia using community dialogue to explore problems and jointly devise solutions. Meetings include all community members, collectively, regardless of age, sex, or socioeconomic status. Four CC facilitators were trained to lead discussions on early marriage, other harmful traditional practices, and matters affecting young women and girls. Community conversations were held in Mosebo every two weeks, engaging all community members in discussions and problem resolution.

III. Methodology

Data collection

The aim of the study was to assess changes associated with the Berhane Hewan program. Baseline and endline surveys were compared in experimental and control sites to assess population-level changes associated with the project. The baseline survey was conducted in early 2004 in Mosebo KA and two other KAs in Yilmana Densa District/Woreda. Enamirt KA in Mecha District/Woreda served as the control, selected because of its similar socioeconomic profile. Shortly after completion of the baseline survey, implementation of the Berhane Hewan program began in Mosebo. The endline survey took place in 2006 in both experimental and control areas.

Similar sample selection and data collection techniques were utilized during both survey rounds. All households in the study area were listed, collecting basic demographic information on all household members within the two KA's. All households with male or female adolescents between the ages of 10 and 19 were considered eligible at baseline; however, only households with female adolescents were included at endline. The number of adolescents selected from each KA was proportional to the size of the population. In the case of households with more than one eligible adolescent aged 10 to 19, a Kish grid[10] was used to select one adolescent.

Local interviewers were recruited from the study areas to administer the surveys. Minimum qualifications included prior interviewing experience and a secondary school education. All interviewers were relatively young in age, so as to make adolescents more comfortable and responsive. Interviewers received a one-day training prior to the initial household listing and an additional five-day training before conducting surveys. During the training, they reviewed each item on the survey and engaged in practice and mock interviews. For open-ended questions, they were trained to probe respondents and record responses verbatim. Interviewers made up to three attempts to locate and interview selected adolescents. Due to the sensitive nature of the topics covered in the surveys, adolescents were interviewed by interviewers of the same gender.

The survey instrument was largely close-ended, with a few open-ended questions aimed at obtaining more detailed information on issues for which prior knowledge is limited. Topic areas included household composition and assets, education, time use, migration, attitudes and expectations, reproductive health knowledge and practice, marriage, pregnancy and childbirth, and sexual activity. The baseline and endline questionnaires were identical, with the exception that the endline questionnaire also

[10] Kish L, Survey Sampling, New York: Wiley, 1965.

included questions on exposure to the intervention. The questionnaire was translated into Amharic and back-translated to English to ensure accuracy. Interviewers obtained informed consent from all respondents and all resident parents or guardians. Completed questionnaires were checked by supervisors for data quality and completeness. Data was entered into Epi-Info and later converted to SPSS for analysis.

The baseline survey was originally conducted in three villages (KAs) within Yilmana Densa Woreda, and the control village, Enamirt, with both male and female adolescents interviewed at baseline. In order to assess the impact of the program on Mosebo girls, the boys were removed from the baseline dataset as were respondents from villages that were neither experimental nor control.

Table 1 Objectives, indicators and variables

Objective	Indicator	Variable
To create safe social spaces & support	Increased friendship networks	• Made new friends in the last year • Has many friends in the neighborhood • Has a nonfamilial best friend
	Increased access to safe spaces	• Has a place outside home/school to meet friends
	Increased participation	• Socialized with friends in the last week • Socialized outside the home in the last week • Played football, netball, another sport in the last week
To increase access to education	Increased school attendance	• Ever attended school • Currently attending school
	Increased school attainment	• Number of years of education (categorical and mean)
	Increased levels of literacy	• Ability to read
To reduce the prevalence of child marriage	Decreased proportion of married adolescents	• Ever married • Current marital status • Married in the last year (during intervention period)
To increase knowledge and use of reproductive health services	Increased knowledge of reproductive health topics	• Knowledge of family planning methods • Knowledge of issues related to STIs, HIV (6 items)
	Increased discussion of reproductive health topics	• Discussion in the last year of reproductive health topics (7 topics)
	Increased use of family planning methods	• Ever use of family planning methods • Ever use of pills, condoms, injectables

Analysis

Other than the sample characteristics, all analyses were weighted by the number of eligible females in the household, with weighted n's reported in the tables. Descriptive statistics were calculated for outcomes of interest in experimental and control sites, comparing changes between baseline and endline. Because changes and transitions may take place differently for younger versus older adolescents, analysis was stratified by age group. For categorical variables, Pearson chi-square tests were used to assess differences between groups for each survey period. In addition, for school status, marriage, and ever use of family planning, logistic regression or proportional hazard models were used at each round of survey. Multivariate analysis controlled for age of respondents, socioeconomic status, and educational attainment. In particular, we were interested in the extent to which residence in the experimental area was associated with positive outcomes in the dependent variable. If residence was not significant at baseline but was significant at endline, we considered differences attributable to the intervention.

Table 2 Sample characteristics in control and experimental area, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=188)	Control (n=272)	Project (n=462)	Control (n=464)
Age category				
10 to 14 years	56.9	49.4	54.1	53.2
15 to 19 years	43.1	50.6	45.9	46.8
School status				
In school	52.7	48.2	71.2	68.8
Out of school	47.3	51.8	28.8	31.2
Educational attainment				
No education	43.9	44.9	23.5***	26.2
1 to 4 years	38.5	39.3	49.8	36.0
5 to 8 years	16.6	15.1	20.2	32.3
9 or more years	1.0	0.7	6.5	5.4
Martial status				
Never married	71.8*	59.9	76.0	74.8
Currently married	23.4	31.6	21.3	20.2
Div/Wid/Sep	4.8	8.5	2.7	5.0
Parenthood				
Has child(ren)	7.6***	21.7	14.8	14.2
No children	92.4	78.3	85.2	85.8
Parental co-residence				
Both parents	41.7	40.7	46.7	48.6
Mother only	18.7	16.8	21.3	19.2
Father only	7.0	6.3	4.8	6.3
Neither parent	32.6	36.2	27.2	25.9
Socio-economic index				
0 to 5 household items	77.0**	62.9	57.0***	24.9
6 to 15 household items	23.0	37.1	43.0	75.1

*Differences between groups significant at *p<.05 **p<.01 ***p<.001*

Based on project objectives, the evaluation examined changes associated with the intervention including indicators of social isolation and support networks, access to education, entry into marriage, and family planning use (Table 1).

IV. Sample Characteristics

A total of 460 baseline respondents were eligible for inclusion in the impact evaluation study, 272 girls from Enamirt and 188 girls from Mosebo. The endline sample included 464 girls in the control area, Enamirt, and 462 girls from the experimental area, Mosebo (Table 2).

There were no significant differences between groups at baseline and endline in terms of age, parental co-residence and school status. At baseline, girls in the experimental sites significantly differed from the controls in terms of marital status, parenthood status and socioeconomic status. A greater proportion of girls in the experimental site had never been married (72 percent) compared to girls from the control group (60 percent), and they were less likely to have children (8 percent in experimental site, 22 percent in control site). Educational attainment differed between groups at endline. For example, girls in the control group were significantly more likely to have completed at least 5 years of education (38 percent) compared to girls in the project site (27 percent). A socioeconomic status index was constructed by counting the number of items owned by members of a girl's current household. For those living with parents, the index represents living conditions in the parent's household. Girls who were not living with parents were asked to report on conditions in their current households. Control households had a significantly greater number of household assets at baseline and endline. This difference was particularly evident at endline, where 75 percent of controls and only 43 percent of experimental households had six or more household items.

V. Exposure to Berhane Hewan

Exposure to the Berhane Hewan intervention was assessed at endline among all survey respondents. The results indicate that there was no contamination in the control group, and the intervention was widely implemented in the experimental area. None of the girls in the control distrct had ever heard of a project entitled Berhane Hewan Adolescent Girls' Project. On the other hand, 92 percent of girls in Mosebo had heard of the project. Only one girl in the control group had participated in a girls' club or support group compared to 85 percent of girls in the experimental site. In addition, none of the girls in the control sample had attended any Berhane Hewan community meetings. Table 3 shows the rates of participation in the Berhane Hewan program components among girls in the experimental group. About half of the girls in the experimental area had been supported to remain in formal schooling, one-fifth participated in a non-formal education group for unmarried girls, and 10 percent of girls participated in a married girls club. Participation in Berhane Hewan groups differed significantly by age. Almost two-thirds of girls (65 percent) between the ages of 10 and 14 participated in formal schooling groups and none participated in married girls clubs. On the other hand, only 37 percent of girls aged 15 to 19 had participated in formal schooling and 22 percent participated in married girls clubs. Roughly three-quarters of girls had attended community conversations. The most common discussions they attended were those devoted to early marriage (72 percent) and HIV/AIDS (70 percent). Girls in the older age group were significantly more likely to have attended community meetings about community issues, family planning and safe motherhood.

Table 3 Participation in Berhane Hewan Program, among girls in experimental area

Program Component	Age 10 to 14 (n=367)	Age 15 to 19 (n=301)	All girls (n=678)
Participation in group			
Formal schooling support	65.4	37.2	52.1
Unmarried girls' group	22.3	23.3	22.9
Married girls group	0.0	22.3	10.0
Did not participate	12.3	16.3***	14.6
Attended community conversation on:[1]			
General community matters	36.0	47.0**	41.0
Early marriage	72.0	72.5	72.0
HIV/AIDS	68.7	72.8	70.3
Family planning	48.5	62.8***	54.9
Safe motherhood	32.4	56.4***	43.5
Did not attend	26.7	27.3	26.9

[1] *Percentages sum to over 100 as more than one meeting was possible.*

*Differences between age groups significant at *p<.05 **p<.01 ***p<.001*

VI. Impact Of Berhane Hewan

Social Networks & Participation

Berhane Hewan provided adolescent girls with opportunities to expand their social networks by participating in same-sex groups led by adult female mentors. At baseline, girls from Mosebo were significantly less likely to have made new friends, or report many friends in the neighborhood or places to meet other girls (Table 4). They were also significantly more likely to report that their closest friend was a relative. None of these indicators differed significantly between the two groups at endline, likely owing to the considerable improvements observed among Mosebo girls as compared to controls.

In Mosebo, the proportion of girls who made new friends in the previous year increased from 4 percent at baseline to 18 percent at endline, while the rate for controls stayed the same (16 percent at baseline; 15 percent at endline). At endline, approximately 19 percent of girls in the experimental area and 18 percent of controls reported that they had a place where they could meet girl friends, a 5 percent increase for controls and an 80 percent increase for the experimental group.

Education

Increasing girls' access to formal and non-formal education was an important component of Berhane Hewan, which provided opportunities for girls to enroll in specialized non-formal education or continue their schooling in formal education. As shown in Table 3, there were substantial improvements in education enrollment in both the control and experimental areas during the study period. The change in the control area might be attributed to education programs implemented by other non-

Table 4 Social networks & participation among experimental & control groups, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=282)	Control (n=416)	Project (n=678)	Control (n=621)
Percentage of respondents reporting that they:				
Made new friends in the last year	3.7	16.1***	18.0	15.0
Have many friends in the neighborhood	39.3	60.8***	58.4	56.5
Have a non-familial best friend	30.1	48.2***	50.9	54.2
Have a place outside home/school to meet same sex friends	10.3	16.9*	18.5	17.8
Percentage of respondents who in the last week:				
Socialized with friends	49.8	84.4***	87.7*	82.9
Socialize with other girls outside the home	8.5	23.8***	21.4	20.1
Played football, netball, or another sport	6.8	24.0	25.0	33.5

*Differences between experimental and control groups significant at *p<.05 **p<.01 ***p<.001*

Table 5 Educational attendance, attainment, and literacy in experimental and control sites, by age group and time of survey

	Age 10 to 14				Age 15 oto 19			
	Baseline		Endline		Baseline		Endline	
	Project (n=169)	Control (n=209)	Project (n=367)	Control (n=348)	Project (n=113)	Control (n=205)	Project (n=301)	Control (n=273)
Ever attended school	70.8	81.8*	96.5	93.4	44.2	34.6	60.3	58.2
School Status (In)	69.6	77.5	95.9**	89.0	38.4	27.3	48.5	54.2
Educational attainment								
No education	29.2	18.2*	3.5	6.7***	55.8	65.4	39.8	41.8***
1 to 4 years	52.4	65.6	75.7	53.9	20.4	14.1	23.1	9.9
5 to 8 years	18.5	16.3	20.4	39.4	21.2	19.0	21.7	33.3
9 or more years	0.0	0.0	0.3	0.0	2.7	1.5	15.4	15.0
Mean yrs of education	2.3	2.5	2.7	3.7***	2.9	1.7	3.5	4.0
Literacy								
Reads easily	33.9	31.6	40.3	50.3*	25.0	18.5	36.9	41.8
Reads with difficulty	21.4	40.2	38.4	30.7	16.1	11.2	17.3	11.7
Does not read at all	44.6	28.2***	21.3	19.0	58.9	70.2	45.8	46.5

*Differences between experimental and control groups significant at *p<0.05 **p<0.01 ***p<0.001*

governmental organizations in Enamirt, and to general intensification of efforts in Ethiopia related to education and achievement of the Millennium Development Goals (MDGs).

At baseline, 71 percent of experimental girls and 82 percent of control girls aged 10 to 14 had ever attended school, a difference that was statistically significant. By endline, ever attendance had increased substantially in both sites, with 97 percent of girls 10 to 14 in the project site attending school and 93 percent in the control site. Moreover, while 10 to 14 year olds in the experimental site were disadvantaged at baseline, at endline, there were no differences between the sites. Similarly, 96 percent of Mosebo girls were

Table 6 Weighted logistic regression for predictors of school status, by age group & time of survey

	Respondents aged 10 to 14				Respondents aged 15 to 19			
	Baseline (n=377)		Endline (n=709)		Baseline (n=317)		Endline (n=572)	
	OR	P-value	OR	P-value)	OR	P-value)	OR	P-value
Age	1.292	0.006	0.943	0.601	0.528	0.000	0.486	0.000
Socio-economic index (0-15)	1.230	0.004	1.109	0.085	1.254	0.012	1.124	0.004
Ever married (yes)	0.152	0.000	0.645	0.271	0.037	0.000	0.119	0.000
Site								
Project	0.569	0.029	2.986	0.008	1.747	0.105	1.347	0.191
Control (ref)	1.00	-	1.00	-	1.00	-	1.00	-

in-school at endline compared to 89 percent of control girl, a significant difference between groups.

A similar pattern was observed in regards to literacy among young girls. Approximately 45 percent of younger girls in Mosebo and 28 percent in the control group could not read at baseline. This proportion was reduced to about the same level at endline (21 percent in Mosebo; 19 percent in Enamirt). However, the mean years of education were significantly higher among young girls in the control group (2.7 years in experimental area versus 3.7 years in the control site). Among older adolescents, changes in school status were less clear, with increases in enrollment between surveys, but no apparent differences between study sites.

Weighted logistic regression was conducted to examine the effect of the treatment group (experimental or control) on school status, after adjusting for other factors: age, socioeconomic status, and marital status (Table 6). Among 10 to 14 year olds, girls in Mosebo were half as likely to be in school at baseline, compared to girls in the control area. At endline, Mosebo girls were nearly three times as likely to be in school compared to girls in the control group, suggesting that the intervention was effective in getting girls back to school.

Among older girls, there were no significant differences in school status between girls in the experimental or control area, either at baseline or at endline. Among this older group of girls, factors that were significantly associated with the likelihood of being in school were age, socioeconomic status and marriage.

Table 7 Marriage among experimental & control groups, by age category & time of survey

	Age 10 to 14				Age 15 to 19			
	Baseline		Endline		Baseline		Endline	
	Project (n=169)	Control (n=209)	Project (n=367)	Control (n=348)	Project (n=113)	Control (n=205)	Project (n=301)	Control (n=273)
Ever married	9.5	13.9	1.6	22.1***	46.0	57.1	45.8***	29.7
Married in the last yr[a]	1.3	1.6	0.0	4.8***	8.6	19.8*	7.4	3.9

*Differences between experimental and control groups significant at *p<0.05 **p<0.01 ***p<0.001*
[a] Only includes respondents who were not yet married two years before the survey period.

Marriage

Though most girls in this setting do not decide upon the timing of marriage, the evaluation assessed girls' attitudes regarding ideal marriage age. When asked the age at which they would like to get married, at baseline 11 percent of Mosebo girls and 5 percent of control girls named an age younger than 18 years, a difference that was statistically significant. At endline, only 3 percent of both experimental and control girls mentioned an ideal marriage age lower than 18 years.

The study assessed changes in marriage age among girls in the experimental and control areas (Table 7). Among girls aged 10 to 14 at baseline, there were no significant differences between experimental and control girls in terms of percent ever married or having been married in the last year. At endline, the proportion of ever married younger girls in the experimental site decreased from 10 percent to 2 percent. In the control area, the proportion of ever married 10 to 14 year olds increased from 14 percent to 22 percent. When the sample is restricted to girls who had not been married two years before the study period, a similar pattern is observed. The proportion of girls who got married in the previous year increased from 2 to 5 percent in the control group. In Mosebo 1 percent of younger girls had married in the previous year at baseline, while not one girl aged 10 to 14 had married in the previous year at endline.

Table 8 Proportional hazard model for predictors of martial status, by age group & time of survey

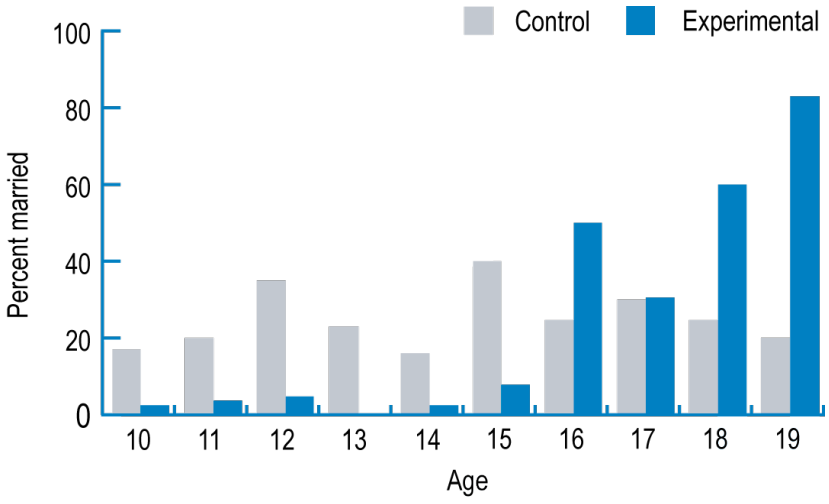
	Respondents aged 10 to 14				Respondents aged 15 to 19			
	Baseline (n=374)		Endline (n=699)		Baseline (n=337)		Endline (n=710)	
	OR	P-value	OR	P-value)	OR	P-value)	OR	P-value
Age	1.307	0.022	0.741	0.002	1.054	0.379	0.985	0.795
Socio-economic index (0-15)	1.245	0.025	1.035	0.494	1.114	0.025	1.200	0.000
Number of years of education	0.764	0.003	1.022	0.716	0.674	0.000	0.833	0.000
Site								
Project	0.661	0.220	0.093	0.000	0.867	0.425	2.412	0.000
Control (ref)	1.00	-	1.00	-	1.00	-	1.00	-

Among older adolescents, there were no significant differences at baseline in terms of marital status, with 46 percent of Mosebo girls 15 to 19 having ever been married, compared to 57 percent of control girls. At endline, significantly more Mosebo girls were ever married (46 percent) compared to 30 percent of girls 15 to 19 in the control area. At the same time, the percentage of Mosebo girls 15 to 19 who are married did not change between baseline and endline. Among Mosebo girls, the percentage of 15 to 19 year olds married in the last year remain relatively stable, from 9 percent at baseline to 7 percent at endline. The percentage of girls in the control group who were married in the last year declined substantially, from 20 percent at baseline to 4 percent at endline.

The proportional hazard model predicting ever marriage is shown in Table 8, stratified by age group. Among girls 10 to 14 at baseline, age, socioeconomic status and years of education were significant predictors of marriage. As expected, the odds of being married increased with age and girls with higher education attainment were less likely to have been married. At endline, however, there was a significant difference; Mosebo girls were 90 percent less likely to have ever been married than girls in the control group, suggesting that Berhane Hewan was associated with delaying marriage among girls aged 10 to 14.

Among girls in later adolescence, socioeconomic status and years of education were predictive of being married. At endline, however, girls 15 to 19 in the intervention site were nearly two and a half times more likely to be married compared to girls in the control site. Paradoxically, while delays in marriage were associated with the project for younger girls, older girls in the project site seemed more likely to be married. Figure 1 shows the percentage of girls married at endline, by age. While few girls in the experimental area were married during early adolescence, marriage of girls in Mosebo appears to accelerate after the age of 15. At the same time, girls in the control area seem to marry at fairly constant rates across ages.

Figure 1 Percent of adolescent girls married at endline, by age & area of residence



Marriage during adolescence is part of a cultural tradition where the father's status in the community is assured if his daughter is married. A girl married later in life or not at all is considered a disgrace.[11] Given that few marriages occurred before age 15, but accelerated after age 15, it is likely that the Berhane Hewan project had the effect of deferring the earliest marriages (those among girls under 15 years) to later adolescence.

Reproductive health

This section examines the impact of the program on reproductive health knowledge, communication, and family planning use. Table 9 shows the proportion of girls in the experimental and control groups who correctly answered various knowledge questions related to family planning, HIV/AIDS, and sexually transmitted infections (STIs). Girls in the experimental site were significantly more likely to know about contraceptive pills than girls in the control group at both baseline and endline. On all other knowledge questions, at baseline, there were either no significant differences between groups or Mosebo girls were significantly less knowledgeable than controls. At endline, Mosebo girls were significantly more likely to know about Depo Provera, condoms, STIs, the primary mode of HIV infection, the lack of a cure for AIDS, and the fact that a healthy-looking person can be infected with HIV.

Communication on reproductive health issues was demonstrated by asking respondents if they spoke to their closest friend about the various

Table 9 Reproductive health knowledge among experimental and control groups, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=282)	Control (n=416)	Project (n=678)	Control (n=621)
Percentage of respondents aware of FP methods:				
Pills	86.2**	77.2	91.1**	86.3
Depo/injectables	85.5	82.9	90.7**	85.5
Condoms	26.2	36.2**	32.1***	16.2
Do no know any method	11.4	13.9	7.6	10.8
Percentage with STI/HIV/AIDS knowledge:				
Know a woman can't always tell if she has an STI	31.0	38.8*	29.1*	31.3
Know a woman can't always tell if a man has an STI	35.6	41.1	60.9***	45.2
Know a healthy looking person can be HIV+	65.2	77.9**	88.2***	71.8
Know that most people don't get HIV from sharp objects	24.1	23.8	34.4	32.4
Know that there is no cure for HIV/AIDS	53.4	64.9**	88.5***	77.8
Mentioned intercourse as HIV transmission mode	78.7	84.7*	92.9*	89.2

*Differences between experimental and control groups significant at *p<.05 **p<.01 ***p<.001*

[11] Pathfinder International. 2006. "Report on the Causes and Consequences of Early Marriage in Amhara Region," Addis Ababa, Ethiopia: Pathfinder, July.

Table 10 Reproductive health communication among experimental & control groups, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=282)	Control (n=416)	Project (n=678)	Control (n=621)
Percentage who discussed topics in last year				
HIV/AIDS	30.1	34.9	79.4***	58.5
Sexually transmitted infections	28.0	28.6	50.1***	32.2
Family planning methods	29.5	37.7*	58.1***	44.8
Condoms	13.0	21.4*	24.3**	18.1
Violence in your community	24.9	38.2**	50.8**	41.5
Problems in your marriage[a]	55.6	55.9	81.6***	23.5
The kind of spouse you would like[b]	10.9	10.8	13.9	25.2**

*Differences between experimental and control groups significant at *p<.05 **p<.01 ***p<.001*
[a] Among respondents who are married; [b] Among respondents who are not married

topics (Table 10). At baseline, Mosebo girls were significantly less likely to talk to their closest friends about family planning, condoms, and violence in their communities. At the end of the study period, however, girls in Mosebo were significantly more likely to discuss all items mentioned except for the ideal spouse. For example, 79 percent of Mosebo girls had discussed HIV/AIDS with their closest friend compared to 59 percent of girls in the control group. Among girls who were married, 82 percent of Mosebo girls and 24 percent of control girls had talked to their closest friends about problems within their marriage. Between baseline and endline, the proportion of girls who discussed family planning methods increased by 18 percent in the control group and by 97 percent in Mosebo.

Table 11 shows the proportion of sexually active girls using various family planning methods, with all but two of the sexually active girls being ever married.[12] There were no significant differences in family

Table 11 Ever use of family planning among sexually active girls in experimental & control sites, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=58)	Control (n=119)	Project (n=143)	Control (n=145)
Pills	34.5	23.3	28.7	21.4
Depo/injectable	34.5	31.0	66.4***	42.1
Condoms	5.2	1.7	2.1	0.0
Ever use of any method	**43.2**	**36.1**	**74.1*** **	**44.8**

*Differences between experimental and control groups significant at *p<.05 **p<.01 ***p<.001*

[12] Note that this sub-sample only includes 119 controls and 58 experimental girls at baseline, and 145 controls and 143 experimental girls at endline.

planning use at baseline. Use of contraceptive pills reduced slightly in both groups between baseline and endline. At endline, girls in Mosebo were significantly more likely to use injectables (66 percent) than girls in the control group (42 percent). Ever use of any family planning method was significantly higher in the experimental area at endline, mainly attributable to increases in injectable use, with 74 percent of sexually active girls in the experimental area ever having used a method, compared to 45 percent of control girls.

Results for the logistic regression model predicting ever use of a family planning method among sexually active girls, are shown in Table 12. Marital status was not included as a control variable as only two sexually active girls were not married across all surveys. There were no significant differences in family planning use by treatment group at baseline. At endline, girls in the experimental area were nearly three times as likely to have used family planning compared to girls in the control area. At baseline, older girls were significantly less likely to have used family planning. Girls with higher levels of education attainment and higher socioeconomic status were significantly more likely to use family planning. None of these control variables were significant at endline.

Table 12 Weighted logistic regression for ever use of family planning among sexually experienced girls, by time of survey

	Baseline (n=175)		Endline (n=285)	
	OR	P-value	OR	P-value
Age	0.913	0.001	1.011	1.011
Socio-economic index (0-15)	1.220	0.021	0.978	0.686
Number of years of education	1.601	0.021	0.940	0.191
Site				
Project	1.332	0.424	2.876	0.003
Control (ref)	1.00	-	1.00	-

VII. Discussion

The Berhane Hewan Program was developed to sensitize community members to the dangers of child marriage, prevent early marriage among unmarried adolescents and provide support for married adolescents. The program included social mobilization of adolescent girls aged 10 to 19 into groups led by female mentors; support to stay in school or convening of groups outside of school including non-formal education and livelihoods skills; and community-wide conversations on early marriage and reproductive health issues effecting girls. In addition, an economic incentive was provided to families who did not marry off their girls during the period. The program was pilot tested in Mosebo Village, Amhara Region, from 2004 to 2006. Population-based surveys were conducted immediately before the implementation and two years afterwards, in both pilot and control areas, to measure changes associated with the Berhane Hewan program.

Implementation of the program was extremely strong with the vast majority of girls having heard of the program (92 percent), having been part of groups (85 percent), and having attended a community conversation (73 percent). On the other hand, none of the girls in the control group had heard of a program called Berhane Hewan, reflecting that no contamination of the control group took place. This provides a basis for attributing any improvements in Mosebo, that were not due to chance and not observed in the control area, as resulting from the program.

The impact evaluation focused on four main areas: social networks and participation, education, marital status, and reproductive health. The findings indicated that educational opportunities increased in both the experimental and control areas during the study period. This improvement seemed to be slightly greater in the control area, which had a significantly higher mean years of education. However, multivariate results indicated that differences in demographic characteristics were masking the program's impact on education. After controlling for marital status, age and socioeconomic status, Mosebo girls aged 10 to 14 were three times more likely to be in school, than girls in the control group.

A similar pattern was observed with regards to marital status. While the rate of marriage seemed to have decreased more substantially in the control group, this was not the case for the younger age group. Younger girls in Mosebo were significantly less likely to be married than those in the control group. Multivariate analysis revealed considerable impacts on the timing of marriage for younger adolescents, aged 10 to 14. Mosebo girls aged 10 to 14 were 90 percent less likely to be married compared to Enamirt girls. That marriage for girls in Mosebo seemed to accelerate

during later adolescence suggests that the earliest marriages may have been deferred to later adolescence, as a result of the program.

Compared to girls in the control site, girls in the project site reflected improved knowledge on HIV, sexually transmitted infections, and family planning methods, and were more likely to have had communication on these issues. Family planning use increased in both areas, but more so in the experimental site. There were no significant differences in use of family planning methods at baseline. At endline, however, Mosebo girls were 1.8 times more likely to have used any family planning method compared to controls, even after adjusting for demographic factors.

Berhane Hewan is a package of interventions including multiple components at the community and individual levels. High levels of exposure to all project components make it difficult to ascertain if specific program components were more influential in bringing about change than other components. The Berhane Hewan experiment is one of the first rigorously evaluated programs to delay marriage in sub-Saharan Africa. Two years is a relatively short period to achieve significant impacts on indicators such as marriage age. However, results of the evaluation indicate significant impacts on education, marriage and reproductive health, demonstrating that progress can be made on the social, educational, and health status of adolescent girls, through well designed and implemented support programs.

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