

## ORIGINAL RESEARCH ARTICLE

# Evaluation of a Reproductive Health Program to Support Married Adolescent Girls in Rural Ethiopia

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## Abstract

Few reproductive health programs are targeted to married adolescent girls. This study measures changes associated with a program for married adolescent girls and a parallel husbands' program, in rural Ethiopia. The married girls' program provided information on communication, self-esteem, reproductive health and gender through girls' groups. The husbands' program focused on non-violence, support to families, and reproductive health. Population-based surveys were undertaken among married girls, at midterm and end line. Outcomes of interest were husbands' assistance with domestic work, accompaniment to the clinic, family planning use, voluntary counseling and testing (VCT), and domestic violence. Overall, 1,010 married girls were interviewed. Participation in the girls' groups was associated with improvements in help with domestic work, accompaniment to the clinic, family planning and VCT. Further improvements were recorded when both partners participated. For example, participating girls were nearly 8 times more likely to receive VCT (OR 7.7) than nonparticipants, and more than 18 times more likely if both partners participated (OR 18.3). While these results are promising, there were indications of selectivity bias that could have contributed to the positive results. Programs engaging both wives and husbands can result in incremental improvements to the health and well-being of girls married early. *Afr J Reprod Health 2014; 18[2]: 68-76*.

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**Keywords:** Early marriage, male involvement, reproductive health, gender

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## Résumé

Peu de programmes de santé de la reproduction sont destinés aux adolescentes mariées. Cette étude mesure les changements associés à un programme destiné aux adolescentes mariées et un programme destiné aux maris parallèles en Ethiopie rurale. Le programme pour les jeunes filles mariées a fourni des informations sur la communication, l'estime de soi, la santé de la reproduction et les sexes à travers des groupes de filles. Le programme destiné aux maris a mis l'accent sur la non-violence, le soutien des familles, et la santé de la reproduction. Les enquêtes basées sur la population ont été menées auprès des filles mariées, à mi-parcours et en fin d'étude. Les résultats d'intérêt étaient l'aide rendu par les maris au travail domestique, l'accompagnement à la clinique, l'utilisation de la planification familiale, le conseil et dépistage volontaire (CDV) et la violence domestique. Dans l'ensemble, 1 010 jeunes filles mariées ont été interrogées. La participation à des groupes de filles a été associée à l'amélioration de l'aide aux travaux ménagers, l'accompagnement à la clinique, la planification familiale et le CDV. D'autres améliorations ont été enregistrées lorsque les deux partenaires ont participé. Par exemple, les filles qui ont participé étaient presque huit fois plus susceptibles de recevoir des CDV (OR 7,7) que celles qui n'ont pas participé et plus de 18 fois plus susceptibles si les deux partenaires ont participé (ou 18.3). Bien que ces résultats soient prometteurs, il y avait des indications de biais de sélection qui pourraient avoir contribué aux résultats positifs. Les programmes qui engagent à la fois les femmes et les maris peuvent aboutir à des améliorations progressives de la santé et du bien-être des filles qui se sont mariées tôt. *Afr J Reprod Health 2014; 18[2]: 68-76*.

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**Mots-clés:** mariage précoce, la participation des hommes, santé de la reproduction, sexes

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## Introduction

Child marriage – or marriage before the age of 18 – is a common occurrence in developing countries, where the majority of world's adolescents live<sup>1</sup>. Roughly half of all girls in South Asia and one third of girls in sub-Saharan Africa marry by age 18<sup>2</sup>. In Ethiopia, where levels of early marriage

are among the highest in Africa, nearly half of all girls are married by age 18, and 27% are married during early adolescence, by age 15<sup>3</sup>.

Girls married early are at a distinct disadvantage. Early marriage is generally centered in the poorest rural communities, of poor countries, and often in places dominated by conservative gender norms<sup>4</sup>. Girls who marry

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early have little education or no education at all. The earlier a girl marries, the more likely it is that her marriage was arranged and the greater the age difference with her husband<sup>5</sup>. In a recent study in Ethiopia, among girls married before age 15, 79% had never been to school, 89% experienced arranged marriage, and 71% first met their husbands on the wedding day<sup>4</sup>. On average, these early-marrying girls were 8 years younger than their husbands. Girls' lack of education and lack of partner choice, in combination with large age differences with husbands likely compromise their power and status in marital relationships and set married girls on an unequal footing with marriage partners.

Early sexual initiation, early childbirth and associated reproductive health risks are fueled by early marriage. It is often assumed that teenage pregnancy usually takes place out-of-wedlock. However, a review of data from 51 developing countries found that 90% of girls giving birth before the age of 18 were married<sup>6</sup>. Moreover, these early first births are the riskiest and constitute the leading cause of death among girls 15 to 19 in developing countries<sup>7</sup>. Indeed, a recent WHO publication on adolescent pregnancy recommended reducing child marriage as a main strategy to reduce adolescent pregnancy and related negative health outcomes<sup>8</sup>.

Girls married early also experience elevated rates of HIV infection. Studies in Kenya, Zambia and Zimbabwe have shown that married adolescent girls have significantly higher rates of HIV infection than their counterparts who are sexually experienced but unmarried<sup>9</sup>. Excess levels of HIV infection have been attributed to the greater frequency of intercourse within marital relationships compared to non-marital ones; married girls' husbands being older and having longer sexual histories than the boyfriends of unmarried girls; and the diminished use of condoms within marriage<sup>9,10</sup>.

Finally, population growth is fueled by the young age structure in developing countries. In this context, researchers estimate that delaying marriage and associated early childbearing in less developed countries by five years can offset 15 to 20% of population growth in the future<sup>11</sup>.

Yet, currently, reproductive health programs for adolescents in the developing world largely focus on those who are unmarried and sexually active. While their disadvantage arguably underscores the need for dedicated programs, health and development initiatives targeted to married adolescents are extremely limited and not reflective of the sheer numbers of girls married early. A few initiatives have demonstrated the potential for targeting newly married girls and their partners. In the Bihar State of India, targeted promotion of family planning to newly married adolescents and their husbands resulted in improved attitudes toward family planning and increased contraceptive usage<sup>12</sup>. Another project for first-time parents in Gujarat and West Bengal States of India, found that targeting married adolescent girls and husbands with health information and girls groups resulted in increased autonomy among wives and improved knowledge of family planning, while behavioral outcomes showed mixed results<sup>13</sup>. Neither of these evaluations examined whether or not involvement of husbands resulted in additional improvements in reproductive health outcomes.

Most studies of male involvement have examined the role of male partners in the context of programs targeted to adult women, with a number demonstrating the added benefits of involving males. A study in urban Ethiopia compared changes associated with community-based health educators who discussed family planning with only women, or jointly with husbands and wives. When home visits involved husbands, women were nearly twice as likely to begin using contraceptives within two months and less likely to default on their use following initiation of family planning<sup>14</sup>. In a longitudinal analysis of 456 HIV positive pregnant women in Kenya, partner attendance during prenatal consultations significantly reduced the risk of vertical transmission and infant mortality by up to 45%, after adjusting for maternal viral load and breastfeeding<sup>15</sup>. In a similar clinic-based study of over 2,100 pregnant women in Nairobi, Kenya, those who came with their partners were three times more likely to return for nevirapine to prevent mother-to-child transmission (PMTCT),

More likely to administer the drug at delivery and significantly less likely to breastfeed, compared to those who did not visit the clinic with their partners<sup>16</sup>. In a longitudinal study among 2,654 pregnant women in Tanzania, HIV-positive women who had their partners attend voluntary counseling were three times more likely to use nevirapine prophylaxis and six times more likely to adhere to prescribed infant feeding regimens<sup>17</sup>.

Of note, these studies tested changes associated with joint participation of marital partners in health services, not interventions specifically tailored for and directed, separately, to males and females. This study examines changes associated programs for married adolescent girls and husbands, implemented in parallel in the rural Amhara region of Ethiopia, promoting more equitable relationships and increased health-promoting behaviors.

### ***Mentoring programs for married adolescent girls & husbands***

‘*Meseret Hiwott*’ program (meaning ‘Base of Life’ in Amharic) was established with the aim of supporting girls who were married at an early age in rural areas of Amhara region, Ethiopia. Project objectives were to provide girls with increased social networks, and knowledge and skills to improve their reproductive health and prevent HIV. Through the project, female mentors are recruited from rural communities and trained to mobilize and lead girls’ groups. Once trained, mentors go house-to-house to identify married adolescent girls aged 10 to 24, describe the program and invite girls’ participation. Recruitment visits at the household level allow mentors to negotiate for the girl’s participation with other gatekeepers, such as husbands or parents-in-law. Participating girls are organized into girls’ groups which meet roughly three times per week, depending on the availability of participants. Groups meet in locally available meeting spaces, such as community halls, in participants’ houses, or under a tree. Once in groups, girls are taken through a 32-hour curriculum that covers topics such as communication and self-esteem, sexually transmitted infections (STIs) and HIV/AIDs, voluntary counseling and testing (VCT), anti-

### **Program for Married Adolescents, Ethiopia**

retroviral therapy (ART), reproductive health, menstruation management, family planning, safe motherhood, gender and power dynamics, and financial literacy.

Shortly after ‘*Meseret Hiwot*’ groups for girls began at the end of 2008, men in the project communities requested a program of their own. ‘*Addis Birhan*’ (Amharic for ‘New Light’) was designed to contribute to achieving the objectives of the ‘*Meseret Hiwot*’ project by equipping rural husbands with communication and support skills to improve the health and well-being of their wives and families. Similar to the design of the program for married girls, male mentors are recruited from communities and trained. They make house-to-house visits to recruit husbands into the program, with groups meeting in community spaces. Unlike ‘*Meseret Hiwott*,’ husbands of any age are eligible for the program, and not only men who are married to girls of adolescent age. In the groups, men are taken through a participatory curriculum that includes partner communication, non-violent and respectful relationships, caring for wives and children, alcohol and drugs, STIs, HIV/AIDS, VCT, ART, family planning, safe motherhood, domestic violence and sexual violence, among others. Sessions in both programs are interactive and include group discussions, role plays and storytelling. As a considerable proportion of participants had never been to school, illustrations were used to spark discussion on topics such as assistance with domestic duties and childcare, couples going to clinics and domestic violence.

The projects were implemented in 20 woredas/districts of Amhara region starting from 2008. By mid-2013, over 225,000 married girls aged 10 to 24 had taken part in the groups and over 130,000 married boys and men aged 10 to 85 had participated in ‘*Addis Birhan*.’ This study uses data from married adolescent girls to examine changes associated with programs for married girls and husbands.

### **Methods**

This study analyzes cross-sectional data from two rounds of post-intervention, population-based surveys among currently married girls, comparing outcomes across three different treatment groups:

those not exposed to the project, those exposed to the intervention for married girls and those for whom both respondent and spouse were exposed. Data was pooled from two rounds of survey among married adolescent girls in six project kebeles (lowest administrative unit) in three districts/woredas of the Amhara region, Ethiopia. Data were collected from a sample of ever-married girls aged 12 to 24 who resided in the three project districts/woredas. The intervention was initiated at the end of 2008. Population-based surveys were undertaken among married girls at two points in time following the beginning of the intervention; a midterm survey was undertaken in mid-2010 and an endline survey in early 2012. No baseline data was collected. The same questionnaire and survey methodology was used at each round of survey.

Within the three project districts/woredas, a census of households in six study kebeles was undertaken to identify households with eligible married girls aged 12 to 24. Households with eligible girls were selected at random. Only one girl was interviewed per household, by a female interviewer. Similar to procedures in Demographic and Health Surveys, three visits were made to the household to locate and interview the sampled respondent. In case of refusal or failure to locate the respondent, no replacement was made. Questionnaires solicited information on a range of issues including social networks and participation, gender attitudes, family planning and VCT, marital relations and communication and domestic violence, among others. All respondents in the survey provided informed consent. In the case of underage girls, they provided their assent and informed consent was obtained from an adult guardian in the household. The study received ethical approval through the local review committee in Ethiopia period.

### **Measures**

The evaluation focused on outcomes in three domains: husbands' support and assistance with domestic duties, positive health behavior including use of family planning and VCT, and domestic and sexual violence. In order to measure support for domestic duties, married girls were asked "Has your spouse helped you with household work in the last three months?" and "Has your spouse

### **Program for Married Adolescents, Ethiopia**

helped you with agricultural work in the last three months?" Support for healthcare was measured by asking, "Has your spouse gone with you to the clinic in the last year?" while positive health behaviors were measured through ever use of family planning and ever having received VCT as a couple. Two indicators were used to measure domestic and sexual violence: girls reporting their husbands forced sex in the last three months; and girls reporting being beaten by husbands in the last three months.

### **Analysis**

Data for this analysis is restricted to girls who were currently married at the time of survey. Respondents were recoded as to whether they had participated in 'Meseret Hiwot,' whether both themselves and their husbands had participated in both the married girls' and husbands' programs, or whether neither husband nor wife had taken part either of the programs. Respondents reporting that only their husbands participated in the program were removed from analysis as there were too few in the category (24) for a meaningful comparison.

Descriptive statistics were calculated for outcomes of interest across respondent categories: no participation, participation in married girls' group only, and participation in both married girls' and husbands' groups. For categorical variables, Pearson chi-square tests were used to assess differences between groups. Multivariate analysis of our outcomes controlled for age of respondents, ever having been to school, and participation in one or both projects. Age was a continuous variable; having ever been to school was dichotomous. In particular, we were interested in the extent to which participation in one or both of the wives and husbands' groups were associated with positive outcomes in the dependent variables. Odds ratios are reported for multivariate results. The study used a cross-sectional, population-based methodology investigating different exposure groups. The odds ratio was used, although both relative risk and odds ratios are valid for this study design<sup>18</sup>.

### **Results**

In all, 1,010 currently married girls were interviewed across the two surveys (Table 1).

**Table 1:** Characteristics of currently married adolescent females aged 12 to 24 in project sites (n=1,010)

	Number (%)
<b>Age category</b>	
12 to 14	15 (1.5)
15 to 19	238 (23.6)
20 to 24	757 (74.9)
<b>Educational attainment</b>	
None	710 (70.3)
1 to 4 years	128 (12.7)
5 to 8 years	109 (10.8)
9+ years	63 (6.2)
<b>Literacy</b>	
Reads easily	194 (19.2)
Reads with difficulty	72 (7.1)
Does not read at all	744 (73.7)
<b>Age at marriage</b>	
Below age 10	155 (15.4)
Age 10 to 14	417 (41.3)
Age 15 to 19	404 (40.0)
Age 20 to 24	34 (3.3)
<b>Age difference with spouse</b>	
Same age or older	16 (1.6)
1 to 4 years younger	319 (31.6)
4 to 9 years younger	481 (47.6)
10+ years younger	194 (19.2)
<b>Ever given birth</b>	
No	212 (21.0)
Yes	798 (79.0)
<b>Year of interview</b>	
2010	586 (58.0)
2012	424 (42.0)
<b>Exposed to intervention</b>	
No exposure	624 (61.8)
Married girls group only	107 (10.6)
Husbands' group only	24 (2.4)
Both married girls & husbands' groups	255 (25.2)

The majority of married girls (75%) were in the older age group, 20 to 24, and had never been to school (70%). A considerable percentage of girls had married during early adolescence, before the age of 15 (57%), with an average age difference with their husband of 6.4 years. Among girls in the project sites, 62% had not participated in the program; 11% participated in the married girls program but their husband had not participated in the male program; and 25% reported that both they and their husbands had participated in the programs.

When participating girls were asked to mention the topics they discussed in the groups, the topics most commonly mentioned were HIV/AIDS (92% of participants), family planning (77%), pregnancy (38%), menstruation (36%), domestic and sexual violence (21%), and STIs (20%) (*analysis not shown*). Participating girls whose husbands did

not participate were more likely to experience spousal disapproval of their participation (8%) compared to girls whose husband took part in 'Addis Birhan' (2%).

Those who are motivated to join groups or whose husbands allow them to join, are likely to be systematically different from nonparticipants, either in terms of their own priorities and concerns or their husbands' level of support. We examined systematic differences in the three exposure groups in order to explore potential selectivity bias among those participating in the programs. Table 2 shows selected demographic characteristics of participants and their husbands, by type of program exposure. Respondents who reported neither their own participation nor their husbands' tended to be younger (mean age 20.9) than those who had been participants in the girls' groups only (mean age 21.3), or both groups (mean age 21.7), a difference that was statistically significant. The three groups did not differ significantly with regard to educational attainment, husband's education, age at marriage or age difference with their spouses. However, girls who did not participate were significantly more likely to report needing someone's permission before leaving the house (81%), compared to girls who participated in the married girls' groups (75%) or for whom both husband and wife participated (60%). This would suggest that nonparticipating girls are more likely to come from households where their movements are restricted and monitored.

### *Bivariate analysis*

Table 3 shows the extent of spousal domestic assistance, support for healthcare, family planning use and domestic violence, by exposure to the program. Spousal assistance seems to increase with participation in the programs. Among girls reporting no program participation, only 33% described that their husbands helped with housework in the last three months. By comparison, 59% of girls who participated in married girls' groups reported their husbands helped them, while 81% of girls were helped where both husband and wife participated. Similar trends were reflected considering accompaniment to the clinic, ever use of family planning and ever use of VCT. The lowest use of family planning

and couples' VCT were among girls who had not participated in the project (57% ever use of family planning; 11 percent ever had couples' VCT). The highest levels of family planning and VCT use were among respondents who participated in married girls' groups as well as their husbands in men's groups (71% ever use of family planning; 65% ever had couples' VCT).

Among respondents who had not participated in the program and those where both husband and wife had participated, 12 to 13% reported having

experienced forced sex in the last three months. However, girls who participated in the girls' group without similar involvement by their husbands reported higher levels of sexual violence, 22%, a statistically significant difference. Nine percent of girls who participated in girls groups only reported having been beaten by husbands in the last three months; 8% of nonparticipants reported being beaten; and 4% of girls for which both partners participated reported being beaten.

**Table 2:** Characteristics of currently married adolescent females and husbands, by exposure to the program

	No participation (n=619)	Wives groups only (n=107)	Both wives & husbands groups (n=255)
<b>Age category (mean)***</b>	20.9	21.3	21.7
<b>Years of education</b>			
None	430 (69.5)	66 (61.3)	194 (75.8)
1 to 4 years	77 (12.4)	19 (17.9)	27 (10.7)
5 to 8 years	69 (11.2)	14 (13.3)	24 (9.5)
9+ years	43 (6.9)	8 (7.5)	10 (4.0)
<b>Age at marriage (mean)</b>	13.4	13.9	13.0
<b>Age difference with spouse</b>			
Same age or younger	8 (1.3)	1 (1.2)	5 (2.1)
1 to 4 years younger	216 (34.8)	35 (32.5)	71 (27.6)
5 to 9 years younger	300 (48.5)	52 (48.2)	118 (46.4)
10+ years younger	95 (15.4)	19 (18.1)	61 (23.9)
<b>Husband's years of education</b>			
None	430 (69.5)	74 (69.0)	183 (71.8)
1 to 4 years	92 (14.8)	15 (14.0)	44 (17.1)
5 to 8 years	65 (10.5)	16 (15.0)	20 (7.9)
9+ years	32 (5.2)	2 (2.0)	8 (3.2)
<b>Respondent needs permission before leaving the house***</b>	502 (81.1)	80 (74.8)	154 (60.2)

\*p<0.05 \*\*p<0.01 \*\*\* p<0.001

**Table 3:** Spousal support, family planning and domestic violence, by exposure to the program

	No participation (n=624)	Wives groups only (n=107)	Both wives & husbands groups (n=255)
<b>Spousal assistance (last 3 mos.)</b>			
Helped with housework***	207 (33.1)	63 (59.0)	206 (80.8)
Helped with agricultural work**	537 (86.1)	91 (84.8)	238 (93.3)
<b>Healthcare, family planning, and VCT</b>			
Spouse accompanied wife to clinic (last year)**	230 (39.6)	45 (42.5)	136 (53.3)
Ever used family planning***	353 (56.6)	74 (69.2)	182 (71.4)
Ever received couples VCT***	67 (10.7)	49 (45.8)	166 (65.2)
<b>Domestic violence</b>			
Spouse forced sex (3 mos.)**	82 (13.2)	23 (21.6)	32 (12.4)
Spouse has beaten wife (3 mos.)~	56 (8.9)	10 (9.4)	11 (4.3)

~ p<0.10 \*p<0.05 \*\*p<0.01 p<0.001

**Multivariate analysis**

Logistic regression predicting assistance with domestic work indicated that girls' age and program exposure was associated with the likelihood of receiving assistance from one's husband in the home (Table 4). Girls who participated in the married girls' groups were over 2 ½ times more likely (odds ratio 2.6;  $p < 0.001$ ) to receive assistance compared to those who did not participate. Among respondents for whom both the husband and wife participated in the groups, husbands were over 8 times more likely to provide

support to their wives (odds ratio 8.4;  $p < 0.001$ ). Logistic regression predicting married girls being accompanied to the clinic in the last year demonstrated that respondents for which both husband and wife attended the groups were nearly twice as likely to go together to a clinic (odds ratio 1.7;  $p < 0.01$ ) compared to respondents who did not participate in the intervention. There was no association between joint clinic visits and project participation among respondents who participated in married girls groups but whose husbands were nonparticipants.

**Table 4:** Adjusted odds ratios (and 95% confidence intervals) from logistic regression for predictors of husbands' support, among currently married females 12-24

	Helped with housework (n=856)		Accompanied wife to clinic (n=856)	
	Adjusted OR	95% CI	Adjusted OR	95% CI
<b>Age (cont)</b>	1.11**	(1.04-1.18)	1.05~	(0.99-1.12)
<b>Ever been to school (yes)</b>	1.55~	(1.11-2.16)	1.41*	(1.04-1.92)
<b>Age at marriage</b>				
Less than 10 (ref)	1.00	-	1.00	-
Age 10 to 14	1.28	(0.81-2.02)	0.99	(0.65-1.49)
Age 15 to 19	1.28	(0.81-2.03)	1.11	(0.73-1.69)
Age 20 to 24	2.21	(0.85-5.74)	1.57	(0.66-3.78)
<b>Exposure to the program</b>				
No exposure (ref)	1.00	-	1.00	-
Wives' groups only	2.60***	(1.67-4.04)	1.05	(0.68-1.61)
Husbands' & wives groups	8.36***	(5.76-12.15)	1.69**	(1.24-2.30)

~  $p < 0.10$  \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

**Table 5:** Adjusted odds ratios (and 95% confidence intervals) from logistic regression for predictors of family planning use, couples' VCT, and domestic violence, among currently married females 12-24

	Ever used family planning (n=911)		Ever received couples VCT (n=911)		Been beaten in last 3 mos. (n=895)	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
<b>Age (cont)</b>	1.14***	(1.08-1.20)	0.92*	(0.86-0.98)	0.98	(0.92-1.05)
<b>Ever been to school (yes)</b>	2.31***	(1.67-3.18)	1.90**	(1.30-2.78)	1.28	(0.92-1.79)
<b>Age at marriage</b>						
Less than 10 (ref)	1.00	-	1.00	-	1.00	-
Age 10 to 14	1.49~	(0.99-2.24)	0.79	(0.47-1.32)	0.86	(0.55-1.36)
Age 15 to 19	1.58*	(1.05-2.39)	1.47	(0.87-2.47)	0.65~	(0.41-1.03)
Age 20 to 24	1.51	(0.63-3.62)	3.61**	(1.40-9.35)	0.60	(0.21-1.67)
<b>Exposure to the program</b>						
No exposure (ref)	1.00	-	1.00	-	1.00	-
Wives' groups only	1.49~	(0.94-2.35)	7.70***	(4.72-12.58)	1.66~	(0.99-2.76)
Husbands' & wives groups	1.85***	(1.33-2.58)	18.34***	(12.13-27.75)	0.84	(0.55-1.28)

~  $p < 0.10$  \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Results for logistic regression predicting family planning use and couples' VCT suggest that the intensity of program exposure is associated with increased likelihood of family planning and couples' VCT (Table 5). Respondents for whom both husband and wife participated in the groups were nearly twice as likely to have ever used family planning (odds ratio 1.9;  $p < 0.001$ ) compared to nonparticipants. When only the respondent participated in the married girls group, the likelihood of family planning use was 1 ½ times that of nonparticipants and only marginally significant (odds ratio 1.5;  $p < 0.10$ ). Couples' VCT was significantly associated with program participation. Couples for whom only the married girl took part in the groups were nearly 8 times more likely to have undergone couples' VCT (odds ratio 7.7;  $p < 0.001$ ), while those for whom both partners took part were over 18 times more likely to have the test jointly (odds ratio 18.3;  $p < 0.001$ )

## **Discussion**

While the intervention showed extremely promising results, there are several limitations to the study design. This is a post-test only research design that includes only data collected following initiation of the interventions. Unfortunately no baseline data was collected from the target group of married adolescent girls, making it difficult for us to understand changes associated with the program before the intervention was initiated. In addition, the design makes it difficult to ascertain the role of selectivity in the results. In other words, we are unsure to what extent the characteristics of people who join programs such as these may bias our results. For example, people who join community programs may be more motivated or progressive, in general, and may be more likely to use family planning or VCT, regardless of the intervention. Our analysis indicates that younger married girls may have been less likely to join the program. This finding underscores the need for programs to place additional emphasis on targeting younger adolescents. In addition, girls whose families required them to seek permission before leaving the house are less likely to join, implying that girls

whose families are more controlling and, perhaps, more conservative are less likely to participate. This suggests that there were some potential selectivity biases in program participation, which may have contributed to positive results achieved. In addition, this analysis is limited to reports by currently married girls, and not formerly married girls or their husbands.

At the same time, the consistency of our results across various outcomes is suggestive of positive changes associated with the interventions for rural married adolescent girls and husbands, which may have been amplified by selectivity biases. The strongest improvements were seen in areas of programmatic focus. The most common topic mentioned by participating girls was HIV, while the strongest impact of the program appeared to be use of couples' VCT. Moreover, the effects of the intervention appear to be additive, with additional benefits accrued when both husband and wife take part in the interventions. When married girls take part in the groups, they are more likely to report their husband helping with housework. Husbands' additional assistance may be associated with participating girls' being more able to communicate these requests to their husbands, with the groups having built levels of confidence, communication skills and awareness of gender-equitable relationships. When husbands also took part in the groups, the reported improvements were increased dramatically. Indeed, the design of the program for husbands' was directed toward achieving the objectives of the married girls program: achieving gender equity, encouraging supportive and understanding husbands and promoting positive reproductive health behaviors. However, it is noteworthy that the study did not detect any changes in domestic violence. This may be because reporting of domestic violence is less common compared to other outcomes, or because this aspect of power dynamics may be more difficult to change than the other outcomes measured.

Some public health practitioners assume that newly married girls are carefully monitored by their extended families and frequently not given permission to participate in public gatherings. Some also assume that married girls would not be likely candidates for family planning in the early

years of their marriage. That the “*Meseret Hiwot*” program was implemented at such significant scale – over 225,000 married girls joining – underscores the demand and potential impact of initiatives for married adolescent girls. In addition, positive improvements in family planning use challenge the assumption that newly married girls would not use family planning. “*Meseret Hiwot*” groups for married girls and “*Addis Birhan*” for husbands demonstrates that it is possible to support and positively impact upon the lives of the large segment of married adolescent girls, even in remote and traditional locations such as rural Ethiopia.

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## Program for Married Adolescents, Ethiopia

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