

## The impact of a national poverty program on the sex partner characteristics of adolescents in Kenya

### *Introduction*

Cash transfers have the potential to prevent the spread of HIV, particularly among adolescents (1). One study has already demonstrated success in reducing HIV prevalence with a conditional cash transfer program (2), and more research is currently underway (3-5). It is important to understand how cash transfer programs may influence HIV risk in order to better understand disease etiology and to more efficiently tailor interventions to maximize their HIV preventive potential. There are several plausible mechanisms that have been proposed. Grants may decrease HIV risk by providing access to more education and higher socio-economic status, empowering recipients to engage in lower HIV risk behavior. Alternatively, exposure to grants may put recipients in contact with safer sexual partners by keeping them in school longer (where they are more likely to find partners close to their own age and HIV-uninfected) or by reducing the financial incentive to engage in transactional sex. Unfortunately, empirical evidence is absent regarding the mechanism through which risk reduction may occur.

The Cash Transfer for Orphans and Vulnerable Children (CT-OVC) is administered by the government of Kenya and currently reaches 135,000 households and benefits over 350,000 vulnerable children (6). Households caring for an orphan or vulnerable child are provided with an unconditional cash transfer of KSH1,500 per month (US\$22). A recent evaluation of the 4-year impact of CT-OVC on the sexual behavior of adolescents living in study households found that receipt of the grant was significantly associated with delayed sexual debut, and weakly associated with a reduced number of partners and unprotected sex acts (7). Here, we examine whether or not household receipt of the grant is associated with the sexual partner characteristics in the same cohort of adolescents.

### *Methods*

As a part of an *a priori* monitoring and evaluation plan, in 2007, a sample of eligible households were randomly assigned to receive the CT-OVC grant (n=1540) or act as controls (n=754) at a rate of 1:2 (control: intervention), stratified by geographic location. Four years later, data were collected on the demographics, sexual behavior, and psychosocial status of adolescents (age 15-25) living in study households.

To investigate the impact of CT-OVC on partner characteristics, we used logistic regression models to estimate the effect of the program on: *partner age*, defined dichotomously as reporting current or most recent partner as older than respondent versus not older; *partner school status*, defined dichotomously as reporting current or most recent partner enrolled in school versus not enrolled in school; and *transactional sex*, defined dichotomously as giving or receiving money, gifts, or favors for sex with most recent or current partner. Only those who reported having at least one sexual

partner in the last 24 months were asked these questions about partner characteristics so the analysis is restricted to this subgroup. We adjusted the models for important covariates that were imbalanced between the arms at baseline: age, sex, Nairobi residence, and relationship to the household head. To see if the effect of the grant was different in different subgroups, we also restricted the analysis to those under age 22 and stratified by sex.

### *Results*

Overall, data on HIV risk were collected on 2212 adolescents, and, of these, 1879 had lived in the household for the entire 4 years of the intervention. 684 of these adolescents reported having at least one sexual partner in the last 24 months; analysis was restricted to this sample. 253 (37%) of these respondents were female and 443 (65%) were under the age of 22 at the time of the interview.

In both crude and adjusted logistic models, the CT-OVC program appeared to have no statistically significant impact on partner age, partner school status and transactional sex, as presented in Table 1. There was also no impact of CT-OVC on partner characteristics when we restricted the analyses by sex and age. Interestingly, the point estimates for the effect of CT-OVC on transactional sex were on opposite sides of the null for males and females. Though neither result was statistically significant, we found that the intervention appeared protective against transactional sex relationships among women (aOR=0.82; 95%CI: 0.41, 1.62), but predictive of transactional sex among men (aOR=1.68; 95% CI: 0.65, 4.36). This trend appears to be driven by those above age 21 as it does not exist when we restrict to younger ages.

### *Discussion*

Overall, the results of this study suggest that the CT-OVC program does not significantly influence the sex partner characteristics of adolescents living in households receiving the grant. There are several potential explanations as to why we do not observe an effect of the CT-OVC program on partner characteristics. First, it may be the case that the program is too diffuse to have significant impacts on adolescents living in grant-receiving households. Unlike other programs that have seen an effect of cash transfers on HIV risk, CT-OVC does not make payments directly to the adolescent, but instead, the money is given to the household head to be used to offset the costs of raising an orphan or vulnerable child. As the CT-OVC program does not directly target adolescents with the objective of reducing HIV risk, changes in partner characteristics due to the grant may be unlikely.

Another potential explanation for why we did not find an impact of the CT-OVC program on partner characteristics concerns the fact that the questions about sex partner characteristics were, naturally, only asked of those adolescents who were sexually active. However, a previous analysis demonstrated that CT-OVC reduces the likelihood of sexual debut (7). Therefore, the comparison of partner characteristics between intervention and control adolescents is not necessarily valid because the sample of

intervention adolescents does not include those who would have gone on to have sex during follow-up without the impact of the intervention. This is particularly problematic as the influence of the intervention is likely not random, but associated with the general risk profile of an individual: those influenced by the grant to delay sexual debut were likely those with intermediate risk profiles. Therefore, those in the intervention group who go on to become sexually active during follow-up likely have higher risk profiles than those sexually active in the control group (Figure 1) which would bias our results toward the null. Our preliminary investigation has not yielded evidence of any statistical differences between those who sexually debut in the control versus the intervention group, in terms of age, education, or self-reported HIV risk. However, these variables may not be the most indicative of sexual risk proclivity; it is still possible that a risk profile shift is occurring, but we are unable to measure it given the questions that were asked in the survey.

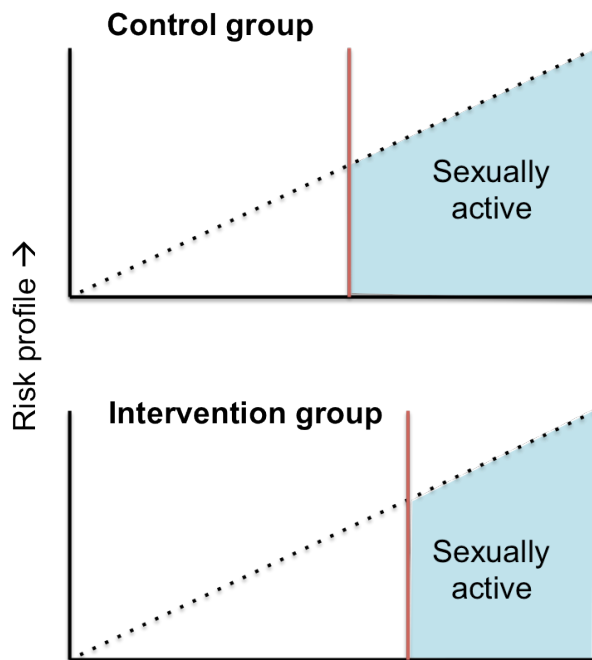
One notable trend appeared in the sub-analysis we performed by sex: among women, the grant appeared to be protective against transactional sex, while among men, the grant appeared to predict transactional sex. We hypothesize that the household receipt of the grant, though diffuse, may have affected men and women differently. The extra household income provided by the grant may have allowed men to provide gifts or money to their partners in return for sex; among women, it may have reduced the financial incentive to engage in money for sex. A differential effect of cash transfers on risk behavior by sex has been noted in other settings (9); however, the precision and therefore interpretation of our results is limited by small sample size and small number of events.

As cash transfer programs become more popular as promising tools to prevent the spread of HIV, it is important to understand the mechanisms through which a reduction in HIV risk may occur. Here, we provide evidence that the Kenyan CT-OVC program does not influence the sex partner characteristics of adolescents living in grant-receiving households. However, these findings may not be generalizable to other geographic areas or to differently structured cash transfer programs. Future studies should be performed to better understand the relationship between cash transfers and partner characteristics and to inform future interventions to maximize their potential to reduce HIV.

**Table 1. Description of partner characteristics, by study arm, stratified by sex and age**

Partner characteristic	Intervention N (%)	Control N (%)	Crude OR (95% CI)	aOR* (95% CI)	p-value (aOR)
<b>Full cohort (n=684)</b>					
Older	116/440 (26.4)	67/231 (29.0)	0.88 (0.61, 1.25)	0.84 (0.57, 1.24)	0.38
In school	262/449 (58.4)	140/231 (60.6)	0.91 (0.66, 1.26)	0.93 (0.64, 1.34)	0.69
Transactional sex	50/449 (11.1)	23/233 (9.9)	1.14 (0.68, 1.93)	1.07 (0.62, 1.84)	0.81
<b>Females (n=253)</b>					
Older	73/160 (45.6)	41/88 (46.6)	0.96 (0.57, 1.62)	0.91 (0.53, 1.56)	0.73
In school	64/165 (38.8)	40/87 (46.0)	0.74 (0.44, 1.26)	0.80 (0.44, 1.44)	0.46
Transactional sex	29/164 (17.7)	17/88 (19.3)	0.90 (0.46, 1.74)	0.82 (0.41, 1.62)	0.56
<b>Males (n=431)</b>					
Older	43/280 (15.4)	26/143 (18.2)	0.82 (0.48, 1.39)	0.75 (0.43, 1.30)	0.30
In school	198/284 (69.7)	100/144 (69.4)	1.01 (0.65, 1.57)	1.03 (0.64, 1.65)	0.92
Transactional sex	21/285 (7.4)	6/145 (4.1)	1.84 (0.73, 4.67)	1.68 (0.65, 4.36)	0.28
<b>Age 21 and under (n=443)</b>					
Older	72/281 (25.6)	37/152 (24.3)	1.07 (0.68, 1.69)	1.08 (0.66, 1.78)	0.75
In school	199/288 (69.1)	109/153 (71.2)	0.90 (0.59, 1.39)	0.86 (0.53, 1.38)	0.53
Transactional sex	30/287 (10.5)	20/154 (13.0)	0.78 (0.43, 1.43)	0.74 (0.38, 1.42)	0.36
<b>Females (n=168)</b>					
Older	44/102 (43.1)	23/63 (36.5)	1.32 (0.69, 2.52)	1.34 (0.68, 2.66)	0.40
In school	55/105 (52.4)	36/63 (57.1)	0.83 (0.44, 1.55)	0.81 (0.41, 1.58)	0.53
Transactional sex	21/104 (20.2)	16/63 (25.4)	0.74 (0.35, 1.56)	0.65 (0.30, 1.42)	0.28
<b>Males (n=275)</b>					
Older	28/179 (15.6)	14/89 (15.7)	0.99 (0.49, 2.00)	0.89 (0.43, 1.84)	0.75
In school	144/183 (78.7)	73/90 (81.1)	0.86 (0.46, 1.62)	0.92 (0.46, 1.82)	0.81
Transactional sex	9/183 (4.9)	4/91 (5.5)	1.13 (0.34, 3.76)	0.94 (0.27, 3.32)	0.93

**Figure 1. Graphical representation of the potential incomparability between arms due to intervention impact on sexual debut**



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