

Effects of Government-Implemented Cash Plus Model on Violence Experiences and Perpetration Among Adolescents in Tanzania, 2018–2019

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 See also Galea and Vaughan, p. 2094.

Objectives. To examine the impacts of a government-implemented cash plus program on violence experiences and perpetration among Tanzanian adolescents.

Methods. We used data from a cluster randomized controlled trial ($n = 130$ communities) conducted in the Mbeya and Iringa regions of Tanzania to isolate impacts of the “plus” components of the cash plus intervention. The panel sample comprised 904 adolescents aged 14 to 19 years living in households receiving a government cash transfer. We estimated intent-to-treat impacts on violence experiences, violence perpetration, and pathways of impact.

Results. The plus intervention reduced female participants’ experiences of sexual violence by 5 percentage points and male participants’ perpetration of physical violence by 6 percentage points. There were no intervention impacts on emotional violence, physical violence, or help seeking. Examining pathways, we found positive impacts on self-esteem and participation in livestock tending and, among female participants, a positive impact on sexual debut delays and a negative effect on school attendance.

Conclusions. By addressing poverty and multidimensional vulnerability, integrated social protection can reduce violence.

Public Health Implications. There is high potential for scale-up and sustainability, and this program reaches some of the most vulnerable and marginalized adolescents. (*Am J Public Health.* 2021;111(12): 2227–2238. <https://doi.org/10.2105/AJPH.2021.306509>)

One billion children experience violence annually,¹ and adverse effects include increased risk of injury, mental health problems, early pregnancy, sexual risk taking, and noncommunicable diseases.^{2–4} Violence experiences and witnessing of violence in childhood increase the risk of experiencing and perpetrating violence in adulthood.^{5,6}

A consortium of international agencies developed INSPIRE, a set of

strategies to reduce violence against children (VAC); strategies include income and economic strengthening (such as cash transfers) and life and social skills training.⁷

Poverty is a structural driver of violence, and there are several pathways through which economic-strengthening programs such as “cash plus,” defined as a combination of cash transfers with additional complementary support or linkages to services,⁸ may reduce the

risk of childhood violence. “Cash plus” may also impact food security, financial empowerment and bargaining power, changes in time use activities (including schooling, labor, and domestic chores), caregiving behaviors, psychosocial well-being, child marriage, and time spent in high-risk settings.^{9,10}

More evidence is still needed on VAC reduction interventions involving men and boys and around economic empowerment.^{3,11,12} A review of

noncontributory social safety net programs, including cash transfers, found that social safety nets can contribute to VAC reduction.¹⁰ More recently, studies from Mali and Zimbabwe have demonstrated that household-targeted cash plus programs reduced violence experienced by children and youths.^{13,14}

Violence impacts have also been examined in bundled interventions targeted to adolescents comprising components related to economic strengthening, life skills, and strengthening health capabilities, but the evidence is mixed. Interventions in sub-Saharan Africa show reductions in forced sex in Uganda (Livelihood Empowerment for Adolescents), physical or sexual violence in Zimbabwe (Shaping the Health of Adolescents in Zimbabwe) and Kenya (Adolescent Girls Initiative), and reduced participation in transactional sex in Zambia (Adolescent Girls Empowerment Program).¹⁵⁻¹⁸ Nevertheless, in Zambia, the Adolescent Girls Empowerment Program found no impacts on physical violence, intimate partner violence, or “unwanted sex,” and an intervention implemented in Kampala, Uganda, found that providing girls with a savings account but no other life skills training increased the risk of unwanted sexual touching and harassment.^{15,19} When replicated in Tanzania, the Livelihood Empowerment for Adolescents intervention failed to demonstrate protective impacts,²⁰ while another intervention in Liberia (Girl Empower) did not lead to reductions in violence.²¹

The aforementioned interventions were implemented by nongovernmental organizations, and, thus, evidence is needed on government-implemented programs, which have greater potential for sustainability and scale-up. Recent studies have called for additional

research of at-scale programs to prevent violence within households, as well as programs tailored to reach adolescent girls.^{22,23} We examined impacts of the “plus” components from a government-run, multisectoral cash plus intervention on male and female adolescents’ experiences and perpetration of violence.

METHODS

We used data from a longitudinal cluster randomized controlled trial ($n = 130$ communities), which was implemented by United Nations Children’s Fund (UNICEF) Office of Research–Innocenti, University at Buffalo, and EDI Global, in collaboration with Tanzania Social Action Fund (TASAF), Tanzania Commission for AIDS, and UNICEF Tanzania.

Participants

The cash plus intervention was piloted in 4 districts and targeted adolescents aged 14 to 19 years living in households participating in the Government of the Republic of Tanzania’s flagship social protection program, the Productive Social Safety Net (PSSN). The PSSN reaches 1 million households nationally, providing a cash transfer every other month, livelihoods enhancement, and public works.²⁴ Cash transfer payments were variable depending on school enrollment and health-related coresponsibilities, but these averaged US \$7.10 per month (maximum US \$21.70 per month), equivalent to approximately 16% of household consumption.^{24,25} All study households (intervention and control arms) had been enrolled in the PSSN since 2015 and received cash transfers. The intervention that was randomized was the “plus” components targeted to

adolescents. We used a sample size calculation to determine the number of clusters required (Appendix A, available as a supplement to the online version of this article at <http://www.ajph.org>).

Randomization

Random assignment of 130 villages into study arms (65 intervention and 65 control) was conducted in July 2017, after completion of the baseline surveys, and was stratified by TASAF administrative areas (program administrative areas, corresponding to Mafinga and Mufindi districts in Iringa, and Run-gwe and Busokelo districts in Mbeya) and village size (large vs small villages).

Procedures

The “Ujana Salama” Cash Plus Model for Safe Transitions to a Healthy and Productive Adulthood intervention followed a capabilities approach^{26,27} to strengthen youth productive, human, and health assets (Conceptual Framework in Appendix B, available as a supplement to the online version of this article at <http://www.ajph.org>). Guiding principles included government ownership, implementation within the PSSN livelihoods enhancement strategy and existing government frameworks, linkages with other government services, and age- and gender-sensitive livelihoods interventions.

The intervention comprised (1) face-to-face livelihoods and life skills training delivered 2 hours per week over 12 weeks (January–May 2018); (2) mentoring (occurring biweekly and then monthly between July 2018 and March 2019) and a productive grant (totaling US \$80 disbursed in up to 2 payments between March and June 2019), conditional on having attended trainings and

developing an approved educational or business plan; and (3) facilitated linkages to adolescent-friendly HIV and sexual and reproductive health services in government health facilities (July 2018–March 2019; Appendix C, available as a supplement to the online version of this article at <http://www.ajph.org>).

The training included sessions on livelihoods, sexual and reproductive health, and HIV prevention and treatment, including a bundle of high-impact behavior change communication approaches and peer support groups (topics summarized in Appendix C). During mentoring, adolescents were provided with linkages to training and apprenticeship activities, input on business plans, peer education, and linkages to health facilities (Activities in Appendix D, available as a supplement to the online version of this article at <http://www.ajph.org>). Two mentors (1 male, 1 female) were selected per village. Addressing supply of health services, UNICEF worked with the Ministry of Health, Community Development, Gender, Elderly, and Children to perform a training in July 2019 with staff at government primary health care facilities in treatment villages to strengthen adolescent-friendly services.

We used TASAF administrative data on PSSN enrollment (in 2015) to identify households that would have adolescents aged 14 to 19 years in 2017. We approached all of these households and aimed to interview all eligible youths (including new youths not registered in the household in 2015; Appendix F, available as a supplement to the online version of this article at <http://www.ajph.org>). Three rounds of data were collected: baseline (April–June 2017), round 2 (May–July 2018), and round 3 (June–August 2019). We used

a split sample approach for modules on violence victimization and perpetration for male and female participants based on best practices guidance, in which male participants answered the violence module in one community and female participants in another, to protect confidentiality of participants and reduce the chance that a perpetrator–victim pair would both be interviewed.²⁸ We provided anonymized referral information to respondents containing contact numbers for district social welfare officers.²⁹

Interviews were conducted in Swahili with same-sex enumerators in private settings and data were entered into SurveyBe version 5.10.210 (EDI Global Limited, Gerrards Cross, UK) software via tablets.

Measures

The primary outcomes were experienced violence (emotional, physical, sexual), help-seeking related to violence, and perpetration of physical and emotional violence in the past 12 months. We assessed these by using an adapted version of questionnaire items used in the World Health Organization (WHO) Multi-country Study on Women's Health and Domestic Violence,³⁰ which draws on the Conflict Tactics Scale.³¹ We adapted these items to include any perpetrator (not just intimate partners) for the current study. Binary violence indicators for emotional, physical, and sexual violence were created from multiple items per violence type (Appendix E, available as a supplement to the online version of this article at <http://www.ajph.org>). At baseline, because of an error in a data-entry skip pattern, sexual violence questions were only asked of individuals who reported ever having had sex.

In subsequent rounds, sexual violence questions were asked to all individuals selected for the violence module.

Respondents experiencing any type of violence were then asked whether they had ever tried to seek help or tell anyone about the violence. In line with existing literature,^{32,33} we further categorized help seeking into formal and informal sources (Appendix E).

We added questions on violence perpetration at round 3. Binary perpetration indicators were created separately for 12-month emotional and physical violence based on items summarized in Appendix D.

Intermediate pathways examined included age at first sexual intercourse, entry into marriage or cohabitation, engaging in an age-disparate sexual relationship, self-perceived stress, self-efficacy, self-esteem, school attendance, and time use (Appendix E). Age-disparate sexual relationship was defined as having a sexual partner 5 or more years older, in line with previous studies.³⁴ Self-perceived stress was measured using the Enhanced Life Distress Inventory, which measures distress across multiple areas of social life and functioning³⁵ and results in an overall scale ranging from 0 to 39 and 3 subscales (economic and health-related well-being, risk and security, relationships). We measured self-efficacy by using a locus-of-control index^{36,37} and self-esteem by using 2 items from Rosenberg's self-esteem scale.³⁸ For time use, we examined participation in 5 types of economic activities performed in the past 7 days (farm work, livestock herding, fishing, nonagricultural business, paid work outside the household) and household chores performed in the previous day (collecting water; collecting firewood or other fuel materials; collecting nuts or other tree

fruits; taking care of children, cooking, or cleaning; and taking care of the elderly or sick household members). Activities were not mutually exclusive, and multitasking was reported as separate activities. An additional pathway examined elsewhere was gender-equitable attitudes.³⁹

Statistical Analysis

As policymakers are interested in understanding population impacts, we used intention-to-treat analyses to examine impacts of the program, including all clusters and adolescents, irrespective of program uptake (uptake was 48.5% among those eligible),⁴⁰ among participants who were interviewed at all 3 rounds. We calculated intervention effects with data separately at each follow-up round by using ordinary least squares for continuous outcomes and linear probability models for binary outcomes. For continuous and binary outcomes, we reported *b* coefficients. We adjusted the regression models for age, sex, and stratum (district and village size), and we adjusted standard errors for clustering and heteroskedasticity by using the VCE (robust) command in Stata version 16 (StataCorp LP, College Station, TX). We further calculated average-treatment-on-the-treated estimates by using 2-stage least squares regressions with linear probability models, in which we predicted program take up in the first-stage regressions and treatment impacts on the treated in the second stage.

We tested program impacts on potential pathways of impact at rounds 2 and 3, and then tested pathway impacts by gender at round 3 only. We describe perpetrators of violence descriptively only, given low

proportions in the categories of perpetrators and limited power to estimate program impacts.

RESULTS

Out of 3599 adolescents found eligible at baseline, a total of 2458 completed interviews (68%). Among this baseline evaluation sample (*n* = 2458), approximately half (*n* = 1165) were interviewed for the violence questions, and, among these, 988 and 1033 were followed up at rounds 2 and 3, respectively, representing the panel samples (Appendix F). Among the panel sample interviewed at all 3 rounds (*n* = 904), no adolescents had missing values for variables of interest. The average age of the sample at baseline was 16 years, 47.4% of the sample were female, and 57% were attending school (Table 1). All background characteristics were balanced at baseline between study arms.

Outcomes

At baseline, 35%, 27%, and 1% of adolescents reported having experienced emotional, physical, and sexual violence, respectively (Table 1). Physical and sexual violence outcomes were balanced at baseline in the pooled (male and female participants) sample, while emotional violence was not (39% of the treatment group vs 31% of controls had experienced emotional violence). Among those who had experienced physical or emotional violence (*n* = 404), 31.7% reported seeking help or disclosing to someone (8.4% to formal sources vs 24.5% to informal sources). Examining indicators by gender, we found evidence for baseline balance for all characteristics and outcomes, except farm work for the household excluding livestock among female

participants and experience of physical violence and informal reporting of violence among male participants (Appendix G, available as a supplement to the online version of this article at <http://www.ajph.org>). By round 3, experiences of violence among the control (treatment) group were 33% (29%) for emotional violence, 13% (11.1%) for physical violence, and 6% (2%) for sexual violence (Table 2).

Intervention Impacts

By round 3, treatment adolescents had a 3-percentage-point reduction of experiencing sexual violence as a result of the intervention (*b* = −0.03; 95% confidence interval [CI] = −0.06, −0.00; Table 2). The intervention had no impact on emotional or physical violence experiences in the pooled sample, nor on help seeking (formal or informal sources). When examining impacts separately by gender, we saw that the sexual violence impacts were driven by the female sample, who experienced a 5-percentage-point reduction in sexual violence (*b* = −0.05; 95% CI = −0.10, −0.00; Table 3) as a result of the program (there were no impacts on this indicator among male participants, who reported low rates of sexual violence; Table 3). Impacts at round 2 are presented in Appendix H (available as a supplement to the online version of this article at <http://www.ajph.org>).

In the pooled sample we found no impacts on emotional and physical violence perpetration. However, when we examined male and female participants separately, we found that male participants were less likely to report physical violence perpetration as a result of the intervention (*b* = −0.06; 95% CI = −0.10, −0.02; Table 3). There were no impacts on emotional violence

TABLE 1— Sample Characteristics at Baseline by Treatment Status: Tanzania Adolescent Cash Plus Study, 2017, Iringa and Mbeya Regions of Tanzania

Variables	Full Sample (n = 904), Mean \pm SD or No. (%)	Cash Plus (Intervention; n = 440), Mean \pm SD or No. (%)	Cash Only (Control; n = 464), Mean \pm SD or No. (%)
General characteristics			
Female	429 (47)	204 (46)	225 (48)
Age, y	16.0 \pm 1.6	15.9 \pm 1.5	16.0 \pm 1.6
Age of household head, y	58.7 \pm 16.4	58.8 \pm 16.3	58.5 \pm 16.5
Female-headed household	603 (67)	288 (65)	315 (68)
Mufindi or Mafinga districts	475 (53)	239 (54)	236 (51)
Primary outcomes			
Experiences of violence			
Emotional	318 (35)	136 (31)	182 (39)
Physical	247 (27)	109 (25)	138 (30)
Sexual ^a	8 (1)	4 (1)	4 (1)
Help seeking for emotional or physical violence (n = 402)			
Any	128 (32)	50 (28)	78 (35)
Formal	34 (8)	14 (8)	20 (9)
Informal	99 (25)	35 (20)	64 (28)
Intermediate pathway outcomes			
Age at first sexual intercourse (n = 137), y	15.9 \pm 1.8	15.8 \pm 1.7	15.9 \pm 2.0
Age-disparate sex (female participants only; n = 68)	18 (26)	6 (19)	12 (33)
Locus of control index	3.2 \pm 0.5	3.3 \pm 0.5	3.2 \pm 0.5
Self-esteem index	3.9 \pm 0.8	4.0 \pm 0.8	3.9 \pm 0.8
ELDI (0–39)	3.3 \pm 4.7	3.3 \pm 4.7	3.3 \pm 4.6
ELDI economic and health-related well-being subscale	2.7 \pm 3.5	2.6 \pm 3.5	2.8 \pm 3.5
ELDI risk subscale	0.3 \pm 1.0	0.3 \pm 1.0	0.2 \pm 0.9
ELDI relations subscale	0.3 \pm 1.2	0.4 \pm 1.3	0.3 \pm 1.1
Currently attending school	512 (57)	254 (58)	258 (56)
Has a spouse or cohabitating partner	1 (0)	0 (0)	1 (0)
Time use indicators (% participating)			
Any economic activities	709 (78)	347 (79)	362 (78)
Paid work outside the household	121 (13)	52 (12)	69 (15)
Farm work for the household, excluding livestock	598 (66)	298 (68)	300 (65)
Livestock herding for the household	433 (48)	213 (48)	220 (47)
Fishing for the household	14 (2)	7 (2)	7 (2)
Household business	41 (5)	16 (4)	25 (5)
Any chores	811 (90)	404 (92)	407 (88)
Collecting water	607 (67)	316 (72)	291 (63)
Collecting firewood	358 (40)	193 (44)	165 (36)
Collecting nuts and other tree fruits	120 (13)	63 (14)	57 (12)

Continued

TABLE 1— Continued

Variables	Full Sample (n = 904), Mean ±SD or No. (%)	Cash Plus (Intervention; n = 440), Mean ±SD or No. (%)	Cash Only (Control; n = 464), Mean ±SD or No. (%)
Taking care of children, cooking, or cleaning	661 (73)	327 (74)	334 (72)
Taking care of elderly or sick	211 (23)	109 (25)	102 (22)

Note. ELDI = Enhanced Life Distress Inventory. Economic activities included those conducted in the previous week, and time-use activities have a reference period of the previous day.

^aThe sexual violence indicator included in this table differs from those used in impacts analyses in Tables 2 and 3 because of a skip pattern error at baseline, whereby only adolescents who reported having had sexual intercourse were asked questions about sexual violence. In subsequent waves, all youths in the violence module were asked questions about sexual violence, which may include other forced sexual acts.

TABLE 2— Intervention Effects (Intent-to-Treat) on Violence at Round 3: Tanzania Adolescent Cash Plus Study, 2019, Iringa and Mbeya Regions of Tanzania

Variables	Cash Plus, No. (%)	Cash Only, No. (%)	b (95% CI)
Experienced	440	464	
Emotional violence	126 (29)	155 (33)	-0.05 (-0.11, 0.02)
Physical violence	49 (11)	58 (13)	-0.01 (-0.06, 0.03)
Sexual violence	10 (2)	26 (6)	-0.03 (-0.06, 0.00)
Emotional, physical, or sexual violence	148 (34)	181 (39)	-0.05 (-0.12, 0.02)
Sought help	148	181	
Any	61 (41)	76 (42)	-0.02 (-0.13, 0.10)
Formal	11 (7)	11 (6)	0.02 (-0.03, 0.07)
Informal	54 (36)	65 (36)	0.00 (-0.11, 0.11)
Perpetrated	440	464	
Emotional violence	19 (4)	28 (6)	-0.02 (-0.05, 0.02)
Physical violence	16 (4)	30 (6)	-0.03 (-0.06, 0.00)

Note. CI = confidence interval. Linear probability models, male and female participants. Models controlled for age, gender, and stratum (district and village size); only coefficients on treatment indicator are shown. Standard errors are clustered at the community level.

perpetration among male participants nor on either outcome among female participants.

There were no impacts on help seeking among either gender (Table 3).

Pathways Analyses

We found positive impacts on participation in livestock herding for the household ($b = 0.09$; 95% CI = 0.02, 0.17; Table 4) and self-esteem ($b = 0.19$; 95% CI = 0.08, 0.29). There were no intervention impacts on self-perceived stress, self-efficacy (locus of control),

marriage or cohabitation, school attendance, or age-disparate relationships. When we examined pathway impacts separately by gender (Appendix I, available as a supplement to the online version of this article at <http://www.ajph.org>), we saw that changes in livestock herding were driven by female participants ($b = 0.14$; 95% CI = 0.03, 0.24), while we observed increases in self-esteem for both female ($b = 0.19$; 95% CI = 0.05, 0.33) and male participants ($b = 0.29$; 95% CI = 0.05, 0.36). In addition, among female participants, we found a protective impact on delaying

age at first sexual intercourse ($b = -0.55$; 95% CI = -1.02, -0.09) and a negative impact on school attendance ($b = -0.10$; 95% CI = -0.19, 0.00). This delay in sexual debut translates to approximately half a year ($0.55 \times 12 = 6.6$ months).

Robustness Check

Difference-in-differences models confirmed findings from the single-difference models with respect to null impacts on emotional and physical violence (Appendix J, available as a

TABLE 3— Intervention Effects (Intent-to-Treat) on Violence at Round 3: Tanzania Adolescent Cash Plus Study, 2019, Iringa and Mbeya Regions of Tanzania

Variables	Cash Plus, No. (%)	Cash Only, No. (%)	b (95% CI)
Male participants			
Experienced	236	239	
Emotional violence	58 (25)	77 (32)	−0.07 (−0.16, 0.01)
Physical violence	23 (10)	30 (13)	−0.01 (−0.07, 0.05)
Sexual violence	5 (2)	11 (5)	−0.03 (−0.07, 0.01)
Sought help	65	90	
Any	24 (37)	34 (38)	0.00 (−0.17, 0.16)
Formal	6 (9)	7 (8)	0.01 (−0.07, 0.09)
Informal	21 (32)	26 (29)	0.05 (−0.10, 0.20)
Perpetrated	236	239	
Emotional violence	10 (4)	13 (5)	−0.01 (−0.05, 0.03)
Physical violence	5 (2)	20 (8)	−0.06 (−0.10, −0.02)
Female participants			
Experienced	204	225	
Emotional violence	68 (33)	78 (35)	−0.01 (−0.11, 0.09)
Physical violence	26 (13)	28 (12)	0.00 (−0.06, 0.06)
Sexual violence	5 (2)	15 (7)	−0.05 (−0.10, 0.00)
Sought help	83	91	
Any	37 (45)	42 (46)	−0.05 (−0.20, 0.10)
Formal	5 (6)	4 (4)	0.02 (−0.06, 0.10)
Informal	33 (40)	39 (43)	−0.06 (−0.21, 0.10)
Perpetrated	204	225	
Emotional violence	9 (4)	15 (7)	−0.02 (−0.08, 0.03)
Physical violence	11 (5)	10 (4)	0.01 (−0.03, 0.06)

Note. CI = confidence interval. Linear probability models, by gender. Models controlled for age, gender, and stratum (district and village size); only coefficients on treatment indicator are shown. Standard errors are clustered at the community level.

supplement to the online version of this article at <http://www.ajph.org>.

Average-Treatment-on-the-Treated Analyses

Average-treatment-on-the-treated estimates were in the same direction and maintained the same significance levels but were generally 2 to 3 times larger in magnitude as compared with intention-to-treat estimates (Appendices K, L, and M, available as supplements to the online version of this article at <http://www.ajph.org>). We found impacts on the economic and health-related

well-being stress Enhanced Life Distress Inventory subscale to be statistically significant ($b = -1.40$; 95% CI = $-2.65, -0.14$) in the average-treatment-on-the-treated models, but not in intention-to-treat models.

Perpetrators

Among those who reported emotional or physical violence at baseline ($n = 402$), the most common perpetrators were peers (45%) and family members (41%), followed by partner or spouse (27%), and then authorities (21%; Appendix M). Other perpetrators

were reported by only 3% of respondents. Subsequently, at round 3, those reporting physical or emotional violence ($n = 316$) reported the most common perpetrators as peers (44%), partner or spouse (34%), and family members (25%; Appendix N, available as a supplement to the online version of this article at <http://www.ajph.org>).

DISCUSSION

We examined the effects of a government-implemented cash plus program targeted to adolescents and found that the intervention reduced

TABLE 4— Intervention Effects on Intermediate Pathway Indicators at Round 3: Tanzania Adolescent Cash Plus Study, 2019, Iringa and Mbeya Regions of Tanzania

Variables	Cash Plus (n = 440), Mean \pm SD or No. (%)	Cash Only (n = 464), Mean \pm SD or No. (%)	b (95% CI)
Age at first sexual intercourse, y			-0.27 (-0.61, 0.08)
Mean \pm SD	16.9 \pm 1.4	17.2 \pm 1.8	
Total no.	151	161	
Age-disparate sex (female participants only)			-0.10 (-0.23, 0.03)
No. (%)	23 (30)	34 (40)	
Total no.	77	85	
Locus of control index	3.3 \pm 0.5	3.3 \pm 0.5	0.03 (-0.04, 0.10)
Self-esteem index	3.9 \pm 0.8	3.8 \pm 0.8	0.19 (0.08, 0.29)
ELDI (0-39)	3.5 \pm 4.9	4.1 \pm 5.3	-0.61 (-1.42, 0.21)
ELDI economic and health-related well-being subscale	2.8 \pm 3.5	3.4 \pm 4.0	-0.59 (-1.12, -0.06)
ELDI risk subscale	0.3 \pm 1.2	0.3 \pm 1.0	-0.01 (-0.19, 0.17)
ELDI relations subscale	0.4 \pm 1.2	0.4 \pm 1.4	0.00 (-0.24, 0.23)
Currently attending school	152 (35)	174 (38)	-0.04 (-0.10, 0.03)
Has a spouse or cohabiting partner	30 (7)	25 (5)	0.02 (-0.01, 0.05)
Time use	440	464	
Any economic activities	359 (82)	376 (81)	0.01 (-0.05, 0.06)
Paid work outside the household	108 (25)	106 (23)	0.02 (-0.04, 0.07)
Farm work for the household	265 (60)	261 (56)	0.04 (-0.03, 0.11)
Livestock herding for the household	260 (59)	232 (50)	0.09 (0.02, 0.17)
Fishing for the household	9 (2)	9 (2)	0.00 (-0.02, 0.02)
Household business	69 (16)	68 (15)	0.01 (-0.04, 0.07)
Any chores	393 (89)	412 (89)	0.01 (-0.04, 0.05)
Collecting water	325 (74)	339 (73)	0.01 (-0.06, 0.08)
Collecting firewood	148 (34)	122 (26)	0.07 (-0.01, 0.14)
Collecting nuts and other tree fruits	36 (8)	23 (5)	0.03 (0.00, 0.07)
Taking care of children, cooking, or cleaning	303 (69)	327 (70)	-0.01 (-0.08, 0.06)
Taking care of elderly or sick	81 (18)	83 (18)	0.01 (-0.05, 0.06)

Note. CI = confidence interval; ELDI = Enhanced Life Distress Inventory. Ordinary least squares and linear probability models (intent-to-treat estimates). Standard errors are clustered at the community level. Economic activities included those conducted in the previous week, and time use activities had a reference period of the previous day. Models controlled for age, gender, and stratum (district and village size); only coefficients on treatment indicator are shown.

experience of sexual violence among female participants and perpetration of physical violence among male participants.

With respect to pathways, we found that the program increased self-esteem and led to changes in time use—namely, participation in livestock herding among female participants. We also

found that the program delayed age at sexual debut by half a year and reduced school attendance among female participants. We found no impacts on other pathways. By delaying the window of exposure to sexual relationships, this may have prevented intimate partner sexual violence. Increases in self-esteem may have led to reduced

sexual violence via improved assertiveness, communication, and interpersonal skills learned in the trainings. Previous research has found that a lack of these skills may contribute to sexual violence risk in southern Africa.⁴¹ This may, in part, explain why we found protective effects for sexual violence but no other forms of violence. Moreover,

previous evidence demonstrates a link between low self-esteem and increased risk of both experiencing and perpetrating dating violence among adolescents,⁴² and given positive impacts on self-esteem in our study, this is a potential pathway for the observed reductions in violence experiences and perpetration.

In a context with limited formal employment opportunities, when older female participants were presented with the opportunity to start a business, they may have opted to do so, possibly explaining negative school attendance impacts. Changes in school attendance could have affected exposure to environments where adolescents are at risk for violence, but our data do not allow us to make more detailed conclusions about this pathway. Although we did not ask about perpetrators of sexual violence because of the sensitive nature of this information, peers and authority figures were common perpetrators of emotional and physical violence. These findings are supported by a global meta-analysis that found that student peers are the second-most-common perpetrators of VAC.²²

The observed impact on livestock herding is likely a result of the training around business planning and starting a business, and some participants invested in small livestock with the aim of selling them for a profit. Some program mentors were agriculture extension workers, which may have also influenced choices. Another study from this sample found that engaging in paid work outside the household was associated with increased risk of experiencing sexual violence and emotional violence, while livestock herding was associated with increased risk of experiencing emotional and physical

violence perpetrated by family members (T. P., written communication, July 15, 2020). Thus, more participation in livestock herding induced by the intervention may be protective against sexual violence when resulting from a substitution from paid labor outside the household. However, we found no simultaneous decreases in the latter.

The intervention led to an increase in equitable gender attitudes (including around violence) among male participants, examined elsewhere.³⁹ This pathway may partly explain decreases in physical violence perpetration, as attitudes about sex, gender, normative behaviors, and hostile masculinity are learned in adolescence,^{41,43} and, thus, this is a key window to model equitable gender norms and healthy relationships.⁴⁴ These findings may have implications for reducing future violence perpetration.

Our findings are consistent with those from an intervention in Uganda¹⁶ but are in contrast with studies from Uganda, Zambia, and Liberia that did not find protective effects against violence.^{15,19,21} These mixed findings underscore that context matters in violence-reduction interventions, as do program design and implementation. Among the cited studies, there is variation in program components, implementing agencies, and dosage of exposure to components. It is difficult to make conclusions about which combinations are most effective in reducing VAC because few studies have tested different combinations of components, and there have been limited examples of the same program being implemented in multiple contexts. In our own study, we were unable to distinguish impacts of the individual intervention components because we could not

vary program components across villages.

Studies that have evaluated impacts of cash transfers (in contrast with our study, which only evaluated the “plus” components in cash plus) have found positive impacts on school attendance,^{45,46} reductions in intimate partner violence among adolescents,³⁴ and reductions in other violence-related outcomes among children and adolescents.¹⁰ These studies are not in contrast with our findings, because the interventions studied were different (cash transfers vs “plus” components). Other studies examining effects of cash plus programs have found that these reduced violence against adolescents and youths,¹⁴ as well as harsh discipline or corporal punishment among young children.^{13,47,48}

Limitations

Generalizability of the results to all adolescents in Tanzania is limited. In addition, the productive grant was disbursed shortly before round 3, and, thus, full impacts of the intervention may not have fully materialized. During round 3 fieldwork, households experienced a delay in PSSN payments for the first time, and this may have mitigated impacts of the cash plus program. Underreporting of violence is not expected to be correlated with treatment status and therefore should not bias impact estimates. Perpetration of physical and emotional violence was not assessed at baseline so we could not assess balance between intervention arms before program roll-out. Our study design did not allow us to disentangle effects of the different program components, and, thus, we could not conclude which components may have contributed more to violence

reduction. Finally, it is possible that our subanalyses were subject to type II errors, as power is reduced as sample sizes are reduced, and ability to make conclusions about heterogeneous treatment effects is limited.

A key factor in the successful implementation of this intervention was multisectoral coordination, including at the district level, where staff were based and activities were implemented. While most program components were administered through PSSN structures, health facilities strengthening was carried out by Ministry of Health, Community Development, Gender, Elderly, and Children, with technical support from UNICEF.

Conclusions

Multisectoral approaches are increasingly advocated to address the drivers of violence. Our study showed that a government-run, multisectoral cash plus intervention reduced violence experiences and perpetration. The broad potential reach of similar scalable interventions has implications for VAC reduction at the population level.

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CONTRIBUTORS

T. Palermo conceptualized the article. T. Palermo, L. Prencipe, and L. Kajula were responsible for the research design. T. Palermo and L. Prencipe led the statistical analysis. All authors interpreted findings and contributed to writing the article and approved the final version. Members of the evaluation team further contributed to study design and data collection.

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CONFLICTS OF INTEREST

The authors have no competing financial and nonfinancial interests to declare.

HUMAN PARTICIPANT PROTECTION

Ethics approval for the study was granted by the National Institute for Medical Research (NIMR/HQ/R.8a/Vol.IX/2784) and the Tanzania Commission for Science and Technology. Informed assent and parental consent were obtained for all unmarried adolescents aged 14 to 17 years, and written informed consent was obtained directly for those aged 18 and 19 years and married adolescents aged 15 to 17 years. There were no married adolescents younger than 15 years, which was the legal age of marriage in Tanzania for girls. The study was retrospectively registered with the Pan African Clinical Trial Registry as PACTR201804003008116.

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