Family Violence Reduction Within a Parenting Intervention in Rwanda: A Mixed-Methods Study

Sarah K.G. Jensen, PhD,[a] Shauna M. Murray, MA,[b] Matias Placencio-Castro, MA,[a,c] Ursula Kajani, BA,[a] Deborah Amponsah, BA,[a] Vincent Sezibera, PhD, [d] Theresa S. Betancourt, ScD[a]

abstract

BACKGROUND AND OBJECTIVES: A mixed-methods study of mechanisms of change through which a home-visiting-based early childhood development intervention, Sugira Muryango ("strong family"), reduced violent discipline and intimate partner violence in Rwanda.

METHODS: The cluster-randomized trial of Sugira Muryango enrolled socioeconomically vulnerable families with children aged 6 to 36 months in rural Rwanda. We interviewed 18 female caregivers early in the intervention, and 21 female caregivers and 11 male intimate partners were interviewed after the intervention. Coded interviews identify risk factors for violence and mechanisms of intervention-related change in violence. Quantitative analyses included 931 caregivers (52.6% female) who lived with an intimate partner to examine risk factors for violence, intervention effects, and mechanisms of violence reduction.

RESULTS: The qualitative data identified daily hardships and alcohol problems as risk factors for violent discipline and intimate partner violence. Through Sugira Muryango, caregivers learned that strong relationships between partners and engagement of male caregivers in child care has positive impacts on children's development. Techniques taught by community lay workers improved communication, promoted positive parent–child interactions, and reduced intimate partner violence and violent discipline. Quantitative analyses also found that daily hardships predict violent discipline and intimate partner violence. Sugira Muryango reduced violent discipline, increased father engagement, and increased female caregiving warmth. Moreover, pre- to postintervention change in caregiving warmth was associated with reduced use of violent discipline among female caregivers and marginally associated with reduced female victimization.

CONCLUSIONS: Violence reduction can be integrated into early child development programs to reduce violent discipline and intimate partner violence.

[a]*School of Social Work, and* [c]*Lynch School of Education, Boston College, Chestnut Hill, Massachusetts;* [b]*School for Global Inclusion and Social Development, University of Massachusetts Boston, Boston, Massachusetts; and* [d]*College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda*

Dr Jensen led the conceptualization and writing of the paper and contributed to the data analysis and interpretation; Ms Murray oversaw intervention implementation and data collection, led the qualitative analysis, and made significant intellectual contributions to the manuscript content; Mr Placencio-Castro led data management, the quantitative data analyses, and contributed to data interpretation; Ms Kajani contributed to the qualitative analysis and critical review of the manuscript; Ms Amponsah contributed to the qualitative analysis; Dr Sezibera supported study implementation and provided critical review of the manuscript; Dr Betancourt obtained funding, led intervention development, supported the conceptualization of the manuscript, and provided critical review of the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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Deidentified individual participant data will not be made available because this is an ongoing trial.

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Address correspondence to Theresa S. Betancourt, ScD, Boston College School of Social Work, McGuinn Hall 106M, 140 Commonwealth Ave, Chestnut Hill, MA 02467. E-mail: theresa.betancourt@bc.edu

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It is estimated that 250 million children globally are at risk for lost developmental potential because of poverty and/or growth stunting.[1] Still, poverty and stunting are only some of the risk factors that threaten healthy child development in poverty-affected regions globally. Violent behaviors toward children and women are common and are associated with poor child outcomes. Violence against children, including violent or harsh discipline, has been found to affect 50% of the world's children each year.[2] Moreover, 25% of children worldwide are believed to live with a mother who is the victim of intimate partner violence (IPV).[3] All types of family violence (violent discipline and IPV) are most prevalent in low- and middle-income countries[4] and in families of lower socioeconomic status.[5] Moreover, rates of family violence increased during the COVID-19 pandemic because of psychosocial and economic stress and social distancing initiatives that kept families home.[6] In addition to the physical consequences, poor outcomes in children exposed to violent discipline include internalizing and externalizing problems.[7,8] IPV among caregivers is also associated with emotional and behavioral problems in children that may have long-lasting effects on their development and well-being.[9,10] Regrettably, family violence is rarely addressed in early child development (ECD) interventions, and interventions that focus solely on mothers have limited ability to prevent violence and ensure a home environment conducive to optimal ECD. Sugira Muryango (SM) is a home-visiting intervention that uses coaching to teach elements of nurturing care, father engagement, stress management, conflict resolution, and nonviolent discipline to male and female caregivers in poor families with young children in Rwanda. Results from the effectiveness trial showed that SM led to a range of positive outcomes including increased engagement in responsive interactions with children and increased father engagement in child care,[11,12] improvements in children's developmental milestones,[12] and reduced violence against children and female caregivers. This paper uses qualitative and quantitative data to explore how SM achieved violence reduction and recommends integrating violence reduction into broader ECD initiatives across the globe.

METHODS

Study Population

We use data from the cluster-randomized effectiveness study of SM, which enrolled 1049 households with 1084 children aged 6 to 36 months.[11,12] Enrolled families belonged to the poorest socioeconomic strata according to the Rwandan poverty categorization. Given the focus on IPV, this study limited the sample to 490 primary female caregivers and 441 male partners who reported being married, in a relationship, or cohabitating with an intimate partner. We excluded 567 caregivers who did not meet these criteria. All caregivers gave written informed consent. Qualitative data were collected from 18 female caregivers early in the intervention. Moreover, 21 females and 11 male intimate partners were interviewed when the intervention ended. Quantitative data were collected before the intervention, immediately postintervention, and at a 12-month follow-up.

The Intervention

SM was implemented between June and September 2018. It comprises 12 modules that cover content consistent with the Nurturing Care Framework, UNICEF/World Health Organization's Care for Child Development, as well as strategies for nonviolent parenting, emotion regulation, stress reduction, conflict resolution, and father engagement in care for children (Fig 1). Modules, each lasting approximately 1 hour, were delivered at a pace of 1 per week. Booster sessions occurred at 3 and 6 months postintervention. SM is delivered by trained, supervised "coaches" from the local community.

Qualitative Methods

We use reflexive thematic analysis coding of caregiver interviews.[13] The sample for the qualitative interviews was purposively selected to represent a diverse range of perspectives based on whether the primary caregiver was living with an intimate partner, the age of the primary caregiver, and first-time mothers versus experienced caregivers. Interviews were conducted in Kinyarwanda and recorded, transcribed, and translated to English. To familiarize ourselves with the data, an iterative process was used, which included 6 phases of analysis: (1) familiarization of data, (2) developing initial codes, (3) identifying themes, (4) reviewing themes, (5) defining and naming themes, and (6) writing. Initial themes focused on relationships between partners, relationships between caregivers and children, conflict within the home, emotional regulation, and violence. In addition to the main coder, 2 additional coders reviewed a random sample of interviews to create revised themes and subthemes collectively. MAXQDA PLUS 2022 (VERBI Software, 2022) was used for data analysis.

Quantitative Methods

Measures

Daily Hardships

Recent daily hardships were reported by all caregivers at baseline using 21 items from an adapted version of the Post-War Adversities Index.[14] Daily hardships (events) were summed into a cumulative score.

Alcohol Problems

The Alcohol Use Disorders Identification Test was reported by all caregivers. It includes 10 questions about alcohol habits and behavioral

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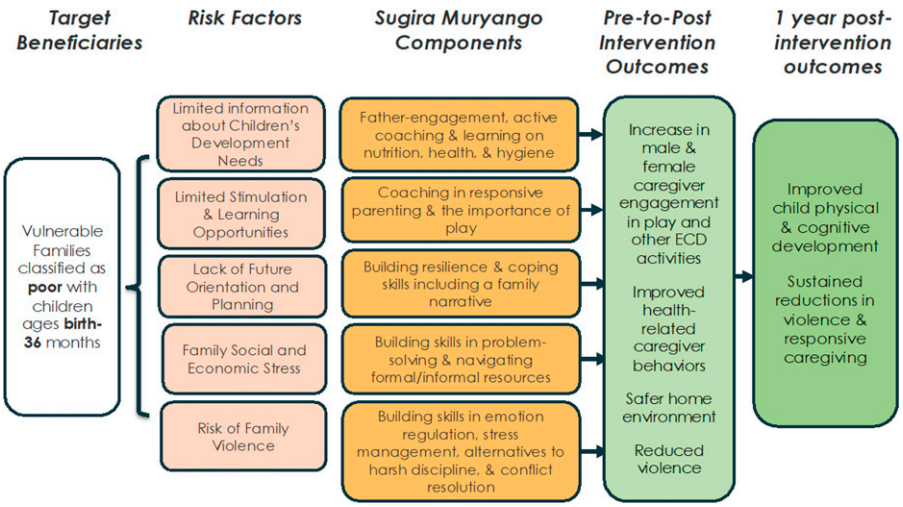

FIGURE 1
Theory of change. Reprinted from Betancourt et al 2020 with permission.

consequences of alcohol intake.[15] Items use a frequency scale ranging from 0 to 4. We used a summative score. A score greater than 8 is considered indicative of hazardous drinking.

Violent Discipline

Violent discipline, including physical and psychological aggression, was assessed using 8 indicators from UNICEF's Multiple Indicator Cluster Survey's Child Discipline module reported by the primary caregivers. Forms of violent discipline included being shouted or screamed at, called demeaning names, shaken, spanked, slapped, or beaten. We created a cumulative score of violent discipline forms within the past 30 days.

IPV

Questions from the Rwanda Demographic and Health Survey's Domestic Violence Module were reported by all caregivers. We used summative scores for physical and sexual abuse victimization (8 items) among female caregivers and perpetration (6 items) among male caregivers within the past 3 months.

Emotion Dysregulation

Emotion dysregulation was assessed in all caregivers using the Difficulties in Emotion Regulation Scale.[16] This scale assesses difficulties in emotion regulation related to poor awareness, acceptance, and understanding of emotions, difficulties engaging in goal-directed behavior, and difficulties refraining from impulsive behavior when experiencing negative emotions. We use a 24-item version previously used in Rwanda.[17] Items use a 5-point frequency scale. We calculated a summative score where higher scores indicate more dysregulation.

Father Engagement

Father engagement was reported by the primary caregiver using an item from the Home Observation for Measurement of the Environment inventory,[18] namely "Father spends time every day caring for the child" ("yes/no").

Parental Warmth

Parental warmth was assessed using the warmth subscale from the 24-item parent-report version of the Parental Acceptance-Rejection Questionnaire, which was answered by all caregivers.[19] Parents reported on their own behavior toward their child using a 4-point Likert scale. We created a summative score where higher scores reflect more warmth.

Statistical Analyses

The quantitative models use path analysis within a structural equation modeling framework. Path models allow for the simultaneous estimation of (1) autoregressions, which is continuity in a variable over time; (2) cross-lagged effects, which is the effects of different variables on each other over time; and (3) within-time covariance of different variables. Path models provide a conservative estimate of predictions given these autoregression, cross-lagged, and within-time measures.[20] We estimate 3 models in females and males, respectively. Model 1 examines risk factors for violence. Model 2 examines intervention effects of SM on IPV and violent discipline. Model 3 examines mechanistic drivers of the intervention effect selected from the qualitative findings. Model 1 is limited to the control group to avoid potential confounding by intervention status. Models 2 and 3 use the full sample.

We use full information maximum likelihood estimation to account for missing data[21] and bootstrapped standard errors to address the nonnormality. Acceptable model fit is assessed using the following criteria: comparative fit index (CFI) $>$ 0.90; standardized root

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mean squared residual (SRMR) < 0.08, and root mean square error of approximation (RMSEA) < 0.06.[22,23] χ^2 statistics are not considered due to high sensitivity to sample size.[24] RMSEA values are interpreted with caution as they usually indicate better model fit with larger degrees of freedom.[25] We report standardized estimates along with exact *P* values and 95% confidence intervals. Analyses were performed in R[26] using the Lavaan package.[27]

RESULTS

Descriptive Statistics

Descriptive sample information is shown in Table 1. Among the 509 included children, 42.7% were exposed to violent discipline at baseline. Among the 490 female caregivers, 26.7% reported IPV victimization and 2.1% reported problematic alcohol consumption at baseline. Among the 441 male partners, 11.9% reported IPV perpetration and 4.5% reported problematic alcohol consumption. Father engagement in child care was reported in 64% of the families at baseline.

Qualitative Results

This section discusses the thematic coding of postintervention caregiver interviews. Quotations are provided in Table 2. Caregivers reflected on program-related changes in their own behaviors such as enhanced communication techniques, which reduced conflict, IPV, and violent discipline. Additionally, caregivers attributed the knowledge learned through SM "coaches" to a reduction in daily stressors that drove alcohol consumption, violence, and hopelessness toward the future.

Communication is Key to Living in Harmony and Raising a Child

Reducing Violence Between Partners

At baseline, 20% of female caregivers and 18% of male caregivers acknowledged physical IPV in their household. Postintervention, 76% of female caregivers and 72% of male caregivers acknowledged the negative impact conflict and violence has on harmony in their home and on raising a child well. Both female and male caregivers gave examples of how SM coaches had taught them how to resolve conflicts through communication and stress reduction.

Alternatives to Violent Discipline

A total of 85% of female caregivers and 72% of male caregivers mention that they had not known of alternatives to violent discipline

TABLE 1 Sample Descriptive Information

	All Caregivers	Female Caregivers	Male Caregivers	Children
Sample size, *n* (%)	931	490 (52.63)	441 (47.37)	509
Caregivers				
Age, y (SD)	36.99 (10.10)	34.22 (7.64)	40.07 (11.52)	—
Female, %	53	—	—	—
Relationship to child, *n*				
Biological mother	—	465	—	—
Biological father	—	—	419	—
Stepfather	—	—	10	—
Aunt	—	1	—	—
Grandmother	—	24	—	—
Grandfather	—	—	12	—
Daily Hardships Score, mean (SD)	6.25 (3.11)	6.51 (3.14)	5.96 (3.05)	—
IPV, mean (SD)	—	—	—	—
Victimization incidents	—	0.70 (1.20)	—	—
Perpetration incidents	—	—	0.17 (0.55)	—
Alcohol consumption, %				
Never	57.79	75.31	38.32	—
Once a week or less	27.82	20.2	36.28	—
More than once a week	14.39	4.49	25.4	—
Emotion dysregulation score	1.92	2.06	1.76	—
Warmth parenting	29.86	29.79	29.94	—
Father engagement, %	—	—	63.64	—
Educational attainment, %				
No school/don't know	26.53	29.59	23.13	—
Less than 6 y (primary)	43.72	43.88	45.54	—
6–8 y (secondary)	16.65	15.1	18.37	—
Secondary/vocational	13.1	11.43	14.97	—
Children				
Age in months, mean (SD)	—	—	—	21.23 (8.29)
Children exposed to harsh discipline, %	—	—	—	42.7

—, not applicable.

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before the intervention and reflected on how using learned alternatives to violent punishment from SM had strengthened their relationship with their children.

Overcoming Daily Stressors for a Brighter Future

Alcohol Consumption

Postintervention, 76% of female caregivers and 54% of male caregivers discussed the role alcohol played in creating conflict and prevented their household from saving for the future, thus contributing to daily hardships.

Coping With Hardships

Daily hardships and stress affected caregivers' interrelationships and caregiver–child relationships. Postintervention, 90% of female caregivers and 81% of male caregivers mentioned coping strategies they had learned from SM, such as problem-solving, deep breathing techniques, and respectful communication to reduce stress.

Other Notes

Almost all reports of alcohol abuse involved dual-headed households. Conversely, feelings of loneliness, isolation, and despair were reported exclusively in single female households.

Theoretical Models Based on Qualitative Results

Building on the qualitative themes and considering the SM theory of change we defined 3 quantitative models (Fig 2) to examine (1) risk factors for violence, (2) overall intervention effects on violence-related outcomes, and (3) mechanisms underlying intervention effects. Proposed mechanisms of change in the use of violent discipline and IPV were selected based on congruence between the qualitative results and the theory of change, namely change in caregiver emotion dysregulation, father engagement, and warm caregiving.

Quantitative Analysis

Results are presented in Table 3 (female caregivers) and Table 4 (male caregivers). For models 2 and 3, we discuss the added paths only, but all estimated paths are provided in the tables.

Female Caregivers

Model 1.A: Risk Factors for Violence Among Female Caregivers

Model fit is acceptable (SRMR = 0.057, CFI = 0.942) although an RMSEA of 0.127 is larger than the predefined threshold, likely because of the low degrees of freedom. Model estimates show that daily hardships predict female caregiver engagement in violent discipline (estimate = 0.076, $P < .001$) and female reports of victimization to IPV (estimate = 0.082, $P < .001$). Alcohol problems predict IPV victimization (estimate = 0.079, $P = .046$) but not violet discipline. Violent discipline (estimate = 0.494, $P < .001$) and IPV victimization (estimate = 0.425, $P < .001$), but not alcohol problems are sustained over time. IPV victimization of female caregivers postintervention is associated with reports of female use of violent discipline 12 months later (estimate = 0.174, $P = .019$).

Model 2.A: Intervention Effects in Female Caregivers

The model still shows good fit (SRMR = 0.028, CFI = 0.975), although the RMSEA (0.065) is slightly larger than the defined threshold. We see a treatment effect whereby SM is associated with reduced use of violent discipline (estimate = –0.327, $P < .001$). There is no treatment effect on IPV victimization or alcohol problems among female caregivers.

Model 3.A: SM Intervention Effects via Caregiver Behavior Change Among Female Caregivers

The model shows acceptable fit across all indices (SRMR = 0.061, CFI = 0.908, RMSEA = 0.060). With regard to the hypothesized mechanisms of behavior change that drive reductions in violence, we see an intervention effect on female caregivers' reports of father engagement (estimate = 0.307, $P < .001$) and on parenting warmth (estimate = 0.218, $P = .007$). We do not see an intervention effect on emotion dysregulation. We find that in females, more warmth predicts reduced use of violent discipline (estimate = –0.091, $P = .044$) and marginally predicts reduced victimization to IPV (estimate = –0.090, $P = .090$). We estimated indirect pathways of SM on violent discipline and IPV victimization via parenting warmth, yet neither indirect path reached significance ($P = .120$ and $P = .130$, respectively).

Male Caregivers

Model 1.B: Risk Factors Driving Family Violence in Male Caregivers

The model shows acceptable fit (SRMR = 0.046, CFI = 0.924). The RMSEA (0.163) is larger than the defined threshold, likely because of the high degrees of freedom. In male caregivers, we see no association of daily hardships or alcohol problems with violent discipline or IPV perpetration. We see continuity in alcohol problems (estimate = 0.227, $P < .001$), violent discipline (estimate = 0.598, $P < .001$), and IPV perpetration (estimate = 0.449, $P = .02$). We see no interrelationships among violent discipline, IPV perpetration, or alcohol problems.

Model 2.B: Intervention Effect on Violence Among Male Caregivers

The model shows acceptable fit (SRMR = 0.024, CFI = 0.974,

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TABLE 2 Qualitative Results from Postintervention Interviews with Female and Male Caregivers

Theme and Subthemes	Household Demographics	Quotations	Female, $n = 21$	Male, $n = 11$
Communication is key to raising a child well				
Reducing conflict	Male, partner of primary caregiver, nuclear household, middle-aged, not new caregiver	"At the time we saw that that situation could happen in a short time. I personally saw it as a problem, and I knew it was bad to cause injury to each other. I also saw the future and it seemed that I could eventually go to prison if I was not careful. But now I see the future is bright and I am even going to accomplish things knowing that the future is bright and sustainable. But there was a time before that I saw difficult things ahead, the future would have been a short one. But now I view a better future."	16	8
	Female, primary caregiver, dual-headed household, middle aged, not new primary caregiver	"I learned not to shout at my husband when he does not bring food home. Before he would leave home when we are all hungry and the children are crying because of hunger, then come back without food. I would shout at him and quarrel so much thinking that maybe he has money and does not want to buy food for us. Since the program we discuss about the problem we have and know how to deal with it without fighting. We now give each other peaceful moments."		
Alternatives to harsh punishment	Female, single-headed household, middle aged, not new primary caregiver	"I honestly didn't think that beating a child was a problem. When a child does wrong, you must punish him/her with a beating. However, Sugira Muryango taught us that it is not right to beat a child even if he/she has done something wrong. We learned about an exercise that we shall do whenever we find our children making mistakes. We know that we ought to go somewhere in the room for instance and calm ourselves down. After releasing our anger, we may get back to the child and show her/him his/her wrongdoings without beating him/her. That way, the child is able to listen and come to understand the weight of her/his actions. We realized that beating a child traumatizes him/her and consequently, affects his/her brain development. Therefore, we learned that resisting beating a child helps in his/her growth."	18	8
	Female, dual-headed household, middle aged, not new primary caregiver	"The mood between parents and children is good now because the children feel comfortable around you. I mean when the children see you talking to them, they see that you are loving and you will support what they are do. And when they are at fault, they don't freak out that their mother will kill them but they know that…"		
Overcoming daily stressors for a brighter future				
Alcohol consumption	Female, dual-headed household, old age, not new primary caregiver	"What I remember, is related to not drowning problems in alcohol. I can't do that. When I encounter a problem, instead I rush to a	11	6

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TABLE 2 Continued

Theme and Subthemes	Household Demographics	Quotations	Female, $n = 21$	Male, $n = 11$
		prayer house!" Now the place I used to go praying, the church has been closed. I don't feel free to congregate at other places."		
	Female, dual-headed, old age, not new primary caregiver. Male: partner of primary caregiver, dual headed household, old aged, not new caregiver	Female caregiver: "There is a way he used to get drunk, and he comes home knocking down the children but it doesn't happen anymore." Male caregiver: "There are changes. Now, we interact, communicate, but before, I would get home drunk, threaten them and go to bed. Both children and their Mom were always running away from me, but today, we live in harmony"		
Coping with hardships	Female, single-headed household, young, not new primary caregiver	"There is one most important change that happened to me. You see, I used to feel hopeless and blame myself for having 2 children out of wedlock. As a result, I behaved anyhow as because I thought I was worthless anyway. But now I changed; I believe that I am an important person and I can raise my children just fine so they will grow up to be great people. My family changed too in terms of how they treated my children. Now when I am not around, I trust that my mother will be a good parent to them."	19	9
	Female, dual-headed household, middle-aged, not new primary caregiver	"My husband would beat the children so much; each received at least 10 beatings per day and they were beaten for every small mistake they did. Recently, my children told me that they are happy because their father does not beat them anymore. They said that those who came to coach us did well since their father stopped beating them. They told me that when I am not there and they do wrong, he just tells them to stop instead of beating them."		
	Female, nuclear, middle-aged, not new primary caregiver	"I learned from Sugira Muryango how to control my anger. There are times when I would be angry and feel like I don't even want to go back home. But after being trained by my coach, she told me that whenever I feel angry, I should sit down and take a breath. She told that I should breathe slowly, keep quiet, and think right. There are some moments I would face a problem and tell it to everyone I meet. After she told me that I can also consult my family."		

RMSEA = 0.059). Similar to model 2.A for female caregivers, we find that SM reduced violent discipline (estimate = –0.329, $P < .001$), but not IPV perpetration or alcohol problems.

Model 3.B: SM Mechanisms of Change in Male Caregivers

The model shows adequate fit across all indices (SRMR = 0.052, CFI = 0.897, RMSEA = 0.057). We see that SM is associated with increased father engagement (estimate = 0.292, $P = .001$), but has no effect on emotion dysregulation or parenting warmth in males. With regard to male caregiver behavior changes serving as mechanisms of change, we find that emotion dysregulation postintervention predicts IPV perpetration 12 months later (estimate = 0.151, $P = .028$) but we do not estimate indirect effect given the lack of an intervention effect on emotion dysregulation. We do not see any effects of changes in father engagement or parenting warmth on violent disciple or IPV perpetration.

DISCUSSION

In line with global estimates, we find that 43% of the parents in our

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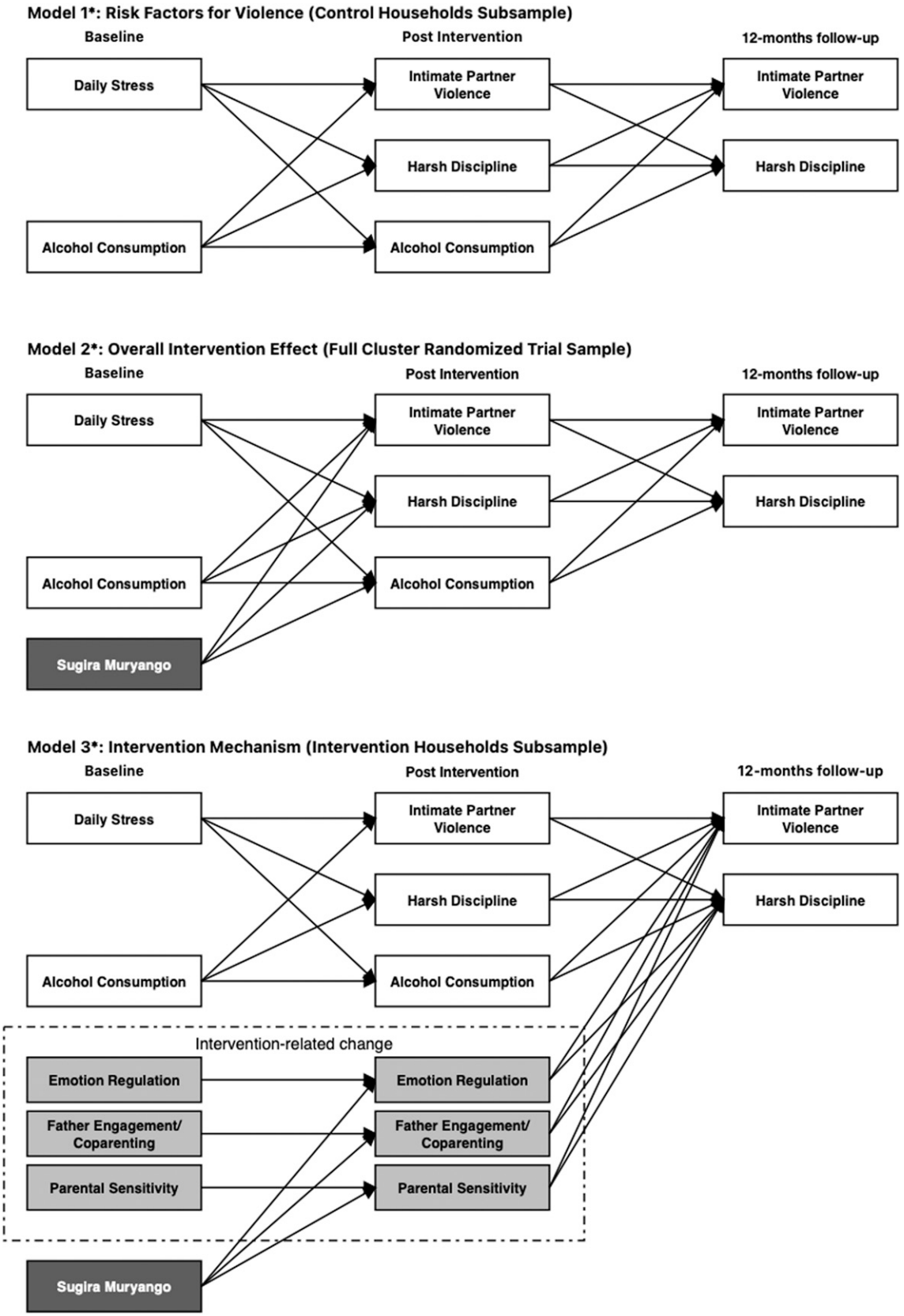

FIGURE 2
Theoretical models of risk and intervention effects on harsh discipline and intimate partner violence with Sugira Muryango.

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TABLE 3 Model Results Male Caregivers

Outcome	Predictor	Estimate	*P*	95% CI LL	95% CI UL
Model 1B					
Risk for violence (baseline to postintervention)					
Violent discipline 1	Daily hardships 0	0.020	.485	−0.044	0.076
Violent discipline 1	Alcohol problems 0	0.032	.402	−0.039	0.109
IPV perpetration 1	Daily hardships 0	0.082	.068	0.007	0.181
IPV perpetration 1	Alcohol problems 0	0.026	.500	−0.047	0.101
Autoregressive path					
Alcohol problems 1	Alcohol problems 0	0.227	<.001	0.126	0.375
Violent discipline 2	Violent discipline 1	0.598	<.001	0.412	0.768
IPV perpetration 2	IPV perpetration 1	0.449	.015	−0.107	0.662
Predictors of violence outcomes (cross-lags)					
Violent discipline 2	IPV perpetration 1	0.026	.765	−0.071	0.280
Violent discipline 2	Alcohol problems 1	−0.005	.940	−0.138	0.107
IPV perpetration 2	Violent discipline 1	−0.020	.644	−0.097	0.070
IPV perpetration 2	Alcohol problems 1	0.183	.154	−0.019	0.469
Model 2B					
Risks for violence (baseline to postintervention)					
Violent discipline 1	Daily hardships 0	0.078	<.001	0.043	0.113
Violent discipline 1	Alcohol problems 0	<0.001	.993	−0.065	0.077
IPV perpetration 1	Daily hardships 0	0.064	.001	0.026	0.103
IPV perpetration 1	Alcohol problems 0	0.020	.697	−0.051	0.145
Autoregressive paths					
Alcohol problems 1	Alcohol problems 0	0.240	.031	0.077	0.510
Violent discipline 1	Violent discipline 2	0.486	<.001	0.368	0.613
IPV perpetration 1	IPV perpetration 2	0.144	.065	−0.016	0.296
Predictors of violence outcomes (cross-lags)					
Violent discipline 2	IPV perpetration 1	0.088	.203	−0.040	0.229
Violent discipline 2	Alcohol problems 1	0.040	.551	−0.053	0.212
IPV perpetration 2	Violent discipline 1	0.160	.035	0.028	0.328
IPV perpetration 2	Alcohol problems 1	0.148	.12	0.002	0.378
Treatment effects					
Violent discipline 1	Treatment	−0.329	<.001	−0.507	−0.149
IPV perpetration 1	Treatment	−0.104	.249	−0.279	0.070
Alcohol problems 1	Treatment	0.084	.295	−0.073	0.230
Model 3B					
Risks for violence (baseline to postintervention)					
Violent discipline 1	Daily hardships 0	0.021	.311	−0.020	0.064
Violent discipline 1	Alcohol problems 0	0.025	.270	−0.023	0.065
IPV perpetration 1	Daily hardships 0	0.048	.072	0.001	0.107
IPV perpetration 1	Alcohol problems 0	0.027	.176	−0.012	0.067
Autoregressive paths for caregiver behaviors					
Alcohol problems 1	Alcohol problems 0	0.169	<.001	0.104	0.248
Violent discipline 2	Violent discipline 1	0.512	<.001	0.380	0.656
IPV perpetration 2	IPV perpetration 1	0.419	.001	0.135	0.620
Predictors of violence outcomes (cross-lags)					
Violent discipline 2	IPV perpetration 1	0.033	.525	−0.044	0.164
Violent discipline 2	Alcohol problems 1	0.065	.202	−0.045	0.155
IPV perpetration 2	Violent discipline 1	−0.002	.953	−0.086	0.075
IPV perpetration 2	Alcohol problems 1	0.093	.137	−0.019	0.225
Autoregressive paths for intervention mechanisms					
Emotion dysregulation 1	Emotion dysregulation 0	0.719	<.001	0.515	0.937
Father engagement 1	Father engagement 0	0.653	<.001	0.439	0.863
Parenting warmth 1	Parenting warmth 0	0.037	.116	0.002	0.094
Intervention effects on mechanistic change					
Emotion dysregulation 1	Treatment	−0.116	.183	−0.297	0.053
Father engagement 1	Treatment	0.292	.002	0.105	0.469
Parenting warmth 1	Treatment	0.055	.581	−0.144	0.262
Effects of intervention change on violence outcomes					
Violent discipline 2	Emotion dysregulation 1	0.024	.570	−0.050	0.115
Violent discipline 2	Father engagement 1	−0.062	.194	−0.155	0.024

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TABLE 3 Continued

Outcome	Predictor	Estimate	*P*	95% CI LL	95% CI UL
Violent discipline 2	Parenting warmth 1	0.002	.955	−0.078	0.087
IPV perpetration 2	Emotion dysregulation 1	0.151	.028	0.013	0.290
IPV perpetration 2	Father engagement 1	0.043	.386	−0.067	0.128
IPV perpetration 2	Parenting warmth 1	−0.047	.370	−0.162	0.040

Variables called 0 refer to baseline, variables called 1 refer to postintervention, and variable called 2 refer to the 1-y follow up from postintervention.
LL, lower limit; UL, upper limit.

study use violent discipline and 27% of the female caregivers report IPV victimization at baseline. Using qualitative and quantitative methods, we cast light on risk factors for family violence and mechanisms through which the SM intervention reduced rates of violence. Qualitative findings indicate that daily hardships and alcohol problems predict violent discipline and IPV. These associations are replicated in the quantitative results in female caregivers, but not in male caregivers. We see interrelationships between violent discipline and IPV in both the qualitative and quantitative data. In the quantitative data, we find that maternal IPV victimization predicts use of violent discipline 12 months later. This suggests that violence among parents may spill over on children, and that children exposed to IPV therefore are at increased risk of concurrent violent discipline. We do not see any relationships between alcohol problems and family violence in either female or male caregivers in the quantitative models.

With regard to SM intervention effects, we confirm the previously reported intervention effect on reducing violent discipline but we do not see an intervention effect on IPV. We have previously shown that, immediately postintervention, the odds of exposure to harsh discipline decreased 70% and the odds of female caregivers reporting IPV victimization decreased 51% in SM families compared with control families.[28] The discrepancy regarding treatment effects on IPV victimization likely stems from differences in statistical modeling approaches, the extensive set of covariates in the current models. We replicate the previously shown effect of SM on increased father engagement. This paper is the first time we examine SM intervention effects on emotion dysregulation and parenting warmth. We do not see intervention effects on emotional dysregulation, but we do see an intervention effect on parental warmth in female caregivers. In females, we further find that change in parental warmth between baseline and postintervention emerges as a predictor of violent discipline and IPV victimization. This suggests that the hypothesized mechanism of change whereby SM reduces family violence through increased caregiver warmth may be important. In males, we find that change in emotion dysregulation, but not parenting warmth, predicts IPV perpetration. The lack of an intervention effect on emotion dysregulation in both males and females suggests that SM can be further improved to affect caregiver behaviors despite strong reports of parents benefitting from these aspects in the qualitative data.

As mentioned previously, violence in the home has significant, long-lasting effects on children. Children exposed to violent discipline and/or IPV are more likely to experience behavioral problems[7,10,29] and to become perpetrators themselves.[30] Parent focused prevention programs seeking to prevent child abuse and neglect have shown promising effects.[31] Still, such programs are rarely integrated into broader ECD interventions focusing on positive parenting strategies and cognitive stimulation. A recent review and meta-analysis of the effectiveness of parenting interventions in preventing violence against children identified only 3 studies of parenting programs that directly addressed violence but estimated a moderately significant negative effect of parenting interventions on abusive, harsh, or negative parenting.[31] Because children's development is shaped by both positive (warm, responsive) and negative (negligent, harsh, abusive) behaviors, ECD programs should address family violence and engage both female and male caregivers. Indeed, analyses presented here suggest that positive and negative parenting practices influence each other, as shown in the predictive relationship between changes in warm parenting and reduced violent discipline in female caregivers.

LIMITATIONS

The qualitative analyses cast light on protective factors against family violence, such as increased hope for the future. A limitation of the current study is that we did not collect quantitative data on protective factors. Current quantitative analyses also relied on a single question on father engagement. Future studies should

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TABLE 4 Model Results Female Caregivers

Outcome	Predictor	Estimate	*P*	95% CI LL	95% CI UL
Model 1A					
Risk for violence (baseline to postintervention)					
Violent discipline 1	Daily hardships 0	0.076	<.001	0.036	0.119
Violent discipline 1	Alcohol problems 0	0.050	.357	−0.029	0.188
IPV victimization 1	Daily hardships 0	0.082	<.001	0.044	0.128
IPV victimization 1	Alcohol problems 0	0.079	.046	−0.011	0.162
Autoregressive path					
Alcohol problems 1	Alcohol problems 0	0.160	.157	0.043	0.464
Violent discipline 2	Violent discipline 1	0.494	<.001	0.338	0.652
IPV victimization 2	IPV victimization 1	0.424	<.001	0.176	0.646
Predictors of violence outcomes (cross-lags)					
Violent discipline 2	IPV victimization 1	0.174	.019	0.040	0.327
Violent discipline 2	Alcohol problems 1	0.100	.244	−0.044	0.293
IPV victimization 2	Violent discipline 1	0.051	.476	−0.090	0.190
IPV victimization 2	Alcohol problems 1	0.194	.109	−0.033	0.448
Model 2A					
Risks for violence (baseline to postintervention)					
Violent discipline 1	Daily hardships 0	0.079	<.001	0.044	0.116
Violent discipline 1	Alcohol problems 0	−0.001	.988	−0.064	0.071
IPV victimization 1	Daily hardships 0	0.068	<.001	0.039	0.100
IPV victimization 1	Alcohol problems 0	0.085	.015	0.011	0.151
Autoregressive paths					
Alcohol problems 1	Alcohol problems 0	0.240	.033	0.078	0.522
Violent discipline 1	Violent discipline 2	0.455	<.001	0.336	0.590
IPV victimization 1	IPV victimization 2	0.461	<0.001	0.276	0.654
Predictors of violence outcomes (cross-lags)					
Violent discipline 2	IPV victimization 1	0.175	.002	0.069	0.283
Violent discipline 2	Alcohol problems 1	0.051	.425	−0.045	0.208
IPV victimization 2	Violent discipline 1	0.028	.586	−0.07	0.137
IPV victimization 2	Alcohol problems 1	0.125	.049	−0.011	0.253
Treatment effects					
Violent discipline 1	Treatment	−0.327	<.001	−0.495	−0.164
IPV victimization 1	Treatment	−0.107	.224	−0.281	0.057
Alcohol problems 1	Treatment	0.084	.307	−0.066	0.255
Model 3A					
Risks for violence (baseline to postintervention)					
Violent discipline 1	Daily hardships 0	0.077	<.001	0.043	0.113
Violent discipline 1	Alcohol problems 0	−0.002	.957	−0.069	0.078
IPV victimization 1	Daily hardships 0	0.068	<.001	0.040	0.100
IPV victimization 1	Alcohol problems 0	0.085	.015	0.012	0.152
Autoregressive paths for caregiver behaviors					
Alcohol problems 1	Alcohol problems 0	0.240	.026	0.088	0.514
Violent discipline 2	Violent discipline 1	0.446	<.001	0.327	0.578
IPV victimization 2	IPV victimization 1	0.422	<.001	0.239	0.600
Predictors of violence outcomes (cross-lags)					
Violent discipline 2	IPV victimization 1	0.152	.007	0.041	0.266
Violent discipline 2	Alcohol problems 1	0.052	.377	−0.037	0.209
IPV victimization 2	Violent discipline 1	0.017	.746	−0.078	0.119
IPV victimization 2	Alcohol problems 1	0.116	.058	−0.009	0.235
Autoregressive paths for intervention mechanisms					
Emotion dysregulation 1	Emotion dysregulation 0	0.681	<.001	0.558	0.805
Father engagement 1	Father engagement 0	0.710	<.001	0.535	0.894
Parenting warmth 1	Parenting warmth 0	0.160	<.001	0.117	0.203
Intervention effects on mechanistic change					
Emotion dysregulation 1	Treatment	−0.004	.954	−0.148	0.155
Father engagement 1	Treatment	0.307	<.001	0.137	0.486
Parenting warmth 1	Treatment	0.218	.007	0.066	0.384
Effects of intervention change on violence outcomes					
Violent discipline 2	Emotion dysregulation 1	−0.002	.974	−0.091	0.087
Violent discipline 2	Father engagement 1	−0.047	.269	−0.126	0.041
Violent discipline 2	Parenting warmth 1	−0.091	.044	−0.181	−0.004
IPV victimization 2	Emotion dysregulation 1	0.073	.112	−0.016	0.165

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TABLE 4 Continued

Outcome	Predictor	Estimate	*P*	95% CI LL	95% CI UL
IPV victimization 2	Father engagement 1	−0.035	.419	−0.126	0.047
IPV victimization 2	Parenting warmth 1	−0.090	.085	−0.200	0.004

Variables called 0 refer to baseline, variables called 1 refer to postintervention, and variables called 2 refer to the 1-y follow-up from postintervention.

assess father engagement in a more nuanced way.

CONCLUSIONS

The SM program capitalizes on synergies between social protection, violence prevention, and ECD. Analyses presented here show that SM reduced violence and improved warm parenting in rural, socioeconomically vulnerable households, thereby demonstrating the potential impact of incorporating violence prevention content into ECD interventions. The cost of integrating violence reduction into ECD interventions is minimal but join ECD and violence reduction programs can profoundly change children's developmental trajectories. Future follow-up studies with families from the cluster-randomized trial will assess child outcomes including cognition, school readiness, and behavioral problems to expand the evidence for long-term effects of violence reducing parenting programs on children in low- and middle-income countries.

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ABBREVIATIONS

CFI: comparative fit index
ECD: early childhood development
IPV: intimate partner violence
RMSEA: root mean square error of approximation
SM: Sugira Muryango
SRMR: standardized root mean squared residual

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