ARTICLE

Reducing Maternal Intimate Partner Violence After the Birth of a Child

A Randomized Controlled Trial of the Hawaii Healthy Start Home Visitation Program

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Objectives: To estimate whether home visitation beginning after childbirth was associated with changes in average rates of mothers' intimate partner violence (IPV) victimization and perpetration as well as rates of specific IPV types (physical assault, verbal abuse, sexual assault, and injury) during the 3 years of program implementation and during 3 years of long-term follow-up.

Design: Randomized controlled trial.

Setting: Oahu, Hawaii.

Participants: Six hundred forty-three families with an infant at high risk for child maltreatment born between November 1994 and December 1995.

Intervention: Home visitors provided direct services and linked families to community resources. Home visits were to initially occur weekly and to continue for at least 3 years.

Main Outcome Measures: Women's self-reports of past-year IPV victimization and perpetration using the Conflict Tactics Scale. Blinded research staff conducted maternal interviews following the child's birth and annually when children were aged 1 to 3 years and then 7 to 9 years.

Results: During program implementation, intervention mothers as compared with control mothers reported lower rates of IPV victimization (incidence rate ratio [IRR], 0.86; 95% confidence interval [CI], 0.73-1.01) and significantly lower rates of perpetration (IRR, 0.83; 95% CI, 0.72-0.96). Considering specific IPV types, intervention women reported significantly lower rates of physical assault victimization (IRR, 0.85; 95% CI, 0.71-1.00) and perpetration (IRR, 0.82; 95% CI, 0.70-0.96). During long-term follow-up, rates of overall IPV victimization and perpetration decreased, with nonsignificant between-group differences. Verbal abuse victimization rates (IRR, 1.14, 95% CI, 0.97-1.34) may have increased among intervention mothers.

Conclusion: Early-childhood home visitation may be a promising strategy for reducing IPV.

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INTIMATE PARTNER VIOLENCE (IPV) prevalence is disproportionately high in families with children younger than 5 years.[1] Both IPV victimization and childhood IPV exposure are associated with adverse health consequences.[2-9] Despite growing understanding of the epidemiology and health consequences of IPV, studies testing effective interventions are limited.[10,11]

Intimate partner violence interventions targeting women with young children are important given the elevated risk of IPV during this period and given the health implications for victims and their children. Early-childhood home visitation, which traditionally focuses on reducing child maltreatment, is one method of delivering intervention services to families. However, families targeted to receive home visiting are frequently also at high risk for IPV.[12] The Centers for Disease Control and Prevention recently conducted a systematic review examining the home visitation–family violence relationship and concluded that there was insufficient evidence to determine if early-childhood home visitation reduced IPV.[13]

Reduction of maternal risk factors for child maltreatment, including IPV, was one of the goals of the Hawaii Healthy Start Program (HSP) early-childhood home visitation program. Duggan et al[14,15] have published mixed findings about HSP's effectiveness during the child's first 3 years of life in decreasing maternal IPV. In these

publications, they treated IPV as a binary variable, did not evaluate sexual violence, and did not delineate the perpetrator. These limitations ignore the complexity of IPV and, thus, impair our ability to estimate the association between home visitation and IPV.

Using data collected to evaluate the Hawaii HSP, we sought to estimate over two 3-year intervals (during program implementation and over long-term follow-up) whether home visitation beginning after the birth of a child was associated with changes in (1) average rates of mothers' IPV victimization and perpetration and (2) rates of specific IPV types (physical assault, verbal abuse, sexual assault, and injury).

METHODS

SETTING AND PARTICIPANTS

Details of the Hawaii HSP study have been published elsewhere.[14-22] Families were eligible if they (1) gave birth between November 1994 and December 1995 on Oahu; (2) had an English-speaking mother; (3) were not involved with Child Protective Services; and (4) had an infant who was at high risk for maltreatment. The criteria for high risk have been described elsewhere.[15,16]

RANDOMIZATION

Families agreeing to participate provided written informed consent. Families then were randomly assigned to the (1) HSP home visiting intervention group; (2) control group; or (3) testing control group. Group assignments were randomly allocated to study ID numbers at a central office using a table of random numbers. Study ID numbers were sequentially given to each newly enrolled family. By design, more families were randomized to the intervention group than the control groups. For the current analyses, participants in the testing control group were excluded because this group was not the primary control group, had a small sample size (n=41), and did not have the same assessment schedule as the other 2 groups. Differences in the distributions of baseline characteristics between the primary control group and the testing control group were minimal.

INTERVENTION

Intervention families received early-childhood home visitation. The content of home visits aimed to promote child health and decrease child maltreatment by improving family functioning and reducing malleable risk factors such as IPV. Paraprofessional home visitors were expected to accomplish these goals by providing direct services and by linking families to appropriate community services such as IPV shelters/advocacy groups and mental health treatment. Direct services were to include (1) teaching about child development; (2) role-modeling positive parenting and problem-solving strategies; and (3) offering emotional support. The intervention was administered by 3 community agencies on Oahu. Each agency operated 2 program sites.

The initial home visit was expected to occur within 1 week of the infant's birth. All intervention families were expected to participate initially in weekly visits. Visits were to taper as families achieved greater competency. Home visits were designed to be carried out for at least 3 years, but it was challenging to retain families. Families participated in a mean of 13.6 visits in the first year.[16] Ninety percent of families participated in home visitation when the child was 3 months of age; 70% participated at 6 months of age; 49%, at 12 months of age; and 25%, at 36 months of age.[16]

OUTCOME ASSESSMENT

Interviews with the infant's primary caregiver, generally the biological mother, were conducted in the intervention and control groups. Trained research staff blinded to the participants' group status conducted the interviews. The baseline interview occurred following the child's birth, and follow-up interviews occurred in 2 periods, annually when the child was 1 to 3 years of age and then annually when the child was 7 to 9 years of age. Data collection ended in 2005.

INCLUSION CRITERIA

In a small percentage of cases at each follow-up point, the child's primary caregiver was not the mother or the mother could not be located for an interview; thus, the interview was conducted with an alternate caregiver. Interviews with alternate caregivers were excluded in the current analyses.

OUTCOME AND COVARIATES

Intimate Partner Violence

During each interview, mothers reported their IPV victimization and perpetration over the past year using the Conflict Tactics Scale (CTS). The psychometric properties of the CTS have been well documented.[23-25] At baseline, the interview included the 38-item CTS1. All subsequent interviews used the 78-item revised CTS (CTS2), which contains the following categories of questions: verbal aggression/abuse, physical assault, sexual coercion/abuse, and injury. Initial validation of the CTS2 estimated that the internal reliability coefficients for each category of questions were 0.79, 0.86, 0.87, and 0.95, respectively.[25] The injury items include acts of physical assault that lead to bodily harm such as "I had a sprain, bruise, or small cut because of a fight with my partner." Four sexual coercion questions were purposefully omitted during the interviews. Confirmatory factor analyses were run in MPlus (version 5.21; Muthén & Muthén, Los Angeles, California) to confirm whether the previously identified factor structure was replicated in the current sample.[25]

Fixed-response choices for each item on the CTSs are categorical, including never, once, twice, 3 to 5 times, 6 to 10 times, 11 to 20 times, and more than 20 times. For our analyses, categorical responses were converted to counts as follows[24]: 3 to 5 times was coded as 4; 6 to 10, as 8; 11 to 20, as 15; and more than 20 times, as 25. For each woman at each interview, we created the following 5 rates per person-year of new victimization acts: (1) total IPV (all physical assault, sexual abuse, and injury acts); (2) physical assault only; (3) sexual abuse only; (4) injury only; and (5) verbal abuse only. The same 5 rates per year were created for maternal IPV perpetration for each woman at each interview.

Maternal Emotional Health

The Mental Health Index 5-item short form measured anxiety and depressive symptoms, asking women how often in the past month they had experienced specific feelings.[26] Response items are on a 6-point scale ranging from all of the time to none of the time. Responses were summed and standardized to a scale of 0 to 100. A cutoff of less than 67 defined poor mental health.[27]

Substance Use

Maternal drug use was measured as self-report of any current drug use. Problem alcohol use was defined as self-report of current alcohol use together with 2 or more positive responses to the 4 CAGE questions, a validated screen for problem alcohol use.[28]

DATA ANALYSES

For 94% of intervention women and 93% of control women who provided baseline data after randomization, our overall approach was an intention-to-treat analysis whereby women were analyzed using their initial group assignment, irrespective of their actual participation in the intervention. All regression analyses were conducted using Stata 10.1 (StataCorp, College Station, Texas).

Summary statistics were generated for the intervention and control groups to describe maternal baseline characteristics. Group differences in baseline characteristics were tested using Pearson χ^2 tests for nominal variables and *t* tests for continuous variables. Rates of IPV for both groups at each point and unadjusted incidence rate ratios (IRRs) were calculated.

Analyses were conducted to determine the extent of missingness in covariates and outcomes over time. Individual follow-up interviews were missing for 2 reasons: (1) attrition, ie, mother's departure from the study; and (2) mother remained in the study through the final interview but missed earlier individual interviews. To reduce bias due to missingness and loss to follow-up, missing data were imputed with 20 imputations using multiple imputation by chained equations.[29,30] As per the default for multiple imputation by chained equations in Stata, each missing variable was regressed on all other variables. We report results of regression models using imputed data.

A negative binomial regression model, which accounts for overdispersion (variance greater than mean), for cross-sectional panel data was selected because of the skewed distribution of IPV acts.[31] Repeated measures of women at multiple times violates the independence assumption required for regression. To address this nonindependence, we treated each woman's multiple measures as clustered data. Analyses of IPV acts over time within a woman suggested that there was variation, and thus, a random effect was added to the model to allow a unique intercept for each participant.

Primary analyses compared total rates of IPV victimization and perpetration (in separate models) between intervention and control group women when children were (1) 1 to 3 years of age and separately when they were (2) 7 to 9 years of age. Additional analyses compared the rates of specific IPV types between intervention and control women during the same 2 periods. All models adjusted for nonequivalence, defined as a *P* value $<.20$, between the intervention and control groups' baseline sociodemographic characteristics including past-year alcohol use (dichotomous), maternal mental health (dichotomous), and past-year employment (dichotomous). Child age (continuous) was included to model time. Because of concern that study site might be a confounder, we also adjusted for site (categorical) in all analyses. Models examining total IPV victimization and perpetration controlled for baseline IPV (continuous).

We conducted 2 sensitivity analyses. For all reported analyses, women with no partner were coded as no IPV. However, the first sensitivity analysis was conducted to test whether omitting women who reported no intimate partner in the past year resulted in similar findings compared with our approach of coding these women as having no IPV in the past year. Second, we conducted a sensitivity analysis to test whether the exclusion of outliers, ie, women with greater than 100 IPV events at any interview, resulted in similar findings to regression models including these women.

HUMAN SUBJECTS

The randomized controlled trial and the current analyses were approved by our institutional review boards. The randomized controlled trial also was approved by the Hawaii Department of Health and the 6 recruitment hospitals.

RESULTS

After consenting, 270 women in the control group and 373 women in the intervention group completed the baseline interview (**Figure 1**). Of these 643 women, 86% in the control group and 91% in the intervention group completed the final interview when the child was 9 years of age. Compared with women remaining in the study, women lost to follow-up were more likely to be Asian (44% vs 26%) and less likely to be Native Hawaiian (20% vs 35%). Differences in the distributions of other baseline characteristics were minimal. Comparing the 39 lost-to-follow-up control women vs the 33 lost-to-follow-up intervention women, a lower proportion of the control group were employed at baseline (44% vs 70%).

In addition to missingness from attrition, some mothers who remained in the study and completed the final interview missed earlier individual interviews. Considering the 2 sources of interview missingness, interviews were obtained for 89% of intervention mothers when the child was aged 1 year, 86% at 2 years, 87% at 3 years, 73% at 7 years, 78% at 8 years, and 78% at 9 years of age. For control mothers, the proportions were 86%, 87%, 83%, 69%, 71%, and 69%. Eight percent of participants had missing baseline covariate data, and 2% of participants or less had response-item missingness for the outcome.

PARTICIPANT CHARACTERISTICS

At baseline, the mean (SD) past-year rates of IPV by group were as follows: (1) intervention group: victimization, 4.2 (12.0) acts and perpetration, 10.5 (22.0); and (2) control group: victimization, 5.7 (16.1) and perpetration, 10.4 (21.6). Baseline characteristics of the intervention and control groups were similar, except that a lower proportion of intervention women had problem alcohol use (40% vs 48%) and poor mental health (43% vs 50%), and a higher proportion were employed in the past year (52% vs 44%) (**Table 1**).

At each of the 6 follow-up interviews, the majority of women reported being in an intimate relationship, and the proportion of women in the intervention and control groups not in relationships was similar (all *P* values $>.30$).

MATERNAL IPV VICTIMIZATION AND PERPETRATION

Confirmatory factor analyses suggested a good fit (Comparative Fit Index=0.95; root mean square error of approximation=0.08) to the underlying data model generated previously for the CTS2. The unadjusted average rates (number of IPV acts per 1 person-year) of maternal IPV victimization and perpetration at each follow-up point by group are illustrated in **Figure 2** and **Figure 3**. The distribution of all IPV rates at all points

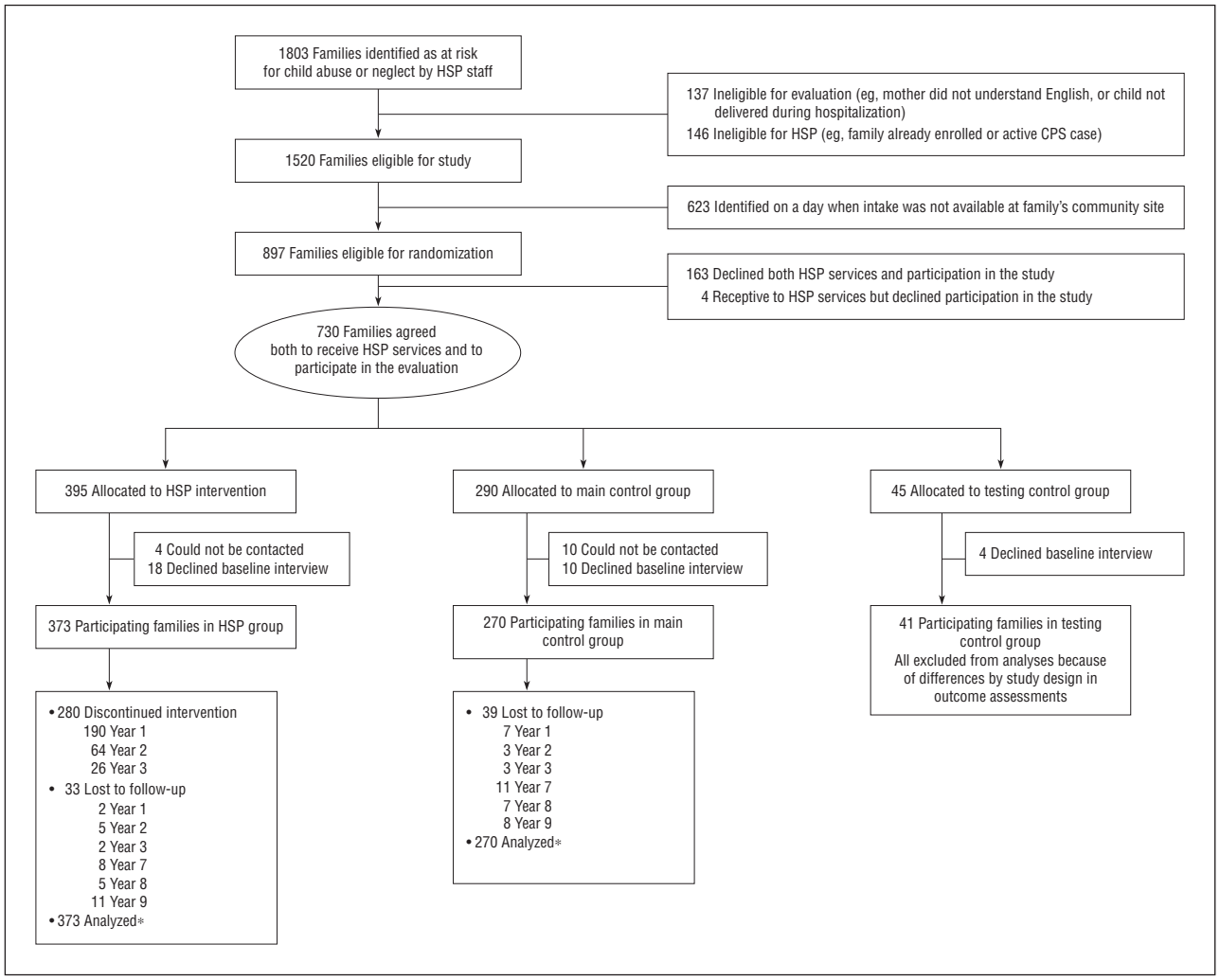

Figure 1. Participant flow through recruitment, intervention, and follow-up. *Multiple imputation used to decrease bias from loss to follow-up. CPS indicates Child Protective Services; HSP, Healthy Start Program.

was skewed, with the majority of women reporting no IPV over the prior year (**Table 2**).

During the 3 years of program implementation, intervention group women reported lower unadjusted rates of IPV victimization (21%) and lower rates of IPV perpetration (34%) as compared with the control group women (**Table 3**). Adjusting for potential confounders, these findings persisted (Table 3) and the intervention group women reported lower rates of maternal IPV victimization (IRR, 0.86; 95% confidence interval [CI], 0.73-1.01) and significantly lower rates of maternal IPV perpetration (IRR, 0.83; 95% CI, 0.72-0.96) compared with control women. Intervention group women reported consistently lower unadjusted rates of maternal victimization and perpetration across all specific IPV types compared with control women. In adjusted analyses, intervention group women showed significantly lower rates of physical assault victimization (IRR, 0.85; 95% CI, 0.71-1.00) and perpetration (IRR, 0.82; 95% CI, 0.70-0.96).

Over long-term follow-up, the unadjusted IRRs showed a 16% decrease in overall maternal IPV victimization and a 2% decrease in maternal perpetration among intervention women compared with control women (Table 3). After adjusting for potential confounders, there were small decreases in the overall IRRs of maternal IPV victimization (IRR, 0.95; 95% CI, 0.77-1.17) and perpetration (IRR, 0.98; 95% CI, 0.79-1.22). The unadjusted IRRs for the specific types of IPV were mixed. The adjusted IRRs were lower for the intervention vs control group for physical abuse, sexual abuse, and injury but were higher for verbal victimization (IRR, 1.14; 95% CI, 0.97-1.34) and perpetration (IRR, 1.08; 95% CI, 0.92-1.26).

Two sensitivity analyses were conducted. The first omitted women reporting no intimate partner in the past year and the findings were quantitatively and qualitatively similar to results in which these women were coded as having no IPV. The second sensitivity analysis omitted women with more than 100 IPV events at any interview and also yielded similar results to modeling including these women.

COMMENT

When compared with a control group, participation in the Hawaii HSP was associated with significantly re-

Table 1. Baseline Maternal Characteristics by Group

Characteristics	No. (%) Control Group (n=270)	No. (%) Intervention Group (n=373)	*P* Value[a]
Age, y			
≤18	65 (24)	78 (21)	.61
19-25	121 (45)	178 (48)	
≥26	84 (31)	117 (31)	
Race			
Native Hawaiian or Pacific Islander	88 (33)	127 (34)	.70
Asian or Filipino	75 (28)	103 (28)	
White	36 (13)	39 (10)	
No primary ethnicity or other	71 (26)	104 (28)	
Education			
High school graduate	174 (64)	257 (69)	.24
Mother–father of baby relationship			
No relationship	34 (13)	35 (10)	.43
Friends/dating	98 (37)	128 (35)	
Living together, not married	78 (29)	108 (29)	
Married	57 (21)	94 (26)	
Problem alcohol use[b]	129 (48)	148 (40)	.04
Drug abuse[c]	41 (15)	47 (13)	.34
Poor mental health[d]	136 (50)	159 (43)	.05
Employed in the past year	119 (44)	194 (52)	.05

[a] Obtained using Pearson χ^2 test for nominal variables.
[b] Measured by self-report of alcohol use and 2 or more positive responses to the 4 CAGE questions.[28]
[c] Measured by any self-report of illicit drug use.
[d] Measured using the 5-item Mental Health Index.[26] A cutoff of less than 67 defined poor mental health.

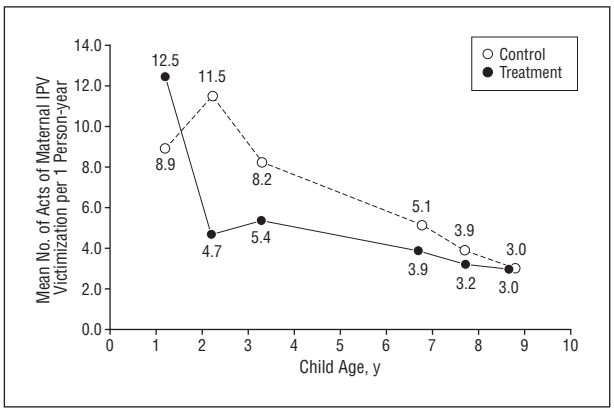

Figure 2. Mean rates (number of acts per 1 person-year) of maternal intimate partner violence (IPV) victimization by treatment group at each point of follow-up. Follow-up occurred annually from child age 1 to 3 years and then annually when the child was aged 7 to 9 years. The x-axis shows the average child age at each follow-up point. Baseline IPV is not included because the instrument used (Conflict Tactics Scale 1) at this point differed from the instrument used (Conflict Tactics Scale 2) at all other points.

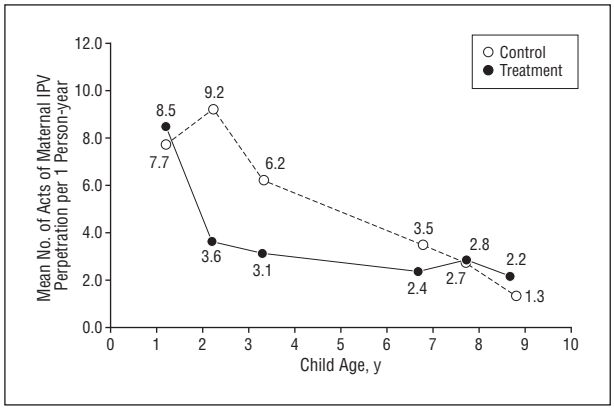

Figure 3. Mean rates (number of acts per 1 person-year) of maternal intimate partner violence (IPV) perpetration by treatment group at each point of follow-up. Follow-up occurred annually from child age 1 to 3 years and then annually when the child was aged 7 to 9 years. The x-axis shows the average child age at each follow-up point. Baseline IPV is not included because the instrument used (Conflict Tactics Scale 1) at this point differed from the instrument used (Conflict Tactics Scale 2) at all other points.

Table 2. Example of Distribution of IPV Acts: IPV Victimization Rates for the Child's First Year of Life by Intervention Group

Rate of Past-Year IPV Victimization	No. (%) Control Group (n=226)[a]	No. (%) Intervention Group (n=328)[a]
0	123 (55)	185 (56)
1	12 (5)	21 (6)
2	12 (5)	12 (4)
3-5	21 (9)	19 (6)
6-10	20 (9)	32 (10)
11-20	15 (7)	18 (5)
21-50	16 (7)	22 (7)
51-100	3 (1)	9 (3)
>101	4 (2)	10 (3)

Abbreviation: IPV, intimate partner violence.
[a] These data are nonimputed such that each year women are missing either because of attrition, noninterview at the 1-year interview, or item-level missing data.

duced maternal IPV perpetration for the child's first 3 years of life. Maternal IPV victimization also decreased during this period. Considering specific types of IPV, maternal perpetration of and victimization from physical assault were significantly reduced among intervention women compared with control women. Sexual violence, verbal abuse, and injury were not significantly associated with group assignment, though low prevalence of sexual abuse and injury may have impacted our ability to detect an association for these IPV types. Over long-term follow-up, overall rates of IPV decreased in both groups, but differences between groups were no longer statistically significant. Verbal abuse may have increased in the intervention group.

Our results first should be contrasted with the Duggan et al conclusion that HSP did not reduce partner psychological abuse (odds ratio, 1.05; 95% CI, 0.81-1.36), physical abuse (odds ratio, 0.83; 95% CI, 0.63-1.09), or injury (odds ratio, 0.81; 95% CI, 0.59-1.10) in the 3 years of program implementation.[15] In those analyses, the 3 specific IPV types were dichotomized as present/absent. In contrast, we considered IPV as a count variable, and analyses tested for a difference in rates between groups. Significant differences in IPV may not have been detected in Duggan et al because dichotomizing an inherently continuous/count variable leads to information loss that decreases power.[32] Using rates also is preferable because the cut point of number of IPV acts where a relationship

Table 3. Average Incidence Rates and Unadjusted[a] and Adjusted[a] IRRs of Maternal IPV[b] During Two 3-Year Periods

	3 Years of Program Implementation[c]				Long-term Follow-up[c]			
	Average Incidence Rate of IPV Acts per Person-year				Average Incidence Rate of IPV Events per Person-year			
	Intervention Group	Control Group	Unadjusted IRR of IPV Events	Adjusted IRR (95% CI)	Intervention Group	Control Group	Unadjusted IRR of IPV Events	Adjusted IRR (95% CI)
Overall Maternal IPV Victimization and Perpetration								
Maternal victimization	7.50	9.55	0.79	0.86 (0.73-1.01)	3.35	4.01	0.84	0.95 (0.77-1.17)
Maternal perpetration	5.08	7.72	0.66	0.83 (0.72-0.96)	2.45	2.51	0.98	0.98 (0.79-1.22)
Specific Types of Maternal IPV Victimization and Perpetration								
Maternal victimization								
Physical assault	5.23	6.68	0.78	0.85 (0.71-1.00)	2.32	2.72	0.85	0.87 (0.70-1.09)
Verbal abuse	18.35	20.86	0.88	0.97 (0.87-1.10)	14.90	13.39	1.11	1.14 (0.97-1.34)
Sexual violence	1.13	1.21	0.93	1.02 (0.81-1.28)	0.50	0.48	1.05	0.83 (0.56-1.22)
Injury	1.18	1.67	0.71	0.86 (0.67-1.12)	0.55	0.88	0.63	0.78 (0.56-1.08)
Maternal perpetration								
Physical assault	4.23	6.29	0.67	0.82 (0.70-0.96)	2.01	2.05	0.98	0.93 (0.73-1.19)
Verbal abuse	18.39	21.59	0.85	0.98 (0.87-1.11)	15.77	15.40	1.02	1.08 (0.92-1.26)
Sexual violence	0.33	0.45	0.73	0.99 (0.71-1.37)	0.12	0.22	0.55	0.72 (0.45-1.14)
Injury	0.54	0.98	0.55	0.80 (0.61-1.06)	0.33	0.25	1.32	0.78 (0.56-1.10)

Abbreviations: CI, confidence interval; IPV, intimate partner violence; IRR, incidence rate ratio.

[a] Intimate partner violence rates by group and unadjusted IRRs calculated using nonimputed data. Adjusted analyses used negative binomial regression modeling with a random intercept with imputed data adjusting for child age (continuous term), program site, and maternal mental health (dichotomous), problem alcohol use (dichotomous), and past-year employment (dichotomous) with control group as the referent. Overall IPV rates were also adjusted for baseline IPV (continuous term).

[b] Measured using the Revised Conflict Tactics Scale.[23-25]

[c] The values for the 3 years of program implementation reflect the first 3 years of the child's life, during which time the intervention was ongoing. The values for long-term follow-up reflect the program's impact when the child was approximately 7 to 9 years of age.

is considered to "have IPV" is arbitrary and generally not evidence based.

To our knowledge, this is the first randomized controlled trial to describe an intervention that decreases rates of female-perpetrated IPV. Published surveys cite that female-perpetrated IPV is a significant public health problem.[33,34] Some argue that men's and women's violence should not be considered equivalent because of different contexts, etiologies, and consequences.[35] Others emphasize that all violence is detrimental and that minor acts of female-perpetrated violence increase risk of severe male-perpetrated violence.[36]

Theoretical debates aside, reducing female-perpetrated IPV likely benefits public health in general and child health specifically. Children exposed to IPV are at increased risk for myriad adverse health consequences; compared with peers, IPV-exposed children incur greater health care costs, are underimmunized, and have worse social/emotional health.[6-9] Exposure to maternal IPV perpetration may pose unique threats to children's health. For example, a recent study by McDonald et al[9] found that maternal IPV perpetration predicted child externalizing problems after controlling for male IPV perpetration.

Two issues complicate interpretation of how home visiting might have influenced IPV: (1) program IPV content was minimal; and (2) few families participated in the expected number of home visits. Prior publications about HSP implementation document that home visitors frequently failed to recognize IPV and seldom linked abused women to community resources.[15] The HSP model specified that families should initially receive weekly home visiting and that the intervention should last at least 3 years. Healthy Start Program home visitors struggled to maintain visit frequency and retain families.

Despite these program limitations, 2 important elements of the home visiting program might have contributed to the decrease in IPV: (1) the home visitor–mother relationship and (2) encouragement of self-efficacy. Mothers in the intervention group trusted their home visitor, and this relationship likely provided social support and decreased isolation.[14] Mothers espoused the belief that their home visitor helped them to "set goals and make a plan for reaching them."[14] When the children were 2 years of age, intervention mothers reported significantly greater parenting efficacy and tended to report less parenting stress[14]; these outcomes parallel the point at which we observed the greatest drop in IPV for the intervention group.

Intimate partner violence interventions for abused and partner-aggressive women similarly focus on promoting interpersonal relationship skills and bolstering self-efficacy.[37,38] For example, Sullivan and Bybee[38] randomized women leaving an IPV shelter to a control group or to advocacy counseling, which included improving social support and self-efficacy. Women randomized to advocacy counseling demonstrated significant reductions in reabuse.

There was a general decline in overall rates of IPV over time for both groups. However, when the children were 7 to 9 years of age, the intervention group did not report significantly lower rates of IPV victimization or perpetration than the control group. Verbal abuse may have

increased for the intervention group. The decreasing rates of IPV over time for both is consistent with literature documenting that IPV prevalence is highest for young women.[1,39] Additional home visits during the child's school-aged years may promote further reductions in overall IPV rates, though rates of verbal abuse should be carefully monitored.

These results must be interpreted in light of important limitations. Women self-reported their own and their partner's IPV over the past 12 months; this duration of recall may be prone to error.[40] Although the CTS2 has been widely validated, there is no "gold standard" from which to determine the accuracy of self-reported IPV. Intervention group women may have felt compelled to portray themselves positively and may have underreported IPV. However, interviews were conducted by blinded research assistants who were not involved in delivering the intervention, and intervention women commonly disclosed other equally sensitive information. Despite randomization, baseline differences existed between the groups. Although we accounted for these differences, unmeasured confounders may remain.

Our findings of an association between Hawaii HSP early-childhood home visitation and decreased rates of IPV during the 3 years of program implementation are encouraging but should be interpreted cautiously. A variety of early-childhood home visitation programs serve high-risk families; each of these models differs with regard to program content, home visitor training, and frequency and duration of visits. Future research should determine whether similar decreases occur in other early-childhood home visiting programs and should investigate which elements of the program may lead to reductions.

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Author Contributions: Dr Bair-Merritt had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Fuddy and Duggan. *Acquisition of data:* McFarlane, Fuddy, and Duggan. *Analysis and interpretation of data:* Bair-Merritt, Jennings, Chen, Burrell, and Duggan. *Drafting of the manuscript:* Bair-Merritt, Jennings, and McFarlane. *Critical revision of the manuscript for important intellectual content:* Bair-Merritt, Jennings, Chen, Burrell, McFarlane, Fuddy, and Duggan. *Statistical analysis:* Bair-Merritt, Jennings, Chen, and Burrell. *Obtained funding:* Duggan. *Administrative, technical, and material support:* Burrell, McFarlane, and Duggan. *Study supervision:* Duggan.
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Announcement

Submissions. The Editors welcome contributions to Picture of the Month. Submissions should describe common problems presenting uncommonly, rather than total zebras. Cases should be of interest to practicing pediatricians, highlighting problems that they are likely to at least occasionally encounter in the office or hospital setting. High-quality clinical images (in either 35-mm slide or electronic format) along with parent or patient permission to use these images must accompany the submission. The entire discussion should comprise no more than 750 words. Articles and photographs accepted for publication will bear the contributor's name. There is no charge for reproduction and printing of color illustrations. For details regarding electronic submission, please see: http://archpediatrics.com.