

Limiting Home Visiting Effects: Maternal Depression as a Moderator of Child Maltreatment

abstract

OBJECTIVE: To test, with a sample of adolescent mothers (16–20 at childbirth) and their first-born infants/toddlers (average age 1 year), whether the impact of a home visiting (HV) child maltreatment prevention program was moderated by maternal depression.

METHODS: The study design was a randomized controlled trial of Healthy Families Massachusetts, a statewide child maltreatment prevention program. A total of 707 first-time mothers were randomly assigned to the HV or control group. The HV group received visits from paraprofessional home visitors. Mothers in the control group were referred to other service providers. The outcome variable consisted of state Child Protective Services reports of child abuse and neglect (mother or other person as perpetrator). Maternal depression was assessed by maternal report (Center for Epidemiologic Studies-Depression questionnaire).

RESULTS: A considerable proportion of families had child maltreatment reports (30% of sample) and maternal depression (38% had clinically significant symptoms). Most maltreatment was neglect. Among control group mothers, reports of maltreatment did not vary according to depressive symptoms. For HV mothers, probability of reports varied with levels of depressive symptoms. Nonsymptomatic HV mothers were less likely to have a child who was reported for maltreatment compared with HV mothers who endorsed clinical levels of depressive symptoms.

CONCLUSIONS: The prevalence of maternal depressive symptoms in this sample, and the link between depression and child maltreatment prevention program effectiveness, suggest that home visitors be alert to maternal depression. Programs also should be aware of possible surveillance effects related to maternal depression. *Pediatrics* 2013;132:S126–S133

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KEY WORDS

child maltreatment, maternal depression, home visiting

ABBREVIATIONS

CES-D—Center for Epidemiologic Studies-Depression

CPS—Child Protective Services

DCF—Department of Children and Families

HFM—Healthy Families Massachusetts

HV—home visiting

TC—target child

T1—time 1

T2—time 2

T3—time 3

Dr Easterbrooks conceptualized and designed the study, drafted the initial introduction section, and reviewed and revised the methods, results, and discussion sections; Dr Bartlett drafted the initial introduction and discussion sections; Dr Raskin participated in data collection, conducted data analyses, and drafted the initial methods and results sections; Dr Goldberg participated as project director, participated in drafting the introduction, and critically reviewed the manuscript; Ms Contreras participated in data collection, conducted data analyses, and participated in drafting the results; Ms Kotake conducted data analyses and participated in drafting the results; Dr Chaudhuri participated in and supervised the data collection and contributed to data analysis; Dr Jacobs conceptualized the study and critically reviewed the manuscript; and all authors approved the final manuscript as submitted.

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Child maltreatment is a serious public health concern because of its prevalence and considerable consequences for children's health, development, and well-being.^{1–6} In 2010, an estimated 754 000 children were victims of abuse and neglect, and ~3.3 million children were referred to Child Protective Services (CPS). More than one-third (34%) of these children were younger than 3 years of age, and the majority (78%) experienced neglect,⁶ which can have more serious consequences than other forms of maltreatment.^{7–10} The deleterious effects of maltreatment early in life extend throughout childhood and into adulthood¹¹; impacts are physical (impaired brain development, chronically activated stress response system, poor physical health), psychological (poor mental health, social and school difficulties, cognitive deficits), and behavioral (juvenile delinquency, substance abuse, teen pregnancy).^{2,12,13}

Children born to adolescent mothers are at risk for maltreatment^{14,15}; estimates of the percentage of maltreated children living with an adolescent mother are as high as 50%.¹⁶ Further, the association between adolescent parenting and child neglect is particularly strong,^{17–19} especially during the first 3 years of life,^{19,20} adding weight to the considerable body of research suggesting that intervention/prevention programs for young parents should begin as early as possible.¹³

Home visitation is a broadly implemented service strategy aimed at preventing child abuse and neglect.^{21–24} Although there are differences among models, most endorse the idea that supporting parents will improve the safety and well-being of their children. Home visitation typically offers parents regular, one-on-one visits during which home visitors provide information (eg, regarding infant nutrition, home safety), psychoeducational training (eg, to build childrearing skills and positive parent-

child relationships, maintain maternal health), referrals, and case management services related to parenting.^{25,26} Recent federal legislation (the Patient Protection and Affordable Care Act of 2010) provides \$1.5 billion over the next 5 years to expand evidence-based home visitation programs to at-risk pregnant women and newborns.

Despite this general enthusiasm for home visiting (HV), meta-analyses suggest that program effects often are modest and may not result in significant reductions in child abuse and neglect.^{27–35} Some home visitation experts caution that potential program impacts on maltreatment may be obscured by “surveillance effects” because families receiving home visitation (ie, the intervention group) have regular contact with professionals or paraprofessionals who might identify and report instances of maltreatment, whereas families not participating in the program (ie, the control group) are not exposed to the same level of scrutiny.^{24,36}

The mixed nature of findings for these home visitation programs suggests that the next step is to determine which program strategies work best for whom and under what conditions.³¹ Services may be particularly effective for some subgroups of participants but have little impact with others.^{37–41} First-time adolescent mothers appear to be especially amenable to intervention through home visitation.^{39,42} On the other hand, maternal depression, common among young mothers and a risk factor for maltreatment, may impede the ability of programs to reduce child abuse and neglect.^{21,22,36,43–45}

Maternal depression increases the risk for parenting difficulties and is strongly associated with child maltreatment.^{15,46–50} Of parents investigated by CPS whose children remain in their custody, an estimated 25% report having experienced major depression within the past year.⁵¹ In addition, many more

young mothers likely experience symptoms (eg, hopelessness, negative attributions of self and others, social disengagement) that operate at the subclinical level but that may impact their daily functioning and parenting, as well as their ability to participate in, and benefit from, home visitation.

Our study examined whether maternal depression moderated the effectiveness of a HV program for young parents in preventing child maltreatment. Given the inconclusive nature of the literature, we framed our analyses as research questions rather than as hypotheses. First, we assessed the impact of Healthy Families Massachusetts (HFM), a statewide child maltreatment prevention HV program for young, first-time mothers (age 20 and younger) and their children (prenatal to age 3), on CPS child maltreatment reports by using a randomized, controlled trial design. Second, we investigated whether maternal depression moderated the impact of the program on child maltreatment.

METHOD

Study Design

Data were drawn from a longitudinal randomized, controlled trial of HFM, a statewide paraprofessional HV program designed to (1) prevent child abuse and neglect by supporting positive, effective parenting; (2) promote optimal health, growth, and development in infancy and early childhood; (3) encourage educational attainment, job, and life skills among parents; (4) prevent repeat pregnancies during the teenage years; and (5) promote parental health and well-being.

This research was approved by the Institutional Review Board of Tufts University. Participants gave written informed consent and signed a release allowing researchers to access their administrative data from the state child protective services (CPS) agency, the

Massachusetts Department of Children and Families (DCF).

Sample

Eligibility criteria for study participation included being female, 16 years of age or older, having received no HFM services in the past, speaking either English or Spanish, and being cognitively able to provide informed consent. Women seeking HFM services were randomly assigned to either the HV group (home visiting services [HVS]) or the control group (resource and information only [RIO]). A sample of 837 mothers was recruited; 707 (84%) participated in the research. Table 1 compares the HV and control groups on a series of mother, child, and family socioeconomic characteristics. There were no group differences with the exception of race/ethnicity: there were a higher percentage of Hispanic mothers in the HV group and more white mothers in the control group.

As noted below, analyses controlled for maternal race/ethnicity as appropriate.

Procedures

Participants completed interviews at 3 time points: enrollment (time 1 [T1]), 12 months after enrollment (time 2 [T2]), and 24 months after enrollment (time 3 [T3]). The complete protocol is described elsewhere.⁵² Measures used for this article were administered at T1 and T2 and are described below.

Dependent Variable

We assessed victimization of the first-born child of participating mothers (referred to as target child [TC]) by using public agency data. Records pertaining to allegations of child maltreatment of the TC were obtained from the DCF and included information on the kind of maltreatment report (eg, maltreatment type, substantiated or not), the perpetrator (eg, mother as

perpetrator or other person as perpetrator), and the timing of reports. Only records covering the time period after participants enrolled in the study were used.

A binary dependent variable was created indicating whether the children of participating mothers had been reported as victims of maltreatment after mothers' enrollment into the study. Possible categories of maltreatment included physical abuse, sexual abuse, neglect, congenital drug addiction, and emotional maltreatment; no cases of emotional maltreatment were reported. Following recommendations in the field,¹⁷ reports of congenital drug addiction were recoded as child neglect. A "case" of child maltreatment refers to a child who has 1 or more reports of child maltreatment. That is, the child may have had a single report at one time, or more than 1 reports at multiple points in time. A single report connotes a single instance of child maltreatment regardless of how many individuals contacted CPS. There were 204 cases of maltreatment; 98% were categorized as neglect, physical abuse, or both. Additionally, the maltreated group included 5 cases in which, in addition to neglect or physical abuse, the child experienced an unsubstantiated case of sexual abuse. Children whom we classified as maltreated included those who had reports alleging maltreatment by any perpetrator (mother or other).

To summarize, the dependent variable distinguished mothers of (a) maltreated TC ($N = 204$; 30%), ie, those with reports of neglect, physical abuse, or a combination of these types occurring after participants enrolled into the study, regardless of report resolution (substantiated or not) or the identity of the perpetrator (mother or other person); and (b) nonmaltreated TC ($N = 483$, 70%), ie, children with no such reports.

TABLE 1 Mother, Child, and Family Characteristics

Characteristic	HV Group	Control Group
Maternal characteristics		
Age (in years) at childbirth	18.69 (SD = 1.28)	18.78 (SD = 1.23)
Race, %		
White	34.2	41.4
African American (non-Hispanic)	20.6	17.7
Hispanic	38.3	30.5
Other (non-Hispanic)	6.9	10.5
Relationship status, %		
Single	34.1	34.1
Dating	24.7	26.2
Committed	41.2	39.7
Living arrangements, %		
Lives alone with child	10.6	7.4
Lives with others	89.4	92.6
Child characteristics		
Age (in months) at T2	12.05 (SD = 5.27)	11.75 (SD = 5.65)
Boy, %	52.9	54.4
Socioeconomic factors, %		
Mother welfare recipient	60.1	55.3
Mother employed	26.5	28.7
Father supports financially	59.9	54.9
Financial difficulties, %		
No difficulties	11.3	12.6
Few difficulties	25.6	21.9
Some difficulties	51.5	47.0
Major difficulties	11.6	17.7

Independent Variables

Maternal Depression

The Center for Epidemiologic Studies-Depression (CES-D) scale¹ was used to measure depressive symptomatology at T1 and T2. The 20-item CES-D scale assesses symptoms experienced during the past week (eg, “I felt that I could not shake off the blues even with help from my family or friends”) rated on a 4-point Likert scale (0 = not at all, 3 = a lot). An overall score, reflecting severity of symptoms, was created by summing the 20 items. Scores of 16 or higher are considered to be “clinically significant.”⁵³

The CES-D scale has demonstrated strong psychometric properties in both clinical and epidemiologic studies with diverse groups, including both adolescents and postpartum women.^{53,54} The reliability and validity of the CES-D scale is well-established, with 100% sensitivity with a clinical diagnosis, and 88% specificity.^{1,55} Cronbach's α of the scale in this study was 0.89.

Covariates

In addition to controlling for HV (=1) or control (=0) group membership, other covariates included mother's age at childbirth, mother's race (white = 1, African American = 2, Hispanic = 3, or Other [eg, Asian] = 4), and the count of various parenting services mothers reported using from pregnancy until the T2 interview (eg, Early Head Start, Early Intervention, parenting classes or groups, or any non-HFM HV programs).

Statistical Analyses

Statistical analyses were performed by using IBM SPSS version 20.0 (IBM SPSS Statistics, IBM Corporation). The study was based on an intent-to-treat design, comparing HV and control group participants regardless of whether HV mothers actually received services. Differences in demographic variables between study groups were assessed

by using χ^2 tests for categorical variables and 2-sided *t* tests for continuous variables. We used a binary logistic regression model to investigate the effect of maternal depression at T2 on the odds of participants being mothers of maltreated TC, controlling for depression at T1, HV group membership, and the covariates. All continuous predictors were centered around the sample mean to assist interpretation.

RESULTS

Prevalence of Child Maltreatment

Approximately 30% ($N = 204$) of children had DCF maltreatment reports; the average number of combined unsubstantiated and substantiated reports ranged from no reports to 8 reports per child. For the majority of children who were victimized, the mother was identified as a perpetrator in at least 1 report (81%). Approximately 71% ($N = 145$) of the reports were substantiated by the DCF; the number of substantiated reports ranged from no reports to 4 reports. The vast majority of both substantiated and unsubstantiated reports were child neglect; of 204 total reports, 84% concerned neglect only, and of the 145 substantiated cases, 95% were substantiated cases of neglect only. There were no differences in rates of maltreatment between the HV and the control groups ($P = 0.769$).

Prevalence of Maternal Depression

High levels of depressive symptoms were prevalent in this sample: at T1, 38% ($N = 253$) of the mothers had scores above the clinical cutoff point. Although average depressive symptoms decreased significantly ($t_{528} = 3.42$, $P < .001$) from T1 (mean = 14.12, SD = 10.60) to T2 (mean = 12.55, SD = 10.15), a third of the sample (31%, $N = 116$) had clinical levels of symptoms at T2.

The HV and control groups differed significantly on depressive symptoms

at both time points. At T1, the HV group had lower symptomatology (mean = 13.37, SD = 10.05) than the control group (mean = 15.72, SD = 11.34; $t_{672} = 2.82$, $P < .005$). There was a larger proportion of mothers with clinical levels of depression at T1 in the control group (43%, $N = 113$) than in the HV group (34%, $N = 140$; $P = .028$). Mothers in the control group reported higher average levels of depressive symptomatology at T2 (mean = 13.96, SD = 11.19) than did mothers in the HV group (mean = 11.59, SD = 9.29, $t_{535} = 2.68$, $P < .005$). However, at T2 there was no group difference in the proportions of mothers with clinically significant symptoms levels (28% HV, $N = 88$; 36% control, $N = 78$; $P = .058$).

Effect of Maternal Depression on Probability of Child Maltreatment

Results of the logistic regression modeling the probability of the child being reported as a victim of maltreatment are summarized in Table 2. The effect of maternal depression at T2 on the probability of victimization differed for mothers who received HV and those who did not, after controlling for the mother's age at childbirth, her race, and severity of depression at T1. Figure 1 reveals that, while for control group mothers, the probability that a report occurred remained relatively stable (~ 0.40) at differing levels of depression, for HV mothers, the probability of reports occurring changed considerably depending on levels of depressive symptoms. Specifically, nonsymptomatic HV mothers were less likely to have children who were reported for maltreatment compared with HV mothers who endorsed clinical levels of depressive symptoms. The probability of having a child report of maltreatment surpassed 0.50 in HV mothers whose symptoms were above a score of 27.

Additionally, Table 2 reveals that, controlling for other variables in the model, maternal race predicted probability of

TABLE 2 Participation in an HV Program Moderates the Probability of Child Maltreatment at Differing Levels of Maternal Depression

	OR (95% CI)
Intercept	0.05
HV group	0.86 (0.57–1.31)
Age at birth of child	0.93 (0.79–1.10)
Race	
African American ^a	0.44 (0.25–0.78)
Hispanic ^a	0.38 (0.21–0.62)
Other nonwhite ^a	0.46 (0.21–0.98)
Use of other services for parents	1.55 (1.24–1.93)
Depression at T1	1.01 (0.98–1.03)
Depression at T2	1.00 (0.97–1.03)
HV group × Depression at T2	1.05 (1.01–1.09)

CI, confidence interval; OR, odds ratio.

^a White is the reference group.

child maltreatment reports, with children of white mothers being more likely to be reported to the DCF as a victim than children of African American, Hispanic, and other nonwhite mothers. Other predictors held constant, the estimated odds that a child of an African American mother would have a report were 0.44 times the odds of a child of a white mother; for a child of a Hispanic mother, the odds were 0.38 times the odds of a child of a white mother, and for a child of a mother of other nonwhite race the odds were 0.46 times the odds of a child of a white mother.

The probability of being reported as a victim of maltreatment was also higher for children whose mothers used more services for parents. When other variables in the model were held constant, with every additional parenting service used, the estimated odds that a child had a report increased by 1.55.

DISCUSSION

The results of this study revealed a high rate of child maltreatment among children of young mothers. Almost one-third (30%) of children (mean age 12 months) were reported as victims of

maltreatment to state CPS; in 81% of these cases, mothers were identified as perpetrators. In comparison, the US rate of child maltreatment in 2011 was 21 per 1000 for children younger than 1 year and 12 per 1000 for children between the ages of 1 and 2.⁵⁶ Substantiated cases of child neglect also occurred more frequently in our sample (95% of reports) than national figures suggest (79%).⁵⁶

Maternal depression was prevalent in our study as well. A substantial percentage (38%) of young mothers reported clinically significant depressive symptoms. This finding is in line with previous research establishing high rates of depression among young mothers enrolled in HV programs.^{57,58} Nevertheless, this is concerning given mounting evidence that maternal depression attenuates or dilutes treatment impact.^{22,39} Although some studies suggest that HV can reduce maternal depression,⁵⁷ and that it is a promising intervention for reaching depressed parents who might not otherwise gain access to the help they need,⁴⁴ the results of large-scale evaluations generally indicate that parental depression is a serious impediment to HV program effectiveness.²¹

Our study findings also revealed an association between maternal depression and child maltreatment, though the relation differed for mothers who received HV compared with mothers in the control group. Among nondepressed mothers, when controlling for maternal race and age at first birth, those in the HV program were less likely than those in the control group to have a child with a CPS report. This finding suggests that HFM is better able to be effective in meeting its goal of child maltreatment prevention among mothers who do not suffer from depression. For HV mothers who had clinical symptoms of depression, however, CPS reports and maternal depression increased in tandem, a finding that is

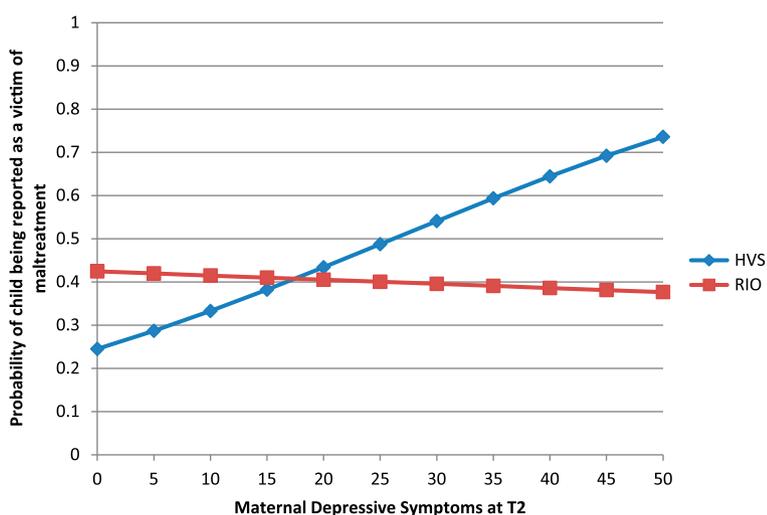


FIGURE 1

Prototypical plot illustrating the moderating effect of participation in an HV program on the relation between maternal depression and probability of child being reported to the DCF as a victim of maltreatment, for a 19-year-old white mother in the HV group, who used 1 parenting support service (eg, parenting classes). HVS, home visiting services; RIO, resources and information only.

consistent with a growing body of research revealing that children of depressed parents are at risk for experiencing insensitive, neglectful, and hostile caregiving.⁴⁸

The fact that maltreatment reports among the control group did not vary as a function of maternal depression is curious. This absence of effect may be explained, in part, by the relative lack of surveillance in the control group, when compared with the HV group. Based on early evaluation findings that many mothers suffered from depression,⁵⁸ HFM established a new program goal of supporting parental well-being, and provides training for home visitors to notice and address parental stress, anxiety, and depression. As a result, home visitors, who are mandated to report suspected maltreatment, may be keen observers of instances in which a mother's more acute depressive symptoms prevent her from providing adequate care for her child. Children of mothers in the HV group who reported milder symptoms of depression were less likely to have reports of maltreatment. There may be several reasons for this finding, including (1) mildly depressed mothers were able to parent effectively, and (2) the low levels of symptoms did not raise the concerns of home visitors enough to warrant reporting. Interestingly, for nondepressed mothers, those in the HV program were less

likely than those in the control group to have a child with a CPS report. Perhaps HFM reduced child maltreatment by nondepressed mothers at the same time that increased surveillance by home visitors aware of maternal distress resulted in increased reports for children of depressed mothers, in essence "washing out" program effects in this study.

The results of this study have important implications for HV efforts to prevent child maltreatment. A substantial body of literature suggests that maternal depression is positively associated with child abuse and neglect, but the specific mechanisms are less clear.^{45-47,48} In part, this is because child maltreatment is difficult to measure: CPS reports typically underestimate actual incidence because it is dependent on the vigilance of reporters, the resources of public agencies, and state statutes.⁵⁹ Cases of neglect, which constitute 97% of our maltreatment cases, are especially difficult to identify.

Limitations

In the current study, we chose to examine formal CPS reports of child maltreatment, whether they were substantiated. This approach could be considered a limitation of our study because it inflates the number of children affected (compared with substantiated reports, which were 71% of allegations), yet research suggests that

child outcomes are indistinguishable based on substantiation status.⁵⁹ In our study, surveillance by home visitors may have led to elevated reporting levels in the intervention group only,^{24,36} which may partially explain our finding that children of depressed mothers were reported more often in the intervention group than the control group. Indeed, the more services a young mother received, the higher the likelihood that her child was reported to be a victim of maltreatment.

Another limitation may be the question of generalizability beyond first-time young mothers of very young children. We do not know whether results would be similar for older mothers, or multiparous mothers, or for older children. Further, we do not know whether the greater likelihood of DCF reports for children of white mothers represents a greater surveillance effect among white mothers, or whether among these mothers' depressive symptoms had a more prominent effect on parenting, leading to maltreatment allegations.

Conclusions

Given considerable new investments in home visitation in the United States,²⁵ further attention from researchers, practitioners, and policymakers is needed to address maternal depression in the context of HV to increase the intervention's efficacy.

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