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# Prevalence, Trajectories, and Risk Factors for Depression Among Caregivers of Young Children Involved in Child Maltreatment Investigations

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## Abstract

This study examines depression among caregivers of young children involved in investigations of child maltreatment, in terms of 12-month prevalence of depression across 5 to 6 years. Data were from the *National Survey of Child and Adolescent Well-Being*, a national probability study of 5,501 children investigated for maltreatment. The study sample comprised 1,244 female caregivers (95.5% biological mothers) of children not placed out of home and younger than 5 years old. About a quarter of caregivers had, at any given point, a score indicating major depression in the previous 12 months; across all follow-ups, 46% of caregivers had a score indicating major depression at some point. Depression was associated with caregivers' report of intimate-partner violence and fair or poor health status. Caregivers of maltreated children are at substantial risk for depression that does not diminish over the course of 5 years. Assessing and providing assistance for intimate-partner violence and health problems may help decrease depression prevalence.

## Keywords

NSCAW, child welfare, caregivers' mental health

Child maltreatment data show that young children have the highest rates of victimization and death associated with maltreatment, with almost 80% of child fatalities occurring among children younger than 4 years of age (U.S. Department of Health and Human Services, 2008). As a way to focus on the needs of young maltreated children and their families, the federal Keeping Children Safe Act of 2003, which amended the Child Abuse and Prevention Treatment Act (CAPTA; Pub. L. No. 108–36), requires states to develop “provisions and procedures” for referring child maltreatment victims and their families to early intervention services. These families bring new challenges to the child welfare system (CWS) and early intervention services. Nevertheless, limited empirical knowledge is available about the mental health problems that afflict these families, and this needs to be addressed in the child welfare case plan and the Individualized Family Service Plan (IFSP) developed by early intervention services.

As the CWS moves in the direction of linking young children and their families with comprehensive services to prevent further maltreatment and reduce the number of children in out-of-home settings, it is crucial that the field moves toward a family-centered approach that understands the need to address caregivers' mental health challenges.

One critical challenge is depression in caregivers, but there is no information at the national level about the prevalence and correlates of depression among female caregivers of young children investigated for child maltreatment. This study analyzes caregivers' depression using the *National Survey of Child and Adolescent Well-Being* (NSCAW), the first nationally representative study of children investigated for maltreatment by the CWS. Through the study of the frequency, persistence, and change in depression over time among caregivers of young children, critical information can be obtained about depression and its correlates that should be considered in service planning for maltreated children and their families.

Maternal depression can be a risk factor for child abuse and neglect and may be common and enduring enough to pose a hazard to the well-being and development of young

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children involved with the CWS. Many young children are maltreated by their caregivers. Among children with substantiated cases of maltreatment in 2006, 58% were maltreated by women, and 80% by their parents (U.S. Department of Health and Human Services, 2008). Research has found that mothers with depression are more likely than mothers without depression to abuse and neglect their children (Berger, 2005; Chaffin, Kelleher, & Hollenberg, 1996; Kotch, Browne, Dufort, & Winsor, 1999; Sheppard, 1997; Windham et al., 2004). This is not surprising given that the physical, emotional, cognitive, and social manifestations of depression could result in mothers being unresponsive to their children's needs or responding aggressively to their children. This work is consistent with other research finding a relationship between maternal depression and negative cognitive, emotional, social, and behavioral outcomes for children (McCarty, Zimmerman, Diguseppe, & Christakis, 2005; Petterson & Albers, 2001) and between maternal depression and increased incidence of child psychopathology (Burke, 2003; Sullivan, Neale, & Kendler, 2000).

Several studies have reported that mothers with depression tend to feel overwhelmed by the daily care of their young children, are less vocal, respond more slowly to young children's cues, have a blunt affect, are less positive and more distant when interacting with their young children, are relatively inactive, display more hostility and irritability, and become frustrated more easily (Luby, 2000; Sameroff & Fiese, 2000; Wolfe, 1999). Moreover, mothers with depression frequently show lower self-regulation and poorer judgment; as a consequence, they risk higher rates of inadequate and neglectful parenting (Wolfe, 1999).

Young children often react to mothers with depression with anger, distress, withdrawal, avoidance, and disrupted emotional self-regulation, further complicating child care. Compared with children of nondepressed mothers, they tend to cry more and tend to be drowsy, fussy, more tense, less sociable, and more insecurely attached to their mothers (Field et al., 1988; Murray & Cooper, 1997; Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Weinberg & Tronick, 1998).

As children of mothers with depression reach school age, they also tend to have poorer mental, motor, and language skills development; less capacity to concentrate; fewer abilities across a broad spectrum of emotional skills; and more behavioral difficulties than children of nondepressed mothers (Murray & Cooper, 1997; Murray et al., 1996; NICHD Early Child Care Research Network, 1999; Petterson & Albers, 2001). It should be noted that maternal depression may be related to child difficulties both because of its effect on parenting and because of genetic links, because research suggests substantial heritability of depression (Sullivan et al., 2000).

Maternal depression and child maltreatment may also co-occur because of common causes. For example, intimate-partner violence (IPV) can lead to maternal depression (Eisenstat & Bancroft, 1999; Martin, Clark, Lynch, Kupper, & Cilenti, 1999; Roberts, Lawrence, Williams, & Raphael, 1998), and families with IPV are also at high risk for child maltreatment (Appel & Holden, 1998; Edleson, 1999). Economic problems may lead to depression (Belle & Doucet, 2003; Dearing, Taylor, & McCartney, 2004; Kessler et al., 2003; Riolo, Nguyen, Greden, & King, 2005) and also put children at risk for neglect (Sedlak & Broadhurst, 1996; Shonkoff & Phillips, 2000). It is even possible that child maltreatment may *cause* maternal depression if another adult is maltreating the child but the mother feels powerless to stop it.

### Prevalence Estimates of Depression

Depression is highly prevalent, especially among women. The lifetime prevalence of major depression in the general population is 16.6%, according to the *National Comorbidity Survey* (NCS), which measures major depression with the *Composite International Diagnostic Interview Short Form* (CIDI-SF; Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998), and is almost twice as high among women as among men (Kessler et al., 2003; Kessler, Berglund, et al., 2005). The 12-month prevalence for women is 6.7% (Kessler, Chiu, Demler, & Walters, 2005), with 12.4 million women affected each year in the United States, compared with 6.4 million men (National Institute of Mental Health, 2001; Wu & Anthony, 2000). Depression is common among mothers of young children; it is estimated that between 12% and 18% of mothers of young children suffer from symptoms consistent with depression (Heneghan, Silver, Bauman, Westbrook, & Stein, 1998; Horwitz, Briggs-Gowan, Storer-Isser, & Carter, 2007; McLennan, Kotelchick, & Cho, 2001).

### Risk Factors for Depression

Depression research in general suggests potential risk factors for depression among caregivers involved with the CWS, several of which are common in the CWS-involved population. Such risk factors include poverty (Belle & Doucet, 2003; Dearing et al., 2004; Kessler et al., 2003; Riolo et al., 2005; Rosen, Warner, & Tolman, 2006) and, for women, being of child-bearing age (SAMHSA, 2006), lower educational attainment (Blazer, Kessler, McGonagle, & Swartz, 1994; Kessler, 2003; Lara-Cinisomo & Griffin, 2007), being unemployed, and being a homemaker (Kessler et al., 2003). People who have never married and those who are divorced, separated, or widowed have a higher risk for depression than married people (Kessler et al., 2003).

Marital dissolution, conflicts with a partner (Liu & Chen, 2006), and single parenthood have also been linked with depression (Lara-Cinisomo & Griffin, 2007). Lack of social support, limited social networks, and limited resources are particularly associated with depression among women (Kawachi & Berkman, 2001; Kendler, Myers, & Prescott, 2005).

People with acute and chronic health problems (e.g., diabetes) and even people who describe themselves as in poor health are at increased risk (Cole & Eamon, 2007; de Jonge, Roy, Saz, Marcos, & Lobo, 2006; Heneghan et al., 1998; Horwitz et al., 2007; McLennan et al., 2001). Also at greater risk are women with a history of childhood sexual and physical abuse (Downs, Capshew, & Rindels, 2006; Liu & Chen, 2006; McGrath, Keita, Stickland, & Russo, 1990; McHolm, MacMillan, & Jamieson, 2003) and women experiencing IPV (Eisenstat & Bancroft, 1999; Martin et al., 1999; Roberts et al., 1998).

The findings on race/ethnicity vary across studies. The *National Study of Comorbidity Replication* (NSC-R) found higher rates of 12-month and lifetime depression among male and female Hispanic adults aged 18 or older than among Whites, and lower risk for lifetime prevalence of depression among non-Hispanic Blacks as compared with Whites (Kessler et al., 2003; Riolo et al., 2005). However, Williams et al. (2007), using the *National Survey of American Life*, found that male and female African American and Caribbean Black adults aged 18 or older had relatively severe and disabling depression when compared with Whites. Another study found lower risk for 12-month prevalence of depression among Hispanic caregivers than among White caregivers (Lara-Cinisomo & Griffin, 2007).

As might be expected, a person is more likely to meet criteria for depression at a given time if he or she had a previous episode of depression (Kessing, Olsen, & Andersen, 1999; Solomon et al., 2001; Wainwright, 2002), but few other risk factors have been found for recurrence. Mueller and colleagues (1999) found that never marrying was a significant predictor of recurrence among male and female adults (Mueller et al., 1999). McLennan et al. (2001) found that recurrence was more likely among caregivers with low educational attainment, caregivers with poor to fair health, and caregivers who were not cohabiting than among caregivers not in these situations (McLennan et al., 2001).

### *Depression Among Caregivers in the CWS*

Although numerous studies conducted in the general population estimate the prevalence and correlates of depression, such studies have not been conducted specifically with female caregivers of young children involved in investigations of child maltreatment.

The prevalence of maternal depression among families involved with the CWS is unknown, but the literature suggests that high rates of maternal depression should be expected (Sheppard, 1997) and that caregivers in this population are more likely to present symptoms associated with depression than they are to present symptoms associated with any other mental health problem (Wolfe, 1999). The need to examine maternal depression among CWS families more closely is critical because maternal depression can increase the risk for chronic abuse and neglect and other adverse developmental outcomes.

Tracking depression over time in this population is important, in particular because the ongoing safety and well-being of young children will depend in many cases on caregivers' overcoming depression. Nevertheless, there are no published estimates of the 12-month prevalence of depression, no reports of individual changes in depression trajectories, and no analysis of predictors of depression among the caregivers of young children involved with the CWS in the United States. One study of the CWS population in two areas in Ontario, Canada ( $N = 853$ , children aged 0 to 16 years), provides an indirect estimate of maternal depression through analysis of factors related to a 50% increase in children's referrals to child protective services between 1995 and 2001. This study found that the prevalence of maternal depression increased from 15% to 29%, almost doubling, over the course of the 6-year observation period (Leschied, Chiodo, Whitehead, & Hurley, 2005).

Information on correlates and predictors of depression is critical for providers of early intervention services receiving families from the CWS. Early intervention services are usually provided at the child's home and include speech/language therapy, special instruction, occupational therapy, developmental monitoring, and physical therapy (Hebbeler et al., 2007). These services are based on the assumption that between sessions, the child's caregiver will implement the treatment plan and exercises prescribed to the child. For a caregiver with depression, following her or his child's plan is likely to be very difficult if her or his mental health problems are not acknowledged first. Even when the early intervention system is used to receive families with a higher prevalence of maternal depression compared with the general population, symptoms for many of those caregivers tend to be associated with their children having a disability and behavioral problems (Bailey, Golden, Roberts, & Ford, 2007). The correlates of maternal depression in the CWS may be different and require a different services approach.

In the United States, a number of previous studies on the CWS population have consistently explored the influence of poverty, substance abuse, and IPV in families involved in allegations of child maltreatment (Besinger, Garland, Litrownik, & Landsverk, 1999; Brown, Cohen, Johnson, & Salzinger, 1998; Cappelleri, Eckenrode, & Powers, 1993;

Hazen, Connelly, Kelleher, Landsverk, & Barth, 2004). Nevertheless, despite its relevance to early intervention and its potential role in future child maltreatment, depression has been examined in few studies. One study reported depressive symptoms among foster caregivers in Illinois ( $N = 189$ ; Cole & Eamon, 2007). This study found very low rates of depression among foster caregivers but provided no information about biological parents involved with the CWS.

Two studies have used the NSCAW to analyze maternal depression as a predictor of child maltreatment, child outcomes, and service use among caregivers. The first study estimated that the 3-year prevalence of major depression among caregivers (89% women) of children aged 2 years or older was 40.3% (Burns et al., in press). The second study estimated that the 12-month prevalence of depression among female caregivers of children aged 0 to 15 years was 28.3% at baseline, 24.6% at 18-month follow-up, and 26.8% at 36-month follow-up (Conron, Beardslee, Koenen, Buka, & Gortmaker, 2009). The Burns et al. estimate focuses on depression over the course of several years but provides no percentage of caregivers who may suffer from depression annually. Conron et al. (in press) report annual depression prevalence estimates; however, neither the Burns et al. nor the Conron et al. studies separate findings by the caregiver's gender. Both studies do not examine factors predicting depression and thus they cannot be used to determine types of service needs among families from the CWS who receive early intervention services. Other studies using the NSCAW data set have reported estimates of caregivers' depression as correlates of other outcomes of interest (e.g., IPV, parenting practices, recurrent reports of maltreatment, self-reported disciplinary practices) for only the initial waves of data and were restricted to subpopulations of caregivers (Casanueva, Martin, & Runyan, 2009; Casanueva, Martin, Runyan, Barth, & Bradley, 2008a, 2008b; Kelleher et al., 2008).

This study focuses on depression among female caregivers of young children because the majority of families in the CWS have female primary caregivers and research on the effects of caregivers' depression on young children has focused on maternal depression. For practitioners working with young maltreated children, ascertaining changes in the 12-month prevalence of maternal depression in the years after contact with CWS and identifying what predicts depression are critical to determine the child welfare case plan and IFSP for the child, as well as necessary changes in family and child services when plans are reviewed every 6 months, as required by law. In addition, the identification of potential risk factors for maternal depression may aid program planners in targeting interventions for high-risk groups.

Using a nationally representative sample of caregivers of young children involved in CWS investigations of child maltreatment, this study examines population rates of depression longitudinally, average individual change and

trajectories over time, and correlates of major depression. Specifically, for this population, the study addresses the following questions: (a) What percentage of caregivers of young children involved with the CWS suffer from depression? (b) How persistent is depression across time? (c) What family and environmental characteristics predict caregivers having depression at the time of contact with the CWS (baseline)? (d) Are there significant changes in depression for individual caregivers across time? (e) What family and environmental characteristics predict occurrence of depression across time?

## Method

This research uses data from the NSCAW, the first nationally representative sample of children who have been the focus of child maltreatment investigations. The NSCAW is a longitudinal study of the well-being of 5,501 children aged 15 or younger who had contact with the CWS during a 15-month period starting in October 1999. Two-stage random sampling was conducted to select a sample from 92 primary sampling units in 97 counties located nationwide. The secondary sampling units were children selected from lists of closed investigations or assessments from the sampled agencies. To be eligible for the sample, children had to enter child welfare services through an investigation of child abuse or neglect by Child Protective Services. These families comprised both open and closed CWS cases (i.e., cases closed without referral for CWS services). The sample design required oversampling of infants and sexual abuse cases. Children were excluded from the study if a sibling had already agreed to participate in the study, if a child allegedly perpetrated the investigated maltreatment, or if the referral to the CWS was screened out without an investigation. Data were collected at baseline and at follow-ups at 12 months (Wave 2), 18 months (Wave 3), 3 years (Wave 4), and 5 to 6 years after baseline (Wave 5). Response rates were 64.2% at baseline, 86.7% at 1 year, 86.6% at 1.5 years, 85.3% at 3 years, and 85.1% at 5 to 6 years.

Additional information on NSCAW methods appears elsewhere (National Survey of Child and Adolescent Well-Being Research Group, 2002). At Wave 2, only caseworkers were interviewed and caregivers provided some information via phone interviews but no assessments were completed; as a consequence, this study uses data from Waves 1, 3, 4, and 5.

## Participants

This analysis focuses on the female caregivers of 1,244 young children who were living at home at baseline and all follow-up periods and who completed at least one assessment for depression. (For this study, caregivers were mostly, but not all, mothers; thus, the term *caregiver* is used for consistency and accuracy.) Only one caregiver did not complete

a single assessment of major depression across time and was excluded from the study. Caregivers of children in out-of-home placement were not assessed for depression. The total number of caregivers with a depression measure was 1,194 at baseline, 1,028 at the 18-month follow-up, 1,037 at the 36-month follow-up, and 904 at the 5- to 6-year follow-up. Analysis comparing caregivers with and without missing data on predictor variables found no significant differences with regard to major depression (variables with missing data and the  $p$  values obtained from the chi-square test comparing major depression among those with and without information were as follows: child main type of maltreatment  $p = .17$ ; caregiver's race/ethnicity  $p = .36$ ; caregiver's marital status  $p = .32$ ; poverty  $p = .21$ ; IPV  $p = .88$ , high stress in the family  $p = .12$ ; history of caregiver's childhood abuse and neglect  $p = .10$ ; low social support  $p = .14$ ; and family has trouble paying for basic necessities  $p = .12$ ).

Most of the caregivers were biological mothers (95.5%); 2.9% were grandmothers, 1.0% were aunts, and fewer than 1% were adoptive mothers or stepmothers. In age, 77.2% of the caregivers were 15 to 29 years old, and 22.8% were aged 30 years or older (see Table 1). Only 5.2% of caregivers were 15 to 17 years old. One half of the caregivers were White (50.2%), followed by African American (23.2%), Hispanic (15.5%), and other race/ethnicity (10.5%). Eighty percent of caregivers (80.8%) had a high school education or less. In terms of marital status, 22.7% were married; 26.9% were separated, divorced, or widowed; and 50.4% had never married. More than one half of the caregivers (51.8%) were unemployed. More than one half (55.9%) were living at or below the federal poverty level. Thirty-eight percent of caregivers (38.2%) had been victims of IPV. Most were in excellent, very good, or good health (85.5%), whereas 14.5% reported that their health was fair or poor. The caseworker report of caregivers' problems indicated that 43.5% experienced high stress because of family matters, 19.2% had a childhood history of abuse and neglect, 21.7% had low levels of social support, and 17.3% had trouble paying for basic necessities. Based on caseworker's report on the case investigation, 56.1% of the caregivers were identified as the alleged perpetrator of maltreatment.

Slightly more than one half (53.2%) of the women's children were male; at baseline, 16.4% of the children were younger than 12 months old, 28.9% were 1 year old, 19.8% were 2 years old, 20.6% were 3 years old, and 14.4% were 4 years old. The most common serious form of maltreatment reported by caseworkers was supervisory neglect (32.2%), followed by physical abuse (25.1%) and physical neglect (failure to provide for the child; 22.4%).

## Procedures

Field representatives contacted caregivers and asked permission to interview and assess them by means of standardized measures. Baseline interviews and assessments were

conducted an average of 4 months after the closing of the CWS investigation for maltreatment. Interviews with caregivers were conducted in English (96%) or Spanish, at their homes, and by means of computer-assisted personal interviewing. Caregivers received an honorarium of approximately \$40 for their participation in each interview. NSCAW also conducted 1-hour computer-assisted personal interviewing sessions with the CWS caseworkers, who were instructed to consult the case record as needed during the interview. At baseline, the investigating caseworker was interviewed; when the investigating caseworker was not available, an ongoing caseworker completed the interview, using the case record to provide information from the investigation. The data analyzed here are drawn from the caregiver and caseworker interviews.

## Measures

**Major depression.** The screening scale of the *World Health Organization Composite International Diagnostic Interview Short Form* (CIDI-SF; Kessler et al., 1998) was used to assess depression in the caregivers at the baseline interview and at the 18-month, 3-year, and 5- to 6-year follow-ups. At each interview, caregivers were asked if during the previous 12 months there was a time when they felt sad, blue, or depressed for 2 consecutive weeks or longer. If the answer was "yes" or "I was on medication/antidepressant," then a series of questions would follow concerning the 2-week period when these feelings were worst. For the diagnosis of major depression, the CIDI-SF follows the guidelines of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994), which characterizes a major depressive episode as "a sad mood or loss of interest in usual activities persisting for at least two weeks that compromises functioning or causes distress" (p. 320). Classification accuracy of the CIDI-SF as compared with the CIDI ranges from 93% to 98% in relation to psychiatric standards (Kessler et al., 1998). For the CIDI-SF, to meet the probable diagnostic requirement for the 12-month prevalence of major depression, the participant has to report three or more symptoms of depression (e.g., loss of interest in usual activities, tiredness, changes in weight, trouble sleeping or excessive sleeping, difficulty concentrating, feelings of low self-worth, and thoughts about death) and respond affirmatively in at least one of the following areas: (a) experiencing 2 or more weeks of dysphoric mood, (b) experiencing 2 or more weeks of anhedonia (lack of enjoyment of any activity), and (c) using medication for depression.

On the basis of the four waves of available data, four groups were identified for analysis of depression: (a) caregivers who did not have a score indicative of major depression at any wave in which they were observed, (b) caregivers who had a score indicative of major depression at only one point in time out of all points at which they

**Table 1.** Sociodemographic Characteristics and Risk Assessment History of Female Caregivers of Children in the Child Welfare System, by Depression Status

Baseline Characteristic	Baseline (N = 1,194) <sup>a</sup>		p
	Total % (SE)	Depression % (SE)	
Total	100	25.1 (1.8)	
Caregiver characteristics			
Age			.101
15 to 29 years	77.2 (2.1)	22.8 (2.3)	
30 years or older	22.8 (2.1)	32.7 (4.8)	
Race/ethnicity			.105
White	50.2 (4.6)	30.0 (2.8)	
Black	23.2 (4.1)	19.4 (4.9)	
Hispanic	15.5 (2.9)	23.3 (4.4)	
Other	10.5 (2.6)	15.5 (5.4)	
Education			.523
High school or less	80.8 (2.3)	24.0 (2.6)	
More than high school	19.2 (2.3)	29.5 (7.1)	
Marital status			.068
Married	22.7 (2.3)	18.2 (3.1)	
Divorced/separated/widowed	26.9 (2.5)	35.7 (5.8)	
Never married	50.4 (3.0)	22.5 (3.2)	
Employment			.447
Employed	48.2 (2.4)	23.3 (3.1)	
Not employed	51.8 (2.4)	26.7 (2.8)	
Poverty			.944
At or below 100% of federal poverty level	55.9 (3.5)	26.1 (3.1)	
Above 100% of federal poverty level	44.1 (3.5)	26.5 (3.3)	
Victim of intimate-partner violence			.018
Yes	38.2 (2.7)	30.4 (3.3)	
No	61.8 (2.7)	21.0 (2.3)	
Health			.007
Excellent, very good, or good	85.5 (1.8)	22.7 (2.0)	
Fair or poor	14.5 (1.8)	39.3 (5.7)	
Caseworker risk assessment of primary caregiver			
High stress			.231
Yes	43.5 (2.9)	27.2 (3.7)	
No	56.5 (2.9)	21.4 (2.4)	
History of abuse and neglect			.149
Yes	19.2 (2.3)	34.8 (7.0)	
No	80.8 (2.3)	22.4 (2.3)	
Low social support			.155
Yes	21.7 (1.9)	31.9 (4.9)	
No	78.3 (1.9)	22.9 (2.5)	
Trouble paying for basic necessities			.106
Yes	17.3 (1.9)	35.3 (6.1)	
No	82.7 (1.9)	22.7 (2.3)	
Child characteristics			
Gender			.916
Male	53.2 (3.6)	25.3 (3.1)	
Female	46.8 (3.6)	24.8 (3.1)	
Age			.595
Younger than 1 year	16.4 (1.9)	22.3 (3.2)	
1 year	28.9 (3.2)	23.1 (4.2)	
2 years	19.8 (2.7)	25.7 (4.7)	
3 years	20.6 (2.9)	20.4 (4.6)	
4 years	14.4 (1.9)	38.1 (8.1)	
Main type of maltreatment			.538
Physical	25.1 (2.3)	27.2 (5.2)	
Physical neglect (failure to provide)	22.4 (2.7)	29.8 (4.1)	
Neglect (lack of supervision)	32.2 (3.5)	22.3 (3.4)	
All other maltreatment	20.2 (3.3)	21.8 (4.5)	

Note: All percentages are weighted. SE = Standard error.

a. N varies between 1,194 and 952.

were assessed, (c) caregivers who had a score indicative of major depression at two points in time out of all points at which they were assessed, and (d) caregivers who had a score indicative of major depression at three or more points in time (up to four) out of all points at which they were assessed.

**Intimate-partner violence.** To assess IPV, caregivers' baseline interview was used, with the physical violence scale of the *Conflict Tactics Scales* (CTS; Straus, 1979). Caregivers were asked how many times in the past 12 months or earlier they had experienced at least one of nine physically violent acts from a partner, including less severe or moderate acts (throwing something; pushing, grabbing, or shoving; slapping; kicking, biting, or hitting with a fist; and hitting or trying to hit with something) and severe acts of physical violence (beating, choking, threatening with a knife or gun, and using a knife or gun). Any act of physical violence from a partner in the past 12 months or earlier was classified as a yes for IPV.

Analyses were also completed for IPV variables that identified caregivers who had been victims of IPV in the past (all acts of IPV occurred more than 12 months ago but not more recently) and those who were current victims of IPV. The association found between IPV and maternal depression was of similar magnitude and direction for both a dichotomous IPV variable (no violence as opposed to any physical violence during the past 12 months or beforehand performed by a current or former date, spouse, or cohabiting partner) and an IPV variable with categories that accounted for IPV timing (no violence, current physical violence, or past physical violence). Because the direction and magnitude were the same for both variable types, results are presented only for the dichotomous variable for any act of physical violence from a partner in the past 12 months or earlier.

**Health status.** Caregivers answered the following question about their health: "In general, would you say your health is . . .?" Response options were *excellent*, *very good*, *good*, *fair*, and *poor*. Based on previous research on health status, a variable with two categories was created: (a) excellent, very good, or good and (b) fair or poor.

**Sociodemographics.** Caregivers were asked about their age; race/ethnicity; family income; number, age, and sex of adults and children in the household; marital status; education; and employment. Only 15 caregivers were aged 45 years or older. Results are presented for two age categories: those caregivers 15 to 29 years old and those 30 or older. (Analyses were completed also with age as a continuous variable; given the lack of significant association between depression and caregiver age, results are presented only for the categorical variable.) Family income and number of adults and children in the household were used to determine poverty level according to U.S. Census Bureau guidelines (Dalaker, 2001).

**Caseworker report on caregiver problems.** The NSCAW used risk assessment questions from the risk assessment tools used in Child Protective Services in Michigan, New York, Washington, Illinois, and Colorado to collect information about primary caregivers. The following risk assessment questions were used in the analyses reported here: "At the time of the investigation, was there high stress on the family? This may have resulted from things like unemployment, drug use, poverty, or neighborhood violence" (yes/no); "Was there a history of abuse and neglect of the primary caregiver?" (yes/no); "At the time of the investigation, was there low social support? This could include a lack of family and/or community support" (yes/no); "At the time of the investigation, did the family have trouble paying for basic necessities such as food, shelter, clothing, electricity, or heat?" (yes/no).

**Maltreatment characteristics.** The most serious type of maltreatment was assessed by asking the caseworkers the following in the baseline interview: "Of the types of abuse or neglect that were reported, please tell me the type that you felt was the most serious." Response options were as follows: physical maltreatment, sexual maltreatment, emotional maltreatment, physical neglect (failure to provide for the child), neglect (lack of supervision), abandonment, moral/legal maltreatment, educational maltreatment, exploitation, and other. Because of the small number of children in each of several categories of maltreatment, children who were reported for abandonment, moral/legal maltreatment, educational maltreatment, exploitation, and other were classified as all others.

## Analyses

All analyses were conducted using the SUDAAN statistical package version 9.0.1 (RTI International, 2002) or Mplus version 4.21 (Muthén & Muthén, 2004). In all analyses, corrections for the NSCAW's complex sampling design are applied including sampling weights, which correct for unequal selection of observations into the NSCAW sample. Thus, all percentages are adjusted (weighted) for sampling probabilities; listed sample sizes have not been adjusted (i.e., are unweighted).

The first analyses are population prevalence estimates of major depression at baseline and at subsequent waves (not presented in a table). Then, the bivariate association of several characteristics with major depression at baseline and at following waves were described using percentages and tested using chi-square tests. These characteristics included the caregiver's age, race/ethnicity, education, marital status, employment, poverty, IPV status, and health, as well as the child's age, sex, and most serious form of child maltreatment investigated. Additional variables considered in the analyses were caseworkers' reports at baseline on multiple



family risks (high stress in the family, caregiver history of childhood abuse or neglect, low social support, and trouble paying for basic necessities).

Second, multiple logistic regression analysis was used to predict the following four outcomes among caregivers (see Table 3): (a) three or more waves with scores in the clinical range of depression, (b) two waves with scores in the clinical range of depression, (c) one wave with scores in the clinical range of depression, and (d) absence of a score in the clinical range of depression at any wave. Analyses were repeated for the subgroup of caregivers that had at least one score in the clinical range of major depression, with the following outcomes: (a) three or more waves with scores in the clinical range of depression, (b) two waves with scores in the clinical range of depression (see Table 4). Partial odds ratios with 95% confidence intervals obtained from the multiple variable ordered logistic model and  $p$  values based on Wald  $F$  tests are reported. These represent the effect of each predictor variable on the odds of depression, controlling for all other predictor variables. Predictor variables were entered as categorical variables indicating the values used for levels. The multiple logistic regression models use the predictor values obtained at baseline.

Finally, to assess change in the odds of major depression over time, a growth curve analysis was fit using the depression indicators at each wave. An unconditional population average trajectory model over four waves of data on major depression (baseline and follow-ups at 1.5, 3, and 5–6 years) was fit to the data with use of logistic regression in SUDAAN. This analysis provides an estimate of the average change in the odds for a score indicative of major depression over this time period. A linear trajectory model (linear in the logit transformation) fitted the data. A quadratic trajectory was tested, but there was no statistically significant curvature in the change in odds over time. All subsequent models with covariates fitted the linear trajectory without allowing for curvature. In addition, each independent variable of interest was modeled separately to test for its effect on the change in the odds of a score indicative of major depression over time.

SUDAAN was used for descriptive analysis. All estimates of prevalence of depression at each wave and correlates of depression are based on univariate and bivariate analysis with no imputed data (see Tables 1 and 2).

Mplus version 4.21 was used for the multiple regressions; maximum likelihood for missing data was used for the multiple regressions (see Tables 3 and 4). Under Arbuckle's (1996) maximum likelihood method, all observations were retained in the analysis even if they were missing information on some predictor variables. The estimation of missing data on a predictor variable is based on all available information and uses associations both between and within observations. The maximum likelihood method

assumes that data are missing at random (Rubin, 1976), conditioned on the covariates in the model. For the outcome variable of multiple regression models (depression), the following percentages of caregivers did not have information on depression at each wave: 4.1% at baseline, 17.4% at the 18-month follow-up, 16.7% at the 36-month follow-up, and 27.4% at the 5- to 6-year follow-up. A total of 26.9% of caregivers had missing data on major depression for one wave, 10.5% for two waves, and 5.6% for three waves; all others had complete data for all waves. The great majority of caregivers with missing data on one or more waves on the major depression score did not have a score indicative of major depression on all other available waves with a depression score. Among caregivers who were depressed at an earlier wave, only 13.7% had a missing value at a latter wave. The missing values were conservatively imputed as *no major depression* to more closely match the univariate results (without imputed data) that showed a flat slope on the probability of depression from baseline to the last follow-up (no upward trend in the likelihood of depression across time).

## Results

### Caregivers Suffering Depression at Baseline

At baseline, one quarter of caregivers had a CIDI-SF score indicating major depression. Of all the variables analyzed for their potential relationship to depression at baseline, two were significantly associated: IPV ( $p = .018$ ) and health status ( $p = .007$ ) (see Table 1). Caregivers who reported being victims of physical abuse by an intimate partner were more likely to be depressed (30.4%) than caregivers who did not report IPV (21.0%). Caregivers who reported having fair or poor health were also more likely to be depressed (39.3%) than caregivers who reported excellent, very good, or good health (22.7%).

Although only one quarter of caregivers met the strict criteria used to define major depression, more than one third of caregivers (37.0%) responded affirmatively that they had felt sad, blue, or depressed for 2 consecutive weeks or longer during the 12 months before the interview.

Among those reporting feeling sad, blue, or depressed, or having lost interest in activities that usually gave them pleasure, the great majority (91.4%) reported that, during the 12 months preceding the baseline interview, they had felt more tired or low on energy than usual for at least 2 weeks; 88.8% had lost interest in most hobbies, work, or activities that usually gave them pleasure; 80.7% had experienced much more trouble concentrating than usual; 74.3% had experienced more trouble than usual in falling asleep; 71.6% had experienced feelings of low self-worth; 54.3% had noted otherwise unexplained weight loss or weight gain; and 33.8% had

thought repeatedly about death (either their own death, someone else's death, or death in general).

### Caregivers' Depression Across Time

Across all follow-ups, 46.3% of caregivers had a CIDI-SF score indicating major depression at least at one point in time. Slightly more than one quarter (27.5%) of caregivers had a score indicative of major depression at only one point. Of those who had a score indicating major depression at baseline, 45.6% had a score of major depression at the 18-month follow-up, 39.4% at the 36-month follow-up, and 40.4% at the 5- to 6-year follow-up. Of those who were not depressed at baseline, 17.2% had a score of major depression at the 18-month follow-up, 16.1% at the 36-month follow-up, and 15.4% at the 5- to 6-year follow-up.

### Repeated Major Depression Score in the Clinical Range

Repeated major depression scores in the clinical range were fairly common. Among all caregivers, 9.8% had two waves with a score in the clinical range for major depression; 6.7% had three waves. Only a small percentage of caregivers had scores in the clinical range for major depression at all points in time (2.4%). Among caregivers with at least one wave with a score in the clinical range for depression, 40.8% had a score in the clinical range at more than one point in time.

Bivariate analysis showed two variables associated with two or more waves with a score in the clinical range for major depression: IPV and caregiver's health status (see Table 2), which are the same two variables that were significantly associated with depression at baseline. Using as comparison caregivers who did not have a score indicative of depression at any wave, caregivers who had been victims of IPV were more likely to have one wave with a score in the clinical range for major depression (OR = 1.8; 95% CI = 1.6–2.9;  $p = .009$ ) and three or more waves with scores in the clinical range for major depression than caregivers who did not report IPV (OR = 3.3; 95% CI = 1.4–7.5;  $p = .006$ ). Compared with caregivers who did not have a score indicative of depression at any wave, caregivers who reported fair or poor health at baseline were more likely to have two waves with scores in the clinical range for major depression (OR = 5.8; 95% CI = 2.6–12.8;  $p = .000$ ) and three or more waves with scores in the clinical range for major depression than caregivers who had excellent, very good, or good health (OR = 2.8; 95% CI = 1.2–6.6;  $p = .020$ ).

### Individual Depression Trajectories

Growth curve analysis of individual caregivers' trajectories for a score in the clinical range for major depression showed

no significant change across time. As noted previously, 25.1% of caregivers had a score in the clinical range for major depression at baseline. At the 18-month follow-up (Wave 3), 23.6% of caregivers had a score in the clinical range for major depression; at the 3-year follow-up (Wave 4), 22.6% had a score in the clinical range for major depression; and at the 5- to 6-year follow-up (Wave 5), the percentage almost matched the percentages from the previous follow-ups (21.6%). These changes at the level of the individual were not statistically significant; they indicate that the odds of an individual's having a score in the clinical range for major depression, for this population, remained almost constant over the time studied. Moreover, there were no significant changes between any two adjacent waves; although only a minority of caregivers had a score in the clinical range for major depression at two or more points in time, the odds did not decrease as time passed after the CWS investigation. Finally, no significant differences were found in average individual trajectories between the groups as defined by the caregiver characteristics considered in this analysis.

### Multinomial Analyses of Depression Correlates

Multiple logistic regression was used to analyze correlates of having a score in the clinical range for major depression while controlling for other variables (see Table 3). On the basis of all caregivers, with the reference group being those who did not have a score indicative of major depression at any wave, caregivers who had been victims of IPV had almost two times the odds of having one wave with a score in the clinical range for major depression as those who did not report IPV; moreover, they had almost three times the odds of having three or more waves with a score in the clinical range for major depression than those who did not report IPV. Caregivers in fair or poor health had more than five times the odds of those in excellent, very good, or good health of experiencing two waves with a score in the clinical range for major depression and more than two times the healthier caregivers' odds of experiencing three or more waves with a score in the clinical range for major depression. Women identified as Black were less likely to have one wave with a score in the clinical range for major depression than White women. Finally, caregivers of children investigated for physical neglect (failure to provide), as the most serious type of abuse, had twice the odds of having one wave in the score in the clinical range for major depression when compared with caregivers of children investigated mainly for neglect (lack of supervision).

Further analyses were conducted restricting the sample to caregivers who had at least one wave with a score in the clinical range for major depression, with the reference group being those who had only one wave with a score in

**Table 2.** Sociodemographic Characteristics and Risk Assessment History of Female Caregivers of Children in the Child Welfare System, by Depression Status Across Waves

Baseline Characteristic	Number of Waves With a Score Indicative of Major Depression (N = 1,244) <sup>a</sup>				p
	No Score Indicative of Major Depression at Any Wave % (SE)	One Wave % (SE)	Two Waves % (SE)	Three or More Waves % (SE)	
Total	53.7 (3.3)	27.5 (3.1)	9.8 (1.8)	9.0 (1.5)	
Caregiver characteristics					
Age					.792
15 to 29 years	55.2 (3.8)	26.9 (4.0)	9.4 (2.1)	8.4 (1.7)	
30 years or older	48.7 (5.9)	29.5 (4.9)	11.0 (3.6)	10.8 (3.5)	
Race/ethnicity					.198
White	48.0 (4.5)	33.5 (4.7)	11.3 (2.1)	7.2 (1.5)	
Black	65.9 (6.4)	15.7 (3.8)	7.4 (3.3)	11.0 (4.8)	
Hispanic	57.9 (11.1)	19.6 (5.1)	11.9 (4.6)	10.6 (4.7)	
Other	47.9 (8.5)	36.4 (9.2)	5.0 (3.3)	10.7 (4.4)	
Education					.653
High school or less	54.4 (3.7)	26.0 (3.4)	9.9 (2.0)	9.7 (1.6)	
More than high school	49.3 (5.8)	34.3 (5.9)	9.8 (3.0)	6.5 (4.4)	
Marital status					.282
Married	52.9 (4.5)	32.9 (4.5)	7.5 (2.2)	6.7 (1.8)	
Divorced/separated/widowed	46.1 (6.2)	33.0 (6.7)	11.0 (2.7)	9.9 (3.8)	
Never married	58.1 (4.3)	22.0 (3.7)	10.3 (2.5)	9.6 (2.4)	
Employment					.547
Employed	55.7 (4.3)	27.8 (4.3)	7.5 (2.1)	9.0 (2.6)	
Not employed	51.8 (3.5)	27.2 (3.4)	12.0 (2.7)	9.0 (2.2)	
Poverty					.713
At or below 100% of federal poverty level	53.8 (4.5)	28.0 (4.1)	10.1 (2.2)	8.0 (2.3)	
Above 100% of federal poverty level	52.9 (4.7)	26.3 (4.1)	8.2 (2.0)	12.5 (3.0)	
Victim of intimate-partner violence					.008
Yes	43.2 (4.0)	33.2 (4.3)	10.3 (2.1)	13.4 (2.9)	
No	59.4 (4.5)	24.8 (3.5)	10.2 (2.1)	5.6 (1.6)	
Health					.003
Excellent, very good, or good	56.2 (3.4)	28.4 (3.5)	7.1 (1.5)	8.2 (1.7)	
Fair or poor	35.7 (6.1)	23.4 (4.4)	26.3 (6.4)	14.5 (3.9)	
Caseworker risk assessment of primary caregiver					
High stress					.630
Yes	51.7 (4.6)	31.2 (5.0)	10.1 (2.1)	7.0 (1.5)	
No	56.5 (4.3)	24.3 (3.8)	10.0 (2.7)	9.2 (2.4)	
History of abuse and neglect					.583
Yes	53.0 (7.0)	22.6 (6.2)	14.4 (5.1)	10.0 (2.9)	
No	55.4 (3.8)	26.7 (3.7)	8.0 (1.7)	9.9 (2.2)	
Low social support					.583
Yes	46.1 (5.7)	31.8 (6.0)	10.0 (2.5)	12.1 (3.0)	
No	56.2 (4.3)	25.3 (4.3)	9.9 (2.1)	8.5 (2.0)	
Trouble paying for basic necessities					.502
Yes	47.5 (5.8)	34.7 (6.3)	9.2 (2.0)	8.5 (2.1)	
No	55.1 (3.8)	25.6 (3.2)	10.1 (2.1)	9.3 (1.9)	
Child characteristics					
Gender					.904
Male	55.7 (4.9)	26.9 (3.8)	9.1 (2.3)	8.3 (2.1)	
Female	51.4 (3.7)	28.2 (3.6)	10.6 (2.5)	9.8 (2.4)	
Age					.591
Younger than 1 year	53.5 (5.0)	27.8 (5.9)	10.9 (3.0)	7.8 (2.4)	
1 year	58.5 (6.0)	23.8 (6.5)	7.4 (2.2)	10.3 (3.6)	
2 years	47.9 (7.3)	32.6 (6.5)	8.6 (3.2)	11.0 (3.4)	
3 years	56.6 (6.7)	27.1 (5.7)	11.7 (4.0)	4.6 (2.2)	
4 years	47.7 (8.0)	28.4 (7.1)	12.2 (4.3)	11.7 (5.9)	

(continued)

Table 2. (continued)

Baseline Characteristic	Number of Waves With a Score Indicative of Major Depression (N = 1,244) <sup>a</sup>				p
	No Score Indicative of Major Depression at Any Wave % (SE)	One Wave % (SE)	Two Waves % (SE)	Three or More Waves % (SE)	
Main type of maltreatment					.426
Physical	57.6 (6.3)	21.8 (5.4)	10.3 (3.0)	10.3 (3.6)	
Physical neglect (failure to provide)	45.6 (5.8)	37.9 (6.6)	10.0 (2.8)	6.6 (2.2)	
Neglect (lack of supervision)	58.3 (4.4)	25.4 (3.8)	8.3 (2.2)	8.0 (1.9)	
All other maltreatment	49.6 (8.0)	25.1 (4.2)	11.9 (4.1)	13.4 (5.6)	

Note: All percentages are weighted. SE = Standard error.

a. N varies between 1,244 and 996.

b. Compared with caregivers not depressed at any wave, caregivers who had ever been victims of intimate-partner violence (IPV) were more likely to have one episode of depression than caregivers who had not been victims of IPV (OR = 1.8; 95% CI = 1.6–2.9;  $p = .009$ ).

c. Compared with caregivers not depressed at any wave, caregivers who had ever been victims of IPV were more likely to have three or more episodes of depression than caregivers who had not been victims of IPV (OR = 3.3; 95% CI = 1.4–7.5;  $p = .006$ ).

d. Compared with caregivers not depressed at any wave, caregivers who reported fair or poor health at baseline were more likely to have two episodes of depression than caregivers who had excellent, very good, or good health (OR = 5.8; 95% CI = 2.6–12.8;  $p = .000$ ).

e. Compared with caregivers not depressed at any wave, caregivers who reported fair or poor health at baseline were more likely to have three or more episodes of depression than caregivers who had excellent, very good, or good health (OR = 2.8; 95% CI = 1.2–6.6;  $p = .020$ ).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

the clinical range for major depression; caregivers who reported IPV had twice the odds of having three or more waves with a score in the clinical range for major depression than those who did not report IPV (see Table 4). Caregivers in fair or poor health had more than four times the odds of those in excellent, very good, or good health for having two waves with a score in the clinical range for major depression. Caregivers who had never married were more likely than married caregivers to have two waves with a score in the clinical range for major depression. Finally, caregivers with a childhood history of abuse and neglect had more than twice the odds of those without such a history for having two waves with a score in the clinical range for major depression.

## Discussion

This study found that between 22% and 25% of caregivers of young children who were the focus of investigations by the CWS had, as measured at any of the four points in time over 5 to 6 years, a CIDI-SF score indicating major depression during at least 2 consecutive weeks in the 12 months before assessment. No significant changes in individual trajectories of scores indicative of depression among caregivers of young children were observed across time, meaning that the chance of having a score in the clinical range for major depression essentially remained constant instead of diminishing with time. Previous research with the CWS population has scarcely addressed the issue of maternal depression estimates; this study is the first to report the 12-month prevalence of major depression at different points

in time, individual changes in trajectories of scores in the clinical range for major depression, and predictors of scores in the clinical range for major depression in a nationally representative sample of caregivers of young children investigated for child maltreatment.

National data from adults 18 years or older and based on the CIDI assessment of major depression in the 12 months before such assessment indicate much lower rates of major depression in the general population than in the population of these caregivers. Both the proportion of U.S. adults who had a major depressive episode in the previous year (6.7%) and the proportion of U.S. adults 18 years old or older who had any mood disorder in the previous 12 months (9.5%) were about one third the proportion of caregivers in this study who were depressed during the 12 months preceding any wave. It is notable that most of the general-population studies relying on the NSC-R do not provide data on 12 months' prevalence specific to women, although a study on lifetime prevalence does report that women have 1.6 times the odds of depression as men (Kessler, Berglund, et al., 2005; Kessler, Chiu, et al., 2005).

Depression estimates at baseline in this study were 50% higher than 12-month estimates of any mood disorder (also measured with the CIDI) in a sample of low-income women receiving welfare (16%; Rosen et al., 2006). The present estimates were also 100% higher than estimates based on Rosen et al.'s comparison subsample of female participants in the NCS (12.8%). Moreover, the total percentage in this study who ever suffered from major depression (46.3%) was almost three times that of national estimates of the adult lifetime prevalence of depression (16.6%; Kessler,

**Table 3.** Multiple Logistic Regression Models for Depression Among Female Caregivers of Children in the Child Welfare System

	Number of Waves With a Score Indicative of Major Depression (reference: 0) (N = 1,244)		
	One OR (95% CI)	Two OR (95% CI)	Three or More OR (95% CI)
<b>Caregiver characteristics</b>			
Age			
29 years or younger	1.0 (0.6–1.9)	0.9 (0.4-2.1)	0.7 (0.3-1.6)
30 years or older	1.0	1.0	1.0
Race/ethnicity			
Black	0.4 (0.2–0.8)**	0.4 (0.1-1.1)	1.0 (0.3-2.9)
Hispanic	0.6 (0.2–1.3)	0.7 (0.3-1.8)	1.0 (0.3-3.7)
Other	1.1 (0.5–2.4)	0.4 (0.1-1.6)	0.9 (0.3-2.5)
White	1.0	1.0	1.0
Education			
High school or less	0.8 (0.4–1.5)	0.9 (0.4-1.8)	1.7 (0.5-5.8)
More than high school	1.0	1.0	1.0
Marital status			
Married	1.3 (0.7–2.5)	0.6 (0.3-1.1)	0.5 (0.2-1.4)
Divorced/separated/widowed	1.4 (0.7–2.8)	1.1 (0.5-2.7)	1.1 (0.4-2.9)
Never married	1.0	1.0	1.0
Employment			
Not employed	1.1 (0.7–1.7)	1.5 (0.7-3.3)	1.2 (0.5-2.6)
Employed	1.0	1.0	1.0
Poverty			
At or below 100% of federal poverty level	1.1 (0.5–2.2)	0.9 (0.4-1.8)	0.5 (0.2-1.1)
Above 100% of federal poverty level	1.0	1.0	1.0
Victim of intimate-partner violence			
Yes	1.9 (1.2–3.0)**	1.1 (0.6-2.1)	3.2 (1.6-6.6)***
No	1.0	1.0	1.0
Health			
Fair/poor	1.3 (0.7–2.4)	5.7 (2.8-11.6)***	2.5 (1.2-5.2)*
Excellent/very good/good	1.0	1.0	1.0
High stress			
Yes	1.1 (0.6–2.0)	0.9 (0.4-1.9)	0.7 (0.4-1.2)
No	1.0	1.0	1.0
History of abuse or neglect			
Yes	0.6 (0.3–1.4)	1.5 (0.5-4.4)	0.7 (0.3-1.7)
No	1.0	1.0	1.0
Low social support			
Yes	1.5 (0.6–3.6)	1.0 (0.5-2.1)	1.8 (0.8-4.1)
No	1.0	1.0	1.0
Trouble paying for basic necessities			
Yes	1.3 (0.6–2.5)	0.8 (0.4-1.6)	1.0 (0.4-2.4)
No	1.0	1.0	1.0
<b>Child characteristics</b>			
Sex			
Female	1.0 (0.7–1.6)	1.2 (0.6-2.5)	1.1 (0.5-2.7)
Male	1.0	1.0	1.0
Age (continuous)	1.1 (0.9–1.3)	1.1 (0.9-1.4)	1.0 (0.8-1.3)
Most serious form of child maltreatment			
Physical	0.8 (0.4–1.6)	1.3 (0.5-3.4)	1.3 (0.5-3.2)
Physical neglect	2.1 (1.0–4.3)*	2.0 (0.8-5.1)	1.3 (0.5-3.1)
All other maltreatment	1.1 (0.5–2.4)	1.8 (0.6-5.5)	2.1 (0.7-6.4)
Neglect (lack of supervision)	1.0	1.0	1.0

Note: All percentages are weighted. To provide the less unbiased analysis of the predictor of depression based on multivariate analysis, we had the option to delete all cases with a missing value at any wave. There was no change in the slope with or without imputed data. Significant predictor variables presented in Table 3 were the same when running models without imputed data, with only small changes in the magnitude of odds ratios and confidence intervals. OR = Odds ratio; CI = Confidence interval.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 4.** Multiple Logistic Regression Models for Depression Among Female Caregivers With One or More Waves With a Score Indicative of Major Depression

	Number of Waves With a Score Indicative of Major Depression (reference: 1) (N = 542)	
	Two OR (95% CI)	Three or More OR (95% CI)
Caregiver characteristics		
Age		
29 years or younger	0.8 (0.3–2.3)	0.6 (0.2–1.4)
30 years or older	1.0	1.0
Race/ethnicity		
Black	1.0 (0.3–2.8)	2.2 (0.8–6.4)
Hispanic	1.3 (0.5–3.2)	2.5 (0.7–8.8)
Other	0.4 (0.1–2.0)	0.6 (0.2–2.1)
White	1.0	1.0
Education		
High school or less	1.0 (0.5–2.2)	2.6 (0.8–8.9)
More than high school	1.0	1.0
Marital status		
Married	0.4 (0.2–0.9)*	0.3 (0.1–1.1)
Divorced/separated/widowed	0.7 (0.3–1.8)	0.7 (0.3–1.5)
Never married	1.0	1.0
Employment		
Not employed	1.3 (0.6–2.7)	0.9 (0.4–2.1)
Employed	1.0	1.0
Poverty		
At or below 100% of federal poverty level	0.8 (0.4–1.9)	0.4 (0.1–1.2)
Above 100% of federal poverty level	1.0	1.0
Victim of intimate-partner violence		
Yes	0.6 (0.4–1.2)	2.0 (1.0–4.0)*
No	1.0	1.0
Health		
Fair/poor	4.4 (1.9–10.5)***	2.0 (0.8–4.7)
Excellent/very good/good	1.0	1.0
High stress		
Yes	0.6 (0.3–1.4)	0.6 (0.3–1.2)
No	1.0	1.0
History of abuse or neglect		
Yes	2.5 (1.0–6.2)*	1.3 (0.5–3.7)
No	1.0	1.0
Low social support		
Yes	0.8 (0.3–2.7)	1.2 (0.4–3.6)
No	1.0	1.0
Trouble paying for basic necessities		
Yes	0.5 (0.2–1.4)	0.9 (0.3–2.9)
No	1.0	1.0
Child characteristics		
Sex		
Female	1.1 (0.5–2.3)	0.9 (0.4–2.0)
Male	1.0	1.0
Age (continuous)	1.1 (0.8–1.5)	0.9 (0.7–1.2)
Most serious form of child maltreatment		
Physical	1.3 (0.5–3.0)	1.7 (0.6–4.6)
Physical neglect	1.0 (0.4–2.6)	0.7 (0.2–2.4)
All other maltreatment	1.3 (0.4–3.6)	1.9 (0.6–6.0)
Neglect (lack of supervision)	1.0	1.0

Note: All percentages are weighted. To provide the less unbiased analysis of the predictor of depression based on multivariate analysis, we had the option to delete all cases with a missing value at any wave. There was no change in the slope with or without imputed data. Significant predictor variables presented in Table 4 were the same when running models without imputed data, with only small changes in the magnitude of odds ratios and confidence intervals.

\* $p < .05$ . \*\*\* $p < .001$ .

Berglund, et al., 2005) and more than double the lifetime prevalence estimates from the *National Survey on Drug Use and Health* (20%; Office of Applied Studies, 2006).

Given the focus of this study on young children, it is important to compare the findings of this study with studies of older children in the CWS. This study's percentage for major depression among caregivers of young children at any point in time (46.3%) was somewhat similar to estimates for caregivers of older children in one study based on the NSCAW (40.3%; Burns et al., in press), although the estimate for caregivers of older children used three instead of four follow-ups. Estimates from the NSCAW and based on depression at each follow-up for caregivers of children aged 0 to 15 were slightly higher (between 24.6% and 28.3%; Conron et al., 2009), suggesting that, even among children who were older at the time of the index investigation, maternal depression likely continued to be a significant problem as the children aged.

More disturbing are the findings that, on average, caregivers' odds of having a score in the clinical range for major depression did not change over the 5- to 6-year course of the study and that 40.8% of those with a major depression score had it at more than one point in time. This result contrasts with McLennan and colleagues' (2001) report on a nationally representative sample of mothers of young children, in which rates of depression after 18 months dropped from 12.1% to 7.8%. Nevertheless, the present results are consistent with a second study of a random sample of 1,208 mothers of young children in the state of Connecticut, which showed a stable rate of depression, with 17% of mothers depressed at baseline and 18% depressed at 1-year follow-up, with almost 50% showing persistent depression (Horwitz et al., 2007).

The high rate of major depression among caregivers of young children reported to the CWS is not only a serious public health problem but also a serious risk to children's development. The most prevalent symptoms of depression among the caregivers of young children (fatigue or low energy, lack of interest in most activities, trouble concentrating, trouble falling asleep, and feeling worthless) can directly affect the quality of the caregivers' parenting. The symptoms may also exacerbate the risk of neglect in an overwhelmed caregiver struggling with the daily tasks of raising a young child. Previous studies have established that the early relationship between a young child and his or her caregiver is critical for healthy development (Ainsworth & Eichberg, 1991; Bowlby, 1973). In a good relationship, the caregiver acts as an organizer of the infant experience, conferring the predictability, stability, and sense of security that form the primary base from which the infant learns how to regulate his or her own emotions and behaviors (Demos, 1982). Research has extensively described how depression interferes with the emotional sensitivity and responsiveness of caregivers toward their young children (Lovejoy,

Graczyk, O'Hare, & Neuman, 2000; NICHD Early Child Care Research Network, 1999; Petterson & Albers, 2001; Wolfe, 1999). Moreover, studies have found that caregivers with depression tend to have difficulties managing distressed young children, perceive parenting as difficult, tend to be inconsistent and feel irritated by the young child's needs, and sometimes report thoughts of harming their children (Burke, 2003). All of these factors associated with maternal depression facilitate a hostile interaction and can eventually lead to multiple and recurrent episodes of physical abuse or neglect of the child (Cassell & Coleman, 1995; Kotch et al., 1999; Kotch et al., 1997).

Two risk factors were the most consistent correlates of a score in the clinical range for major depression: having been a victim of IPV and reporting fair or poor health. The IPV finding is consistent with previous studies in the general population and in clinical settings with IPV victims (Eisenstat & Bancroft, 1999; Martin et al., 1999; Roberts et al., 1998). In addition, the association between depression and poor health among caregivers of young children in the general population (Heneghan et al., 1998; Horwitz et al., 2007; McLennan et al., 2001) and among foster caregivers (Cole & Eamon, 2007) has been reported. Given that depression may manifest as physical symptoms (e.g., lack of energy, altered sleep patterns), it is likely that depressed caregivers might identify as being in poor or fair health, rather than in good or excellent health.

The association between the type of main maltreatment suffered by the child (physical neglect compared to lack of supervision) and having one wave with a score in the clinical range for major depression may be related to the depressed caregiver's impairment in providing for the most basic needs of the child (e.g., food, housing, medical care). Further research should explore causal pathways for the association between child physical neglect and maternal depression.

Contrary to one previous study (Williams et al., 2007), this study found that Black caregivers were less likely than White caregivers to have one wave with a score in the clinical range for major depression. This finding is consistent with the NCS-R finding of lower risk of lifetime prevalence of depression among non-Hispanic Blacks than among Whites in the general population (Kessler et al., 2003). Results from this analysis also support previous studies that have shown a higher risk for recurrence of depression among people who have never married than among married people (Mueller et al., 1999).

The fact that sociodemographic factors that have been identified as risk factors for depression in previous studies (e.g., poverty, education, unemployment, age, trouble paying for basic necessities, and low social support) were not statistically significant at the conventional level of  $\alpha < .05$  may in part be attributable to the relative homogeneity of this population, which had a restricted range on

education and age and had a limited number of caregivers with middle-class or higher income and employment. Note that it is not possible to assert confidently that sociodemographic factors had no effect, because age, trouble paying for basic necessities, low social support, race/ethnicity, and marital status were related to depression at  $p \leq .155$  in the bivariate analyses in Table 2. It should also be noted that the design effect of two-stage random sampling increases the standard error of estimates (Levy & Lemeshow, 1991), which reduces the statistical power of tests compared with what they would be with the same sample size and simple random sampling.

Rates of depression among caregivers of young children in the CWS were very similar to rates among caregivers with children with disabilities likely to receive early intervention services. A meta-analysis of 42 studies generated a rough estimate of an average of 23.6% of caregivers of children with disabilities passing the threshold for depressive symptoms (Bailey et al., 2007). Nevertheless, the correlates of depression found in this study contrast with correlates in the population of families receiving services for child disabilities. Studies based on mothers of children with disabilities have reported that, at the child level, maternal depression is associated with autism diagnoses and children's behavioral problems. With regard to maternal and family factors for families of children with disabilities, maternal depression is associated with maternal stress, maternal coping style, physical health of the mothers, and family support and cohesion (Bailey et al., 2007). Although providers of early intervention services may know how to help caregivers of children with disabilities and address many of the correlates of depression associated with poor maternal health, dealing with IPV could be a significant challenge for them. A complicating factor is that early intervention services are usually provided at the child's home, where providers are more likely to encounter episodes of IPV and child maltreatment directly. This will require training of professionals, because many may not be aware of effective strategies for IPV intervention and referral resources available in their communities.

### Limitations

There were several limitations to this study. Because this study focused on women whose children were involved in allegations of child maltreatment, findings are not necessarily generalizable to other groups of women. Also, the measure of major depression was not based on a clinical interview with a mental health professional but on a single source of information: maternal reports.

Measurement of major depression was restricted to the report of at least one episode in the 12 months preceding the assessment. The duration of the episodes and whether multiple episodes occurred during any 12-month period

are unknown. Moreover, the measurement of major depression at each time point pertained only to the previous 12 months, and it is possible that this method missed depressive episodes between time points, which were more than 12 months apart. When caregivers were depressed at an early wave and had a missing value at a later wave (13.7%), the missing value was conservatively imputed as no depression, which could have led to undercounting waves with a score in the clinical range for major depression. Given that the prior history of major depression was not collected, women could have suffered multiple episodes of depression before the baseline interview, so those classified as having one score in the clinical range of major depression might instead have had a recurrent episode, whereas those classified as having no episodes might have had a previous one. Similarly, some of the caregivers classified as having three or more waves with a score in the clinical range for major depression across time might have had chronic depression, a critical issue that could not be studied with this data set.

Caregivers' responses for a variety of variables were subject to various forms of recall and response bias, especially in light of the sensitive nature of the events and the consequential nature of the topics (e.g., IPV and maternal depression). The assessment of IPV was limited to physical violence and did not include emotional and sexual abuse, which may also be associated with maternal depression. The use of caseworker information also carries limitations, such as the potential lack of knowledge about a caregiver's early history of abuse and neglect.

### Implications

Depressive symptoms among caregivers of young children reported to the CWS likely reflect the complex and overwhelming reality surrounding many families with a history of CWS involvement. The demands and challenges that these families face will not likely disappear with time alone. As children grow, many problems in early childhood will likely continue as risk factors that can compromise their well-being and development.

Among the many risk factors that maltreated children face, however, maternal depression is amenable to treatment. Screening for depression during CWS assessment and facilitating treatment as needed are essential for caregivers. Screening for caregiver depression is also one of the most effective interventions to promote children's well-being and development. Caseworkers can be a valuable resource to caregivers and children if they have the means and a system in place to refer caregivers for further evaluation and treatment.

A cross-sectional British study of caregivers of families in child and family social work caseloads reported more services and more time devoted to families with child abuse



and maternal depression (Sheppard, 1997). Similarly, in a Florida sample, there were more challenges in providing services and less success improving parenting skills among depressed caregivers of young children who had been reported for maltreatment to the CWS than among nondepressed caregivers reported for maltreatment to the CWS (Osofsky et al., 2007). These studies show the need for further research that focuses on determining effective ways to promote completion of treatment by caregivers with depression. Intervention research is needed to provide evidence concerning programmatic and implementation variables associated with the reduction of depression symptoms and recurrence. Research is also needed to determine how to help young children who need multiple services but have caregivers who are not able to take care of service completion because of depression.

Once the CWS addresses maternal depression, the system must be prepared for the level and intensity of resources that such address entails. They can especially be helpful if they ask questions about the risk factors for depression found here—current or past IPV and health status—and facilitate delivery of IPV and health services as needed. As they work with families, caseworkers should also be mindful that caregivers' history of abuse and neglect in childhood predicts depression.

The degree to which the CWS should play a role in service access for caregivers with depression is important for future policy consideration. It is noteworthy that new legislation is designed to promote early screening for maternal depression. As mentioned in the introduction, the federal Keeping Children Safe Act of 2003 requires that states develop "provisions and procedures" for referring child maltreatment victims to early intervention services, as funded under Part C of the Individuals with Disabilities Education Act [IDEA; 21 U.S.C. § 106(b)(2)(A)]. Part C services are intended to enhance the development of infants and toddlers with disabilities and minimize infants' potential for developmental delay. The law specifies that families should receive "a family directed assessment of the resources, priorities and concerns of the family and the identification of the supports and services necessary to enhance the family's capacity to meet the developmental needs of the infants and toddlers" [IDEA, 20 USC § 105(a)(2)]. Part C services include family training, counseling, and psychological services provided by psychologists, social workers, and family therapists. Note also that depression screening of caregivers of young children can also be accomplished through home visiting programs (Izzo et al., 2005; Olds et al., 1999; Olds et al., 2004), which have proved effective with low-income, disadvantaged populations similar to many families in the CWS.

Ultimately, to change the harsh reality surrounding maltreated young children, services must reach beyond child

safety and placement; they must simultaneously address the children's well-being and the families' well-being.

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