Preventing child maltreatment: An evidence-based update

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ABSTRACT
Child maltreatment is a significant public health problem associated with a broad range of negative outcomes in children and adolescents that can extend into adulthood. This review summarizes information about programs aimed at the prevention of child maltreatment evaluated by controlled trials, with a focus on home visitation programs. It does not include programs aimed at prevention of child sexual abuse, the subject of a separate review in this series. We discuss those programs that include one or more measures of child maltreatment and related outcomes (reports of abuse and neglect, injuries, hospitalizations and emergency room visits). Most programs targeting at-risk families have not shown evidence of effectiveness in preventing abuse or neglect. An important exception is the Nurse Family Partnership (NFP), a program provided by nurses to first-time socially disadvantaged mothers beginning prenatally that has undergone rigorous evaluation in three randomized controlled trials. It has shown consistent effects in reducing reports of maltreatment and associated outcomes as well as additional benefits in maternal and child health in high-risk families. A second exception is the promising Early Start program provided by nurses and social workers to at-risk families beginning postnatally. One randomized controlled trial of the program has shown reduced rates of parental reports of severe abuse and hospital attendance for injuries and poisonings, based on records. The characteristics of the NFP and Early Start programs are discussed with special emphasis on ways in which they differ from other home visitation programs.

KEY WORDS: Child maltreatment, home visitation program, prevention

Millions of children experience abuse and neglect every year. Official statistics are inaccurate, partly because many countries do not have systems responsible for recording child maltreatment.[1] In addition, child maltreatment definitions vary among countries and even where mandatory reporting exists, only a small proportion of cases are reported. These figures are still staggering despite definitional and reporting limitations. Child maltreatment includes five major subtypes: physical, sexual, emotional abuse, neglect and exposure to intimate partner violence (IPV). International studies demonstrate that, depending on the country, one-quarter to half of all children report severe and frequent physical abuse;[5] approximately 20% of females and 5-10% of males report sexual abuse as children.[1] The extent of worldwide emotional abuse, neglect and exposure to IPV is unknown.

The Canadian Incidence Study of Reported Child Abuse and Neglect examined the incidence of child maltreatment involving two nationwide waves in 1998 and 2003.[2,3] In 2003, approximately 235,315 maltreatment cases were investigated, with an annual incidence of 38.3 investigations per 1,000 children. Nearly half (49%) were substantiated, 13% were suspected and 40% were unsubstantiated.[3] Neglect, exposure to IPV and physical abuse were the most frequently substantiated categories. The rate of substantiated maltreatment increased 125% between 1998 and 2003.[3] The authors suggest that this is likely due to increased awareness of emotional maltreatment and exposure to IPV as maltreatment subtypes.

MacMillan and colleagues (1997) examined the prevalence of child physical and sexual abuse in 9,953 Ontario residents 15 years of age or older and found that significantly more females (12.8%) reported sexual abuse than males (4.3%), and significantly more males (31.2%) reported physical abuse than females (21.1%).[4] No community-based Canadian data exist regarding the prevalence of emotional abuse, neglect or exposure to IPV among children. It is evident from Canadian and international data that child maltreatment is a major problem throughout the world.

Impairment Associated with Child Maltreatment
Child maltreatment is associated with impairment across emotional, social, biological, and cognitive domains.[5-6] Adults who experienced childhood maltreatment are at risk for developing psychiatric disorders.[7-9] Adverse childhood
experiences, including maltreatment, have also been associated with adult risk behaviors, negative health outcomes and disease, for example, increased rates of substance abuse, risky sexual practices, chronic disease, and cancer.[10,11] Potential mechanisms in this relationship are neurobiological factors such as changes in brain function and structure, and alterations in the biological stress system.[11-14] On a macro scale, prevention of child maltreatment would help prevent a range of negative physical and mental health outcomes.

Risk Indicators Associated with Child Maltreatment

Recognition of risk indicators is paramount for developing child maltreatment prevention programs targeting at-risk populations. We use the term “indicator” rather than risk factor, because the latter often implies a causal relation between risk and outcome (in this case, child maltreatment). Much of the literature discussing “risk factors” is based on findings from cross-sectional surveys, which cannot tell us about causality – only associations.

In Table 1 we highlight some key risk indicators associated with physical and sexual abuse and neglect; information about risk indicators associated with emotional abuse and exposure to IPV is limited. Risk indicators for child maltreatment operate at a child, family and community level. At the child level, both gender and age are risk indicators. Males are at increased risk for physical abuse and females are at a greater risk for sexual abuse.[4,13] Both preschool children and adolescents are at greater risk for physical abuse, while sexual abuse is more common among children of elementary school age and adolescents.

At a family level, child physical abuse and neglect are associated with multiple risk indicators including inadequate parenting skills, family breakdown, parental stress and mental illness, IPV, and parental history of maltreatment during childhood.[15] Exposure to IPV is not only classified as a type of child maltreatment, but also increases the risk of child physical abuse and neglect.[2,17-18] Children in families with parental mental disorder, substance abuse, poor marital quality, and low paternal warmth and involvement are at greater risk for physical abuse and neglect.[2,15,19-20] It is likely a constellation of factors, rather than a single risk indicator leads to maltreatment. For example, young maternal age is associated with maltreatment,[15,21-22] and is also related to low maternal education and low socioeconomic status.

At the community level, contextual factors, including low socioeconomic status, living in an impoverished community, family size, and sibling spacing are risk indicators associated with maltreatment.[15,23-24] Although community-level risk indicators may have direct effects on children, it is more likely that these factors impact children indirectly through their caregivers.[24] Further work is needed to understand links between risk indicators and preventive interventions. A few longitudinal studies have been conducted;[25] such studies can provide information regarding temporal and causal relations, but only if information about exposure to maltreatment is collected such that the temporal association can be determined.[25,26]

Typically, investigators collect information about exposure to maltreatment retrospectively, even though data about the risk indicators is gathered prospectively.

### Table 1: Selected risk indicators for child abuse and neglect

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<tr>
<th>Risk factors</th>
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<td>Low maternal education</td>
<td>Maternal youth (age&lt;20)</td>
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<td>Maternal youth (age&lt;20)</td>
<td>Single parenthood</td>
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<td>Single parenthood</td>
<td>Welfare dependent</td>
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<td>Early separation from mother</td>
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<td>Low father involvement and warmth</td>
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<td>Age (preschool children and adolescents &gt; risk)</td>
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<td>Caregiver substance abuse</td>
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<td>Caregiver substance abuse</td>
<td>Presence of intimate partner violence</td>
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<td>Lack of parental social support</td>
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<td>Parental history of childhood maltreatment</td>
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<td>Low religious attendance</td>
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<td>Maternal youth</td>
<td>Parental death</td>
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<td>Parental death</td>
<td>Presence of stepfather</td>
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<td>Presence of stepfather</td>
<td>Harsh punitive tactics</td>
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<td>Harsh punitive tactics</td>
<td>Maternal psychopathy</td>
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<td>Maternal psychopathy</td>
<td>Unwanted pregnancy</td>
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<td>Unwanted pregnancy</td>
<td>Gender (females &gt; risk)</td>
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<td>Gender (females &gt; risk)</td>
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<td>Age (older children &gt; risk)</td>
<td>Parental history of childhood maltreatment</td>
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Programs for the Prevention of Child Maltreatment

Prevention of child maltreatment programs can be classified into universal programs, directed at whole populations (e.g. school children) and ‘targeted’ programs, aimed at high-risk individuals or groups.[27] Universal approaches may include public education about parenting, parental education and support groups in the community or provided through hospitals, and public awareness campaigns that provide information about recognition and reporting suspected maltreatment. Targeted programs focus on high-risk groups that may have one or more risk indicators associated with maltreatment.[27] These programs may include parental education and home visitation programs or family resource centers in high-risk neighborhoods. Finally, “tertiary” prevention focuses on preventing the recurrence of child maltreatment and decreasing impairment associated with
maltreatment; a discussion of such programs is beyond the scope of this review.

In a systematic review of the effectiveness of universal and targeted programs for the prevention of child physical abuse and neglect, MacMillan and colleagues identified eight main interventions targeting high-risk groups: (1) home visitation, (2) comprehensive healthcare program, (3) contact with a pediatrician plus home visits, (4) enhanced mother-infant contact postpartum, (5) parent training, (6) support from social work agencies, including drop-in-centre access, (7) free transportation for prenatal and well-child care, and (8) combined services including education, case management, and psychotherapy. Using four outcome measures – official reports of suspected or verified abuse and neglect, hospitalizations, visits to emergency departments, and injury rates – to evaluate the various interventions highlighted above, only intensive home visitation provided to socially disadvantaged women perinatally emerged as effective in preventing child maltreatment. The best evidence was for the effectiveness of a program of home visiting by nurses – the Nurse Family Partnership (NFP). MacMillan and colleagues (2000) confirmed these findings in a subsequent update.

For this review, we selected studies based on methodological quality according to the US Preventive Services Task Force guidelines and included only those programs where the intervention was evaluated using a control group. Furthermore, we limited our review to studies that included reports of maltreatment or associated measures such as injuries, hospitalizations and visits to the emergency room. If studies included one or more of these outcomes, we discuss them, and report on other related outcomes. Our review is not exhaustive in its discussion of prevention programs, but instead we highlight major interventions that meet stringent methodological criteria.

Home visitation programs

Home visitation programs as a method of preventing maltreatment have been extensively implemented; a minority has undergone rigorous evaluation. While many programs have similar underlying goals, they differ in terms of the qualifications of visitors (nurses vs. paraprofessionals), the structure provided to the visitors to implement services, the parenting population targeted for services, and the content and clinical methods used in the programs.

Nurse family partnership

The NFP is a home visitation program employing nurses as home visitors. It has programs in 25 states, serving approximately 85,809 families. Since 1977, the NFP has been tested across three sites using randomized controlled trials (RCTs). Olds and colleagues (1986) first tested it in Elmira, New York (N=400); then in Memphis, Tennessee (N=1138); and more recently in Denver, Colorado (N=735). The program model targeted first-time mothers who were predominantly low income, single, or adolescents. The program content was designed to modify risks associated with negative outcomes including poor birth outcomes, child abuse, neglect, injuries, and compromised parental life course. In the three studies, women were randomly assigned either to home visiting during pregnancy and the first two years postpartum or comparison services which consisted of some combination of routine care. In the Elmira and Memphis studies, there was also a group of mothers who received home visitation focused on the prenatal period, without the two-year postnatal follow-up. Since the outcomes for this group were substantially below the group where home visiting began prenatally and extended through infancy, the phrase “NFP” refers to the latter program. The duration of each visit was approximately 75 to 90 min with visits following a set schedule, beginning before the end of the second trimester in pregnancy, as follows: weekly for the first four visits, every other week for the remainder of the pregnancy; every week for six weeks in the postpartum period, every other week until the infant is 21 months old, then once a month until the child is two years old. The NFP is a theoretically-grounded program involving three major activities: (1) promoting healthy pregnancy, the health and development of the child, and the parent’s life course, (2) assisting women in building relationships, and (3) linking women and their family with health and social services. In the Elmira sample, nurse visitation improved women’s prenatal health-related behaviors and pregnancy outcomes, and reduced children’s injuries detected in medical records. There was a trend for the rates of state-verified reports of child abuse and neglect to be reduced in the first two years postpartum among the highest risk women in the sample (single, low-income, adolescent mothers; P = 0.07). A reduction in reports of maltreatment, although not evident at the four-year follow-up, was present at the 15-year follow-up in the whole sample; women who were visited by nurses were 48% less likely to be identified as perpetrators of child abuse and neglect compared with controls. While these results are impressive, maltreatment was not eliminated. Presence of IPV in the home attenuated program effects on maltreatment, although the presence of IPV did not moderate program effects on maternal or child functioning. With support from the Centers for Disease Control and Prevention, a study is currently underway to develop strategies to assist women exposed to IPV; this NFP enhancement will be studied in the future, by comparing the current NFP model and one augmented with an IPV component in a randomized trial.

In Memphis and Denver, rates of substantiated child abuse and neglect in the population of two-year-old children were too low (3-4%) to serve as a valid indicator of child maltreatment. However, in Memphis, NFP children had 23% fewer injury- and ingestion-related healthcare encounters, were hospitalized fewer days and, when hospitalized, tended to be older with less severe conditions compared with the control children. At child age six, NFP mothers reported fewer subsequent pregnancies, longer intervals between the birth of their children; longer relationships with current partners; and fewer months utilizing welfare and food stamps. Moreover, NFP children had higher intellectual functioning and fewer behavioral problems in the borderline or clinical range. Finally, there was a trend (P = 0.08) towards fewer deaths in the NFP children from birth to age nine from preventable causes.
Due to the complexity of the healthcare system in Denver, researchers could not use medical records or trace children’s healthcare utilization patterns reliably.\(^{[41]}\) Therefore, they used parental caregiving and infant emotional and cognitive outcomes as proxy measures associated with maltreatment.\(^{[19]}\) At all follow-up visits, up to child age four, compared with controls, NFP children were less likely to exhibit emotional vulnerability and language delays and exhibited superior mental development, and more advanced language, superior executive functioning and behavioral adaptation.\(^{[40,41]}\) Also, at four years postpartum, NFP mothers reported greater intervals between the births of their offspring and less IPV over the past six months.

Given that many existing home visitation programs employ paraprofessionals, the Denver trial involved three arms—one with nurses, one with paraprofessionals and a control group. Paraprofessionals produced results that were approximately half the size of those produced by nurses.\(^{[31]}\) While mothers reported benefits from visits with paraprofessionals at two years postpartum, child outcomes were not statistically different from the control group in most cases.\(^{[41]}\) Furthermore, the nurse-visited group experienced less attrition and families were more likely to adhere to scheduled visits.\(^{[31]}\) Based on these findings, Olds and colleagues\(^{[41]}\) concluded that visitor qualifications likely played a role in the parents’ engagement and affected parental motivation.\(^{[31]}\)

Although findings from the NFP sites demonstrate external validity, program adjustments have been necessary to address challenges associated with implementation of certain aspects of the curriculum, as well as maternal depression and IPV in the home. Identification of these limitations has led to plans for evaluation of additions to the model which will be tested in site-based RCTs.\(^{[51]}\)

Healthy Families America

Healthy Families America (HFA), modeled after Hawaii’s Health Start Program (HSP), is a home visiting program by paraprofessionals targeting at-risk families. It has programs in over 430 communities across North America, serving approximately 47,000 families.\(^{[42,43]}\) Generally, families are identified based on psychosocial risks during pregnancy or at birth.\(^{[41]}\) Paraprofessionals offer home visiting services to clients beginning postnatally and extending for three to five years. Home visitors provide information, make referrals to community resources, prepare parents for their children’s developmental milestones, screen and refer identified delays, and promote environmental safety. While the HFA programs are committed to a similar set of principles, their approaches are malleable and vary between sites.\(^{[42-46]}\) There is considerable variation in program design and execution since state and local HFA programs do not adopt a single approach.\(^{[51]}\)

Most studies evaluating these programs using RCTs have found no effect on the reduction in rates of child abuse and neglect.\(^{[45,46]}\) In assessing the HSP, Duggan and colleagues\(^{[45]}\) found no program effects on children’s visits to the emergency department, hospitalization, or injuries, and no effects on parental reports of abusive caregiving or observations of care provided in the home. More recently, they evaluated six Healthy Families Alaska (HFAK) programs.\(^{[51]}\) Consistent with previous assessments of similar programs, Duggan and colleagues (2007) found no overall effects on maltreatment reports, or on most measures of parental risks. Furthermore, while HFAK mothers reported using more mild forms of physical discipline compared with control mothers, there were no differences between groups in their use of more severe forms of physical discipline.\(^{[45]}\) Caldera and colleagues (2007) found differences between groups on some child outcomes; HFAK children had better developmental and behavioral outcomes compared with control children.\(^{[46]}\) However, Caldera and colleagues found few differences in parenting outcomes with the exception of greater parenting self-efficacy in HFAK mothers.\(^{[46]}\) The authors attributed these findings to high attrition rates and unintentional variations in service quality and implementation.

One randomized trial of a home visitation program modeled after HFA conducted in New York (HFNY) showed reduction in maternal self-reports of some abusive and neglectful behaviors, but no difference in child protection reports between the home-visited and control groups. In addition, similar to other HFA programs, attrition rates were high, with a 66% drop-out rate by Year 2.\(^{[47]}\)

Early Start Program

In New Zealand, the Early Start (ES) Program was implemented in the 1990s targeting at-risk families.\(^{[48]}\) Plunket Community nurses, who visit families within three months of birth to provide health and parenting support referred families to ES when they identified two or more risk factors.\(^{[48]}\) Nurses and social workers delivered services within ES. Using a social learning model, the unique characteristics of the program include an initial comprehensive assessment of family needs, resources, and strengths. The visitor and family then collaboratively generate solutions to family challenges, thereby fostering a partnership between the home visitor and client. Finally, the visitors provide support throughout the preschool years.\(^{[48]}\)

The goals of the program include: (1) improving child health and parenting skills; (2) reducing maltreatment; (3) supporting parental physical and mental health; (4) promoting family economic well-being; and (5) supporting stable, positive partner relationships. Initially, home visitors assessed family functioning weekly for a month. Frequency of visits depended on family need, ranging from high to low need. Visits started as soon as birth as possible and continued until the child’s third birthday. One fundamental feature of ES was that it was developed and pilot tested prior to launching the full-scale trial.

Fergusson and colleagues\(^{[49]}\) used an RCT to compare outcomes between 220 families enrolled in ES with 225 control families. At trial completion, attrition rates were higher for the ES group (16.4%) compared to the control group (7.2%). There were no statistically significant differences in the characteristics of the remaining participants.\(^{[49]}\) However, the imbalanced attrition rates create a potential bias.\(^{[52]}\)
The ES children exhibited a number of benefits compared to their control counterparts. The ES children had greater contact with family physicians and dentists and were less likely to have hospital visits due to injury or ingestions. In addition, ES parents reported higher rates of positive and nonpunitive parenting at 36 months. Furthermore, ES parents reported lower rates of severe child assaults than control parents. However, Fergusson and colleagues (2005) found no differences between groups in rates of contact with agencies responsible for child maltreatment follow-up, possibly due to surveillance bias.\(^{[49]}\)

At the 36-month follow-up, Fergusson and colleagues (2006) found no differences amongst family-related outcomes, including maternal health, family functioning, exposure to stressful life events, and economic circumstances. The authors suggest that the discrepancy between benefits of the program for parenting and child-related outcomes, in the absence of corresponding family-related changes, may be due to program features promoting “new learning” in areas related to child health, education and parenting, rather than changing established family difficulties.\(^{[49]}\)

Although there are differences between the NFP and ES programs in terms of client selection and program delivery, common features contribute to their respective successes including: (1) empirically-based program design (2) tertiary qualifications of home visitors (nurses or social workers); and (3) supervisory quality control of both program delivery and content.\(^{[49]}\) The results of ES are promising, however this intervention requires additional study to determine if results can be replicated across other samples and regions.

**Comment on Parenting Programs**

Parenting programs typically aim to improve the parent-child relationship by changing parental practices and functioning, including mental health, attributions, and cognitions. While many programs serve the general community, some programs target high-risk populations. Parent programs vary in curriculum and design depending on the target audiences. Examples include the Triple P program, Sure Start, Family Connections, and Together for Kids.\(^{[50]-[54]}\) Programs may be short-term, offered weekly for six to 12 weeks, or more intensive, offering services up to one year. We did not include a comprehensive overview of these programs here because existing studies do not include maltreatment reports or related outcomes such as injuries or hospitalizations; they concentrate on improvements in parenting knowledge or skills. Further research is needed to determine whether improvement in parenting through such programs actually prevents child maltreatment.

**Conclusion and Future Directions**

Research in the prevention of child maltreatment has been limited for several reasons, including challenges in measuring subtypes of child maltreatment and in conducting RCTs with complex populations, in addition to the ethical and legal considerations involved in evaluating interventions in this area.\(^{[54]}\) Although evidence-based support for targeted interventions has been steadily increasing with the impressive results of the NFP, and ES there is a gap in the field with respect to rigorous evaluations of prevention programs for child maltreatment. The NFP and ES will not be the only answers; additional approaches that include a combination of universal and targeted programs are necessary. Thus far, research has primarily focused on the prevention of child physical and sexual abuse; neglect is often considered with physical abuse and little attention has been given to the prevention of emotional abuse or exposure to IPV.

The development of future programs needs to be theoretically driven. In addition, before investing in a full evaluation of a program (using an RCT, for example), an intervention should be piloted for feasibility and acceptability. The program should then be evaluated with the key outcomes of child maltreatment using the most rigorous design possible – in most cases, a randomized trial comparing the experimental program with existing services, since it is not ethical to withhold services, even if it is unknown whether existing services provide any benefit. Once an intervention has been evaluated, it is important to determine its external validity; are the findings generalizable to other settings and populations? If this is determined to be the case, it is then appropriate to move toward dissemination, however, adherence to the protocol and guidelines must be closely monitored.\(^{[50]}\) Ongoing data collection should be used to monitor program outcomes; any major modifications should be evaluated before implementation. The majority of studies purporting to evaluate child maltreatment prevention programs have utilized a wide range of outcome measures related to various aspects of parental, child and family functioning. Only a minority of studies have included direct measures of child maltreatment such as injuries or reports of child abuse and neglect. Researchers need to identify common outcomes that may be assessed using standardized, relevant measures. Once a program is shown to have benefits, it is essential to consider evaluations based on costs of the intervention and an examination of economic benefits to society.\(^{[26],[31]}\)

**References**


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