Child Maltreatment 1

Burden and consequences of child maltreatment in high-income countries

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This is the first in a Series of four papers about child maltreatment

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Child maltreatment remains a major public-health and social-welfare problem in high-income countries. Every year, about 4–16% of children are physically abused and one in ten is neglected or psychologically abused. During childhood, between 5% and 10% of girls and up to 5% of boys are exposed to penetrative sexual abuse, and up to three times this number are exposed to any type of sexual abuse. However, official rates for substantiated child maltreatment indicate less than a tenth of this burden. Exposure to multiple types and repeated episodes of maltreatment is associated with increased risks of severe maltreatment and psychological consequences. Child maltreatment substantially contributes to child mortality and morbidity and has longlasting effects on mental health, drug and alcohol misuse (especially in girls), risky sexual behaviour, obesity, and criminal behaviour, which persist into adulthood. Neglect is at least as damaging as physical or sexual abuse in the long term but has received the least scientific and public attention. The high burden and serious and long-term consequences of child maltreatment warrant increased investment in preventive and therapeutic strategies from early childhood.

Introduction

Maltreatment of children by their parents or other caregivers is a major public-health and social-welfare problem in high-income countries. It is common and can cause death, serious injury, and long-term consequences that affect the child's life into adulthood, their family, and society in general. The 2006 WHO report on prevention of child maltreatment[1] drew attention to the need for this topic to achieve the prominence and investment in prevention and epidemiological monitoring that is given to other serious public-health concerns with lifelong consequences affecting children—such as HIV/AIDS, smoking, and obesity—and it recommended expansion of the scientific evidence base for the magnitude, effects, and preventability of the problem. This Series of four papers critically assesses this expanding evidence base with the aim of informing policy and practice relating to child maltreatment. We focus mainly on high-income countries and eastern European countries that are in economic transition, since the problem and systems for response differ in low-income and many middle-income countries. In this first paper of the Series, we aim to quantify the magnitude of the problem, its determinants, and consequences. The second charts the evidence underpinning recognition and response by professional agencies dealing with children. The third assesses what works for prevention of child maltreatment and associated impairment, and the final paper discusses how consideration of children's rights could enable a more coherent and effective approach to child maltreatment.

Key messages

- A substantial minority of children in high-income countries are maltreated by their caregivers
- Repeated abuse and high levels of neglect mean that for many children maltreatment is a chronic condition
- Parental poverty, low educational achievement, and mental illness are often associated with child maltreatment
- Child maltreatment has longlasting effects on mental health, drug and alcohol problems, risky sexual behaviour, obesity, and criminal behaviour, from childhood to adulthood
- Neglect is at least as damaging as physical or sexual abuse in the long term, but has received the least scientific and public attention
- The high burden and serious, longlasting consequences of child maltreatment warrant increased investment in preventive and therapeutic strategies from early childhood

Burden of child maltreatment and definitions

Child maltreatment encompasses any acts of commission or omission by a parent or other caregiver that result in harm, potential for harm, or threat of harm to a child

Search strategy and selection criteria

We did a comprehensive search of PubMed, Psychinfo, and Education Resources Information Center (ERIC) for any systematic reviews or overviews related to child maltreatment published after 2000 (to June, 2008) and then scrutinised reference lists of relevant studies. We also searched PubMed, ERIC, and Psychinfo using additional synonyms and indexing terms specific to each outcome. Searches on PubMed were enhanced with the related articles facility for selected studies. Recent psychological abstracts, child abuse and neglect abstracts, and criminal justice abstracts were also searched. We searched websites posted by governments or major advocacy bodies on child maltreatment for reports on incidence and prevalence rates.

	Definition	Comment
Child maltreatment*	Any act of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child. Harm does not need to be intended	In the USA, 82% of substantiated cases were perpetrated by parents or other caregivers[3]
Physical abuse*	Intentional use of physical force *or implements* against a child that results in, or has the potential to result in, physical injury	Includes hitting, kicking, punching, beating, stabbing, biting, pushing, shoving, throwing, pulling, dragging, shaking, strangling, smothering, burning, scalding, and poisoning. 77% of perpetrators were parents according to US figures for substantiated physical abuse[3]
Sexual abuse*	Any completed or attempted sexual act, sexual contact, or non-contact sexual interaction with a child by a caregiver†	Penetration: between mouth, penis, vulva, or anus of the child and another individual. Contact: intentional touching directly or through clothing of genitalia, buttocks, or breasts (excluding contact required for normal care). Non-contact: exposure to sexual activity, filming, or prostitution. For substantiated cases in the USA in 2006, 26% of perpetrators were parents and 29% a relative other than a parent.[3] Parents form a smaller percentage (3–5%) of perpetrators of self-reported sexual abuse[4]
Psychological (or emotional) abuse*	Intentional behaviour that conveys to a child that he/she is worthless, flawed, unloved, unwanted, endangered, or valued only in meeting another's needs. *In the UK, the definition includes harmful parent–child interactions which are unintentional: "the persistent emotional ill-treatment of a child such as to cause severe and persistent adverse effects on the child's emotional development"*[5]	Can be continual or episodic—eg, triggered by substance misuse. Can include blaming, belittling, degrading, intimidating, terrorising, isolating, or otherwise behaving in a manner that is harmful, potentially harmful, or insensitive to the child's developmental needs, or can potentially damage the child psychologically or emotionally. Witnessing intimate-partner violence can be classified as exposure to psychological abuse. 81% of substantiated cases in the USA were perpetrated by parents[3]
Neglect*	Failure to meet a child's basic physical, emotional, medical/dental, or educational needs; failure to provide adequate nutrition, hygiene, or shelter; or failure to ensure a child's safety	Includes failure to provide adequate food, clothing, or accommodation; not seeking medical attention when needed; allowing a child to miss large amounts of school; and failure to protect a child from violence in the home or neighbourhood or from avoidable hazards. Parents make up 87% of perpetrators of substantiated cases in the USA[3]
Intimate-partner violence	Any incident of threatening behaviour, violence, or abuse (psychological, physical, sexual, financial, or emotional) between adults who are, or have been, intimate partners or family members, irrespective of sex or sexuality	Most frequently the perpetrator is the man in heterosexual couples, but there is growing recognition of violence inflicted by women. One community survey reported unanimous agreement that punching, slapping, or forcing a partner to have sex should be regarding as intimate-partner violence, but there was less consensus about emotional or economic abuse

*Definitions are based on Centers for Disease Control and Prevention report 2008, with modifications in italics.[2] †Includes substitute caregivers in a temporary custodial role (eg, teachers, coaches, clergy, and relatives).

Table 1: **Definitions of child maltreatment**

(usually interpreted as up to 18 years of age), even if harm is not the intended result.[2] Four forms of maltreatment are widely recognised: physical abuse; sexual abuse; psychological abuse, sometimes referred to as emotional abuse; and neglect. Increasingly, witnessing intimate-partner violence is also regarded as a form of child maltreatment. Consensus definitions place responsibility for safeguarding children from maltreatment on all caregivers, including teachers, trainers, or child minders (table 1).[2] In practice, however, 80% or more of maltreatment is perpetrated by parents or parental guardians, apart from sexual abuse, which is mostly perpetrated by acquaintances or other relatives (table 1).

Reliable measurement of the frequency and severity of child maltreatment is not straightforward. We review three types of studies that measure the frequency of maltreatment. The first two types are community studies based on self-reports from victims who are old enough to comply with surveys, or studies based on parents reporting severe physical punishment or patterns of care. The third type involves official statistics from agencies investigating victims (eg, child-protection services) or police (investigating victims and offenders). All these measures have biases and inconsistencies: thus the prevalence figures in panel 1 are presented as a range of estimates. Despite the uncertainty of these estimates, the gap between the low rates of maltreatment substantiated by child-protection agencies and the ten-fold higher rates reported by victims or parents underlines the fact that only a few children who are maltreated receive official attention.[25–27] Studies that have linked self-reports to official statistics for child protection provide direct evidence of under-reporting to agencies. One study reported evidence of contact with child-protection services in only 5% of children who were physically abused and 8% of those sexually abused.[26] Another showed that even children who were being monitored by agencies reported four to six times more episodes of abuse than did official records.[28]

The discrepancies between official statistics and community studies are even more substantial when examined by age at maltreatment. National statistics from child-protection agencies in the UK and USA show an inverse relation between rate of reports and age for all categories of maltreatment apart from sexual abuse, which is stable across the age range.[3,7] Opposite trends have been noted for self-report or parent-report studies in the UK and USA for physical, sexual, or psychological abuse, whereas the prevalence of neglect seems to remain relatively constant.[20,27,29] Explanations for these diverging trends include increased risks of under-reporting by parents of younger children, and underdetection of maltreatment by child-protection agencies in older children.

Although self-reports or parent reports are probably closer to the true, unobserved rate of maltreatment than are official reports to agencies, they might still be underestimates. Biases in self-reports of sexual abuse have been investigated, although problems such as

Panel 1: **Burden of maltreatment—prevalence of maltreatment in the past year per child population or cumulative prevalence during childhood**

Agency reports

UK (England)

- 1·50% of children were estimated to have been referred to social services for abuse (excluding neglect and intimate-partner violence);[6] the rate for all social welfare referrals for children (<18 years) in 2007 was 4·96% per year[7]
- 0·84% of all social welfare referrals were estimated to have been investigated for abuse;[6] 2·77% of children were investigated in 2007
- 0·30% of children started on a child-protection plan in 2007 (previously child protection registration);[7] reports according to primary reason were: neglect 44%, physical abuse 15%, multiple 10%, psychological abuse 23%, and sexual abuse 7%

USA

- 4·78% of children were investigated in 2006[3]
- 1·21% of children were substantiated in 2006; primary reasons were: neglect 60%, physical abuse 10%, multiple 12%, psychological abuse/unknown 11%, and sexual abuse 7%

Canada

- 2·15% of children were investigated in 2003[8]
- 0·47% of children remained suspicious[8]
- 0·97% of children were substantiated; primary reasons were: neglect 38%, physical abuse 23%, psychological abuse 23%, and sexual abuse 9%

Australia

- 3·34% of children were referred in 2002–03[9]
- 0·68% of children were substantiated; primary reasons were: neglect 34%, physical abuse 28%, psychological abuse 34%, and sexual abuse 10%

Self-reported maltreatment or parent-reported perpetration

Physical abuse

- 3·7–16·3% (5–35% cumulative) of children per year experienced severe parental violence or worse, which is likely to place child at risk of harm; typically included studies classified hitting with fist/object, kicking, biting, threatening/using a knife/weapon as severe violence (review includes studies in UK, USA, New Zealand, Finland, Italy, and Portugal);[10,11] slapping, hitting, and grabbing were classified as minor violence and are not counted in the figures shown here
- 12·2–29·7% is the yearly prevalence of physical abuse for Macedonia, Moldova, Latvia, and Lithuania[12]
- 24–29% is the cumulative prevalence of physical abuse for Siberia, Russia, and Romania[13,14]

Psychological abuse

- 10·3% is the yearly prevalence of psychological abuse (verbal abuse by adults or told not wanted; US study)[15]
- 4–9% is the cumulative prevalence based on categories consistent with severe emotional abuse (studies in Sweden, USA, and UK)[16–18]
- 12·5–33·3% is the yearly prevalence of severe or moderate psychological abuse reported for four eastern European states (Macedonia, Latvia, Lithuania, and Moldova)[12]

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forgetting, denial, misunderstanding, and embarrassment also apply to other forms of maltreatment.[30] All these problems are likely to lead to the under-reporting rather than over-reporting of sexual abuse of children.[25,31,32] Test-retest studies have shown modest to moderate agreement between successive self-reports by young adults of sexual or physical abuse several years later (κ coefficient 0·4–0·6) and good agreement is shown for all types of victimisation several weeks later.[25,27,33] One study using latent class methods estimated that reported rates of child sexual abuse were roughly half the true but non-observed rate.[25]

Studies measuring physical abuse in young children use parent reports of physical violence, whereas parent or adolescent self-reports can be used in older children to yield similar estimates.[25,27] Comparison between official statistics and parent-report studies within a country suggest that only a small proportion of these cases are investigated by child-protection services (panel 1). For example, a systematic review in the UK estimated that around one in 30 children who were physically abused by parents (yearly prevalence 9%) were investigated by social-welfare services responsible for child protection, and only one in 250 children who were physically abused were monitored in accordance with a child-protection plan.[10]

Measurement of sexual abuse relies on retrospective self-report studies of episodes that are recalled years later by adolescents or adults. Between 5% and 10% of girls and 1% to 5% of boys are exposed to penetrative sexual abuse during childhood, although figures that include any form of sexual abuse are much higher (panel 1). These estimates are supported by results of a meta-analysis of worldwide studies of variable quality and methodologies,[20] but they probably give a lower limit of the true rate of sexual abuse because of under-reporting.

Few studies have examined the prevalence of psychological abuse. Results from large population-based, self-report studies in the UK and USA showed that 8–9% of women and about 4% of men reported exposure to severe psychological abuse during childhood.[16,17] Similar figures have been recorded for psychological abuse in the past year in boys and girls (10·3%).[15] Higher rates have been reported in eastern Europe by similar measures (panel 1).[12]

Measurement of neglect in the community is difficult, partly because there are many aspects of omission or lack of provision of care that are harmful or could place a child at risk of harm.[34] UK and US studies noted that between 1·4% and 10·1% of children or their mothers reported persistent absence of care or instances in which a child was hurt because of insufficient supervision (panel 1). Neglect has received little attention from self-report and parent-report studies despite being the most frequent category of child maltreatment recorded by child-protection agencies (panel 1).[3,7]

Children who witness intimate-partner violence can be harmed psychologically by witnessing the experience or by being caught up in the violence. The reported prevalence of witnessing intimate-partner violence during childhood ranges from 8–10% in Swedish children aged 15–16 years, who were surveyed in 2000 and 2006,

to 24% reported in a survey of 8600 adult members of a US health maintenance organisation.[18,24] The risk of other forms of child maltreatment for witnesses of intimate-partner violence is 30–60%.[35,36]

Children who are exposed to one type of maltreatment are often exposed to other types on several occasions or continuously. How frequently this abuse occurs is underestimated by official reports because recording of more than one type of maltreatment is often discouraged by child-protection agencies and official reports often do not capture the chronology of exposure over time. However, retrospective self-report studies consistently show that some children are exposed to more than one type of maltreatment.[3,7,15,16,37] This pattern is emphasised by detailed examination of narratives in US child-protection reports of 519 cases of maltreatment, in which high rates of multiple types of maltreatment were reported (36–91% depending on the classification used) with emotional abuse rarely occurring alone (1·2%).[38] Exposure to multiple types of abuse contributes to high rates of repeated referrals to child-protection services—eg, 22% of children with substantiated maltreatment in the US were re-reported within 24 months,[39] with similar rates in the UK (24% within 27 months) and in eight European countries (7–33%).[40–42] Factors that consistently affect re-reporting to agencies are primarily ongoing risk factors in the child (such as disability or chronic medical disorders), in the parent (such as alcohol misuse), indices of social adversity (such as low income, contact with services), and multiple or chronic maltreatment, particularly neglect.[43] Re-report can also indicate increased surveillance.[27,39,42–46]

Much less is known from self-report studies about patterns of maltreatment for more than one child in a family. However, an analysis of child-protection referrals in the UK showed that maltreatment was restricted to one specific child, who was more likely to be abused physically or sexually, in 44% of 310 index cases. Referrals of multiple siblings (56% of cases) were linked to neglect or psychological abuse. Parental difficulties and family stressors—such as family conflict and separation, drug or alcohol misuse, or family criminality—were associated with maltreatment of all children in the family (37%).[47]

Throughout childhood, maltreatment by parents or other caregivers merges with other forms of victimisation. In a nationally representative study, Finkelhor and colleagues[27,48] noted that the 22% of children aged 2–17 years who had four or more types of victimisation in the previous year—including physical, sexual, or psychological abuse; neglect; or exposure to crime, assault, witnessing intimate-partner violence; or peer or sibling victimisation—were much more likely to be victimised the following year than were those who had fewer types of victimisation, and to have the most serious victimisations and most serious psychological symptomology. Evidence from several studies suggests that children who are exposed to one type of maltreatment are at high risk of other types and of repeated exposure over time, and that the frequency of exposure is correlated with the severity of maltreatment.[16,24,48,49] For a few children, maltreatment is a chronic condition, not an event.

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Sexual abuse

- Cumulative prevalence of any sexual abuse: 15–30% for girls and 5–15% for boys; cumulative prevalence of penetrative sexual abuse: 5–10% for girls and 1–5% for boys (any sexual abuse includes non-contact, contact, or penetrative abuse); figures are taken from population-based studies in developed countries (Australia, New Zealand, Canada, and USA)[4,19]
- Similar results were derived in a meta-analysis by Andrews and colleagues[20] of studies worldwide (93 for boys and 143 for girls): estimates of childhood prevalence rates were: non-contact sexual abuse (3·1% boys, 6·8% girls); contact sexual abuse (3·7% boys, 13·2% girls); penetrative sexual abuse (1·9% boys, 5·3% girls); and any sexual abuse (8·7% boys, 25·3% girls)

Neglect

- 1·4–15·4% is the incidence[15,21] (6–11·8% cumulative childhood prevalence[17,22]) of persistent absence of care or provision likely to place a child at risk of harm (eg, not enough food, no medical care when needed, no safe place to stay,[15] serious absence of care,[17] or in maternal reports—child hurt because of lack of supervision,[21] self-report and maternal-report studies from USA and UK)

*Witnessing intimate-partner violence**

- 10–20% is the yearly prevalence estimates based on a review of US community studies by Carlson.[23] Few recent studies have been undertaken
- 8–25% is the childhood prevalence of witnessing intimate-partner violence—cross-sectional surveys of adolescents and adults[18,24]

*This category is not included in child-protection reports, therefore not listed in first part of panel.

Determinants of maltreatment

Characteristics of the victim

Understanding what characteristics of parent–child relationships place children at increased risk of maltreatment within a family is complex and beyond the scope of this review. Girls have a higher risk of being sexually abused than do boys, although rates of other types of maltreatment are similar for both sexes in high-income countries.[3,7,20,50] In low-income countries, girls are at higher risk for infanticide, sexual abuse, and neglect, whereas boys seem to be at greater risk of harsh physical punishment.[51]

Disabled children are at increased risk of maltreatment, although whether their disability is a cause or consequence is uncertain.[52–54] A record-linkage study in the USA showed a cumulative prevalence of any maltreatment in 9% of non-disabled children and in 31% of disabled children.[52] The overall prevalence of any recorded disability was 8%, but a quarter of all maltreated children had a disability.

Characteristics of the parents and community

Identification of the separate effects of parental characteristics on the risk of child maltreatment is challenging

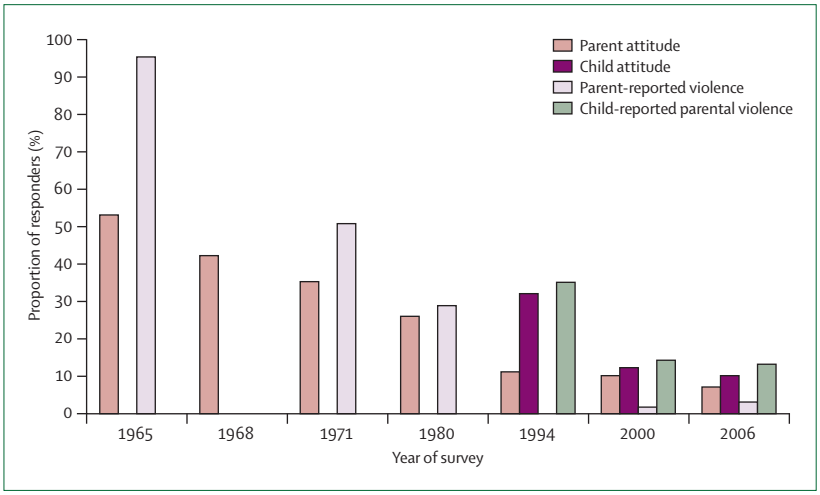

Figure: **Time trends in parental violence towards children in Sweden**
Parental attitudes are based on nationally representative interview surveys (1965, 1968, 1971, 1980) and questionnaire surveys (1994, 2000, 2006). Child attitudes are based on questionnaire surveys of schoolchildren aged 13 and 16 years in 1994, 2000, and 2006. Responses are to the question "Is it right to punish your child physically (including a box on the ear) if they have made you angry" (for children "Is it OK for your parents to hit you if you have made them angry?"). Parental violence is based on parent-reported physical punishment in the past year and child reports on parental violence in preschool years.[18]

Panel 2: Prevalence of abuse in residential care institutions

About 1·3 million children (aged 0–17 years) are in social-care facilities within 20 countries in eastern Europe and the former Soviet Union.[71] Physical and sexual abuse by caregivers and peers in these institutions seems to be common.[72] In 2000, an anonymous questionnaire study of 3164 children in residential care aged 7–18 years (8% of all children in residential care in Romania) showed that 38% reported severe physical punishment or beatings, usually by residential care staff (in 77% of cases).[73] A fifth of respondents (roughly half were boys) claimed to have been blackmailed or coerced into sexual activity, and a further 4% claimed that they were constrained to have sex. The reported perpetrators of these acts of sexual abuse were older residents of the same sex (50%), older residents of the opposite sex (12%), institutional staff (1·3%) offending inside the institution, as well as relatives (4%), other young people (3%), and adults (1%) offending outside the institution. 29% of respondents would not identify their perpetrator. Public scandals involving the sexual exploitation of children in residential care by their carers occur worldwide, with recent examples in Belgium, Portugal, UK, and Ireland.[51] However, the consistency of the problem across residential care homes in Romania suggests endemic abuse, which, given that 1·9% of children are in residential care at any one time in that country, represents a major public-health problem.[73]

See Online for webfigures 1 and 2

since many factors are inextricably clustered. Poverty, mental-health problems, low educational achievement, alcohol and drug misuse, and exposure to maltreatment as a child are strongly associated with parents maltreating their children. The extent to which each of these risk factors is causally related to the occurrence of maltreatment is hard to establish. Risk factors might affect the child differently depending on the type of maltreatment and might also be linked to the adverse consequences of maltreatment. The ecological model conceptualises maltreatment as multiply determined by forces at work in the individual, in the family, and in the community and culture, and suggests that these determinants modify each other. Thus, parental risk factors can be modified by the environment and community.[55] Nevertheless, some relationships can be generalised. First, income and parental education are risk factors for child maltreatment, although their importance varies with the type of maltreatment.[17,22,43,56,57] Second, socioeconomic inequalities are especially steep for deaths from child abuse.[58] Third, in the USA, there is controversy about the extent to which ethnic differences in allegations and substantiation of maltreatment, and in deaths from injury due to maltreatment, are explained by sociodemographic characteristics.[48,59–61] However, ethnic differences in the overall risk of maltreatment are largely explained by sociodemographic characteristics, apart from for children of mixed or multiracial heritage who have an increased risk.[22] Fourth, although a clear pathway exists by which parental drug and alcohol problems can cause child maltreatment in individual families, evidence for a causal link within populations is less certain. However, substance misuse is undoubtedly a common factor in incidents involving both spouse and child maltreatment.[62]

Last, the community environment seems to have a small to moderate effect in addition to family and individual characteristics. A UK cohort study[63] reported that individual strengths distinguished resilient from non-resilient children who were exposed to physical abuse under conditions of low but not high family and neighbourhood stress, which was manifested by high crime and low social cohesion, and informal social control. Similarly, a systematic review[64] reported that 10% of the variation in child health and adolescent outcomes, including maltreatment, was explained by neighbourhood socioeconomic status and social climate.

Changes over time

Evidence suggests that physical and sexual abuse are decreasing in some settings. In the USA, substantiated reports of sexual and physical abuse have fallen by around 50% from the mid-1990s to 2005 (webfigure 1),[27,50,65] with a similar trend in England (webfigure 2).[7] These decreases are probably accurate estimates since they are present across both types of abuse with no preponderance of equivocal cases. No analysis of trends in Europe has been done, despite clear evidence, at least in Sweden, of a reduction in acceptance and occurrence of parental violence towards children since the 1960s (figure).[18] Further research is needed to confirm these trends that emphasise the

predominance and continuing problem of neglect and the rise in recognition of psychological abuse, which is often associated with other forms of family violence (webfigures 1 and 2).

Differences between countries

Comparisons of the prevalence or incidence of maltreatment between different countries need parent-report or self-report studies using similar survey methods. Few such studies have been published. 30 years ago, Gelles and Edfeldt[66] reported a 5% higher prevalence of physical abuse in the past year in the USA than in Sweden when the same instrument was used. A meta-regression of self-report studies[20] indicates higher rates of sexual abuse in the USA than in Europe (22% *vs* 15%), although differences might be partly due to less sensitive survey methods in the European studies. The agency reports for different countries in panel 1 are difficult to compare since they reflect different systems and thresholds.

Child maltreatment is a particular concern in the newly independent eastern and central European states, where the economic transition in the past 15 years has been associated with substantial rises in premature adult mortality (panel 1).[67,68] Although data are scarce, a questionnaire survey of children aged 10–14 years (n=1145) in Macedonia, Latvia, Lithuania, and Moldova recorded the lowest yearly prevalence rates of severe and moderate psychological abuse and physical abuse in Macedonia (18% and 12%, respectively) and the highest in Moldova (43% and 29%, respectively).[12] Abuse was higher in rural areas than in urban areas, and was associated with parental overuse of alcohol.[12] Other studies report similar rates of child sexual abuse to those in western Europe.[13,69] As in western Europe, by far the greatest problem is neglect. The WHO national prevalence study of child maltreatment in Romanian families showed that physical neglect was reported by 46% of adolescents surveyed, emotional neglect by 44%, and educational neglect by 34%.[13] These rates are much higher than are those in western Europe.[41] A WHO study in Samara, Russia, reported that the identification of neglect by health and social services is seven times more common than is identification of physical abuse.[70] In two-thirds of all cases of maltreatment, the parents were recorded as alcoholic. The usual response to such cases in 2002 was to place the child into residential or foster care. However, the chances of physical and sexual abuse in residential care are even higher than in family-based care (panel 2).

	Prospective studies*	Retrospective studies*
Education and employment		
Low educational achievement	Moderate	Weak
Low skilled employment	Moderate	Lacking
Mental health		
Behaviour problems as child/adolescent	Strong	Strong
Post-traumatic stress disorder	Strong	Strong
Depression	Moderate	Strong
Attempted suicide	Moderate	Strong
Self-injurious behaviour	Weak	Weak
Alcohol problems	Moderate	Strong
Drug misuse/dependence	Weak	Strong
Physical health and sexual behaviour		
Prostitution/sex trading	Moderate	Strong
Teenage pregnancy	Inconsistent	Strong
Promiscuity	No effect	Strong
General adult health	Lacking	Moderate
Chronic pain in adulthood	No effect	Weak
Obesity	Strong	Weak
Health-care use/costs	Lacking	Moderate
Quality of life	Lacking	Lacking
Aggression, violence, criminality		
Criminal behaviour	Strong	Strong

*Refers to ascertainment of maltreatment. The classification indicates consensus about the findings from included studies and are broadly consistent with the following criteria: strong=evidence of a significant effect after adjustment for confounders; moderate=evidence of a significant but small effect, or of a stronger effect that is reduced after adjustment for confounders or highly likely to be confounded; weak=evidence of an effect based on methodologically problematic studies or associations that do not persist after adjustment, but consistently favour a positive effect; inconsistent=effect qualitatively different across studies (ie, positive and negative or no associations); lacking=no studies addressing this question.

Table 2: **Summary of review findings on consequences of child maltreatment—evidence for an association in prospective and retrospective studies**

Death from child maltreatment

The most tragic manifestation of the burden of child maltreatment is the thousands of child deaths every year due to deliberate killing (homicide) or neglect (manslaughter). WHO estimated that 155 000 deaths in children younger than 15 years occur worldwide every year as a result of abuse or neglect, which is 0·6% of all deaths and 12·7% of deaths due to any injury.[51] Only a third of these deaths are classified as homicide. Furthermore, substantial under-reporting occurs because of insufficient routine investigations and post-mortem examinations of child deaths in most countries.[74] The biological parents are responsible for four-fifths of cases, and step-parents are to blame for most of the remaining cases (15% of the total).[74]

Child homicide occurs most frequently during infancy—in the UK, 35% of child homicide victims (<16 years) are younger than 1 year.[74,75] In infancy, homicide is equally likely to be perpetrated by the mother and the father; however, for older children, the perpetrator is usually a man.[75] Large differences in infant homicide rates exist between high-income countries, with the highest rates recorded in the USA and lowest in Scandinavia and southern Europe.[76] An analysis of infant homicide rates between 1945 and 1998 in 39 countries confirmed previously reported associations between infant homicide and higher rates of female participation in the workforce and income inequalities.[77]

According to WHO estimates, rates of death in children younger than 15 years due to homicide or manslaughter in central and eastern Europe and the newly independent states of the former Soviet Union are consistently higher than in the western European countries of the EU (webfigure 3). The peak incidence from 1993 to 2003 coincided with the period of economic and political transition when community services were severely disrupted.[68] Despite improvement over the past 30 years in child protection in western European countries and the USA, there has been very little decrease in the rate of child homicides.[78,79]

See Online for webfigure 3

Long-term consequences of child maltreatment

Since groundbreaking work in the early 1970s drew attention to the battered child syndrome, research designed to quantify the long-term consequences of child maltreatment has grown.[80] Here we summarise the evidence for associations between different types of maltreatment and outcomes related to education, mental health, physical health, and violence or criminal behaviour. Findings from cohort studies that prospectively ascertained whether children were maltreated or not, and which followed up these children over time to identify later outcomes, are contrasted with more diverse work of cohort and cross-sectional studies that measure maltreatment retrospectively, usually on the basis of self-reporting in adolescence or adulthood. Since we are interested in the consequences of child maltreatment, we want to assess causality. Thus, the strengths of prospective studies include the temporal ordering of maltreatment and subsequent outcomes, objective measurement of maltreatment, avoidance of recall bias, minimisation of selective inclusion of participants on the basis of the outcome, and the opportunity to adjust for social and individual confounding factors as they occur.

All these factors are weaknesses of studies using retrospective measurement of maltreatment, especially since the temporal ordering of maltreatment and outcomes cannot be reliably established. Recall bias is also a concern, with ambiguity about whether consequences are due to the actual abuse experience, aftermath of the abuse experience, or a person's cognitive appraisal of the experience. However, studies that use only official cases of child maltreatment might detect only the few maltreated children who come to professional attention, who might differ in some ways from other maltreated children and whose outcomes could also be different. The problem of representativeness, which can distort the prevalence and effect size, is reduced for population-based longitudinal cohort studies. The validity of various methods of assessing and studying maltreatment is a source of ongoing debate.[81,82] Our analysis endeavours to draw on the strengths of prospective and retrospective studies and, when available, on findings from systematic reviews (table 2).

Education and employment

Child maltreatment is associated with long-term deficits in educational achievement. Prospective longitudinal studies have consistently shown that maltreated children have lower educational achievement than do their peers, and are more likely to receive special education[83–86] (Jonson-Reid and colleagues[83] found that 24% of maltreated children received special education at a mean age of 8 years, compared with 14% of children with no maltreatment record). The differences are substantial—eg, only 42% of the maltreated children completed high school compared with two-thirds of community-matched controls.[85] Another prospective study showed that decreases in school attendance and school performance were related to the timing of maltreatment, and were cumulative.[87] Most of these associations persisted after adjustment for family and social characteristics (eg, ethnic origin, age, sex, and socioeconomic status), as seen in some but not all studies. A longitudinal population-based cohort study in New Zealand,[86] with retrospective ascertainment of child maltreatment, confirmed these reduced levels of educational achievement in adults who had been physically or sexually abused (eg, 6–10% of abused children attained a university degree compared with 28% of those not abused) but such differences were largely explained by social, parental, and individual characteristics. Exposure of children to intimate-partner violence also seems to be linked to low educational achievement, but the extent to which this factor is independent of other forms of child maltreatment is unclear.[88]

Although the risk of underachievement in education is clearly high in children who are maltreated, evidence for a causal link is mixed. Studies are needed from outside the USA to help quantify the extent of this burden in different educational settings.

Maltreatment has longlasting economic consequences for affected individuals.[89] In a prospective study of court documented cases of childhood maltreatment and community-matched controls, significantly more of the abused and neglected individuals were in menial and semi-skilled occupations than were controls (62% *vs* 45%) at 29 years of age, and fewer had remained in employment during the past 5 years (41% *vs* 58%). Further research is needed to examine the effect of child maltreatment on economic productivity throughout life and in different settings.

Mental-health outcomes

Child maltreatment increases the risk of behaviour problems, including internalising (anxiety, depression) and externalising (aggression, acting out) behaviour.[84,90–95]

Children who witness intimate-partner violence are at increased risk of behaviour problems, but whether this factor is independent of other forms of maltreatment is contentious.[88,96,97] Behaviour problems in childhood seem to be strongly determined by early timing of maltreatment,

although whether early physical or psychological abuse, or neglect, is most damaging at this age is unclear.[90,98] Behaviour problems that arise later in adolescence might be related most strongly to maltreatment during adolescence.[91] Consistent evidence suggests a cumulative effect of different types of maltreatment on later behaviour problems,[91,99] with one group concluding "there is no point beyond which services for children are hopeless…every risk factor we can reduce matters".[99]

Maltreated children have a moderately increased risk of depression in adolescence and adulthood (adjusted odds ratios ranging from 1·3 to 2·4), which only partly reflects the family context in which maltreatment occurs.[84,91,92,95,100–103] Because depression is common and serious—around a quarter to a third of maltreated children meet criteria for major depression by their late 20s (with use of criteria from the Diagnostic and Statistical Manual of Mental Disorders [DSM])[92,102,104]—this association represents a substantial burden. For many affected individuals, the onset of depression begins in childhood, reinforcing the need for early intervention in the lives of these abused and neglected children, before symptoms of depression cascade into other spheres of functioning.[91,102] Depression is associated with neglect and physical and sexual abuse, with no clear evidence for a specific effect of any particular type of maltreatment. Some investigators have shown a dose response, with depression more likely with harsh or severe physical abuse than with less severe forms of maltreatment.[20,92]

Evidence suggests that child maltreatment increases the risk of post-traumatic stress disorder, which, by definition, develops after a terrifying event or ordeal. Symptoms include recurrent intrusion of frightening thoughts and memories, sleep difficulties, and detached or numb feelings, which can substantially affect a person's ability to function. Prospective and retrospective studies consistently show associations between physical or sexual abuse or neglect and post-traumatic stress disorder in adolescents and adults, which persist after controlling for family and child characteristics that are correlated with maltreatment.[20,84,95,105–108] These effects can be longlasting. One prospective study[105] of children who were maltreated before 12 years of age and assessed at 29 years reported that 23% of people who were sexually abused, 19% of those physically abused, and 17% of those neglected, had a present diagnosis of post-traumatic stress disorder (with use of DSM-III criteria) compared with 10% of controls, and lifetime risks of this disorder were much higher in cases than in controls. However, family, individual, and lifestyle variables, such as having a parent who is an alcoholic or has been arrested, also increased the risk of post-traumatic stress disorder. A meta-analysis[20] of studies of children who have been sexually abused suggests a dose-response effect, with higher risks associated with penetrative sexual abuse than with contact or non-contact abuse.

Evidence for an association between childhood maltreatment and adult psychosis is inconclusive.[109–111] No clear link between personality disorder and maltreatment has been noted,[89] although one prospective study[101] showed an increased risk of personality disorder in maltreated children including those exposed to verbal abuse, which was independent of physical or sexual abuse or neglect. These findings emphasise the need for further research into the effects of psychological abuse.

Consistent evidence suggests that both physical abuse and sexual abuse are associated with a doubling of the risk of attempted suicide for young people who are followed up into their late 20s. For physical and sexual abuse, these effects persist after adjustment for confounding family and individual variables,[89,92] but for neglect, these effects are mainly explained by family context.[100] According to cross-sectional studies, the risk of attempted suicide increases with the accumulation of multiple adversities, including repeated maltreatment and witnessing intimate-partner violence.[112,113] The risk of attempted suicide can be very high in young people. Widom and colleagues[89] reported lifetime rates of 19% in 29-year-old adults who were abused or neglected as children compared with 8% of community-matched controls, whereas a population-based cohort in New Zealand reported suicide attempts by 11–21% of young adults or adolescents who were exposed to severe physical abuse or penetrative sexual abuse compared with 1–3% of controls.[92] Similar rates have been reported in a systematic review of ten studies[114] and one prospective study in New York, which showed that 6% of adolescents who were abused made multiple suicide attempts.[100]

The hypothesis that children who have been sexually abused use self-injurious behaviour (such as cutting) as a maladaptive coping mechanism is only weakly supported by a systematic review of 45 retrospective studies.[115] By contrast, a prospective study reported a strong association with sexual abuse but no association with physical abuse or neglect.[116]

Converging evidence from prospective and retrospective studies suggests that child maltreatment increases the risk of alcohol problems in adolescence and adulthood. These effects are moderate and persist in some but not all studies after adjustment for family characteristics and parental alcohol use.[20,22,91,92,102,117–119] On the basis of results from a prospective study with follow up at 29 and 39 years of age,[102,117] and from a systematic review of 224 studies,[119] the association with alcohol problems, at least in adulthood, is confined to girls. These findings emphasise the need for interventions for girls and young women to prevent the development of alcohol problems and the associated health, safety, and social problems that excessive drinking in women can cause. For example, problem drinking in women increases the risk of fetal alcohol syndrome and might affect their ability to look after a child.[120]

The link between child maltreatment and drug dependency is not straightforward.[22,84,91,92,121] One prospective study[122] reported that individuals who were maltreated in childhood were no more likely to have a diagnosis of drug dependency by the age of 29 years than were community controls. However, when a different measure of drug use is used, individuals who were abused and neglected were at increased risk for present illicit drug use at roughly 40 years of age.[121] Investigators of this study speculated that although individuals who had experienced neglect or abuse would mature out of drug use, abused and neglected individuals might continue in a problematic drug-use trajectory. Cross-sectional studies indicate that exposure to multiple forms of abuse and other childhood adversities, including witnessing intimate-partner violence, leads to a cumulative increase in the risk of self-reported alcohol or drug misuse in adulthood.[123,124]

Overall, the burden of mental ill health resulting from child maltreatment is substantial. A New Zealand cohort study[92] estimated that physical abuse accounted for 5% of mental disorders and sexual abuse for 13%, after taking account of the family context in which maltreatment occurs.

How exposure to maltreatment of different types, at different developmental stages, leads to adverse mental-health outcomes is complex, although early and cumulative maltreatment seem to be particularly harmful to the development of the brain.[125,126] The webappendix summarises the evidence for biological mechanisms that link child maltreatment and later outcomes.

See Online for webappendix

Physical-health outcomes

Four very different prospective longitudinal studies[127–130] have reported strong associations between physical abuse, neglect, and sexual abuse and obesity, which persist after accounting for family characteristics and individual risk factors, such as childhood obesity. Large differences in the magnitude of this association between studies (adjusted odds ratios range from 1·3 to 9·8)[129,130] probably indicate differences in exposure and outcome measures and analyses. Retrospective studies also suggest an association between child sexual abuse and eating disorders (eg, bulimia and anorexia), but there is less information about other forms of maltreatment.[131] Several large cross-sectional studies have reported relations between multiple child adversities, including child maltreatment, and a range of health outcomes in adulthood (eg, ischaemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease), albeit with little adjustment for lifetime confounders.[132,133]

Abnormally overt or intrusive sexualised behaviour is a common problem in preteen children who are exposed to sexual abuse.[134] However, sexualised behaviour is not specific to child sexual abuse and has been associated with physical abuse, characteristics of family adversity, coercive parenting, child behaviour, and modelling of sexual behaviour.[135]

Most studies that have examined the relation between child maltreatment and sexual behaviour in adolescence and adulthood have focused on outcomes for sexual abuse. An exception is a prospective study with follow-up at 29 years of age, which reported a significant association between physical or sexual abuse or neglect and arrest for prostitution or being paid for sex (13% of cases *vs* 4% of controls for girls, p=0·001; 15% *vs* 8% for boys, p=0·17), but no significant associations with promiscuity or teenage pregnancy.[136] In two prospective studies,[91,137] child maltreatment was associated with teenage pregnancy. In one study,[136] HIV was twice as common in abused and neglected individuals as in controls, although the difference did not reach conventional levels of significance most likely because of weak statistical power.[136] A systematic review and meta-analysis of various types of study, most with retrospective ascertainment of abuse status, similarly reported the strongest associations between child sexual abuse and sex trading in adolescence or adulthood, and showed greater effects for women than for men.[112,138–140] Small to moderate effects of child sexual abuse on increased rates of teenage pregnancy have been noted, as well as earlier onset of sexual activity, greater numbers of sexual partners, increased rates of abortion, and increased risks of sexually transmitted disease.[4,138,140–145] These effects are stronger with more severe[146,147] or repeated[145] sexual abuse or exposure to multiple childhood adversities.[148,149] Emerging evidence also suggests that exposure to child sexual abuse might be related to later sexual orientation.[150] Overall, these findings suggest associations between exposure to child sexual abuse and subsequent sexual adjustment.

Controversy about a possible link between childhood maltreatment and chronic pain in adulthood emphasises the differences between prospective and retrospective measures of child maltreatment and the advantages of considering both types of study design. A prospective study based on children with maltreatment documented by courts and community-matched controls showed no association with chronic pain reported in adulthood at 29 years of age.[151] However, when groups were compared on the basis of retrospective self-reports of child maltreatment, the association with chronic pain was significant (p<0·0001).[152] Similar evidence of a modest association between child sexual or physical abuse (but not neglect), and pain in adulthood has been reported.[151,153–156]

These findings draw attention to the distinction between how people remember and interpret abusive childhood experiences and exposure to child abuse. They establish an association between memories of childhood abuse and chronic pain in adulthood and further suggest that abused individuals with chronic pain are more likely to seek health care than are non-abused individuals with chronic pain.[151] However, we cannot conclude that child abuse or neglect causes chronic pain in adulthood.

Despite the evidence for diverse and serious consequences of child maltreatment, a systematic review[157] found no studies measuring quality of life during childhood after maltreatment, and only four studies in adults. Further research, based on modification of existing methods and development of measures that can be used for younger children, is needed for economic assessments of the burden of child maltreatment and cost-effectiveness of intervention strategies. Studies in North America[158,159] and Australia[160] have shown increased service use and costs associated with child maltreatment, but research is lacking elsewhere in the world and in other public sectors.

Aggression, crime, and violence

In addition to feeling considerable pain and suffering themselves, abused and neglected children are at increased risk of becoming aggressive and inflicting pain and suffering on others, often perpetrating crime and violence. One paper on the cycle of violence[161] reported that being physically abused or neglected as a child increased the likelihood of arrest as a juvenile (31% arrested *vs* 19% of community-matched controls) and as an adult (48% *vs* 36%). Since that time, similar effects on criminal behaviour have been reported in the USA despite differences in geographical region, time period, age of adolescent, definition of maltreatment, and assessment technique.[95,137,162–167] These findings are supported by systematic reviews of retrospective studies, showing that physical and sexual abuse predict delinquency or violence in boys and girls,[168] although physical abuse might be most strongly related to youth violence in girls.[169] A direct comparison of different types of maltreatment found that children who were physically or sexually abused were more likely to carry a weapon in adolescence than were neglected children, because of a perceived need for self protection.[170] Evidence that risks of youth violence cumulate when child abuse persists into adolescence suggests a need for interventions to prevent ongoing abuse.[169]

Future research

Child maltreatment is common, and for many it is a chronic condition, with repeated and ongoing maltreatment merging into adverse outcomes throughout childhood and into adulthood. The burden on the children themselves and on society is substantial. At the same time, variation in rates of maltreatment between countries, particularly for infant homicides, and a possible decrease in recent years in sexual and physical abuse in some high-income countries, shows that the present high burden of child maltreatment is not inevitable. International comparative studies are needed, especially in countries outside North America and northern Europe, to help learn lessons from different settings about how to prevent child maltreatment and its consequences. The high burden and serious and longlasting consequences of child maltreatment warrant increased investment in preventive and therapeutic strategies from early childhood. Research into what works at an individual and policy level is a priority.[171,172]

More research is needed into characteristics of responses by communities, families, and services that help with healthy development rather than exacerbate the child's problems. This research includes improved understanding of the many ways in which children are victimised at different stages of development.[27]

More attention needs to be given to neglected children. There is mounting evidence that the consequences of childhood neglect can be as damaging—or perhaps even more damaging—to a child than physical or sexual abuse. More attention also needs to be paid to the potentially different needs of boys and girls who are maltreated. Although classrooms and neighbourhoods are disrupted more by deviant behaviour of boys than of girls, research shows that maltreatment doubles a girl's risk of being arrested for a violent crime and increases risk for subsequent alcohol and drug problems, with implications for her children.

Conflict of interest statement

We declare that we have no conflict of interest.

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References

1 Butchart A, Kahane T, Phinney Harvey A, Mian M, Furniss T. Preventing child maltreatment: a guide to taking action and generating evidence. Geneva: WHO and International Society for the Prevention of Child Abuse and Neglect, 2006.

2 Leeb RT, Paulozzzi L, Melanson C, Simon T, Arias I. Child maltreatment surveillance. Uniform definitions for public health and recommended data elements. Atlanta: Centers for Disease Control and Prevention, 2008.

3 US Department of Health and Human Services, Administration on Children youth and Families. Child Maltreatment 2006. Washington, DC: US Government Printing Office, 2008.

4 Fergusson DM, Mullen PE. Childhood sexual abuse—an evidence based perspective. Thousand Oaks: Sage, 1999.

5 HM Government. Working together to safeguard children. A guide to interagency working to promote and safeguard the welfare of children. London: The Stationary Office, 2006. http://www.everychildmatters.gov.uk/_files/AE53C8F9D7AEB1B23E403514A6C1B17D.pdf (accessed Oct 16, 2008).

6 Cleaver H, Walker S. Assessing children's needs and circumstances. London: Jessica Kingsley Publishers, 2004.

7 Department for Children, Schools and Families. Referrals, assessments and children and young people who are the subject of a child protection plan or are on child protection registers: year ending 31 March 2007. London: Department for Children, Schools and Families, 2008.

8 Trocme N, MacMillan H, Fallon B, Marco RD. Nature and severity of physical harm caused by child abuse and neglect: results from the Canadian Incidence Study. *Can Med Assoc J* 2003; **169:** 911–15.

9 Australian Institute of Health and Welfare. Australia's health 2004. Canberra: AIHW, 2004.

10 Woodman J, Pitt M, Wentz R, Taylor B, Hodes D, Gilbert RE. Performance of screening tests for child physical abuse in Accident and Emergency Departments. *Health Technol Assess* 2008; **12:** 1–118.

11 Machado C, Goncalves M, Matos M, Dias AR. Child and partner abuse: self-reported prevalence and attitudes in the north of Portugal. *Child Abuse Negl* 2007; **31:** 657–70.

12 Sebre S, Sprugevica I, Novotni A, et al. Cross-cultural comparisons of child-reported emotional and physical abuse: rates, risk factors and psychosocial symptoms. *Child Abuse Negl* 2004; **28:** 113–27.

13 Browne KD. National prevalence study of child abuse and neglect in Romanian families. Copenhagen: WHO Regional Office for Europe, 2002.

14 Berrien FB, Aprelkov G, Ivanova T, Zhmurov V, Buzhicheeva V. Child abuse prevalence in Russian urban population: a preliminary report. *Child Abuse Negl* 1995; **19:** 261–64.

15 Finkelhor D, Ormrod R, Turner H, Hamby SL. The victimization of children and youth: a comprehensive, national survey. *Child Maltreat* 2005; **10:** 5–25.

16 Edwards VJ, Holden GW, Felitti VJ, Anda RF. Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. *Am J Psychiatry* 2003; **160:** 1453–60.

17 May-Chahal C, Cawson P. Measuring child maltreatment in the United Kingdom: a study of the prevalence of child abuse and neglect. *Child Abuse Negl* 2005; **29:** 969–84.

18 Janson S, Langberg B, Svensson B. Violence against children in Sweden. A national survey 2006–2007 (in Swedish). Stockholm: Allmanna Barnhuset and Karlstad University, 2007.

19 Nelson EC, Heath AC, Madden PAF, et al. Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: results from a twin study. *Arch Gen Psychiatry* 2002; **59:** 139–45.

20 Andrews G, Corry J, Slade T, Issakidis C, Swanston H. Child sexual abuse. Comparative quantification of health risks. Geneva: WHO, 2004.

21 Theodore A, Chang JJ, Runyan D. Measuring the risk of physical neglect in a population-based sample. *Child Maltreat* 2007; **12:** 96–105.

22 Hussey JM, Chang JJ, Kotch JB. Child maltreatment in the United States: prevalence, risk factors, and adolescent health consequences. *Pediatrics* 2006; **118:** 933–42.

23 Carlson BE. Children exposed to intimate partner violence: research findings and implications for intervention. *Trauma Violence Abuse* 2000; **1:** 321–40.

24 Dong M, Anda RF, Felitti VJ, et al. The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse Negl* 2004; **28:** 771–84.

25 Fergusson DM, Horwood LJ, Woodward LJ. The stability of child abuse reports: a longitudinal study of the reporting behaviour of young adults. *Psychol Med* 2000; **30:** 529–44.

26 MacMillan HL, Jamieson E, Walsh CA. Reported contact with child protection services among those reporting child physical and sexual abuse: results from a community survey. *Child Abuse Negl* 2003; **27:** 1397–408.

27 Finkelhor D. Childhood victimization. Violence, crime and abuse in the lives of young people. Oxford: Oxford University Press, 2008.

28 Everson MD, Smith JB, Hussey JM, et al. Concordance between adolescent reports of childhood abuse and Child Protective Service determinations in an at-risk sample of young adolescents. *Child Maltreat* 2008; **13:** 14–26.

29 Ghate D, Creighton SJ, Field J. A national study of parents, children and discipline. Swindon: Economic and Social Reserach Council, 2002.

30 Melchert TP, Parker RL. Different forms of childhood abuse and memory. *Child Abuse Negl* 1997; **21:** 125–35.

31 Widom CS, Morris S. Accuracy of adult recollections of childhood victimization. Childhood sexual abuse. *Psychol Assess* 1997; **9:** 34–46.

32 Hardt J, Rutter M. Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *J Child Psychol Psychiatry* 2004; **45:** 260–73.

33 Bifulco A, Brown GW, Lillie A, Jarvis J. Memories of childhood neglect and abuse: corroboration in a series of sisters. *J Child Psychol Psychiatry* 1997; **38:** 365–74.

34 Straus MA, Kantor GK. Definition and measurement of neglectful behavior: some principles and guidelines. *Child Abuse Negl* 2005; **29:** 19–29.

35 Appel A, Holden E. The co-occurrence of spouse and physical child abuse: a review and appraisal. *J Fam Psychol* 1998; **12:** 578–99.

36 Herrenkohl TI, Sousa C, Tajima EA, Herrenkohl RC, Moylan CA. Intersection of child abuse and children's exposure to domestic violence. *Trauma Violence Abuse* 2008; **9:** 84–99.

37 MacMillan HL, Fleming JE, Trocme N, et al. Prevalence of child physical and sexual abuse in the community. Results from the Ontario Health Supplement. *JAMA* 1997; **278:** 131–35.

38 Lau AS, Leeb RT, English D, et al. What's in a name? A comparison of methods for classifying predominant type of maltreatment. *Child Abuse Negl* 2005; **29:** 533–51.

39 Fluke JD, Shusterman GR, Hollinshead DM, Yuan YY. Longitudinal analysis of repeated child abuse reporting and victimization: multistate analysis of associated factors. *Child Maltreat* 2008; **13:** 76–88.

40 Hamilton CE, Browne KD. Recurrent maltreatment during childhood: a survey of referrals to police and child protection units in England. *Child Maltreat* 1999; **4:** 275–86.

41 May-Chahal C, Bertotti T, Di Blasio P, et al. Child maltreatment in the family: a European perspective. *Eur J Social Work* 2006; **9:** 3–20.

42 Hindley N, Ramchandani PG, Jones DP. Risk factors for recurrence of maltreatment: a systematic review. *Arch Dis Child* 2006; **91:** 744–52.

43 Bae H-O, Solomon P, Gelles RJ. Abuse type and substantiation status varying by recurrence. *Child Youth Serv Rev* 2007; **29:** 865–69.

44 Drake B, Jonson-Reid M, Sapokaite L. Re-reporting of child maltreatment: does participation in other public sector services moderate the likelihood of a second maltreatment report? *Child Abuse Negl* 2006; **30:** 1201–26.

45 Classen CC, Palesh OG, Aggarwal R. Sexual revictimization: a review of the empirical literature. *Trauma Violence Abuse* 2005; **6:** 103–29.

46 Widom CS, Czaja SJ, Dutton MA. Childhood victimization and lifetime revictimization. *Child Abuse Negl* 2008; **32:** 785–96.

47 Hamilton-Giachritsis CE, Browne KD. A retrospective study of risk to siblings in abusing families. *J Fam Psychol* 2005; **19:** 619–24.

48 Finkelhor D, Ormrod RK, Turner HA. Re-victimization patterns in a national longitudinal sample of children and youth. *Child Abuse Negl* 2007; **31:** 479–502.

49 Clemmons JC, Walsh K, DiLillo D, Messman-Moore TL. Unique and combined contributions of multiple child abuse types and abuse severity to adult trauma symptomatology. *Child Maltreat* 2007; **12:** 172–81.

50 US Department of Health and Human Services. The third national incidence study of child abuse and neglect (NIS-3). Washington, DC: National Clearing House on Child Abuse and Neglect, 2006.

51 Pinheiro PS. World report on violence against children. New York: United Nations Secretary-General's study on violence against children, 2006.

52 Sullivan PM, Knutson JF. Maltreatment and disabilities: a population-based epidemiological study. *Child Abuse Negl* 2000; **24:** 1257–73.

53 Fisher M, Hodapp R, Dykens E. Child abuse among children with disabilities. *Int Rev Res Ment Retard* 2008; **35:** 251–89.

54 Govindshenoy M, Spencer N. Abuse of the disabled child: a systematic review of population-based studies. *Child Care Health Dev* 2007; **33:** 552–58.

55 Sidebotham P. An ecological approach to child abuse: creative use of scientific models in research and practice. *Child Abuse Rev* 2001; **10:** 97–112.

56 Sidebotham P, Heron J, Golding J. Child maltreatment in the "Children of the Nineties:" deprivation, class, and social networks in a UK sample. *Child Abuse Negl* 2002; **26:** 1243–59.

57 Berger LM. Income, family characteristics, and physical violence toward children. *Child Abuse Negl* 2005; **29:** 107–33.

58 Roberts I, Li L, Barker M. Trends in intentional injury deaths in children and teenagers (1980–1995). *J Public Health Med* 1998; **20:** 463–66.

59 Ards SD, Chung C, Myers SL Jr. Sample selection bias and racial differences in child abuse reporting: once again. *Child Abuse Negl* 2001; **25:** 7–12.

60 Flaherty EG, Sege RD, Griffith J, et al. From suspicion of physical child abuse to reporting: primary care clinician decision-making. *Pediatrics* 2008; **122:** 611–19.

61 Falcone RA Jr, Brown RL, Garcia VF. Disparities in child abuse mortality are not explained by injury severity. *J Pediatr Surg* 2007; **42:** 1031–36.

62 Ondersma SJ. Introduction to the second special section on substance abuse and child maltreatment. *Child Maltreat* 2007; **12:** 111–13.

63 Jaffee SR, Caspi A, Moffitt TE, Polo-Tomas M, Taylor A. Individual, family, and neighborhood factors distinguish resilient from non-resilient maltreated children: a cumulative stressors model. *Child Abuse Negl* 2007; **31:** 231–53.

64 Sellstrom E, Bremberg S. The significance of neighbourhood context to child and adolescent health and well-being: a systematic review of multilevel studies. *Scand J Public Health* 2006; **34:** 544–54.

65 Jones L, Finkelhor D. The decline in child sexual abuse cases. Washington, DC: United States Department of Justice, 2001.

66 Gelles RJ, Edfeldt AW. Violence toward children in the United States and Sweden. *Child Abuse Negl* 1986; **10:** 501–10.

67 McKee M, Zwi A, Koupilova I, Sethi D, Leon D. Health policy-making in central and eastern Europe: lessons from the inaction on injuries? *Health Policy Plan* 2000; **15:** 263–69.

68 Walberg P, McKee M, Shkolnikov V, Chenet L, Leon DA. Economic change, crime, and mortality crisis in Russia: regional analysis. *BMJ* 1998; **317:** 312–18.

69 Herczog M, May-Chahal C. Child sexual abuse in Europe: an overview. Strasbourg: Council of Europe, 2002.

70 Ostergren M, Bacchi A, Browne KD. Improving maternal infant and child health in the Russian Federation: a joint DFID/WHO project. Copenhagen: WHO Regional Office for Europe, 2003.

71 Carter R. Family matters: a study of institutional childcare in Central and Eastern Europe and the Former Soviet Union. London: Everychild, 2005.

72 Hunt K. Abandoned to the state: cruelty and neglect in Russian orphanages. USA: Human Rights Watch, 1998.

73 UNICEF. Child abuse in residential care in institutions in Romania. Bucharest: UNICEF, 2001.

74 UNICEF. A league table of child maltreatment deaths in rich nations. Innocenti Report Card number 5. Florence: UNICEF Innocenti Research Centre, 2003.

75 Brookman F, Nolan J. The dark figure of infanticide in England and Wales: complexities of diagnosis. *J Interpers Violence* 2006; **21:** 869.

76 Creighton S. Prevalence and incidence of child abuse: international comparisons. London: NSPCC Information Briefings, 2004.

77 Hunnicutt G, LaFree G. Reassessing the structural covariates of cross-national infant homicide victimization. *Homicide Studies* 2008; **12:** 46–66.

78 Fox JA, Zawitz JA. Homicide trends in the United States. Washington DC: US Department of Justice, 2007. http://www.ojp.usdoj.gov/bjs/homicide/teens.htm (accessed Oct 14, 2008).

79 WHO Regional Office for Europe. Health for All database (HFA-DB). Copenhagen: WHO Regional Office for Europe, 2008. http://www.euro.who.int/hfadb (accessed Oct 14, 2008).

80 Behl LE, Conyngham HA, May PF. Trends in child maltreatment literature. *Child Abuse Negl* 2003; **27:** 215–29.

81 Widom CS, Raphael KG, DuMont KA. The case for prospective longitudinal studies in child maltreatment research: commentary on Dube, Williamson, Thompson, Felitti, and Anda (2004). *Child Abuse Negl* 2004; **28:** 715–22.

82 Kendall-Tackett K, Becker-Blease K. The importance of retrospective findings in child maltreatment research. *Child Abuse Negl* 2004; **28:** 723–27.

83 Jonson-Reid M, Drake B, Kim J, Porterfield S, Han L. A prospective analysis of the relationship between reported child maltreatment and special education eligibility among poor children. *Child Maltreat* 2004; **9:** 382–94.

84 Lansford JE, Dodge KA, Pettit GS, Bates JE, Crozier J, Kaplow J. A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Arch Pediatr Adolesc Med* 2002; **156:** 824–30.

85 Perez CM, Widom CS. Childhood victimization and long-term intellectual and academic outcomes. *Child Abuse Negl* 1994; **18:** 617–33.

86 Boden JM, Horwood LJ, Fergusson DM. Exposure to childhood sexual and physical abuse and subsequent educational achievement outcomes. *Child Abuse Negl* 2007; **31:** 1101–14.

87 Leiter J. Child maltreatment and school performance declines: an event-history analysis. *Am Educ Res J* 1997; **34:** 563–89.

88 Kitzmann KM, Gaylord NK, Holt AR, Kenny ED. Child witnesses to domestic violence: a meta-analytic review. *J Consult Clin Psychol* 2003; **71:** 339–52.

89 Widom CS. Childhood victimization: early adversity and subsequent psychopathology. In: Dohrenwend BP, ed. Adversity, stress, and psychopathology. New York: Oxford University Press, 1998: 81–95.

90 Manly JT, Kim JE, Rogosch FA, Cicchetti D. Dimensions of child maltreatment and children's adjustment: contributions of developmental timing and subtype. *Dev Psychopathol* 2001; **13:** 759–82.

91 Thornberry TP, Ireland TO, Smith CA. The importance of timing: the varying impact of childhood and adolescent maltreatment on multiple problem outcomes. *Dev Psychopathol* 2001; **13:** 957–79.

92 Fergusson DM, Boden JM, Horwood LJ. Exposure to childhood sexual and physical abuse and adjustment in early adulthood. *Child Abuse Negl* 2008; **32:** 607–19.

93 Herrenkohl EC, Herrenkohl RC, Rupert LJ, Egolf BP, Lutz JG. Risk factors for behavioral dysfunction: the relative impact of maltreatment, SES, physical health problems, cognitive ability, and quality of parent-child interaction. *Child Abuse Negl* 1995; **19:** 191–203.

94 Herrenkohl TI, Herrenkohl RC. Examining the overlap and prediction of multiple forms of child maltreatment, stressors, and socioeconomic status: a longitudinal analysis of youth outcomes. *J Family Violence* 2007; **22:** 553–62.

95 Banyard VL, Williams LM, Siegel JA. The long-term mental health consequences of child sexual abuse: an exploratory study of the impact of multiple traumas in a sample of women. *J Trauma Stress* 2001; **14:** 697–715.

96 Yates TM, Dodds MF, Sroufe LA, Egeland B. Exposure to partner violence and child behavior problems: a prospective study controlling for child physical abuse and neglect, child cognitive ability, socioeconomic status, and life stress. *Dev Psychopathol* 2003; **15:** 199–218.

97 Sternberg KJ, Lamb ME, Guterman E, Abbott CB. Effects of early and later family violence on children's behavior problems and depression: a longitudinal, multi-informant perspective. *Child Abuse Negl* 2006; **30:** 283–306.

98 Kotch JB, Lewis T, Hussey JM, et al. Importance of early neglect for childhood aggression. *Pediatrics* 2008; **121:** 725–31.

99 Appleyard K, Egeland B, van Dulman MH, Sroufe LA. When more is not better: the role of cumulative risk in child behavior outcomes. *J Child Psychol Psychiatry* 2005; **46:** 235–45.

100 Brown J, Cohen P, Johnson JG, Smailes EM. Childhood abuse and neglect: specificity of effects on adolescent and young adult depression and suicidality. *J Am Acad Child Adolesc Psychiatry* 1999; **38:** 1490–96.

101 Johnson JG, Cohen P, Smailes EM, Skodol AE, Brown J, Oldham JM. Childhood verbal abuse and risk for personality disorders during adolescence and early adulthood. *Compr Psychiatry* 2001; **42:** 16–23.

102 Widom CS, White HR, Czaja SJ, Marmorstein NR. Long-term effects of child abuse and neglect on alcohol use and excessive drinking in middle adulthood. *J Stud Alcohol Drugs* 2007; **68:** 317–26.

103 Noll JG, Trickett PK, Susman EJ, Putnam FW. Sleep disturbances and childhood sexual abuse. *J Pediatr Psychol* 2006; **31:** 469–80.

104 Widom CS, Dumont KA, Czaja SJ. A prospective investigation of major depressive disorder and comorbidity in abused and neglected children grown up. *Arch Gen Psychiatry* 2007; **64:** 49–56.

105 Widom CS. Posttraumatic stress disorder in abused and neglected children grown up. *Am J Psychiatry* 1999; **156:** 1223–29.

106 Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol* 2000; **68:** 748–66.

107 Tolin DF, Foa EB. Sex differences in trauma and posttraumatic stress disorder: a quantitative review of 25 years of research. *Psychol Bull* 2006; **132:** 959–92.

108 Whiffen V, Macintosh H. Mediators of the link between childhood sexual abuse and emotional distress: a critical review. *Trauma Violence Abuse* 2005; **6:** 24–39.

109 Read J, van Os J, Morrison AP, Ross CA. Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatr Scand* 2005; **112:** 330–50.

110 Morgan C, Fisher H. Environment and schizophrenia: environmental factors in schizophrenia: childhood trauma—a critical review. *Schizophr Bull* 2007; **33:** 3–10.

111 Shevlin M, Houston JE, Dorahy MJ, Adamson G. Cumulative traumas and psychosis: an analysis of the national comorbidity survey and the British Psychiatric Morbidity Survey. *Schizophr Bull* 2008; **34:** 193–99.

112 Afifi TO, Enns MW, Cox BJ, Asmundson GJG, Stein MB, Sareen J. Population attributable fractions of psychiatric disorders and suicide ideation and attempts associated with adverse childhood experiences. *Am J Public Health* 2008; **98:** 946–52.

113 McHolm AE, MacMillan HL, Jamieson E. The relationship between childhood physical abuse and suicidality among depressed women: results from a community sample. *Am J Psychiatry* 2003; **160:** 933–38.

114 Evans E, Hawton K, Rodham K. Suicidal phenomena and abuse in adolescents: a review of epidemiological studies. *Child Abuse Negl* 2005; **29:** 45–58.

115 Klonsky ED, Moyer A. Childhood sexual abuse and non-suicidal self-injury: meta-analysis. *Br J Psychiatry* 2008; **192:** 166–70.

116 Yates TM, Carlson EA, Egeland B. A prospective study of child maltreatment and self-injurious behavior in a community sample. *Dev Psychopathol* 2008; **20:** 651–71.

117 Widom CS, Ireland T, Glynn PJ. Alcohol abuse in abused and neglected children followed-up: are they at increased risk? *J Stud Alcohol* 1995; **56:** 207–17.

118 Widom CS, Hiller-Sturmhofel S. Alcohol abuse as a risk factor for and consequence of child abuse. *Alcohol Res Health* 2001; **25:** 52–57.

119 Simpson TL, Miller WR. Concomitance between childhood sexual and physical abuse and substance use problems. A review. *Clin Psychol Rev* 2002; **22:** 27–77.

120 Streissguth AP. A long-term perspective of FAS. *Alcohol Health Res World* 1994; **18:** 74–81.

121 Widom CS, Marmostein NR, White HR. Childhood victimization and illicit drug use in middle adulthood. *Psychol Addict Behav* 2006; **20:** 394–403.

122 Widom CS, Weiler BL, Cottler LB. Childhood victimization and drug abuse: a comparison of prospective and retrospective findings. *J Consult Clin Psychol* 1999; **67:** 867–80.

123 Dube SR, Anda RF, Felitti VJ, Edwards VJ, Williamson DF. Exposure to abuse, neglect, and household dysfunction among adults who witnessed intimate partner violence as children: implications for health and social services. *Violence Vict* 2002; **17:** 3–17.

124 Bair-Merritt MH, Blackstone M, Feudtner C. Physical health outcomes of childhood exposure to intimate partner violence: a systematic review. *Pediatrics* 2006; **117:** e278–90.

125 Glaser D. Child abuse and neglect and the brain—a review. *J Child Psychol Psychiatry* 2000; **41:** 97–116.

126 Lee V, Hoaken PN. Cognition, emotion, and neurobiological development: mediating the relation between maltreatment and aggression. *Child Maltreat* 2007; **12:** 281–98.

127 Johnson JG, Cohen P, Kasen S, Brook JS. Childhood adversities associated with risk for eating disorders or weight problems during adolescence or early adulthood. *Am J Psychiatry* 2002; **159:** 394–400.

128 Noll JG, Zeller MH, Trickett PK, Putnam FW. Obesity risk for female victims of childhood sexual abuse: a prospective study. *Pediatrics* 2007; **120:** 361–67.

129 Thomas C, Hyponnen E, Power C. Obesity and type 2 diabetes risk in mid-adult life: the role of childhood adversity. *Pediatrics* 2008; **121:** e1240–49.

130 Lissau I, Sorensen TI. Parental neglect during childhood and increased risk of obesity in young adulthood. *Lancet* 1994; **343:** 324–27.

131 Brewerton TD. Eating disorders, trauma, and comorbidity: focus on PTSD. *Eat Disord* 2007; **15:** 285–304.

132 Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med* 1998; **14:** 245–58.

133 Draper B, Pfaff JJ, Pirkis J, et al. Long-term effects of childhood abuse on the quality of life and health of older people: results from the depression and early prevention of suicide in general practice project. *J Am Geriatr Soc* 2008; **56:** 262–71.

134 St Amand A, Bard DE, Silovsky JF. Meta-analysis of treatment for child sexual behavior problems: practice elements and outcomes. *Child Maltreat* 2008; **13:** 145–66.

135 Merrick MT, Litrownik AJ, Everson MD, Cox CE. Beyond sexual abuse: the impact of other maltreatment experiences on sexualized behaviors. *Child Maltreat* 2008; **13:** 122–32.

136 Wilson H, Widom CS. An examination of risky sexual behavior and HIV in victims of child abuse and neglect: a 30-year follow-up. *Health Psychol* 2008; **27:** 149–58.

137 Lansford MJ, Berlin D, Bates J, Pettit GS. Early physical abuse and later violent delinquency: a prospective longitudinal study. *Child Maltreat* 2007; **12:** 233–45.

138 Arriola K, Louden T, Doldren M, Fortenberry R. A meta-analysis of the relationship of child sexual abuse to HIV risk behavior among women. *Child Abuse Negl* 2005; **29:** 725–46.

139 Rind B, Tromovitch P, Bauserman R. A meta-analytic examination of assumed properties of child sexual abuse using college samples. *Psychol Bull* 1998; **124:** 22–53.

140 Senn TE, Carey MP, Vanable PA, Coury-Doniger P, Urban M. Characteristics of sexual abuse in childhood and adolescence influence sexual risk behavior in adulthood. *Arch Sex Behav* 2007; **36:** 637–45.

141 Kalichman SC, Gore-Felton C, Benotsch E, Cage M, Rompa D. Trauma symptoms, sexual behaviors, and substance abuse: correlates of childhood sexual abuse and HIV risks among men who have sex with men. *J Child Sex Abus* 2004; **13:** 1–15.

142 Merrill LL, Guimond JM, Thomsen CJ, Milner JS. Child sexual abuse and number of sexual partners in young women: the role of abuse severity, coping style, and sexual functioning. *J Consult Clin Psychol* 2003; **71:** 987–96.

143 Fergusson DM, Horwood LJ, Lynskey MT. Childhood sexual abuse, adolescent sexual behaviors and sexual revictimization. *Child Abuse Negl* 1997; **21:** 789–803.

144 Paolucci EO, Genuis ML, Violato C. A meta-analysis of the published research on the effects of child sexual abuse. *J Psychol* 2001; **135:** 17–36.

145 Brown J, Cohen P, Chen H, Smailes E, Johnson JG. Sexual trajectories of abused and neglected youths. *J Dev Behav Pediatr* 2004; **25:** 77–82.

146 Fergusson DM, Horwood LJ, Lynskey MT. Childhood sexual abuse and psychiatric disorder in young adulthood: II. Psychiatric outcomes of childhood sexual abuse. *J Am Acad Child Adolesc Psychiatry* 1996; **35:** 1365–74.

147 Mullen PE, Martin JL, Anderson JC, Romans SE, Herbison GP. The long-term impact of the physical, emotional, and sexual abuse of children: a community study. *Child Abuse Negl* 1996; **20:** 7–21.

148 Cohen M, Deamant C, Barkan S, et al. Domestic violence and childhood sexual abuse in HIV-infected women and women at risk for HIV. *Am J Public Health* 2000; **90:** 560–65.

149 Hillis SD, Anda RF, Dube SR, Felitti VJ, Marchbanks PA, Marks JS. The association between adverse childhood experiences and adolescent pregnancy, long-term psychosocial consequences, and fetal death. *Pediatrics* 2004; **113:** 320–27.

150 Tomeo ME, Templer DI, Anderson S, Kotler D. Comparative data of childhood and adolescence molestation in heterosexual and homosexual persons. *Arch Sex Behav* 2001; **30:** 535–41.

151 Davis DA, Luecken LJ, Zautra AJ. Are reports of childhood abuse related to the experience of chronic pain in adulthood? A meta-analytic review of the literature. *Clin J Pain* 2005; **21:** 398–405.

152 Raphael KG, Chandler HK, Ciccone DS. Is childhood abuse a risk factor for chronic pain in adulthood? *Curr Pain Headache Rep* 2004; **8:** 99–110.

153 Linton SJ. A prospective study of the effects of sexual or physical abuse on back pain. *Pain* 2002; **96:** 347–51.

154 Walsh CA, Jamieson E, MacMillan H, Boyle M. Child abuse and chronic pain in a community survey of women. *J Interpers Violence* 2007; **22:** 1536–54.

155 Raphael KG. Childhood abuse and pain in adulthood: more than a modest relationship? *Clin J Pain* 2005; **21:** 371–73.

156 Brown J, Berenson K, Cohen P. Documented and self-reported child abuse and adult pain in a community sample. *Clin J Pain* 2005; **21:** 374–77.

157 Prosser LA, Corso PS. Measuring health-related quality of life for child maltreatment: a systematic literature review. *Health Qual Life Outcomes* 2007; **5:** 42.

158 Bonomi AE, Anderson ML, Rivara FP, et al. Health care utilization and costs associated with childhood abuse. *J Gen Intern Med* 2008; **23:** 294–99.

159 Chartier MJ, Walker JR, Naimark B. Childhood abuse, adult health, and health care utilization: results from a representative community sample. *Am J Epidemiol* 2007; **165:** 1031–38.

160 Spataro J, Mullen PE, Burgess PM, Wells DL, Moss SA. Impact of child sexual abuse on mental health: prospective study in males and females. *Br J Psychiatry* 2004; **184:** 416–21.

161 Widom CS. The cycle of violence. *Science* 1989; **244:** 160–66.

162 Maxfield MG, Widom CS. The cycle of violence: revisited 6 years later. Archives of Pediatrics & Adolescent Medicine. *Arch Pediatr Adolesc Med* 1996; **150:** 390–95.

163 Smith C, Thornberry TP. The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology* 1995; **33:** 451–81.

164 Stouthamer-Loeber M, Loeber R, Homish DL, Wei E. Maltreatment of boys and the development of disruptive and delinquent behavior. *Dev Psychopathol* 2001; **13:** 941–55.

165 Zingraff MT, Leiter J, Myers KA, Johnsen MC. Child maltreatment and youthful problem behavior. *Criminology* 1993; **31:** 173–202.

166 Herrenkohl RC, Egolf BP, Herrenkohl EC. Preschool antecedents of adolescent assaultive behavior: a longitudinal study. *Am J Orthopsychiatry* 1997; **67:** 422–32.

167 Egeland B, Yates T, Appleyard K, van Dulmen M. The long-term consequences of maltreatment in the early years: a developmental pathyway model to antisocial behavior. *Child Serv: Soc Pol Res Prac* 2002; **5:** 249–60.

168 Hubbard DJ, Pratt TC. A meta-analysis of the predictors of delinquency among girls. *J Offender Rehab* 2002; **34:** 1–13.

169 Maas C, Herrenkohl TI, Sousa C. Review of research on child maltreatment and violence in youth. *Trauma Violence Abuse* 2008; **9:** 56–67.

170 Lewis T, Leeb R, Kotch J, et al. Maltreatment history and weapon carrying among early adolescents. *Child Maltreat* 2007; **12:** 259–68.

171 MacMillan HL, Wathen CN, Barlow J, Fergusson DM, Leventhal JM, Taussig HN. Interventions to prevent child maltreatment and associated impairment. *Lancet* 2008; published online Dec 3. DOI:10.1016/S0140-6736(08)61708-0.

172 Reading R, Bissell S, Goldhagen J, et al. Promotion of children's rights and prevention of child maltreatment. *Lancet* 2008; published online Dec 3. DOI:10.1016/S0140-6736(08)61709-2.