

Screening Children for Family Violence: A Review of the Evidence for the U.S. Preventive Services Task Force

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Child abuse and neglect has been defined as “any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm.”¹ Approximately 1 million children are identified as abused in the United States each year.² In 1999, reported abuse rates were 1,180 per 100,000 children with the highest rates for children age 3 years and younger.³ An estimated 1,100 children died of abuse and neglect that year, approximately 1.62 deaths per 100,000 children.³ Reported abuse likely captures only a fraction of all cases.⁴ A large survey of adults indicated that 11% experienced psychological abuse, 11% physical abuse, and 22% sexual abuse during childhood.⁵

Frequently cited factors associated with child abuse and neglect include low income,⁶⁻⁹ low maternal education,⁶⁻⁸ non-white ethnicity,^{6,9} large family size,^{6,8} young age of the mother,⁶ single-parent status,⁶ parental psychiatric disturbance,¹⁰ and presence of a stepfather,⁶ among others.^{6,11} As the

number of risk factors increases, the proportion of children maltreated also increases.⁶

Many health problems are associated with abuse and neglect. These problems include acute trauma, including death, unwanted pregnancy, and long-term physical and mental problems, such as depression, post-traumatic stress disorder, somatization, suicide, and substance abuse.^{5,12-21} Children who witness intimate partner violence are at risk for developmental delay; school failure; and a variety of psychiatric disorders, including depression and oppositional defiant disorder.^{22,23} and violence against others.²⁴ Children experiencing sexual or physical abuse have a higher risk of intimate partner abuse as adults.²⁵⁻²⁸

The clinician’s role in identification and intervention is considered a professional responsibility by physician and nursing organizations.^{29,30} Ongoing child abuse is evidenced as multiple and recurrent injuries, injury histories inconsistent with physical findings, and injuries inconsistent with children’s abilities to sustain them on their own. Identification and reporting of abuse

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are inconsistent and highly dependent on the clinician's awareness and training. Reporting child abuse to protective services is mandatory in almost all states, although statutes mandating reporting vary. Nineteen states require that any person who suspects child abuse or neglect must report; the majority of the states limit mandatory reporting to professionals working with children.³¹ Hospitals are also required to address abuse for accreditation.³²

Many children experiencing abuse do not show obvious evidence of abuse. Whether screening all children leads to a decline in abuse is unknown, protocols for screening are lacking, and few clinicians routinely screen patients who do not have apparent injuries.³³⁻³⁸ The evidence for how to effectively intervene once problems are identified is limited.

In 1996, the U.S. Preventive Services Task Force (USPSTF) concluded that there was insufficient evidence to recommend for or against the use of specific screening instruments to detect family violence for children, but it recommended that clinicians ask questions about abuse if it is suspected.³⁹ This report is an update on the current literature on family violence focusing on studies of the performance of screening instruments designed for the health-care setting and the effectiveness of clinical-based interventions for children. A separate report on screening for family violence in women and elderly adults is available elsewhere.⁴⁰

Methods

The analytic framework and key questions guiding this systematic review are detailed in Figure 1. Relevant studies were identified from multiple searches of MEDLINE (1966 to December 2002), PsycINFO (1984 to December 2002), CINAHL (1982 to December 2002), ERIC (1989 to December 2002), and the Cochrane Controlled Trials Register (Appendix 1). We reviewed references listed in a review of early childhood home visitation for the prevention of violence for the U.S. Task Force on Community Prevention Service,⁴¹ the Prevention of Child Maltreatment Update from the Canadian Task Force on Preventive Health Care,⁴² and *Violence in Families: Assessing Prevention and Treatment Programs*.⁴³ Additional articles were obtained by

reviewing reference lists of pertinent studies, reviews, and editorials, and by consulting experts.

We defined screening as assessment of current harm or risk for harm from family violence in asymptomatic persons in a health-care setting. Universal screening means assessing everyone; selective screening indicates that only those who meet specific criteria are assessed. The target population for this review is children as victims of abuse or neglect directed towards them by family members, caretakers, or others with similar relationships.

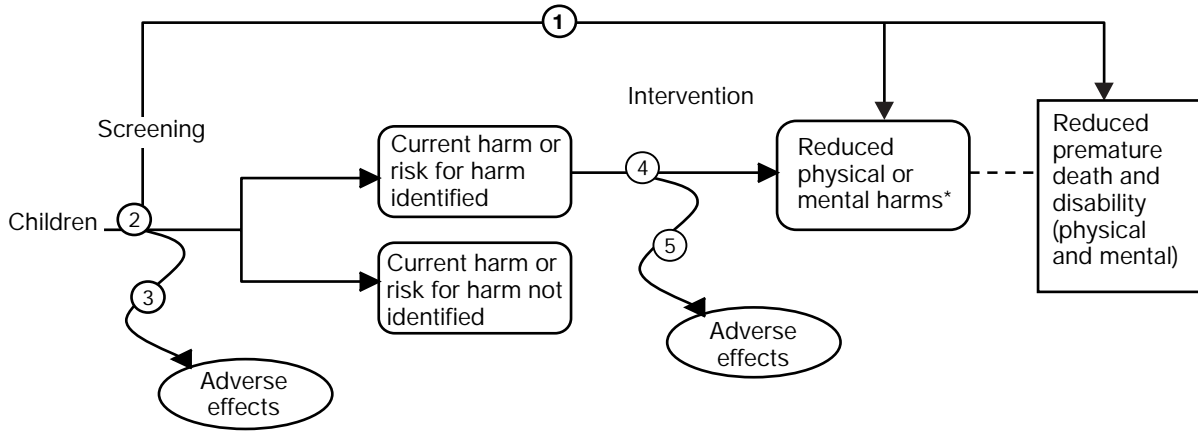
Studies included in this review had English-language abstracts, were applicable to U.S. clinical practice, described abuse and neglect against children, were conducted in or linked to primary care (family practice, pediatrics), obstetrics and gynecology, or emergency department settings, and included a physician or other health provider in the process of assessment or intervention. We excluded studies about patients presenting with trauma.

Studies about assessment were included if they evaluated the performance of verbal or written questionnaires or other assessment procedures, such as physical examinations, that were brief and applicable to the primary care setting. Included studies described the study sample, the screening instrument or procedure, the abuse or neglect outcome, and the collection of data. Outcomes included indicators of physical abuse, neglect, emotional abuse, or sexual abuse and any reported related health outcomes (i.e., depression).

Studies about interventions were included if they measured the effectiveness of an intervention in reducing harm from family violence compared with comparison groups. We excluded studies that tested effectiveness of interventions to educate health care professionals about family violence or to increase screening rates in institutions. We also excluded studies about mandatory reporting laws, descriptions of programs, the accuracy of physician diagnosis and reporting of abuse, and physician factors related to reporting.

From each included study, we abstracted the study design, number of participants, setting,

Figure 1. Analytic Framework and Key Questions



Key Questions

- Arrow 1: Does screening for family violence reduce harm and premature death and disability?
- Arrow 2: How well does screening identify current harm or risk for harm from family violence?
- Arrow 3: What are the adverse effects of screening?
- Arrow 4: How well do interventions reduce harm from family violence?
- Arrow 5: What are the adverse effects of intervention?

*Including physical trauma (fractures, dislocations, brain injury, etc.); unwanted pregnancy and sexually transmitted diseases, mental trauma, social isolation, and its repercussions, such as depression, anxiety, nightmares, among others.

length and type of interventions, length of follow-up, outcomes, methods of outcome measurement, and study duration, among others. Two reviewers independently rated each study’s quality using criteria specific to different study designs developed by the USPSTF (Appendix 2). When reviewers disagreed, a final score was reached through consensus.

Results

Screening

We identified and reviewed 1,808 abstracts and retrieved 65 articles for further review. Six studies met eligibility criteria. Additional details of these studies are provided in Table 1⁴⁴⁻⁵⁰ and as supplemental data in Appendix 3.⁴⁴⁻⁶⁸

No studies meeting eligibility criteria directly addressed the effectiveness of screening in reducing harm and premature death and disability. A limited number of studies described the performance of screening methods, such as self-administered

questionnaires, clinical staff-directed interviews, and clinical observation. All studies primarily assessed parents, rather than children directly, and none utilized specific physical examination protocols for screening. Instruments and scoring procedures included in these studies are described in Appendix 4.^{49,51-53}

Few studies evaluated the performance of these approaches in predicting child abuse and neglect outcomes. Screening instruments had fairly high sensitivity but low specificity when administered in the study populations. Best results were achieved when screening involved a 2-step method, however, these strategies have not been widely tested in other populations and have not been evaluated for feasibility in the primary care setting.

Self-administered Questionnaires

The Kempe Family Stress Inventory (KFI)⁵³ was used in 3 studies meeting eligibility criteria (Table 1).^{44-47,50} Study populations included predominantly young, single women with low socioeconomic

Table 1. Studies of Child Abuse Screening Instruments

Author, Year	N	Population and Settings	Instruments	Results	Quality Rating and Limitations
Self-administered questionnaires					
Stevens-Simon, 2001 ⁴⁴	262	Adolescents (13–19 y) in a maternity program at the University of Colorado Hospital In Denver (32% African American, 22% Hispanic, 92% Medicaid recipients, 94% unmarried)	Kempe Family Stress Inventory (KFI)	At 1 and 2 years, the KFI was the only significant predictor of maltreatment using multiple outcome measures (RR 8.41, 95% CI, 5.77–10; RR 5.19, 95% CI, 1.99–13.60)	Good–fair Differential loss to follow up
CCAPR, 1996 ^{45,46}	287	Pregnant women at hospital obstetric clinics in 6 counties in Oahu (Hawaii Healthy Start) (mean age 23 y, 65% poor, 89% multi-cultural, 40% poor maternal mental health, 45% domestic violence in the home, 30% parental substance use, 28% no high school diploma)	2 step screening: 1) 15 item Hawaii Risk Indicators Screening Tool (medical record or interview) 2) KFI	89% sensitivity and 28% specificity with high scores on CAP inventory	Fair No abuse outcomes, high attrition
Katzev, 1997 ⁴⁷	2,870	At-risk pregnant women from 12 counties in Oregon (Healthy Families) (72% single parents, 68% with story of child abuse or neglect, 57% less than high school education, 37% history of substance abuse, 29% 17 y or younger)	2 step screening: 1) 15 item Hawaii Risk Indicators Screening Tool (medical record or interview) 2) If positive, then KFI	1,350 were given the KFI. Score was highly correlated with maltreatment rates (per 1000 children): 7 for low-risk scores, 18 moderate, 45 high, and 172 severe. Sensitivity was 97%, specificity 21% for scores in high-severe risk range	Fair–poor Many confirmed reports were made by home visitors to high-risk homes

CAP = Child abuse potential; CI = confidence interval; KFI = Kemper Family Stress Inventory; RR = relative risk.

Table 1. Studies of Child Abuse Screening Instruments (cont)

Author, Year	N	Population and Settings	Instruments	Results	Quality Rating and Limitations
Clinical staff-administered questionnaires					
Brayden, 1993 ⁴⁸	1,089	Pregnant women receiving prenatal care at Metropolitan Nashville General Hospital, Tennessee (under 23 y, 60% single, 68% white, 25% unemployed)	Maternal History Interview-2, open-ended questions and subscales including parenting skills, personality, discipline philosophy, life stress, and others; high risk based on percentile scoring on subscales; 314 identified as high risk	The Maternal History Interview-2 predicted child abuse, but not neglect or sexual abuse. High-risk group 6.6% with child abuse reports compared with 2.3% in low risk group in first 36 months (RR 3.02, 95% CI, 1.02-8.90)	Poor Participation low; requires trained interviewers
Anderson, 1993 ⁴⁹	185	Abusive and nonabusive mothers recruited from a national sample of female nurses contacted through advertising and a mailing list	Parenting Profile Assessment, 21-item nurse interview for the primary care setting; 38 (21%) scored as high risk	75% sensitivity and 86% specificity for self-reported abuse Most sensitive to high stress and poor marital relationships	Poor Only self-reports of abuse by mothers, no actual abuse measured or verified; small sample with only 15 self-reported abusers
Clinical Observation					
Leventhal, 1996 ⁵⁰	114 cases 114 controls	Children at the Primary Care Center at Yale New Haven Hospital referred to the hospital's child abuse committee from the postpartum ward by clinicians	Clinician judgment of potential child abuse or neglect based on a number of criteria including parental substance use, income, social support, previous child abuse or neglect, and parenting behavior	After controlling for baseline variables, 1.8-fold increase in the rate of subsequent hospitalizations of the high risk children compared to others ($P<0.05$)	Poor Risk criteria not fully defined or standardized

indicators. A retrospective cohort study found that a high score on the KFI was the only statistically significant predictor of maltreatment at 1 and 2 years and, when compared with a low score, was associated with more clinic visits during the first year and hospital admissions during the first 6 months.⁴⁴ Other studies used the KFI in a 2-step screening process that began with the 15-item Hawaii Risk Indicators Screening Tool.^{45–47,52} The 2-step process had 89% sensitivity and 28% specificity when compared with responses on the Child Abuse Potential (CAP) inventory, a 160-item instrument,^{45,46,52} and 97% sensitivity and 21% specificity when compared to maltreatment rates in another study.^{47,52}

Clinical Staff-administered Questionnaires

The Maternal History Interview (MHI-2) utilizes open-ended questions and subscales to evaluate parenting skills, personality, discipline philosophy, life stress, and others to determine risk for child abuse.⁴⁸ Mothers determined to be high-risk by the MHI-2 had a higher incidence of reported child abuse than low-risk mothers in a study of young pregnant women.⁴⁸ The Parenting Profile Assessment (PPA) is a 21-item nurse interview designed for the primary care setting.⁴⁹ Responses on the PPA were compared to self-reports about past episodes and indicated 75% sensitivity and 86% specificity.⁴⁹

Other Techniques: Clinician Observation

In a retrospective cohort study, nurses referred patients and their newborns to the hospital's child abuse committee from the postpartum unit after determining them to be at high risk for abuse based on a number of non-standardized criteria.⁵⁰ When compared to low-risk patients, high-risk patients had a significantly greater rate of subsequent hospitalizations for medical and psychosocial reasons.

Interventions

We found and reviewed 1,748 abstracts. Seventeen studies, utilizing 13 unique populations, met inclusion criteria,^{47,48,54–68} including 9

randomized controlled trials. All studies evaluated interventions for pregnant and postpartum women and their infants and are described in Table 2^{47,48,54–68} and Appendix 3.^{44–68}

A randomized controlled trial with a 15-year follow-up indicated that nurse home visits during the prenatal period and for 2 years postpartum for low-income women can improve short-term and long-term abuse and neglect outcomes for children.^{54–58} Nurse visits included parent education, support systems for the mother, and engagement of family members with other health and social services. Results at 2 years showed that high-risk women who had nurse visits were less likely to commit acts of child abuse and neglect than high-risk women without visits ($P = 0.07$).⁵⁷ At 3- and 4-year follow-up observations, there were no differences between groups for child abuse and neglect outcomes.^{54,55} At the 15-year follow-up, children in the nurse-visited group were less likely to have reports of child maltreatment of any kind ($P < 0.05$).⁵⁸ Mothers in the nurse-visited group were less likely to be perpetrators of child abuse and neglect than mothers without nurse visits 15 years after the intervention ($P < 0.001$).⁵⁶

Six trials of fair quality evaluated home visitation programs linked to prenatal clinics or hospital care.^{59–64} Studies varied in the types and duration of interventions. All but 1 study⁶² used inclusion criteria based on an assessment of risk for child abuse and neglect, although no study used standardized or validated instruments. Studies generally considered positive responses to criteria such as social or demographic risk factors (unmarried, low level of education, unemployed),^{59,63} drug use during pregnancy,⁶¹ low birth weight,⁶⁴ or a history of other risk factors (HIV infection, homelessness, substance use),⁶⁰ among others. Follow-up ranged from 2 to 24 months after delivery, and abuse outcomes were determined by a number of methods.

None of these studies described significantly fewer reports of abuse and neglect in intervention groups compared with control groups, although not all studies were designed for this outcome.⁶³ Five of the studies reported other significant intervention effects related to abuse and neglect

Table 2. Summary of Intervention Studies

Author, Year	Type of Study	N	Population	Age of Child When Intervention Ended (Mo)	Risk Assessment	Significant Decrease in Abuse Measures	Other Significant Effects*	Quality Rating
Olds, 1986 ⁵⁷ 1994 ⁵⁴ 1995 ⁵⁵ 1997 ⁵⁶	RCT		Pregnant women, first births (many teenagers, unmarried, low social class); small, semi-rural county in New York State	24	85% had 1 or more factors: <19 y, single-parent status, low income			Good
Eckenrode, 2000 ⁵⁸ Follow-up								
2 y		400				X (P=0.07)	X	
3 y		400				0	X	
4 y		56				0	X	
15 y		324				X	X	
Kitzman, 1997 ⁶³	RCT	1,139	Pregnant, low-income, minority women, mostly teenagers; public obstetric clinic in Memphis	24	First birth with at least 2 factors: unmarried, 12 y of education, unemployment status	NA	X	Fair
Black, 1994 ⁶¹	RCT	43	Drug using pregnant women (majority single, African American, multiparus, low education, low income, history of incarceration, urban)	18	Admitted using cocaine or heroin during pregnancy	NA	X	Fair

*Other outcomes include injury, poisoning, hospitalizations, child development level, and others.
 CPS = child protective services; HIV = human immunodeficiency virus; HRIS = Hawaii Risk Indicator Scale;
 KFI = Kempe Family Stress Inventory; NA = not studied; RCT = randomized controlled trial; X = significant relationship;
 0 = studied but not significant.

continue

Table 2. Summary of Intervention Studies (cont)

Author, Year	Type of Study	N	Population	Age of Child When Intervention Ended (Mo)	Risk Assessment	Significant Decrease in Abuse Measures	Other Significant Effects*	Quality Rating
Barth, 1991 ⁵⁹	RCT	191	Pregnant women in California with low income; 90% scored above the mean on Child Abuse Potential Inventory (CAP)	6	Two or more positive responses to a list of criteria	0	NA	Fair
Marcenko, 1994 ⁶⁰	RCT	225	Pregnant low-income minority women, Philadelphia	6	A history of at least 1 factor: substance abuse, homelessness, domestic violence, psychiatric illness, incarceration, HIV infection, lack of social support	0	X	Fair
Brooten, 1986 ⁶⁴	RCT	79	Low birth weight infants	18	Weight <2200 grams	0	X	Fair
Siegel, 1980 ⁶²	RCT	331	Pregnant women, mostly minority, low education, not married; North Carolina	12	None	0	0	Fair
Cerny, 2001 ⁶⁷	Cohort	142	Pregnant women at risk for child abuse or neglect, Tripler Army Medical Center	12	One or more positive responses to a list of criteria	0	X	Fair-poor
Katzev, 1999 ⁴⁷	Cohort	6,921	First-birth pregnant women, Oregon	36	HRIS; if high score, then KFI.	X	X	Fair-poor

Table 2. Summary of Intervention Studies (cont)

Author, Year	Type of Study	N	Population	Age of Child When Intervention Ended (Mo)	Risk Assessment	Significant Decrease in Abuse Measures	Other Significant Effects*	Quality Rating
Brayden, 1993 ⁴⁸	RCT	1,082	Pregnant women, Philadelphia	24	Risk factors: frequent moves, previous removal of children by CPS, abusive behavior, and high scores on the Life Stress Scale and Nurture Scale	X	NA	Poor
Dawson, 1989 ⁶⁶	Quasi-Experimental	172	Low-income pregnant women, Denver	24	None	Increased reports	NA	Poor
Flynn, 1999 ⁶⁸	Cohort	137	Pregnant minority women; mostly teenagers; Newark	36	Based on clinical judgment	0	X	Poor
Gray, 1979 ⁶⁵	RCT	150	Pregnant women; Denver.	36	Based on clinical judgment.	Increased reports	X	Poor

such as medical care utilization, parent-child interactions, punishment, stressful life events, parental mental illness, and drug use.^{59-61,63,64}

Harms of Screening and Interventions

No studies were identified that provide data about adverse effects of screening or interventions. False-negative tests may hinder identification of those who are truly at risk. False-positive tests could lead to inappropriate labeling and punitive attitudes. Additional possible harms include psychological distress, escalation of abuse and family tension, loss of personal residence and financial resources, erosion of family structure, loss of autonomy for the victim, and lost time from work. Children could lose contact with established support systems including neighbors, siblings, school contacts, and peer groups.

There has been concern that patients may feel uncomfortable or threatened if asked questions about family violence. Although most women bringing their children to a pediatric emergency department believed screening for family violence was appropriate, many indicated that their willingness to disclose might be affected by fear of being reported to child protective services.⁶⁹ Clinicians in the study indicated that they would feel obligated to report a child to protective services if violence were present in the home.

Discussion

Detection of child abuse and neglect by clinicians could potentially reduce serious harms to children. Screening for abuse or risk of abuse, however, poses unique challenges. Determining performance characteristics of screening instruments, such as sensitivity and specificity, is difficult because there is no reference standard for detecting actual episodes of abuse. Screening instruments require high sensitivity and specificity because falsely implicating a parent as an abuser may have serious consequences. For children, mandatory reporting requires that documentation of abuse exists, but reported abuse likely captures only a fraction of all cases. In a recent survey of nurses and physicians,

71% of respondents rated the identification of maltreatment as rather difficult or difficult.⁷⁰ Work pressure, unfamiliarity, and awkwardness were cited as barriers.

Existing instruments to detect child abuse are not designed for direct administration to the child, missing opportunities to screen older children in the context of usual health care. Screening for abuse in the primary care setting can involve a variety of techniques including physical examination as well as questionnaires. History from the child has been stated as the most important diagnostic feature in determining child sexual abuse.⁷¹ Findings during a routine physical examination suggestive of abuse and neglect, such as burns, bruises, and repeated suspect traumatic injury, have been described.^{39,72} Many professional medical organizations, including the American Academy of Pediatrics, the American Medical Association, and the American Academy of Family Physicians, recommend that physicians remain alert for the signs and symptoms of child abuse and neglect in the medical visit.

Even if current screening methods correctly identified children at risk of abuse, optimal interventions are not clearly established or widely available. Studies of interventions for prevention of child abuse focused on the prenatal, postpartum, and early childhood periods.⁷³ Both the U.S. Task Force on Community Preventive Services⁴¹ and the Canadian Task Force on Preventive Health Care⁴² recommend this service. Interventions for older children have not yet been shown to be effective.

There are many gaps in the evidence for screening children for abuse, and future research should address these needs. Definitions and measures of abuse, neglect, severity, and chronicity need to be standardized across studies. Existing screening instruments require more testing and validation in various health-care settings, as well as modification of those that are too long or complex for medical practice. Instruments require validation in languages other than English.

Studies need to consider the influence of observer or surveillance bias.^{26,41,55} In studies of child abuse, families in the intervention group are often observed more closely than those in the control group and

may be more likely to have abuse detected.^{65,66} Results could be misrepresented. Interventions are dissimilar between studies and often inadequately described. Programs that deviate from tested models may have different results.

Screening and intervention studies are generally confined to certain high-risk populations while overlooking others such as special cultural groups and military families. Broader applications would show whether results are generalizable. More research is required to better understand pregnancy-related violence such as the course of violence during pregnancy and postpartum, health implications, the role of violence on reproductive decision making, and determination of what screening and intervention strategies are most effective for this population.⁷³

Evaluations of the feasibility of screening procedures and interventions in health-care settings must consider costs, time, resources, clinician consistency, barriers, and patient compliance. Evaluations of strategies enlisting health systems and community programs are needed. Studies of the effectiveness of treatment programs for abused victims as well as for perpetrators would provide needed evidence that identification and intervention can lead to improved health outcomes. These outcomes should include not only measures of reduced violence, but also associated health outcomes such as improved quality of life, mental health,⁷⁴ social support, self-esteem, productivity, and others.

Despite the prevalence of child abuse and neglect and its impact on health, there are few studies providing data on its detection and management to guide clinicians. As a result, clinicians have difficulty fulfilling their role in prevention and treatment of the harms of family violence.

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Appendix 1: Search Strategies

Child Abuse Screening Instruments

Databases: MEDLINE (1966–2002), CINAHL (1982–2002), Health & Psychosocial Instruments (1985–2002)

1. exp Child Abuse/ or child abuse.mp.
2. (battered child\$ or abused child\$).mp.
3. violence against child\$.mp.
4. school based.mp.
5. SCHOOLS, NURSERY/
6. (elementary school\$1 or grade school\$).mp.
7. 4 or 5 or 6
8. 7 and abuse\$.mp
9. 1 or 2 or 3 or 8
10. Mass Screening/ or screening.mp.
11. questionnaires/ or questionnaire\$.tw.
12. interviews/ or interview\$.tw.
- 13.. 10 or 11 or 12
14. 9 and 13
15. limit 14 to (human and English language)

Child Abuse Interventions

Databases: MEDLINE (1966–2002), CINAHL (1982–2002)

1. exp Child Abuse/ or child abuse.mp.
2. (battered child\$ or abused child\$).mp.
3. violence against child\$.mp.
4. school based.mp.
5. SCHOOLS, NURSERY/
6. (elementary school\$1 or grade school\$).mp.
7. 4 or 5 or 6
8. 7 and abuse\$.mp.

9. 1 or 2 or 3 or 8
10. PEDIATRICS/ or pediatrics.mp.
11. pediatrician\$.mp.
12. Physicians, Family/ or family physicians.mp.
13. exp Primary Health Care/ or primary care.mp.
14. Family Practice/ or family practice.mp.
15. emergencies/ or emergency.mp.
16. exp emergency service, hospital/ or emergency department\$.mp.
17. 10 or 11 or 12 or 13 or 14 or 15 or 16
18. 9 and 17
19. pc.fs. or prevent\$.mp. or intervention.mp. or assessment.mp.
20. exp counseling/ or counsel\$.mp.
21. (patient education or questionnaire\$).mp.
22. questionnaires/
23. interviews/ or interview\$.mp.
24. exp clinical trials/ or clinical trial\$.mp.
25. 19 or 20 or 21 or 22 or 23 or 24
26. 18 and 25
27. limit 26 to (human and English language)
28. from 27 keep 1-104

Database: PsycINFO (1984–2002)

1. exp Child Abuse/ or child abuse.mp.
2. (battered child\$ or abused child\$).mp.
3. violence against child\$.mp.
4. (school based and (violence or abuse\$)).mp.
5. exp Nursery Schools/ or nursery school.mp.
6. exp Elementary Schools/ or elementary school.mp.
7. grade school\$.mp.

8. (5 or 6 or 7) and (abuse or violence).mp.
9. 1 or 2 or 3 or 4 or 8
10. exp PEDIATRICS/ or pediatrics.mp.
11. exp Family Physicians/ or family physicians.mp.
12. exp Primary Health Care/ or exp Physicians/ or primary care.mp.
13. exp Family Physicians/ or family practice.mp.
14. exp emergency services/ or emergency\$.mp.
15. exp School Nurses/ or school nurse.mp.
16. 10 or 11 or 12 or 13 or 14 or 15
17. 9 and 16
18. limit 17 to (human and english language)
19. prevention/ or prevent\$.mp. or intervention.mp. or assessment.mp.
20. exp counseling/ or counsel\$.mp.
21. exp Client Education/ or patient education.mp.
22. questionnaires/ or questionnaire\$.mp.
23. exp INTERVIEWS/ or interviews.mp.
24. clinical trial\$.mp.
25. exp At Risk Populations/ or exp Cohort Analysis/ or cohort study.mp.
26. 19 or 20 or 21 or 22 or 23 or 24 or 25
27. 18 and 26

Database: ERIC (1989–2002)

1. Child Abuse
2. Family Practice
3. Physicians
4. 1 and 2 or 3

Database: Cochrane Database of Systematic Reviews & Controlled Trials

Key word search: **child abuse**

Appendix 2: Study Quality Rating Criteria¹

Diagnostic Accuracy Studies

Criteria

- Screening test relevant, available for primary care, adequately described?
- Study uses a credible reference standard, performed regardless of test results?
- Reference standard interpreted independently of screening test?
- Handles indeterminate results in a reasonable manner?
- Spectrum of patients included in study?
- Sample size?
- Administration of reliable screening test?

Definition of Ratings Based on Criteria

Good: Evaluates relevant available screening test; uses a credible reference standard; interprets reference standard independently of screening test; reliability of test assessed; has few or handles indeterminate results in a reasonable manner; includes large number (more than 100) broad-spectrum patients with and without disease.

Fair: Evaluates relevant available screening test; uses reasonable, although not best, standard; interprets reference standard independent of screening test; moderate sample size (50 to 100 subjects) and a “medium” spectrum of patients.

Poor: Has important limitation, such as uses inappropriate reference standard, screening test improperly administered, biased ascertainment of reference standard, very small sample size of very narrow selected spectrum of patients.

Randomized Controlled Trials (RCTs) and Cohort Studies

Criteria

- Initial assembly of comparable groups: randomized controlled trials (RCT)—adequate randomization, including concealment and whether potential confounders were distributed equally among groups; cohort studies—consideration of potential confounders with either restriction or measurement for adjustment in the analysis; consideration of inception cohorts?
- Maintenance of comparable groups (includes attrition, crossovers, adherence, contamination)?
- Important differential loss to follow-up or overall high loss to follow-up?
- Measurements: equal, reliable, and valid (includes masking of outcome assessment)?
- Clear definition of interventions?
- Important outcomes considered?
- Analysis: adjustment for potential confounders for cohort studies, or intention-to-treat analysis for RCTs?

Definition of Ratings Based on Criteria

Good: Studies will be graded “good” if they meet all criteria: comparable groups are assembled initially and maintained throughout the study (follow-up at least 80%); reliable and valid measurement instruments are used and applied equally to the groups; interventions are spelled

out clearly; important outcomes are considered; and appropriate attention is given to confounders in analysis.

Fair: Studies will be graded “fair” if any or all of the following problems occur, without the important limitations noted in the “poor” category below: generally comparable groups are assembled initially but some question remains whether some (although not major) differences occurred in follow-up; measurement instruments are acceptable (although not the best) and generally applied equally; some, but not all, important outcomes are considered; and some, but not all, potential confounders are accounted for.

Poor: Studies will be graded “poor” if any of the following major limitations exists: groups assembled initially are not close to being comparable or maintained throughout the study; unreliable or invalid measurement instruments are used or not applied at all equally among groups (including not masking outcome assessment); and key confounders are given little or no attention.

Case Control Studies

Criteria

- Accurate ascertainment of cases?
- Nonbiased selection of cases/controls with exclusion criteria applied equally to both?

- Response rate?
- Diagnostic testing procedures applied equally to each group?
- Measurement of exposure accurate and applied equally to each group?
- Appropriate attention to potential confounding variable?

Definition of Ratings Based on Criteria

Good: Appropriate ascertainment of cases and nonbiased selection of case and control participants; exclusion criteria applied equally to cases and controls; response rate equal to or greater than 80%; diagnostic procedures and measurements accurate and applied equally to cases and controls; and appropriate attention to confounding variables.

Fair: Recent, relevant, without major apparent selection or diagnostic work-up bias but with response rate less than 80% or attention to some but not all important confounding variables.

Poor: Major selection or diagnostic work-up biases, response rates less than 50%, or inattention to confounding variables.

¹ Harris RP, Helfand M, Woolf SH, et al. Current methods of the U.S. Preventive Services Task Force: a review of the process. *Am J Prev Med.* 2001;20:21–35.

Appendix 3: Detailed Results

Screening

We identified and reviewed 1,808 abstracts; 65 articles were retrieved for further review; and 6 studies met eligibility criteria.

No studies meeting eligibility criteria directly addressed the effectiveness of screening in reducing harm and premature death and disability. A limited number of studies described the performance of screening methods, such as self-administered questionnaires (sometimes in conjunction with interviews and medical record reviews), clinical staff-directed interviews, and clinical observation. All studies primarily assessed parents, rather than children directly, and none utilized specific physical examination protocols for screening. Examples of instruments and scoring procedures included in these studies are described in Appendix 4.¹⁻⁴

Few studies evaluated the performance of these approaches in predicting child abuse and neglect outcomes. Screening instruments had fairly high sensitivity but low specificity when administered in the study populations. Best results were achieved when screening involved a 2-step method, however, these strategies have not been widely tested in other populations and have not been evaluated for feasibility in the primary care setting.

Self-administered Questionnaires

The Kempe Family Stress Inventory (KFI) was used in 3 studies meeting eligibility criteria (Table 1).^{5,6,9,10} These studies used a score of 25 or more to define high risk status. Study populations included predominantly young, single women with low socioeconomic indicators. A retrospective cohort study in Denver included 262 adolescent parents in a university hospital maternity program.⁶ Cases of child abuse and neglect were recorded by medical staff. As part of a larger battery of measures, families completed the 10-item KFI including questions about stressful events, parent behavior, and other risk factors associated with child abuse and neglect. High score on the KFI was the only statistically

significant predictor of maltreatment at 1 year (relative risk [RR] 8.41, 95% confidence interval [CI], 5.77–10.01; $P=.0009$) and at 2 years postpartum (RR 5.19, 95% CI, 1.99–13.60; $P=.004$). In addition, families identified with high-risk scores on the KFI were more likely than low-risk families to initiate clinic visits for their children during the first year ($P<.0001$) and admit their children to the hospital during the first 6 months ($P=.06$).

A study conducted in Hawaii Healthy Start affiliated obstetrics clinics that included young, poor, pregnant women with high rates of domestic violence and substance abuse, utilized the KFI in a 2-step screening process.^{2,5,9} Identification of high-risk women by initial review of medical records or interview using the 15-item Hawaii Risk Indicators Screening Tool was followed by the KFI. Results were then compared with the Child Abuse Potential (CAP) inventory, a 160-item instrument. The 2-step procedure had 89% sensitivity and 28% specificity at 6-months follow-up.

An evaluation of the Oregon Healthy Families program also used the Hawaii Risk Indicators Screening Tool to screen 2,870 pregnant women considered at risk for child abuse because of history of previous abuse or neglect, history of substance abuse, and young age, among other factors.¹⁰ Women who had high scores on this test (40% of cohort), were then given the KFI. Scores on the KFI were highly correlated with maltreatment rates (given per 1000 children): 7 with low risk scores, 18 with moderate, 45 with high, and 172 with severe. Sensitivity was calculated at 97%; specificity 21% for high and severe risk scores.²

Clinical Staff-administered Questionnaires

A study of 1,089 young pregnant women receiving care at a general hospital used the Maternal History Interview (MHI-2) to determine risk for child abuse.⁷ This instrument utilizes open-ended questions and subscales to evaluate

parenting skills, personality, discipline philosophy, life stress, and others. The incidence of reported child abuse among mothers identified as high risk was 6.6% compared with 2.3% for low-risk mothers (RR 3.02, 95% CI, 1.02–8.90) based on public agency reports of physical abuse, neglect, sexual assault, or mother-child separation in the first 36 months. The MHI-2 had a sensitivity of 55.6% for physical abuse. This instrument did not predict neglect or sexual abuse.

The Parenting Profile Assessment (PPA) is a 21-item nurse interview designed for the primary care setting.⁴ Responses on the PPA were compared with self-reports about past episodes of abuse in a sample of 185 mothers who volunteered to be studied.⁴ Results indicated 75% sensitivity, 86% specificity, 39% positive predictive value, and 97% negative predictive value.

Other Techniques: Clinician Observation

In a retrospective cohort study, nurses referred patients and their newborns to the hospital's child abuse committee from the postpartum unit after determining them to be at high risk for abuse based on a number of nonstandardized criteria, including parental substance use, income, social support, previous child abuse or neglect, and parenting behavior.⁸ Information was gathered from direct observation and medical records. When compared with the low-risk patients, the rate of subsequent hospitalizations for medical and psychosocial reasons was significantly greater in high-risk patients ($P < .01$ and $P < .05$, respectively).

Interventions

A total of 1,748 abstracts were captured in database searches. Seventeen studies, using 13 unique populations, met inclusion criteria. All studies evaluated interventions for pregnant and postpartum women and their infants. Nine randomized controlled trials were found with 4 subsequently published follow-up studies:¹¹⁻¹⁴ 1 rated good quality,¹⁵ 6 rated fair quality,¹⁶⁻²¹ and 2 rated poor quality.^{7,22} One poor-quality quasi-experimental

study,²³ 2 fair-to-poor quality cohort studies,^{10,11} and 1 poor-quality cohort study²⁵ were also found. All studies are described in Table 2,^{7,10-25} but only the randomized controlled trials rated good or fair quality are described in the text.

A trial of 400 low-income, pregnant women in a semi-rural county in New York State provided 3 levels of support services during and after pregnancy and assessed outcomes related to child abuse and neglect.¹⁵ Women were actively recruited to the study through a variety of ways, including public health clinics and obstetric practices, if they had no other previous live births and were either younger than 19, single parents, or had low socioeconomic status, although women who requested to be in the study were also included. They were randomized to 1 of 4 groups: no intervention, intervention with transportation services to the medical clinic during pregnancy, intervention with transportation services and nurse home visits during pregnancy (every 2 weeks for approximately 9 visits), and intervention with transportation services and nurse home visits continuing through the child's second birthday. Nurse visits included parent education, support systems for the mother, and engagement of family members with other health and social services.

All infant participants received a sensory, developmental, and home environment evaluation at 1 and 2 years of age using Bayley, Cattell, and Home Observation for Measurement of the Environment (HOME) Scales. In addition, records from the department of social services (Child Protective Services), emergency department visits, and other medical visits were reviewed for the presence of abuse and neglect. If there were suspected problems in the no-intervention group at the 1- or 2-year evaluation, subjects were referred to appropriate services. Data were also collected at ages 3,¹¹ 4,¹² and 15.^{13,14} At the 15-year follow-up, outcome data included a life history calendar, self-report of criminal activity, parent-child conflict inventory, and domestic violence assessment.

Results at 2 years showed that high-risk women who had prolonged nurse visits were less likely to commit acts of child abuse and neglect compared with high-risk women without visits ($P = .07$).¹⁵ At 3

and 4 years' follow-up, there were no differences between groups for child abuse and neglect outcomes.^{11,12} At the 15-year follow-up, however, children in the nurse-visited group were less likely to be involved in reports of child maltreatment of any kind ($P < .05$).¹⁴ Mothers in the nurse-visited group were less likely to be perpetrators of child abuse and neglect than mothers without nurse visits 15 years after the intervention ($P < .001$).¹³

Other related outcomes included fewer injuries or toxic ingestions at ages 2, 3, and 4 years,^{11,12,15} and fewer visits to the emergency department at ages 3 and 4 years^{11,12} for the nurse-visited group. Also, at the 2-year assessment, nurse-visited toddlers showed a higher developmental quotient than not visited toddlers.¹⁵ When compared with not visited mothers, mothers in the nurse-visited group showed less impairment by alcohol and other drug use, less convictions, and less jail time at the 15-year follow-up.¹⁴ This finding, however, was statistically significant only for the subgroup of unmarried women with low socioeconomic status.

Six fair-quality trials evaluated home visitation programs linked to prenatal clinics or hospital care.¹⁶⁻²¹ Studies varied in the types and duration of interventions. All but 1 study¹⁹ used inclusion criteria based on an assessment of risk for child abuse and neglect, although no study used standardized or validated instruments. Studies generally considered positive responses to criteria, such as social or demographic risk factors (unmarried, low level of education, unemployed),^{16,20} drug use during pregnancy,¹⁸ low birth weight,²¹ or a history of other risk factors (human immunodeficiency virus infection, homelessness, substance use),¹⁷ among others. Follow-up ranged from 2 to 24 months after delivery, and abuse outcomes were determined by medical record review, face-to-face interviews, home observation, questionnaires on child abuse potential, and county social service records. Evaluations of the home included assessment of the safety and developmental appropriateness of the home and play environment.

None of these studies described significantly fewer reports of abuse and neglect in intervention groups compared with control groups, although

not all studies were designed for this outcome.²⁰ Five of the studies reported other significant intervention effects related to abuse and neglect, such as medical care utilization, parent-child interactions, punishment, stressful life events, parental mental illness, and drug use.^{16-18,20,21}

A trial in Memphis randomized 1,139 pregnant women seen in a public obstetric clinic to 4 different intervention groups, including a home nurse-visit group.²⁰ This study had a design similar to the New York State trial¹⁵ but differed in implementation of the intervention and measurement of outcomes. Furthermore, study groups had different income levels at baseline. Outcome measures included mothers' perceptions of child abuse and neglect, punishment, and child rearing; medical visits; and life events; but there were no verified reports of abuse and neglect. By the 24th month, nurse-visited women held fewer beliefs about child rearing associated with child abuse and neglect, such as lack of empathy, belief in physical punishment, and unrealistic expectations of an infant ($P = .003$). Nurse-visited children had fewer health care encounters related to injuries or ingestions in the first 2 years compared with comparison groups ($P = .05$).

A trial using prenatal assessment indicated that 43 drug-using minority women had CAP scores significantly above the norm ($P < .01$).¹⁸ At 18 months follow-up, an intervention group that had received biweekly nurse home visits reported total abuse scores on the CAP to be within the norm, whereas the control group continued to show total scores above the norm ($P < .01$). Women in the treatment group were more emotionally responsive to their children ($P = .03$), had a more stimulating home environment ($P = .053$), reported being drug free ($P = .002$), and were compliant with primary care ($P = .016$) compared with the women without home visits.

In a trial conducted in California, 191 pregnant women were referred to a specialized home visitation program after being determined to be high risk and were observed for 2 months postpartum.¹⁶ Before the program, the intervention group had more reports of child abuse than the control group.

After the intervention, the control group had a greater increase in unsubstantiated reports ($P<.05$). No differences were found for substantiated reports, well-being, prenatal care, birth outcomes, baby temperament, child welfare, or court-ordered in-home or out-of-home services.

In Philadelphia 246 pregnant minority women participated in a study of home visitation from prenatal to 12 months postpartum.¹⁷ There were no significant differences between groups on the HOME inventory. Treatment women showed a decrease in overall psychological distress ($P<.002$) and had more help with household tasks and attaining household items ($P<.001$), higher total social support ($P<.005$), and more support from grandparents ($P=.04$) and friends ($P<.004$).

A trial of nurse home visitation for low birth weight babies included 79 postpartum women at the University of Pennsylvania Hospital.²¹ Low birth weight infants in the intervention group were discharged 11 days earlier ($P<.05$) than the control group, and were on average 2 weeks younger. At 18 months' follow-up, there were no differences between groups for reports of child abuse or foster care placement, measures of rehospitalizations, numbers of acute care visits, or incidence of failure to thrive.

In a trial of home visitation in North Carolina, at 12-month follow-up, there were no differences between groups for reports of child abuse and neglect, number of hospitalizations, or number of emergency department visits.¹⁹

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Appendix 4: Screening Instruments

Hawaii Risk Indicators Screening Tool¹

Based on medical record or interview; score true, false, unknown.

1. Unmarried
2. Partner unemployed
3. Inadequate income
4. Unstable housing
5. No phone
6. Education under 12 years
7. Inadequate emergency contacts
8. History of substance use
9. Inadequate prenatal care
10. History of abortions
11. History of psychiatric care
12. Abortion unsuccessfully sought or attempted
13. Adoption sought or attempted
14. Marital or family problems
15. History of depression

Positive screen: 1 true score on item number 1, 9, or 12; 2 or more true scores; 7 or more unknowns.

Kempe Family Stress Inventory (KFI)^{2,3}

Score 1 point for each positive response:

1. Parent history of abuse as child (beaten or deprived)
2. Parent history of criminal activity, mental illness, or substance abuse history
3. Previous or current Child Protective Services involvement
4. Parent with isolation, low self-esteem, or depression

5. Multiple stresses or crises
6. Potential for violent temper outbursts
7. Unrealistic, rigid expectations of child's behavior or development
8. Harsh punishment of child
9. Child perceived by parent to be difficult and/or provocative
10. Child unwanted or at risk for poor bonding

For each item score: 0 = no problem, 5 = mild problem, 10 = severe problem.

Positive assessment (100 points possible): a total score of 25 or more for either parent.

Parenting Profile Assessment (PPA)⁴

Questions directed to mother (score for item):

1. Moderate to severe discipline as a child (5)
2. Past or present spousal abuse (3)
3. Perception of stress (4.5)
4. Moderate to severe life change score (4.5)
5. High school education or less (3)
6. Rare involvements out of home (1.25)
7. Little or no prenatal care (2.5)
8. Does not feel good about herself (3.5)
9. Feels like running away (3)
10. Age at first birth under 20 (2)
11. Unlisted or no phone (1)
12. Difficulty communicating with family members (3.5)
13. History of unemployment over a two-month period (of usual provider) (2)
14. Currently under or unemployed (of usual provider) (2)

15. Family involvements with police (2)
16. Less than \$20,000 a year income (2.5)
17. Curses at child(ren) when disciplining (3.5)
18. Child(ren) shows evidence of punishment after discipline (3)
19. Perceives discipline of children as harsh (3)
20. Calls child(ren) names when disciplining (3.5)

For each “yes” answer, add scores for items. Also assess for presence of clustered items (4, 5, 15, 16, 19).

Possible risk: 21 points or more or presence of all items in cluster.

Low risk: less than 21 points and not all items in cluster present.

Uncertain risk: unsure of answers to questions.

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