

Screening Tools for Child Abuse Used by Healthcare Providers: A Systematic Review

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ABSTRACT

Background: The early detection of child abuse is essential for children at risk. Healthcare professionals working at hospitals and in the community are often the first to encounter suspected cases of child abuse. Therefore, an accurate identification of child abuse is critical for intervention. However, there is no consensus on the best method to screen for child abuse.

Purpose: This systematic review was designed to evaluate the relevant psychometric properties and critically appraise the methodological quality of child abuse screening tools used by healthcare providers with children less than 18 years old.

Methods: We searched the Cochrane Library, MEDLINE, Embase, CINAHL, Education Resources Information Center, PubMed, Airtiti Library, and OpenGray databases for studies on screening tools used to identify abuse in children published through October 2019 in English or Chinese. Information regarding populations, assessment methods, and accuracy parameters were extracted. Study quality was assessed using the CoNSensus-based Standards for the selection of health Measurement INstruments checklist and Grading of Recommendation, Assessment, Development, and Evaluation criteria.

Results: Nine hundred thirty-nine abstracts and 23 full-text articles were reviewed for eligibility, and 15 screening tools for child abuse used by healthcare providers were identified. Screening tools often assess the presence of more than one form of abuse, but no single tool covered all forms. Of these, 10 tools screened for a single, discrete type of abuse, including nine physical abuse screening tools (three abusive head trauma tools) and one sexual abuse tool. Eighty percent ($n = 12$) of the screening tools had a moderate-to-high quality of evidence based on the Grading of Recommendation, Assessment, Development, and Evaluation criteria. However, none of these screening tools achieved an adequate level of evidence based on the CoNSensus-based Standards for the selection of health Measurement INstruments checklist.

Conclusions/Implications for Practice: In this systematic literature review, 15 assessment tools of child abuse used by healthcare providers were identified, of which nine screened for physical abuse. Screening tools must be valid, succinct, user-friendly, and amenable for use with children at every point of care in the healthcare system. Because of the paucity of informative and practical studies in the literature, findings related to the quality of child abuse screening tools were inconclusive. Therefore, future research should focus on the use of screening tools in the healthcare system to identify effective screening

interventions that may help healthcare providers identify child abuse cases as early as possible.

KEY WORDS:

child abuse, screening tool, healthcare provider.

Introduction

The World Health Organization defines child maltreatment as abuse and neglect that is directed at children under 18 years old. Child maltreatment constitutes all forms of physical abuse, sexual abuse, emotional abuse, and neglect that results in actual or potential harm to a child's health or survival (World Health Organization, 2020). In cases of child abuse, only children with injuries or in a life-threatening situation are referred for medical treatment. However, child abuse does not necessarily present consistent symptoms and signs. Most abusers or caregivers tend to deny or refuse to provide a child's medical history, which overshadows the crucial point and misleads judgments on the presence of child abuse, making related diagnoses and treatments more difficult. Without immediate identification and intervention, the risk of repeated maltreatment in children experiencing abuse increases, leading to physical and mental trauma that may be life-threatening (Oral et al., 2008).

Healthcare providers such as community and hospital medical staffs often encounter maltreated children in their professional settings. The characteristics of abuse differ

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across cases. In some cases, children who have experienced abuse exhibit only mild or insignificant symptoms such as bruises (Mimasaka et al., 2010). Healthcare professionals often use medical histories, exhibited symptoms, and observations of interactions between the child and his or her caregivers to determine the presence of abuse.

Existing screening tools for child abuse may be used by a wide range of professionals in various settings. Some tools have been designed based on parents' or children's self-reported abuse (Saini et al., 2019), whereas others rely on the objective results of imaging examinations (Flom et al., 2016) or on physical and medical history analyses (Berger et al., 2016). Furthermore, community assessments of child abuse largely rely on parental statements, parental behavior, caring experiences, and direct observations to assess the state of a child and the home environment (van der Put et al., 2017). An efficient screening tool may assist healthcare providers to effectively identify potential cases of child abuse. Hoytema van Konijnenburg et al. (2013) reviewed the related literature and explored the use of physical examinations to screen child abuse in hospitals and communities. Their findings showed that 0.8%–13.5% of children are screened for child abuse. However, that study did not conduct a sensitivity and specificity analysis. Moreover, physical examination alone is insufficient for screening child abuse cases. Considering the difficulty in identifying child abuse, healthcare providers must pay greater attention to details and be more sensitive in detecting cases of potential or actual abuse to systematically and efficiently screen suspected cases in busy clinical settings. The use of screening tools that offer high sensitivity and cover common injuries and features of child abuse has been shown to increase the rate of detection of child abuse from less than 3% to 34% (Louwers et al., 2012).

An efficient screening tool that covers both risk factors and identification elements of child abuse will enable healthcare workers to identify child abuse effectively, while reducing the burden of judgment and evaluation and lowering the chance of overlooking cases. Furthermore, the early detection of child abuse will allow the provision of appropriate assistance, prevent further abuse, and reduce long-term negative effects (Salinas-Miranda et al., 2015). A recent systematic literature review by Saini et al. (2019) analyzed 52 screening tools for child abuse. This review included only instruments that measured any form of child abuse in articles published in English. The review found that most of the existing screening tools use self-reported and retrospective questionnaires and that they mainly explore child abuse cases occurring before 18 years old. The significance of this review is that it examined the quality of the screening tools using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) checklist, wherein only eight of the screening tools were found to have a moderate or high quality of evidence. However, this systematic literature review is mainly applicable to assessing the abuse experience of victims and is less appropriate for infants and young children who are unable to express themselves or for assessments conducted in time-sensitive emergencies.

Moreover, it did not include screening tools designed for use in healthcare settings. Hoft and Haddad (2017) also conducted a systematic literature review of existing screening tools and guidelines for identifying child abuse. The study analyzed nine screening tools, which included a questionnaire completed by parents on the risk of child abuse and sexual exploitation, a risk assessment questionnaire completed by the medical staff on physical and sexual abuse screening tools, and a questionnaire on the scale of potential child neglect evaluated by preschool professionals. Although the review by Hoft and Haddad examined different types of screening tools, it did not evaluate or compare the quality of each tool. Therefore, it was not possible to identify the effectiveness of each analyzed tool.

Healthcare covers a wide range of services from the management of acute medical units to health promotion and administration in communities. Thus, the suitability of a screening tool for child abuse varies depending on the context in which it is used. Healthcare workers—even those in acute care hospitals—face multiple difficulties when using screening tools for child abuse. For example, emergency rooms (ERs), pediatric intensive care units, outpatient departments, and community and homecare services may, respectively, use different screening tools based on their unique contexts. Rumball-Smith et al. (2018) used the Escape tool to construct a screening tool to detect child abuse in children under 13 years old using electronic medical records in the ERs of 13 hospitals. Their results showed that the reporting rate was considerably higher when the screening tool was used (1.3% vs. 0.4%; odds ratio [OR] = 2.90, 95% confidence interval [CI; 1.67, 5.02]) and that the reporting rate for positive cases was significantly higher than that for negative cases (50% vs. 0.3%; $p < .0001$).

Rigorous screening tools appropriate for use in the healthcare environment may assist healthcare providers to detect child abuse early as well as reduce their workload, improve work efficiency, and increase confidence and job satisfaction (Carson, 2018). To this end, this study was designed to identify the current screening tools used by healthcare providers to detect child abuse, identify the assessment content used in these tools, and evaluate the reliability and quality of these tools using a systematic literature review. The findings will be used to propose the most appropriate, reliable, and validated screening tools for child abuse that may be used in various segments of the healthcare industry. The research questions of this study were as follows: (a) What screening tools are used by healthcare providers to detect child abuse? (b) How should screening tools for detecting child abuse be evaluated? and (c) What are the psychometric properties of child abuse screening tools?

Methods

This systematic review was constructed based on Preferred Reporting Items for Systematic Review and Meta-Analysis (Moher et al., 2009). In addition, the COSMIN checklist

(Prinsen et al., 2018) was used to conduct the literature review, and the Grading of Recommendation, Assessment, Development, and Evaluation (GRADE; Schünemann et al., 2017) was adopted to grade the quality of evidence to evaluate the measurement properties and formulate results and recommendations.

Search Strategy

This systematic review included an extensive search of relevant domestic and international publication databases, including Airtiti Library, PubMed, MEDLINE, CINAHL, Education Resources Information Center, Cochrane Library, Embase, and OpenGray. An extensive literature search was conducted for all full-text articles published before October 2019 to canvass the most comprehensive range possible. The Boolean logic operator “OR” was used for joint sets of synonyms and “AND” for keyword conjugations. These operators were used in combination and separately during the keyword search. The search keywords included the following: (“child*abuse

[MeSH],” “child*maltreatment,” “child neglect,” or “abusive head trauma”) and (“instrument,” “screening,” “measurement,” “scale,” or “questionnaire”) and (“health care”).

Inclusion Criteria

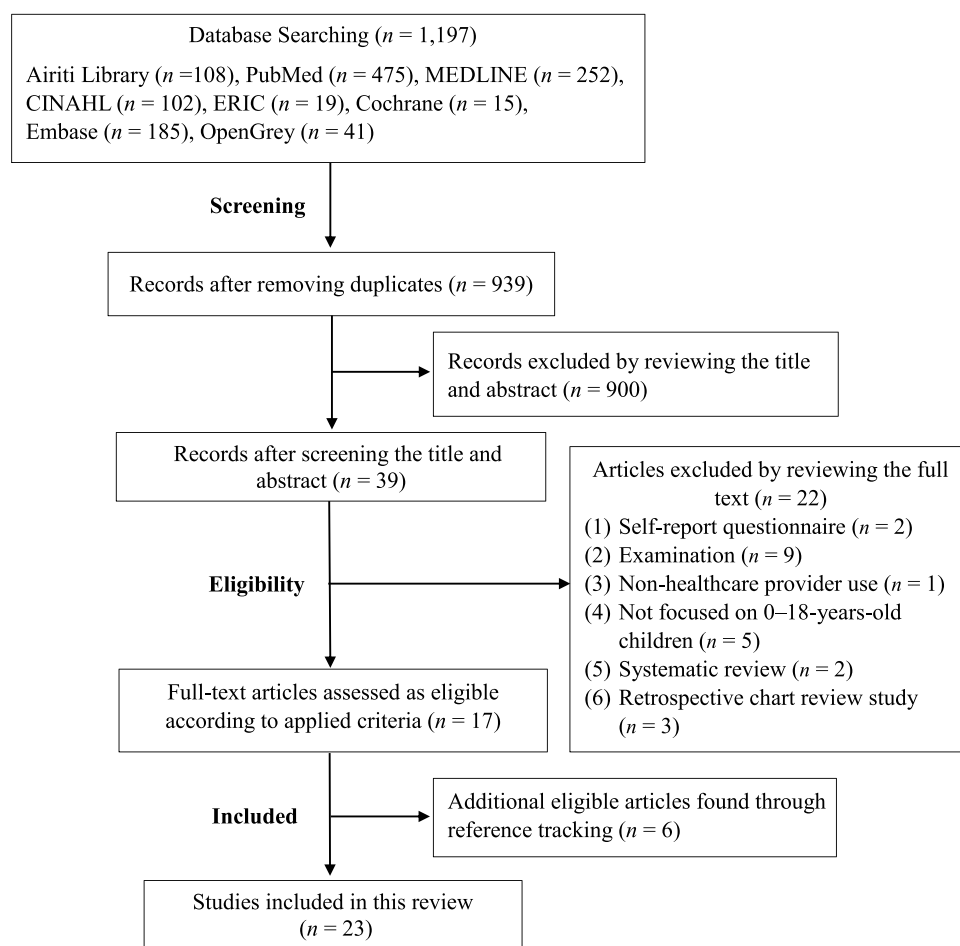
The screening tools identified in this systematic review were required to meet the following three inclusion criteria: (a) have as their main objective the evaluation of victims who had been abused either physically (including abusive head trauma), sexually, or emotionally or had been subjected to neglect; (b) be applicable to children less than 18 years old; and (c) be designed for use by healthcare professionals such as medical staff in ERs, pediatric wards, and community healthcare units. Furthermore, the reviewed articles were required to have been published in either Chinese or English.

Exclusion Criteria

Review articles, commentaries, editorials, and expert opinion articles were excluded from consideration.

Figure 1

Systematic review: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart



Search Outcome

Publications were first screened independently by two researchers based on their titles and abstracts, and duplicate publications were deleted. Publications that used screening tools for the objective evaluation of children younger than 18 years old and those used by healthcare professionals at hospitals and communities were selected. Finally, 23 publications met the inclusion criteria, and 15 screening tools were selected for further analysis. The literature search in this study was based on the Preferred Reporting Items for Systematic Review and Meta-Analysis statement (refer to the flow diagram presented in Figure 1).

Quality Appraisal

Two researchers reviewed all selected publications independently using the COSMIN checklist (Prinsen et al., 2018), which includes nine measurement properties, including internal consistency, reliability, measurement error, content validity, construct validity, hypothesis testing, cross-cultural validity, criterion validity, and responsiveness. The quality of publications was classified as inadequate, doubtful, adequate, and very good. The GRADE approach was adopted for evaluating the quality of evidence (Schünemann et al., 2017). Publications were further graded as not serious, serious, very serious, and undetected with reference to risk of bias, inconsistency, imprecision, indirectness, and publication bias. Furthermore, the quality of evidence was classified as high, moderate, low, and very low. If there were divergent opinions in the process of quality assessment, a final decision was reached after holding discussions with a third reviewer.

Results

Study Selection

Twenty-three publications, which used 15 different screening tools, met the inclusion criteria. The applicable subjects, assessment items, and reliability and validity of the identified tools are presented in Tables 1 and 2. The included tools assessed the following forms of child abuse: physical abuse ($n = 6$); abuse-related head trauma ($n = 3$); physical abuse and neglect ($n = 2$); child abuse and neglect ($n = 1$); physical and sexual abuse ($n = 1$); physical abuse, emotional abuse, and neglect ($n = 1$); and sexual abuse ($n = 1$). These tools were mainly developed in the United States or in European countries, with seven developed in the United States, four in the Netherlands, two in the United Kingdom, and one each in Spain and South Korea.

Population Characteristics

Of the 15 child abuse screening tools identified in the included articles, eight targeted children who had sought medical attention with injury and three targeted all children who had sought medical attention. The tools used in these studies included the Pittsburgh Infant Brain Injury Score (PIBIS),

INTOVIAN (a European Commission-funded project name), and Escape (Berger et al., 2016; Ezpeleta et al., 2017; Louwers et al., 2014). The remaining four studies that utilized self-report tools to assess risk of child abuse were the Early Risks of Physical Abuse and Neglect Scale (ERPANS), Pediatric Hurt-Insult-Threaten Scream-Sex (PedHITSS) screening tool, Identification of Parents At Risk for child Abuse and Neglect (IPARAN), and Symptoms Associated with Sexual Abuse (SASA; Schols et al., 2019; Shakil et al., 2018; van der Put et al., 2017; Wells et al., 1997). These self-report tools were designed to be used by parents to provide descriptions of either their parental behavior or their observations of their child's behavioral problems. Eleven studies provided descriptions of child characteristics, including mean ages of less than 1 year ($n = 7$), 1–4 years ($n = 2$), and 5–8 years ($n = 2$).

Screening Tools

Healthcare providers mainly provide care in hospital and community settings. When an abused child is sent to the hospital, healthcare providers will conduct physical examinations and tests using medical devices to evaluate whether that child's symptoms are related to abuse. In addition, when conducting family visits in the community, there is also the opportunity to assess the caregiver's parenting and environment to facilitate the early detection of abused children. To identify the key factors of child abuse, the assessment items and methods of the child abuse screening tools include questions on the symptoms of abuse and on whether the child is in a high-risk environment. On the basis of the assessment items, the screening tools of the selected studies were classified into three major categories. Those in the first category involved an objective assessment of the consistency of the mechanism and severity of injury as determined through a physical examination and review of the child's medical history as well as its appropriateness with the child's development and abilities. In this category, interviews and physical examinations such as visual inspections to check for bruising and burns/scalds were used as the basis for assessing whether the mechanism of injury was consistent with the child's developmental stage. Of the 15 tools identified in this review, five were in this category, including INTOVIAN for assessing physical abuse, emotional abuse, and neglect (Ezpeleta et al., 2017); the Burns Risk assessment for Neglect or abuse Tool (BuRN-Tool) for assessing burns (Kemp et al., 2018); the Torso, Ear, and Neck Bruising Clinical Decision Rule (TEN-4 BCDR) for assessing bruising (Pierce et al., 2010); and Escape and SPUTOVAMO-R (acronym consisting of the first letters of the question in Dutch) for assessing physical abuse (Louwers et al., 2014; Sittig et al., 2011).

Tools in the second category involved the use of biochemical tests and precision imaging in addition to interviews and physical examinations for determining the mechanism of injury. Examinations included x-ray imaging for detecting skull or long bone fractures, computed tomography imaging for detecting intracranial hemorrhaging, fundoscopic examination

Table 1*Description of Selected Studies That Examined Child Abuse Screening Instruments*

Study	Instrument	Inclusion Criteria (Children)	Form of Child Abuse	Sample Size	No. of Items	Scoring/Cutoff Point	Sensitivity		Specificity		AUC	
							%	95% CI	%	95% CI	%	95% CI
1. Berger et al. (2016; United States)	PIBIS	< 1 y in the emergency department (ED)	Abused head trauma	1,040	4	A 5-point scale that assessed (a) abnormality on dermatologic examination (2 points), (b) age \geq 3.0 months (1 point), (c) head circumference > 85th percentile (1 point), and (d) serum hemoglobin level < 11.2 g/dl (1 point)/cutoff point: total score of 2 points	93.3	[89.0, 96.3]	53.0	[49.3, 57.1]	83.0	[80.0, 86.0]
2. Chang et al. (2004; United States)	DIPCA	< 3 y identified by External Injury Codes (E-codes) in the range of 967.0–967.9	Physical abuse	11,919	6	A 15-point scale with (a) 1 point for fracture of base or vault of skull; (b) 2 points each for contusion of eye, rib fracture, intracranial bleeding, multiple burns, or age of 1–3 y; and (c) 6 points for age of 0–1 y/cutoff point: total score of 3 points	72.5		89.1		86.0	
3. Chang et al., (2005; United States)	SIPCA	< 14 y identified based on ICD-9, Clinical Modification codes 800–959	Physical abuse	58,558	6	A 15-point scale with (a) 1 point for fracture of base or vault of skull; (b) 2 points each for contusion of eye, rib fracture, intracranial bleeding, multiple burns, or age of 1–3 y; and (c) 6 points for age of 0–1 y/cutoff point: total score of 3 points	86.6		80.5		89.0	
4. Cowley et al. (2015; United Kingdom)	PredAHT	< 3 y with an intracranial injury in the pediatric intensive care unit (PICU)	Abused head trauma	198	6	Yes/no questions/cutoff point of 3 points	72.3	[60.4, 81.7]	85.7	[78.8, 90.7]	88.0	[82.3, 92.6]
5. Ezpeleta et al. (2017; Spain)	INTOVIAN	< 3 y in public health centers	Physical abuse, emotional abuse, neglect	219	9	Yes/no questions/cutoff point of at least 1 point	–		–			
6. Hymel et al. (2014; United States)	Four-variable CPR	< 3 y for intensive care of head injuries	Abused head trauma	291	4	Yes/no questions/cutoff point of at least 1 point	96.0	[90.0, 99.0]	43.0	[35.0, 50.0]	78.0	

(continues)

Table 1*Description of Selected Studies That Examined Child Abuse Screening Instruments, Continued*

Study	Instrument	Inclusion Criteria (Children)	Form of Child Abuse	Sample Size	No. of Items	Scoring/Cutoff Point	Sensitivity		Specificity		AUC	
							%	95% CI	%	95% CI	%	95% CI
7. Kemp et al. (2018; United Kingdom)	BuRN-Tool	< 16 y with a burn in the pediatric ED	Physical abuse, burn	1,327	7	Integer scores ranging from 0 to 3 points/cutoff point: total score of 3 points	87.5	[61.7, 98.4]	81.5	[77.1, 85.4]	87.0	[83.0, 90.0]
8. Louwers et al. (2014; Netherlands)	Escape	< 18 y who visited the ED	Physical abuse	38,136	6	Yes/no questions/cutoff point of at least 1 point	80.0	[67.0, 89.0]	98.0			
9. Paek et al. (2018; South Korea)	FIND	< 14 y who visited the ED with injuries	Physical abuse, neglect	3,855	8	Yes/no questions/cutoff point of at least 1 point	–		–			
10. Pierce et al. (2010; United States)	TEN-4 BCDR	< 4 y with abusive or accidental trauma in the PICU	Physical abuse, bruises	95	1	Bruising on the torso, ear, or neck for a child aged less than 4 y, and bruising in any region for an infant aged less than 4 months	97.0		84.0			
11. Schols et al. (2019; Netherlands)	ERPANS	< 1 y assessed during a home visit of families	Physical abuse, neglect	1,257	31	4-point response format ranging from 0 (<i>never observed or reported</i>) to 3 (<i>very often observed or reported</i>)/cutoff point: total score of 1 point	–		–			
12. Shakil et al. (2018; United States)	PedHITSS	< 12 y in clinic completed by parents	Physical abuse, sexual abuse	422	5	5-point Likert scale (0 = <i>never</i> , 1 = <i>rarely</i> , 2 = <i>sometimes</i> , 3 = <i>fairly often</i> , or 4 = <i>frequently</i>)/cutoff point: total score of 1 point					85.0	[81.0, 89.0]
13. Sittig et al. (2011; Netherlands)	SPUTOVAMO-R	< 7 y with physical injury in the ED	Physical abuse	5,000	6	Yes/no questions/cutoff point of at least 1 point	–		–			
14. van der Put et al. (2017; Netherlands)	IPARAN	< 1 y assessed during a home visit of families	Child abuse, neglect	4,692	16	4-point response scale (always, often, sometimes, never) or a yes/no option. Each item is assigned a score between 0 and 2/cutoff point of at least 1 point	66.7		77.4		72.0	[59.3, 84.7]
15. Wells et al. (1997; United States)	SASA	< 15 y with risk of sexual abuse based on the tool completed by parents in a clinic	Sexual abuse	121	12	Yes/no questions/cutoff point: total score of 3 points or more	90.9		88.5			

Note. "INTOVIAN" was a European Commission-funded project name. AUC = area under curve; y = years; PIBIS = Pittsburgh Infant Brain Injury Score; DIPCA = Diagnostic Index for Physical Child Abuse; SIPCA = Screening Index for Physical Child Abuse; PredAHT = Predicting Abusive Head Trauma; CPR = Clinical Prediction Rule; BuRN-Tool - Burns Risk assessment for Neglect or abuse Tool; FIND = Finding Instrument for Nonaccidental Deeds; TEN-4 BCDR = Torso, Ear, and Neck Bruising Clinical Decision Rule; ERPANS = Early Risks of Physical Abuse and Neglect Scale; PedHITSS = Pediatric Hurt-Insult-Threaten-Scream-Sex screening tool; SPUTOVAMO-R = acronym consisting of the first letters of the question in Dutch; IPARAN = Identification of Parents At Risk for child Abuse and Neglect; SASA = Symptoms Associated with Sexual Abuse; ICD-9 = International Classification of Diseases-9th Edition.

Table 2

COSMIN Checklist for Evaluating the Methodological Quality of Individual Studies That Utilized Child Abuse Screening Instruments

Study	Instrument	Internal Consistency	Reliability	Measurement Error	Content Validity	Structural Validity	Hypotheses Testing	Criterion Validity	Responsive-ness	Cross-Culture Validity
Berger et al. (2016)	PIBIS	Very good	NA	Adequate	Adequate	NA	Adequate	Adequate	Very good	NA
Chang et al. (2004)	DIPCA	Adequate	NA	NA	NA	NA	Adequate	Adequate	Very good	NA
Chang et al. (2005)	SIPCA	Very good	NA	NA	Adequate	NA	Adequate	Adequate	Very good	NA
Cowley et al. (2015)	PredAHT	Adequate	NA	Adequate	NA	NA	Adequate	Adequate	Very good	NA
Ezpeleta et al. (2017)	INTOVIAN	Very good	Adequate	NA	Adequate	NA	Adequate	NA	NA	NA
Hymel et al. (2014)	4-variable CPR	Adequate	NA	Adequate	Adequate	NA	Adequate	NA	Doubtful ^a	NA
Kemp et al. (2018)	BuRN-Tool	Very good	NA	Adequate	Adequate	NA	Adequate	NA	Very good	NA
Louwers et al. (2014)	Escape	Very good	NA	Adequate	Adequate	NA	Adequate	Adequate	Very good	NA
Paek et al. (2018)	FIND	Adequate	NA	Doubtful ^b	Adequate	NA	Adequate	Doubtful ^c	NA	NA
Pierce et al. (2010)	TEN-4 BCDR	Adequate	NA	Adequate	NA	NA	Adequate	Adequate	Adequate	NA
Schols et al. (2019)	ERPANS	Very good	Adequate	Adequate	Adequate	Adequate	Adequate	NA	NA	NA
Shakil et al. (2018)	PedHITSS	Very good	Very good	Adequate	Adequate	Adequate	Adequate	Adequate	Adequate	NA
Sittig et al. (2011)	SPUTOVAMO-R	Very good	NA	NA	Adequate	NA	Adequate	Adequate	NA	NA
van der Put et al. (2017)	IPARAN	Very good	NA	NA	Adequate	NA	Adequate	Very good	Doubtful ^a	NA
Wells et al. (1997)	SASA	Adequate	Adequate	NA	Na	NA	Adequate	Very good	Adequate	NA

Note. Methodological quality: inadequate, doubtful, adequate, very good, and not applicable (NA). "INTOVIAN" was a European Commission-funded project name. PIBIS = Pittsburgh Infant Brain Injury Score; DIPCA = Diagnostic Index for Physical Child Abuse; SIPCA = Screening Index for Physical Child Abuse; PredAHT = Predicting Abusive Head Trauma; CPR = Clinical Prediction Rule; BuRN-Tool = Burns Risk assessment for Neglect or abuse Tool; FIND = Finding Instrument for Nonaccidental Deeds; TEN-4 BCDR = Torso, Ear, and Neck Bruising Clinical Decision Rule; ERPANS = Early Risks of Physical Abuse and Neglect Scale; PedHITSS = Pediatric Hurt-Insult-Threaten Scream-Sex screening tool; SPUTOVAMO-R = acronym consisting of the first letters of the question in Dutch; IPARAN = Identification of Parents At Risk for child Abuse and Neglect; SASA = Symptoms Associated with Sexual Abuse.

^a Lower specificity and AUC. ^b Unexplained or missing data. ^c Evaluation by emergency medicine board-certified physician without gold standard.

for detecting retinal hemorrhaging, the measurement of head circumference, and the measurement of serum hemoglobin level. Among the 15 tools identified in this review, six belonged to this category, including PIBIS, Predicting Abusive Head Trauma (PredAHT), and the four-variable Clinical Prediction Rule (CPR) for assessing abusive head trauma (Berger et al., 2016; Cowley et al., 2015; Hymel et al., 2014); the Screening Index for Physical Child Abuse (SIPCA) and Diagnostic Index for Physical Child Abuse (DIPCA) for assessing physical abuse (Chang et al., 2004, 2005); and Finding

Instrument for Nonaccidental Deeds (FIND) for assessing physical abuse and neglect (Paek et al., 2018).

Tools in the third category involved assessing the risk of child abuse through parental self-reporting on physical and mental health issues, parenting and disciplining methods, and child-related emotional and behavioral issues. Among the 15 tools identified in this review, four were in this category, including ERPANS for assessing physical abuse and neglect (Schols et al., 2019), PedHITSS for assessing physical and sexual abuse (Shakil et al., 2018), IPARAN for assessing

child abuse and neglect (van der Put et al., 2017), and SASA for assessing sexual abuse (Wells et al., 1997).

Except for ERPANS, which comprises 31 items (Schols et al., 2019), and the TEN-4 BCDR, which comprises one item (Pierce et al., 2010), the remaining 13 tools comprise between four and 16 items. Yes/no questions were used in eight tools, a 4- or 5-point Likert scale was used in three tools, and a weighted scoring system was used in four tools.

Most of the reviewed publications ($n = 11$) did not state whether training was required before using the associated screening tool. However, basic medical and nursing knowledge was clearly a necessary although unstated prerequisite, as professional knowledge is required to determine the level of consistency between physical examination and medical history results. Screening tool training methods and content were elucidated in four publications, as follows: SPUTOVAMO-R: description of ways to identify child abuse and the method for filling out the SPUTOVAMO-R form; SASA: description of how structured interviews and data collection were performed; and ERPANS and IRAPAN: description of the training required to identify the various forms of child abuse, assessment methods, and ways to improve the communication techniques and relationship building skills of parents.

Quality of Studies

The COSMIN checklist (Prinsen et al., 2018) was used to assess the measurement quality of the child abuse screening tools identified in this review. As presented in Table 2, none of the tools achieved a rating of “adequate” or above on any of the nine measurement properties. In terms of measurement error, the FIND received a “doubtful” rating, as the article did not provide an explanation for missing data. Regarding criterion validity, no gold standard was presented with which to confirm child abuse cases using the four-variable CPR, BuRN-Tool, or ERPANS. For the FIND, evaluation by a board-certified emergency medicine physician was stated as the criterion for confirming child abuse cases. With reference to responsiveness, neither sensitivity nor specificity analysis was performed for the INTOVIAN, FIND, ERPANS, and SPUTOVAMO-R, whereas the four-variable CPR and IPARAN exhibited low sensitivity or area under curve (AUC) values. The values for either AUC (72.0%–89.0%) or sensitivity (66.7%–97.0%) and specificity (53.0%–98.0%) were reported for 11 tools, whereas internal consistency (Cronbach's $\alpha = .79$ –.83) was reported for two tools. Cross-cultural validity could not be evaluated for any of the tools, as all were used in a single country setting only. A comparison of the number of “adequate” and “very good” ratings of the screening tools revealed that the PedHITSS earned the highest number (eight ratings), followed by PIBIS, Escape, and ERPANS (six ratings each).

The quality of evidence of the screening tools was evaluated using GRADE (Schünemann et al., 2017). As shown in Table 3, the quality of evidence was rated as “high” in three tools (the PIBIS, Escape, and PedHITSS), “moderate” in nine tools, and “low” in three tools. In addition, a “serious”

rating was assigned because the following factors affecting the certainty of evidence were observed: (a) risk of bias, that is, subject inclusion criteria were not stated for the PredAHT and INTOVIAN, and no gold standard for confirming child abuse cases was provided for the four-variable CPR, BuRN-Tool, and FIND; and (b) imprecision, that is, sensitivity or specificity analysis was not performed for the INTOVIAN, FIND, ERPANS, and SPUTOVAMO-R; a 95% CI for sensitivity or specificity was not provided for the DIPCA, SIPCA, TEN-4 BCDR, and SASA; and low sensitivity and specificity values or AUC values were exhibited by IPARAN and the four-variable CPR. Publication bias could not be evaluated, as all tools were used in the published study only.

Applicable Settings and Replicability of the Screening Tools

Of the 15 screening tools, two (the ERPANS and IRAPAN) were used during newborn home visits to assess whether parents were at a high risk of abusing their children, two (the DIPCA and SIPCA) were used in hospital settings to confirm child abuse using diagnosis codes, three (the PedHITSS, INTOVIAN, and SASA) were used for assessment purposes at outpatient clinics, five (the PIBIS, BuRN-Tool, FIND, Escape, and SPUTOVAMO-R) were used during triage in emergency departments, and three (the PredAHT, four-variable CPR, and TEN-4 BCDR) were used in pediatric intensive care units.

Discussion

The systematic literature review conducted in this study identified 15 screening tools used by healthcare providers to assess child abuse. Although all of the tools covered one or more forms of abuse, none encompassed all types of abuse. Two thirds of the tools ($n = 10$) screened for a specific form of abuse, with nine tools designed to screen for physical abuse (including three tools targeted toward abusive head trauma) and one tool designed to screen for sexual abuse. Furthermore, 14 of the 15 tools addressed physical abuse, and only one tool (INTOVIAN) addressed emotional abuse.

Physical abuse is the most common form of child abuse encountered in clinical practice (Solis-Garcia et al., 2019). As the mechanisms of physical abuse related injuries are clearly observable and may serve as identification indicators, tools designed to screen for physical abuse account for the greatest proportion of child abuse screening tools. When a child who has experienced physical harm or encountered a life-threatening situation is taken to a medical institution for treatment, rapid screening by medical staff is essential for subsequent intervention and the prevention of further harm. Therefore, it is imperative for healthcare providers to prioritize the assessment of child abuse. The Escape tool was the most commonly used child-abuse assessment tools identified in this review (Louwers et al., 2012). With high sensitivity and specificity of 80%–100% and 98.0%–98.3%, respectively, the Escape tool has been used in several studies

Table 3*GRADE Summary of Findings on Screening Tools for Child Abuse*

Study	Instrument	Risk of Bias	Indirectness	Inconsistency	Imprecision	Publication Bias	Certainty of Evidence
Berger et al. (2016)	PIBIS	Not serious	Not serious	Not serious	Not serious	Undetected	High
Chang et al. (2004)	DIPCA	Not serious	Not serious	Not serious	Serious ^a	Undetected	Moderate
Chang et al. (2005)	SIPCA	Not serious	Not serious	Not serious	Serious ^a	Undetected	Moderate
Cowley et al. (2015)	PredAHT	Serious ^b	Not serious	Not serious	Not serious	Undetected	Moderate
Ezpeleta et al. (2017)	INTOVIAN	Serious ^b	Not serious	Not serious	Serious ^a	Undetected	Low
Hymel et al. (2014)	Four-variable CPR	Serious ^c	Not serious	Not serious	Serious ^d	Undetected	Low
Kemp et al. (2018)	BuRN-Tool	Serious ^c	Not serious	Not serious	Not serious	Undetected	Moderate
Louwens et al. (2014)	Escape	Not serious	Not serious	Not serious	Not serious	Undetected	High
Paek et al. (2018)	FIND	Serious ^e	Not serious	Not serious	Serious ^a	Undetected	Low
Pierce et al. (2010)	TEN-4 BCDR	Not serious	Not serious	Not serious	Serious ^a	Undetected	Moderate
Schols et al. (2019)	ERPANS	Not serious	Not serious	Not serious	Serious ^a	Undetected	Moderate
Shakil et al. (2018)	PedHITSS	Not serious	Not serious	Not serious	Not serious	Undetected	High
Sittig et al. (2011)	SPUTOVAMO-R	Not serious	Not serious	Not serious	Serious ^a	Undetected	Moderate
van der Put et al. (2017)	IPARAN	Not serious	Not serious	Not serious	Serious ^d	Undetected	Moderate
Wells et al. (1997)	SASA	Not serious	Not serious	Not serious	Serious ^a	Undetected	Moderate

Note. Evidence quality: not serious, serious, very serious, and undetected. "INTOVIAN" was a European Commission-funded project name. GRADE = Grading of Recommendation, Assessment, Development, and Evaluation; PIBIS = Pittsburgh Infant Brain Injury Score; DIPCA = Diagnostic Index for Physical Child Abuse; SIPCA = Screening Index for Physical Child Abuse; PredAHT = Predicting Abusive Head Trauma; CPR = Clinical Prediction Rule; BuRN-Tool = Burns Risk assessment for Neglect or Abuse Tool; FIND = Finding Instrument for Nonaccidental Deeds; TEN-4 BCDR = Torso, Ear, and Neck Bruising Clinical Decision Rule; ERPANS = Early Risks of Physical Abuse and Neglect Scale; PedHITSS = Pediatric Hurt-Insult-Threaten Scream-Sex screening tool; SPUTOVAMO-R = acronym consisting of the first letters of the question in Dutch; IPARAN = Identification of Parents At Risk for child Abuse and Neglect; SASA = Symptoms Associated with Sexual Abuse.

^a Studies were insufficient to provide screening validity for AUC, or sensitivity and specificity without 95% CI. ^b Subjects without inclusion criteria. ^c Gold standard criteria for the diagnosis of child abuse do not exist. ^d Provide screening validity for lower AUC, or sensitivity and specificity. ^e Evaluation by emergency medicine board-certified physician.

conducted in different countries, including Iran (Dinpanah & Akbarzadeh Pasha, 2017), the United States (Carson, 2018; Rumball-Smith et al., 2018), and the Netherlands (Louwens et al., 2012, 2014; Moll, 2014). Certain tools are designed to assess maltreatment using observations of specific injuries. For example, PIBIS assesses the cause of abusive head trauma, BuRN-Tool assesses the cause of burns, and TEN-4 BCDR assesses the cause of bruises to confirm whether they are attributable to accidents or intentional harm.

Among the assessment tools identified in this article, only a small number ($n = 4$) assessed neglect or emotional abuse. However, neglect is the most commonly reported form of maltreatment, accounting for 60.8%–75.9% of all reported cases of child maltreatment (Administration for Children and Families, 2020; Chang et al., 2016). The assessment of neglect requires the consideration of multiple aspects and signs such as the needs of the child, parenting abilities, and family and environmental factors. However, because of the paucity of available assessment tools, clinical personnel often rely on past experience or intuition to make related judgments (Horwath, 2007). In a previous study, health professionals with experience in the field of pediatrics were found to be significantly more competent than personnel with experience in other subspecialties in identifying cases of child abuse ($p < .001$; Sathiadass et al., 2018). Given the difficulty

of conducting standardized assessments of subjective intuition, the limited number of medical personnel who possess professional knowledge/extensive experience in pediatrics, and the lack of assessment tools and standards, healthcare providers tend to report child abuse cases based on experience or intuition. This results in inconsistencies and increased burden in the determination of neglect or nonneglect by hospitals and social welfare units. Therefore, the development of evidence-based standardized neglect assessment tools to facilitate systematic assessment and judgment is necessary.

The lack of obvious injury in cases of emotional abuse and the traditional Asian concept that scolding is a reasonable form of discipline often lead to the failure of children to recognize child abuse and to rationalize the abusive behavior inflicted by abusers. In turn, this affects the uncovering of abuse events (Wang et al., 2018) and complicates the assessment of emotional abuse. However, as emotional abuse often coexists with other forms of abuse (Clarkson Freeman, 2014), emotional abuse assessment tools such as INTOVIAN may be used to concurrently assess physical abuse, emotional abuse, and neglect (Ezpeleta et al., 2017). By performing a comprehensive assessment of various forms of abuse, future negative consequences of emotional abuse such as mental illnesses, substance abuse, anxiety, and emotional disorders may be prevented (Schoemaker et al., 2002).

The sensitivity and specificity of assessment tools are of vital importance, as adopting tools that lack high sensitivity and specificity may result in false-positive or false-negative cases, which not only increases the assessment burden of child protective services workers and may necessitate judicial investigation to confirm individual cases (O'Donohue et al., 2018) but also may result in missed opportunities for intervention. In this study, most of the identified tools ($n = 12$) achieved a “moderate” rating or above for certainty of evidence. The values of AUC (72.0%–89.0%) or of sensitivity (66.7%–97.0%) and specificity (53.0%–98.0%) were reported for 11 tools, with 70% and 70% of these 11 tools reporting sensitivities and specificities greater than 80%, respectively. Therefore, more than half of the screening tools had high sensitivity and specificity levels related to detecting child abuse. The internal consistency or face validity was reported for two of the tools. As reliability and validity testing was not performed for the remaining two tools, their validity remains unclear and their quality could not be evaluated.

At present, no single screening tool is applicable to all healthcare settings, as all tools require appropriate settings and adequate professional knowledge to be used properly. Most of the assessment tools examined in this study ($n = 13$) were utilized in medical institutions (emergency departments, pediatric intensive care units, and outpatient clinics), whereas two were designed to be completed by community nurses using the responses of parents during home visits to assess whether parents were at a high risk of abusing their children. Other objective assessment tools such as the Family Map Inventories-Adverse Childhood Experiences may also be used by community nurses during home visits to facilitate the screening of high-risk families and support subsequent intervention efforts (McKelvey et al., 2016).

All of the screening tools used by hospital healthcare providers were focused on physical abuse and sexual abuse. It is recommended to use Escape and PedHITSS, with AUC values of 99.2%, and 85%, respectively (Dinpanah & Akbarzadeh Pasha, 2017; Shakil et al., 2018). However, if a child with a brain injury or fracture caused by abuse is examined by x-ray, computed tomography scan, magnetic resonance imaging, or ophthalmoscope, the mechanism of injury can be confirmed. It is recommended to use PIBIS, DIPCA, and SPICA, which earned AUC values of 83%, 86%, and 89%, respectively (Berger et al., 2016; Chang et al., 2004, 2005). The results of equipment-aided medical examinations help healthcare providers confirm objective evidence of child abuse. However, although equipment-aided examinations can increase the ability of healthcare professionals to identify child abuse, only a few abuse types, for example, physical and sexual abuse, may be identified in this manner. Moreover, the requisite equipment is not easily accessible or universally available such as in community or medical-clinic settings. Therefore, valid screening tools must exhibit high sensitivity and specificity characteristics.

Through the use of standardized, easily comprehensible, and valid tools to assess child abuse, healthcare providers

can perform consistent assessments without omitting key items, which facilitates decision making related to the identification of child abuse cases. This is especially beneficial for novice medical personnel with limited or no pediatric experience, as a high level of acceptance of assessment tools leads to a lower perceived clinical burden and increased validity in child abuse screening (Louwers et al., 2012; Mullen et al., 2018). Given the highly complex nature of child abuse, assessment tools may not only be used in preliminary screenings but also be used to promote timely intervention measures.

This study differs from previous studies in the highlighting of the significance of using objective assessment measures to identify child abuse. However, most publications reviewed in the present article did not state whether training was required for these assessment tools and did not compare the screening results of different healthcare providers. Therefore, the target user of these tools may require further attention and training. By attending appropriate training sessions, medical personnel may become proficient in using assessment tools and improve their assessment capabilities (Schols et al., 2019). It is hoped that, by combining high-quality assessment tools with professional training and abilities, early intervention and preventive measures may be implemented to protect children from violence to improve overall child health and welfare.

Limitations

As this systematic review included articles published in either English or Chinese only, there may be relevant articles on assessment tools published in other languages that were omitted from this review. Moreover, the integrity of the identified tools could not be analyzed, as most were used in single studies only and many tools were not analyzed for sensitivity and specificity. Furthermore, our ability to appraise the evidence and quality of a number of the tools was limited because reliability and validity testing results were not provided. Future studies should be designed to compare different assessment tools to promote the timely identification of child abuse cases. Furthermore, most of the studies examined in this systematic review focused only on assessments of children who had sought medical attention or were living in communities. Future assessment efforts may also be extended to school children to further determine the validity of these tools.

Conclusions

In this systematic literature review, 15 tools used by healthcare providers to assess child abuse were identified. As the assessment items included in the screening tools were classified into different categories, this study found that the tools were distributed disproportionately. Most were designed to assess physical abuse and achieved moderate to high levels of evidence quality, rendering them suitable for use by medical personnel in hospital and community settings. However, as research on the use of these tools in clinical practice is limited, further practical experience is required to confirm their

reliability and validity to aid in the early determination by healthcare providers of child abuse cases.

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References

- Administration for Children and Families. (2020). *Child abuse, neglect data released*. <https://www.acf.hhs.gov/media/press/2020/child-abuse-neglect-data-released>
- Berger, R. P., Fromkin, J., Herman, B., Pierce, M. C., Saladino, R. A., Flom, L., Tyler-Kabara, E. C., McGinn, T., Richichi, R., & Kochanek, P. M. (2016). Validation of the Pittsburgh infant brain injury score for abusive head trauma. *Pediatrics*, 138(1), Article e20153756. <https://doi.org/10.1542/peds.2015-3756>
- Carson, S. M. (2018). Implementation of a comprehensive program to improve child physical abuse screening and detection in the emergency department. *Journal of Emergency Nursing*, 44(6), 576–581. <https://doi.org/10.1016/j.jen.2018.04.003>
- Chang, D. C., Knight, V., Ziegfeld, S., Haider, A., Warfield, D., & Paidas, C. (2004). The tip of the iceberg for child abuse: The critical roles of the pediatric trauma service and its registry. *The Journal of Trauma and Acute Surgery*, 57(6), 1189–1198. <https://doi.org/10.1097/01.TA.0000145076.05111.E1>
- Chang, D. C., Knight, V. M., Ziegfeld, S., Haider, A., & Paidas, C. (2005). The multi-institutional validation of the new screening index for physical child abuse. *Journal of Pediatric Surgery*, 40(1), 114–119. <https://doi.org/10.1016/j.jpedsurg.2004.09.019>
- Chang, Y. C., Huang, J. L., Hsia, S. H., Lin, K. L., Lee, E. P., Chou, I. J., Hsin, Y. C., Lo, F. S., Wu, C. T., Chiu, C. H., & Wu, H. P., Prevention, Protection Against Child Abuse, Neglect (PCHAN) Study Group. (2016). Child protection medical service demonstration centers in approaching child abuse and neglect in Taiwan. *Medicine (Baltimore)*, 95(44), Article e5218. <https://doi.org/10.1097/md.00000000000005218>
- Clarkson Freeman, P. A. (2014). Prevalence and relationship between adverse childhood experiences and child behavior among young children. *Infant Mental Health Journal*, 35(6), 544–554. <https://doi.org/10.1002/imhj.21460>
- Cowley, L. E., Morris, C. B., Maguire, S. A., Farewell, D. M., & Kemp, A. M. (2015). Validation of a prediction tool for abusive head trauma. *Pediatrics*, 136(2), 290–298. <https://doi.org/10.1542/peds.2014-399>
- Dinpanah, H., & Akbarzadeh Pasha, A. (2017). Potential child abuse screening in emergency department; a diagnostic accuracy study. *Emergency (Tehran, Iran)*, 5(1), Article e8.
- Ezpeleta, L., Pérez-Robles, R., Fanti, K. A., Karveli, V., Katsimicha, E., Nikolaidis, G., Hadjicharalambous, M. Z., & Hatzinikolaou, K. (2017). Development of a screening tool enabling identification of infants and toddlers at risk of family abuse and neglect: A feasibility study from three South European countries. *Child: Care, Health and Development*, 43(1), 75–80. <https://doi.org/10.1111/cch.12416>
- Flom, L., Fromkin, J., Panigrahy, A., Tyler-Kabara, E., & Berger, R. P. (2016). Development of a screening MRI for infants at risk for abusive head trauma. *Pediatric Radiology*, 46(4), 519–526. <https://doi.org/10.1007/s00247-015-3500-z>
- Hoft, M., & Haddad, L. (2017). Screening children for abuse and neglect: A review of the literature. *Journal of Forensic Nursing*, 13(1), 26–34. <https://doi.org/10.1097/JFN.0000000000000136>
- Hoytema van Konijnenburg, E. M., Teeuw, A. H., Sieswerda-Hoogendoorn, T., Leenders, A. G., & van der Lee, J. H. (2013). Insufficient evidence for the use of a physical examination to detect maltreatment in children without prior suspicion: A systematic review. *Systematic Reviews*, 2, Article No. 109. <https://doi.org/10.1186/2046-4053-2-109>
- Horwath, J. (2007). The missing assessment domain: Personal, professional and organizational factors influencing professional judgements when identifying and referring child neglect. *The British Journal of Social Work*, 37(8), 1285–1303. <https://doi.org/10.1093/bjsw/bcl029>
- Hymel, K. P., Armijo-Garcia, V., Foster, R., Frazier, T. N., Stoiko, M., Christie, L. M., Harper, N. S., Weeks, K., Carroll, C. L., Hyden, P., Sirotak, A., Truemper, E., Ornstein, A. E., & Wang, M., Pediatric Brain Injury Research Network (PediBIRN) Investigators. (2014). Validation of a clinical prediction rule for pediatric abusive head trauma. *Pediatrics*, 134(6), e1537–e1544. <https://doi.org/10.1542/peds.2014-1329>
- Kemp, A. M., Hollén, L., Emond, A. M., Nuttall, D., Rea, D., & Maguire, S. (2018). Raising suspicion of maltreatment from burns: Derivation and validation of the BuRN-Tool. *Burns*, 44(2), 335–343. <https://doi.org/10.1016/j.burns.2017.08.018>
- Louwens, E. C., Korfage, I. J., Affourtit, M. J., Ruige, M., van den Elzen, A. P., de Koning, H. J., & Moll, H. A. (2014). Accuracy of a screening instrument to identify potential child abuse in emergency departments. *Child Abuse & Neglect*, 38(7), 1275–1281. <https://doi.org/10.1016/j.chiabu.2013.11.005>
- Louwens, E. C., Korfage, I. J., Affourtit, M. J., Scheewe, D. J., van de Merwe, M. H., Vooijs-Moulaert, A. F., van den Elzen, A. P., Jongejan, M. H., Ruige, M., Manai, B. H., Looman, C. W., Bosschaart, A. N., Teeuw, A. H., Moll, H. A., & de Koning, H. J. (2012). Effects of systematic screening and detection of child abuse in emergency departments. *Pediatrics*, 130(3), 457–464. <https://doi.org/10.1542/peds.2011-3527>
- McKelvey, L. M., Whiteside-Mansell, L., Connors-Burrow, N. A., Swindle, T., & Fitzgerald, S. (2016). Assessing adverse experiences from infancy through early childhood in home visiting

- programs. *Child Abuse & Neglect*, 51, 295–302. <https://doi.org/10.1016/j.chiabu.2015.09.008>
- Mimasaka, S., Ohtani, M., Kuroda, N., & Tsunenari, S. (2010). Spectrophotometric evaluation of the age of bruises in children: Measuring changes in bruise color as an indicator of child physical abuse. *The Tohoku Journal of Experimental Medicine*, 220(2), 171–175. <https://doi.org/10.1620/tjem.220.171>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G., PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7), Article e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
- Moll, H. A. (2014). Screening on child abuse in Europe. *Archives of Disease in Childhood*, 99, A18–A19. <https://doi.org/10.1136/archdischild-2014-307384.58>
- Mullen, S., Quinn-Scoggins, H. D., Nuttall, D., & Kemp, A. M. (2018). Qualitative analysis of clinician experience in utilising the BuRN Tool (Burns Risk assessment for Neglect or abuse Tool) in clinical practice. *Burns*, 44(7), 1759–1766. <https://doi.org/10.1016/j.burns.2018.03.013>
- O'Donohue, W., Cummings, C., & Willis, B. (2018). The frequency of false allegations of child sexual abuse: A critical review. *Journal of Child Sexual Abuse*, 27(5), 459–475. <https://doi.org/10.1080/10538712.2018.1477224>
- Oral, R., Yagmur, F., Nashelsky, M., Turkmen, M., & Kirby, P. (2008). Fatal abusive head trauma cases: Consequence of medical staff missing milder forms of physical abuse. *Pediatric Emergency Care*, 24(12), 816–821. <https://doi.org/10.1097/PEC.0b013e31818e9f5d>
- Paek, S. H., Jung, J. H., Kwak, Y. H., Kim, D. K., Ryu, J. M., Noh, H., Kyong, Y. Y., & Kang, Y. J. (2018). Development of screening tool for child abuse in the Korean emergency department: Using modified Delphi study. *Medicine (Baltimore)*, 97(51), Article e13724. <https://doi.org/10.1097/MD.00000000000013724>
- Pierce, M. C., Kaczor, K., Aldridge, S., O'Flynn, J., & Lorenz, D. J. (2010). Bruising characteristics discriminating physical child abuse from accidental trauma. *Pediatrics*, 125(1), 67–74. <https://doi.org/10.1542/peds.2008-3632>
- Prinsen, C. A. C., Mokkink, L. B., Bouter, L. M., Alonso, J., Patrick, D. L., de Vet, H. C. W., & Terwee, C. B. (2018). COSMIN guideline for systematic reviews of patient-reported outcome measures. *Quality of Life Research*, 27(5), 1147–1157. <https://doi.org/10.1007/s11136-018-1798-3>
- Rumball-Smith, J., Fromkin, J., Rosenthal, B., Shane, D., Skrbini, J., Bimber, T., & Berger, R. P. (2018). Implementation of routine electronic health record-based child abuse screening in general emergency departments. *Child Abuse & Neglect*, 85, 58–67. <https://doi.org/10.1016/j.chiabu.2018.08.008>
- Saini, S. M., Hoffmann, C. R., Pantelis, C., Everall, I. P., & Bousman, C. A. (2019). Systematic review and critical appraisal of child abuse measurement instruments. *Psychiatry Research*, 272, 106–113. <https://doi.org/10.1016/j.psychres.2018.12.068>
- Salinas-Miranda, A. A., Salemi, J. L., King, L. M., Baldwin, J. A., Berry, E. L., Austin, D. A., Scarborough, K., Spooner, K. K., Zoorob, R. J., & Salihu, H. M. (2015). Adverse childhood experiences and health-related quality of life in adulthood: Revelations from a community needs assessment. *Health & Quality of Life Outcomes*, 13, Article No. 123. <https://doi.org/10.1186/s12955-015-0323-4>
- Sathiadas, M. G., Viswalingam, A., & Vijayaratnam, K. (2018). Child abuse and neglect in the Jaffna district of Sri Lanka—A study on knowledge attitude practices and behavior of health care professionals. *BMC Pediatrics*, 18(1), Article No. 152. <https://doi.org/10.1186/s12887-018-1138-3>
- Schoemaker, C., Smit, F., Bijl, R. V., & Vollebergh, W. A. (2002). Bulimia nervosa following psychological and multiple child abuse: Support for the self-medication hypothesis in a population-based cohort study. *International Journal of Eating Disorders*, 32(4), 381–388. <https://doi.org/10.1002/eat.10102>
- Schols, M. W. A., Serie, C. M. B., Broers, N. J., & de Ruiter, C. (2019). Factor analysis and predictive validity of the Early Risks of Physical Abuse and Neglect Scale (ERPANS): A prospective study in Dutch public youth healthcare. *Child Abuse & Neglect*, 88, 71–83. <https://doi.org/10.1016/j.chiabu.2018.10.011>
- Schünemann, H. J., Wiercioch, W., Brozek, J., Etzeandía-Ikobaltzeta, I., Mustafa, R. A., Manja, V., Brignardello-Petersen, R., Neumann, I., Falavigna, M., Alhazzani, W., Santesso, N., Zhang, Y., Meerpohl, J. J., Morgan, R. L., Rochwerger, B., Darzi, A., Rojas, M. X., Carrasco-Labra, A., Adi, Y., & Akl, E. A. (2017). GRADE Evidence to Decision (EtD) frameworks for adoption, adaptation, and de novo development of trustworthy recommendations: GRADE-ADOLOPMENT. *Journal of Clinical Epidemiology*, 81, 101–110. <https://doi.org/10.1016/j.jclinepi.2016.09.009>
- Shakil, A., Day, P. G., Chu, J., Woods, S. B., & Bridges, K. (2018). PedHITSS: A screening tool to detect childhood abuse in clinical settings. *Family Medicine*, 50(10), 763–769. <https://doi.org/10.22454/FamMed.2018.778329>
- Sittig, J. S., Uiterwaal, C. S., Moons, K. G., Nieuwenhuis, E. E., & van de Putte, E. M. (2011). Child abuse inventory at emergency rooms: CHAIN-ER rationale and design. *BMC Pediatrics*, 11, Article No. 91. <https://doi.org/10.1186/1471-2431-11-91>
- Solis-Garcia, G., Maranon, R., Medina Munoz, M., de Lucas Valle, S., Garcia-Morin, M., & Rivas Garcia, A. (2019). Child abuse in the Emergency department: Epidemiology, management, and follow-up. *Annals of Pediatrics (Barcelona)*, 91(1), 37–41. <https://doi.org/10.1016/j.anpedi.2018.09.013>
- van der Put, C. E., Bouwmeester-Landweer, M. B. R., Landsmeer-Beker, E. A., Wit, J. M., Dekker, F. W., Kousemaker, N. P. J., & Baartman, H. E. M. (2017). Screening for potential child maltreatment in parents of a newborn baby: The predictive validity of an Instrument for early identification of Parents At Risk for child Abuse and Neglect (IPARAN). *Child Abuse & Neglect*, 70, 160–168. <https://doi.org/10.1016/j.chiabu.2017.05.016>
- Wang, F., Wang, M., & Xing, X. (2018). Attitudes mediate the intergenerational transmission of corporal punishment in China. *Child Abuse & Neglect*, 76, 34–43. <https://doi.org/10.1016/j.chiabu.2017.10.003>
- Wells, R., McCann, J., Adams, J., Voris, J., & Dahl, B. (1997). A validation study of the structured interview of Symptoms Associated with Sexual Abuse (SASA) using three samples of sexually abused, allegedly abused, and nonabused boys. *Child Abuse & Neglect*, 21(12), 1159–1167. [https://doi.org/10.1016/s0145-2134\(97\)00091-4](https://doi.org/10.1016/s0145-2134(97)00091-4)
- World Health Organization. (2020). *Child maltreatment*. <https://www.who.int/news-room/fact-sheets/detail/child-maltreatment>