Contents lists available at ScienceDirect

International Journal of Educational Research Open

The effectiveness of school-based child sexual abuse prevention programmes among primary school-aged children: A systematic review

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A B S T R A C T

This systematic review provides a comprehensive overview of child sexual abuse prevalence globally, along with an examination of the effectiveness of school-based prevention education programmes for primary school-aged children. These prevention programmes utilise social cognitive learning theories to teach children the importance of identifying and responding to abusive situations. A total of 676 papers were evaluated with 13 Randomised Controlled Trial (RCT) or cluster RCT design studies identified as meeting the study's inclusion criteria. These studies were published in English between January 2000 and May 2022, and focus on outcomes of school-based prevention programmes designed for primary school-aged children (5–12 years old). To ensure a comprehensive and academically rigorous analysis, the following databases were included: Science Direct, Web of Science, Scopus, the American Psychiatric Association (APA) PsycINFO, Ovid Medline, and Embase. The studies reviewed aim to evaluate the effectiveness of various child sexual abuse prevention programmes in improving children's knowledge and recognition of, and response to potentially unsafe situations. In terms of outcomes and results, the interventions have significantly impacted knowledge, skills, confidence, and awareness in the short and long term. These studies used different intervention methods, including mobile applications, personal safety programmes, and protective behaviour programmes, delivered in various formats such as web-based, textbooks, and in-person sessions. This systematic review highlights the importance of child sexual abuse prevention programmes in schools and the need for further research.

1. Introduction

Child sexual abuse is defined by the World Health Organisation (WHO) as "the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared, or else that violates the laws or social taboos of society" (2006, p.62). This includes unwanted touching as well as penetrative assault on children (Barth et al., 2013; Pereda et al., 2009; Stoltenborgh et al., 2011). In many cases, victims do not report their abuse to authorities, and two thirds do not disclose it (Wyatt & Newcomb, 1990) because of stigma, shame, fear of reprisal (London et al., 2005). Many victims feel embarrassed or ashamed of the abuse they have experienced, and fear that reporting it will lead to judgement or further abuse, others may not have access to resources or support to report the abuse (Lemaigre et al., 2017).

Children who experience severe childhood sexual abuse are more likely to achieve poorer educational outcomes (Boden et al., 2007). This is compounded by family socio-economic background (e.g., education) and family functioning (e.g., changes in parental dynamics), and

individual factors (e.g., gender), all of which are known to contribute to child maltreatment (*ibid*). These factors can lead to a range of emotional and cognitive problems, such as difficulty concentrating, low self-esteem, and difficulty forming relationships with peers (McTavish et al., 2022).

Child sexual abuse has affected a variety of socioeconomic and ethnic groups, both males and females. Children commonly experience sexual abuse perpetrated by adults or other young people, whether within or outside their family circles (Finkelhor, 2009; Turner et al., 2011). Moreover, children and young people are most vulnerable to sexual abuse during the early adolescent phases of life, such as between the ages of 7 and 12 in the United States (Finkelhor et al., 2014) and 5 and 12 in Ireland (McGee et al., 2002). It has been shown that these periods of risk occur during the primary school years (Walsh et al., 2015). During the developmental phases of childhood, children's cognitive and social abilities are still developing, which makes them more susceptible to being manipulated or coerced by adults or peers. Consequently, children in this age range more vulnerable and less likely to recognise or report inappropriate behaviour (Choe et al., 2013).

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To empower primary school-aged children, who are particularly vulnerable, with essential knowledge and skills to recognise, react to, and report abuse, comprehensive school-based prevention programmes are vital. Programmes in schools focus on enhancing students' understanding, consciousness, and application of protective abilities to prevent abuse. In fact, many school-based programmes have proven effective in increasing children's knowledge of self-protection skills. (Pulido, 2015; Bustamente et al., 2019). In essence, school-based prevention programmes play a crucial role in empowering children with fundamental skills to protect themselves from abuse, and utilising systematic reviews can gather and maximise the available evidence to inform and improve these programmes.

Previous systematic reviews included studies from the 1900s (Walsh et al., 2015) and between 2014 and 2020 (Lu et al., 2023). The latter studies included primary and secondary school interventions in English and Chinese languages, featuring quasi-randomised control trials (RCT) in addition to RCTs and cluster RCTs. As sexual abuse risks occur during primary school ages (Walsh et al., 2015), it was necessary to conduct this review to synthesise what school-based programmes for child sexual abuse prevention for primary school-aged children are available and to indicate the gap for future research studies in the field. This review focuses on studies published between 2000 and 2022 that include prevention of sexual abuse interventions for primary school-aged children, regardless of geographical location. Moreover, this review includes randomised controlled trial studies which provide strong evidence of the efficacy of interventions and because RCTs tend to limit all types of bias.

Research question. School-based child sexual abuse prevention interventions/programmes for primary school-aged students will be investigated. The systematic review will answer the following question:

How effective are sexual abuse prevention interventions / training sessions for primary school-aged children?

2. Background: school-based programmes for the prevention of child sexual abuse

School-based programmes for the prevention of child sexual abuse are aimed at equipping children with the necessary knowledge and skills to identify, respond to, and disclose instances of abuse (Finkelhor, 2009). By doing so, these interventions seek to reduce the number of cases and recurrences among children and young adults (Schneider & Hirsch, 2020). For example, in a school-based programme, children can be taught about appropriate boundaries and consent, as well as being provided the opportunity to discuss these issues in a safe and supportive environment (Morris et al., 2017). These interventions, ultimately, could play a crucial role in preventing child sexual abuse and nurturing a secure environment for students.

Child sexual abuse prevention programmes in schools are tailored to groups of students (e.g., in classes) and adjusted to match their ages and cognitive abilities. Delivering instructions that suit their developmental stage enables them to grasp the material effectively, making it relevant and comprehensible. For instance, activities like role-playing and watching videos may be incorporated for younger students, whereas older children might engage in more sophisticated tasks like group discussions or participating in surveys. Ultimately, providing age- and level-appropriate information allows students to better understand concepts of abuse prevention (Barron & Topping, 2013).

In prevention programmes, students receive thorough training to recognise and avoid potentially harmful situations, providing them with strategies to repel unwanted situations both physically and verbally (Lu et al., 2023; Finkelhor, 2009). To create a protective environment for children, school-based programmes offer essential knowledge on seeking help in cases of abuse or attempted abuse, empowering adults to respond promptly and effectively to disclosures (Berliner & Kolko, 2016). Through classroom activities like role-playing, discussions, and interactive exercises, children and young people gain practical skills and knowledge that they can apply in real-life situations (Walsh et al., 2015).

These interventions also help them understand their rights and support resources, enhancing their confidence to speak out against any form of sexual abuse (Hébert et al., 2001). This comprehensive approach not only strengthens individual resilience, but also fosters a shared commitment to safeguarding the well-being of children and nurturing an environment conducive to their growth and development (Wurtele, 2009; Barron & Topping, 2013).

3. Methods

Systematic reviews are conducted in order to answer a specific research question by compiling evidence that meets predefined eligibility criteria (Higgins et al., 2022). Based on the PRISMA guidelines, this systematic literature review was performed rigorously and impartially.

3.1. Search strategy

Searches were conducted on the Web of Science, Scopus, PsycINFO, MEDLINE, and Embase. The following search strings were used: "sex* abuse" prevent* AND child* AND program OR programme OR intervention AND "random* control* trial" OR RCT OR "quasi experimental". As Science Direct does not accept the asterisk (*), these search strings were used there: ("sexual abuse prevention" AND children AND program OR programme OR intervention AND "randomised controlled trial" OR RCT OR "quasi experimental")

3.2. Inclusion criteria

The following inclusion criteria were applied to identify relevant studies for this review. The studies had to be published in English between January 2000 and May 2022 and report on the outcomes of school-based prevention programmes targeting primary school-aged children (5–12 years old). Only studies that employed a Randomised Controlled Trial (RCT) or cluster RCT study design were included. Additionally, the studies had to seek children's outcomes and be accessible.

Several databases were searched in order to identify relevant studies for this systematic literature review. These databases included Science Direct ($n = 269$), Web of Science ($n = 117$), Scopus ($n = 112$), American Psychiatric Association (APA) PsycInfo ($n = 30$), Ovid MedLine ($n = 62$), and Embase ($n = 86$). A combined number of articles of $n = 676$ were retrieved from the initial database searches. These articles were then screened for relevance based on the inclusion and exclusion criteria outlined in the review methods section above. After screening, a total of $n = 13$ articles were deemed eligible for inclusion in this systematic literature review. An independent reviewer conducted the same screening process, with a 94.2 % agreement (Kappa score) between reviewers. As an overview of the systematic review process, a PRISMA flow diagram (Fig. 1) is presented below (Moher et al., 2009).

3.3. Characteristics of the included studies

The characteristics of the selected studies are listed in a descriptive table below (Table 1), including the article characteristics (author, year, and country), the aim of the study, study design, participants, intervention (length, instruments, and measures), and main findings.

3.4. Risk of bias (quality) assessment

The quality of data was assessed using the revised Cochrane risk-of-bias tool for randomised trials (RoB 2) Version of 22 August 2019 (Sterne et al., 2019). In the Fig. 1 below, seven studies are deemed to have some bias concerns overall, whereas the other six papers are deemed to be at a low risk of bias.
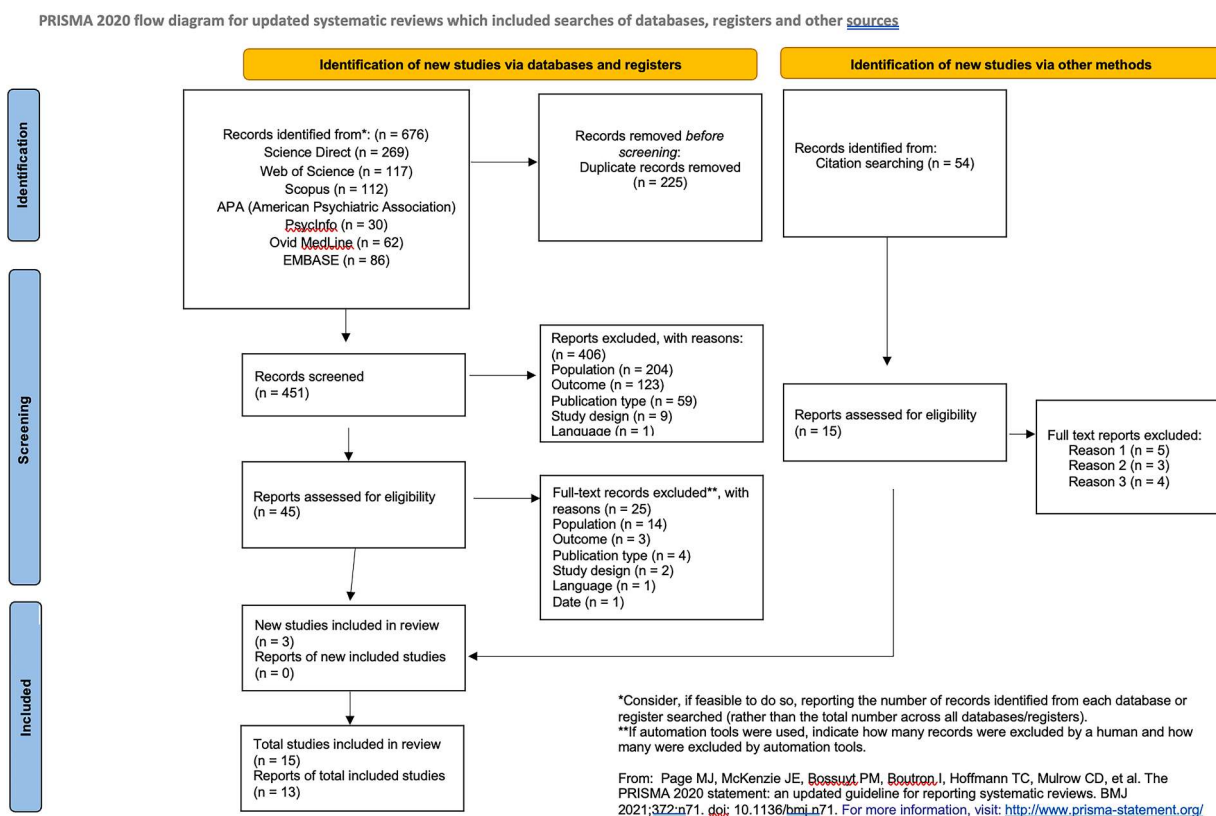
Fig. 1. PRISMA flow diagram.

3.5. Effect of interventions

Improvements were evident when the pre- and post-test results of all 13 studies selected were compared. Only seven studies checked whether participants remembered the knowledge they gained during the interventions, by conducting follow-up sessions which showed with effective results. The forest plot is shown in Fig. 2 below, along with the effect sizes for all studies. The studies used different interventions and measures within varying timeframes and ages of participants and consequently produced different effect sizes. The overall effect size is 0.919, despite the lowest effect size of –0.65 (White et al., 2018). The highest effect size is 9.58 (White et al., 2018). Interestingly, in the study by White et al. (2018), children's confidence in disclosing information decreases, whereas their knowledge of protective behaviour increases. The researchers examined knowledge, recognition, behavioural intentions, cognitive skills, disclosure and the problem-solving skills of children, as well as whether anxiety is associated with the intervention.

4. Results

The main findings on the effects of the interventions can be divided into three outcomes: knowledge, skills, and unanticipated consequences. For each outcome, a forest plot figures are presented separately below (Fig. 3).

4.1. Knowledge

The findings of research on sexual abuse prevention programmes for children provide valuable insights into the efficacy and various instructional approaches employed in educating children about sexual abuse prevention. These studies primarily focused on assessing children's knowledge and understanding of sexual abuse prevention, utilizing measures that encompassed recognition, awareness of strangers / potential abusers, basic prevention concepts, safe behaviours, and the

ability to distinguish between appropriate and inappropriate touching, as well as the importance of disclosing secrets (Hebert et al., 2001).

One noteworthy instructional method that stood out from the majority of these interventions was role-playing. By engaging children in simulated scenarios, role-playing provides them with opportunities to practise and internalize the skills and knowledge taught during the programme. Through assuming different roles and responding to hypothetical situations, children can develop a better grasp of appropriate behaviours and responses in real-life situations involving potential sexual abuse. This active and experiential learning approach has shown promise in enhancing children's comprehension and retention of information (Hebert et al., 2001; Nickerson et al., 2019; Urbann et al., 2020).

In addition to role-playing, the use of vignettes and videos in certain studies served as an effective tool for visualizing and contextualizing the concepts and situations related to child protection programmes (Hebert et al., 2001; Nickerson et al., 2019; Urbann et al., 2020). These visual aids provided concrete examples of potential scenarios and helped children develop a deeper understanding of the subject matter. By presenting realistic portrayals of interactions and behaviours, vignettes and videos contribute to the transfer of knowledge from the programme to real-life situations.

Moreover, many studies incorporated follow-up assessments to examine the long-term retention of knowledge and determine the effectiveness of the prevention programmes over time (Hebert et al., 2001; Krahé & Knappert, 2009; Dale et al., 2016; Moon et al., 2017; White et al., 2018; Bustamante et al., 2019; Urbann et al., 2020). The findings consistently indicated that children retained the information they had learned, signifying that the programmes had a lasting impact. This retention of knowledge is encouraging because it implies that children possess the necessary tools to identify and respond appropriately to potential instances of sexual abuse, even after the programme has concluded (Hebert et al., 2001).

Table 1
Characteristics of the included studies.

Authors, Year, Country	Objectives	Intervention	Study Design	Participants	Intervention Length	Instruments and Measures	Main Findings
Hebert et al., 2001. Canada.	ESCAPE, a child sexual abuse prevention program, will be evaluated.	ESCAPE is an adaptation of the American Child Assault Prevention Program (CAP) Role-playing, guided discussions, behavior modelling, and rehearsal. Children should be aware of their personal rights and taught basic prevention concepts and skills.	Solomon-type design RCT	133 (1st and 3rd grade) students	a 60-75-minute workshop	a) Pre-test (1 week before) b) Post-test (1 week after the program) c)A 2-month follow-up **Measures** - Knowledge Questionnaire ("Children's Knowledge of Abuse Questionnaire" Tutty, 1995) "Personal Safety Questionnaire," Wurtele et al. (1987) -Vignette measure of skills -Satisfaction -Parent Questionnaire ("Parent Perception Questionnaire", Wurtele et al., 1992)	Children's knowledge and skills are increased and maintained at the follow-up session.
Krahé and Knapper, 2009. Germany.	To investigate the differences between the LIVE and DVD circumstances.	The (No) Child's Play prevention program. (Distinguishing good/bad touch and secrets, getting help, rejecting unwanted touch)	RCT	148 students, 1st and 2nd graders from three schools in Berlin. 44 p- Live 55 p- DVD 49 p- Control	60 min	The -Adequacy of program a) Pre-test (2 weeks prior) b) Post-test c) A 2-week follow-up d) 30-weeks follow-up **Measures** -8 short scenarios to measure self-protective skills.	Both the LIVE and DVD groups showed significant improvement.
Muller et al.,2014. Germany	To assess the efficacy and acceptability of the recently researched web-based preventative program "Cool and Safe."	"Cool and Safe" prevention program. Emotions and emphasizes that children should pay attention to their feelings and talk about bad feelings with trusted adults.	2 × 2 Mixed Factorial Design RCT	286 children (age for 8 to 11 years) in German elementary schools.	4 weeks	a) Pre-test b) Post-test **Measures** - Children's Knowledge of Abuse Questionnaire (Tutty, 1997) -Behavioral Intentions -Domain Specific Anxiety Questionnaire for Children (Mack, 2007) -Emotion Awareness Questionnaire (Rieffe et al., 2008) -Children's acceptance of "Cool and Safe"	Increase in knowledge and behavioral intentions. Also, talking about emotions openly increases. No increase in anxiety.
Pulido et al., 2015. The USA.	Safe Touches, a school-based CSA prevention program, was evaluated in low socioeconomic status, ethnically diverse group.	A CSA prevention program called `Safe Touches Interactive workshop, role-play scenarios, and an age-appropriate activity book Key concepts: private body parts, safe/non-safe touches secrets.	Cluster RCT	492 s- and third-grade students at 6 public elementary schools	A 50-minute interactive workshop	a) Pre-test (prior to the intervention) b) Post-test (1 week after intervention) **Measures** - Children's Knowledge of Abuse Questionnaire (Tutty, 1995)	A significant increase in terms of inappropriate touches knowledge, No difference in understanding the appropriate touches. Children in the second grade had higher scores than others.

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Table 1 (*continued*)

Authors, Year, Country	Objectives	Intervention	Study Design	Participants	Intervention Length	Instruments and Measures	Main Findings
Dale et al., 2016. Australia.	To assess the effectiveness of a child protection education program for children in Australia.	Learn To BE SAFE With Emmy TM Workshops designed to teach kids how to recognize the signs of impending fear, distinguish between safe and unsafe secrets and understand the importance of personal space. Cognitive-behavioral (modelling), behavioral (skills practice), and social-learning theories (role-play, discussion)	RCT	245 grade 1 children within 5 primary schools.	5 sessions	a) Pre-test b) Post-test c) 6-month follow-up **Measures** -Protective Behaviors Questionnaire (ProBeQ) -Application of Protective Behaviors Test Revised (APBT) -Parent Protective Behaviors Test (PPBT) -Revised Children's Manifest Anxiety Scale 2nd edition: short form (RCMAS-2; Reynolds and Richmond, 2008a)	Improved interpersonal safety awareness and ability to select a safe response to imaginary unsafe situations. After 6 months, the knowledge of children remains.
Moon et al., 2017. Korea.	To create and test a sexual abuse protection education program for primary school children using a mobile app (SAP MobAPP).	App-based SAP education program Web- and textbook-based education	Experimental RCT	122–140 Children 10 years old Control Group A received web-based sexual abuse prevention education, while Control Group B received textbook-based sexual abuse prevention education.	Weekly sessions for 3 weeks	a) Pre-test b) Post-test c) 4-month follow-up **Measures** Recognition of sexual abuse Skills to avoid sexual abuse	After training and four weeks later, awareness and skills to avoid child sexual abuse increased.
Morris et al., 2017. The USA.	To investigate two community-level factors as possible moderators of the effectiveness of the Safe@ Last program.	The 'Safe@Last' Program Including 5 domains: safe versus unsafe people, safe choices, problem solving, clear disclosure, and assertiveness. The use of role-playing, music, games, stories, an interactive online workbook, and the engagement of parents and family outside the classroom.	Cluster RCT	1177 students in 1st through 6th grade from 14 public schools. (the intervention & the waitlist control group)	Over 1 month. 4 sessions *35 min each	a) Pre-test b) Post-test **Measures** -Knowledge retention. -School characteristics.	The intervention effects were larger for adolescents living in lower-income counties compared with those living in higher-income counties, and for youth attending schools in counties with lower abuse/neglect rates compared with those in higher-income counties. Child characteristics (gender or ethnicity) did not moderate the intervention effects.
White et al., 2018. Australia.	'Learn to be safe with Emmy and friends TM,' an Australian protective behavior program, will be evaluated for its effectiveness.	Learn to be safe with Emmy and friends™ -Protective Beh Knowledge (child) -Protective Beh Knowledge (parent) -Disclosure Intentions -Disclosure Confidence -Safety Identification Skills	RCT	611 children in Grade 1 (5–7 years) participated.	5 weeks 1-hour weekly sessions	a) Pre-test (baseline) b) Post-test (after intervention) c) 6-month follow-up **Measures** -Demographic questions -Protective Behaviors Questionnaire (ProBeQ, Dale et al., 2016) -Application of Protective Behaviors Test-revised (APBT-R, Dale et al., 2016) Observed Protective Behaviors Test (OPBT) -Revised children's manifest anxiety scale 2nd edition: short form (RCMAS-2; Reynolds and	The intervention group was effective in enhancing interpersonal safety knowledge (both child and parent-rated) and parent-rated interpersonal safety abilities. These advantages were maintained at the 6-month follow-up, with participating youngsters experience higher disclosure confidence. By the OPBT, there was no noticeable impact on children's disclosure intentions, safety identification skills, or interpersonal safety skills.

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Table 1 (*continued*)

Authors, Year, Country	Objectives	Intervention	Study Design	Participants	Intervention Length	Instruments and Measures	Main Findings
Bustamante et al., 2019. Ecuador.	To assess the short- and long-term effects of an instructional program on kids' understanding of CSA self-defense techniques in Ecuador.	"I have the right to feel safe at all times" prevention program. Including increasing self-esteem, secrets, touches, trusted adults, risk situations, saying "no", and disclosing and recognizing abuse. Interactive activities through setting powerful questions.	Cluster RCT	939 children aged 7 to 12 years	2 months for each group 10 * one-hour sessions	Richmond, 2008a) +Parent measures a) Pre-test (both group) b) Post-test (1st group-before 2nd started) c) Post-test (1st and 2nd groups) 6-month follow-up for 1st group **Measures** - A questionnaire by Del Campo Sanchez, 2006.	Scores are increased and maintained 6 months after the program ends.
Nickerson et al., 2019. The USA.	To assess the impact of the Second-Step Child Protection Unit curriculum and assess the role of age and gender in moderating program efficacy.	The Second-Step Child Protection Unit Curriculum. Discussion, pictures, videos, puppets, and vignettes	RCT	8 elementary schools 2172 pre- to fourth-grade students (4–12 years old) 1151 in intervention schools and 1021 in the control schools.	6-week CPU	a) Pre-test b) Post-test **Measures** -Children's Knowledge of Abuse Questionnaire-Revised (CKAQ; Tutty, 1997) -Personal Safety Questionnaire (PSQ; Saslawsky and Wurtele, 1986) -What-If Situations Test-III-R (WIST; Wurtele, 1988,1989) -Teacher-Student Relations, Delaware School Climate Survey (TSR-DSCD; Bear et al., 2014)	Children in CSA intervention schools performed much better on all outcomes. Girls outperformed boys in CSA awareness and the capacity to identify, avoid, and disclose unsafe interactions.
Jones et al., 2020. Australia.	This study assesses the effect of supplementary classroom instruction and partial Orbit game completion on student learning.	ORBIT game, a free CSA prevention program 3 groups: -Play Orbit (50) -Play Orbit and CSA lessons (55) The control group (34)	RCT	139 students (aged 8–10 years) from elementary school.	3 months	a) Pre-test b) Post-test **Measures** - Children's Knowledge of Abuse Questionnaire Revised (CKAQ-R-III)	Children in the orbit play and lesson and orbit play groups improved their test results. Compared to those who did not finish the game, the kids whose scores greatly improved after finishing Orbit did so.
Urbann et al., 2020. Germany.	To design and evaluate a sexual abuse prevention program for deaf and hard of hearing (DHH) children.	STARK met SAM" (Strong with Sam, SmS) Program Multisensory Sam as a puppet, paper, pictures, writings. Role-plays, items, short films.	RCT	92 DHH primary school children aged 8–12 years.	Over 2 weeks, 3 units per week.	a) Pre-test b) Post-test c) 30-week Follow-up d) 6-month follow-up **Measures** -Interview for the Children, WIST -Questionnaire for the Children's Teachers -Treatment Integrity -Evaluation Design	The intervention group increasingly gained information while experiencing no improvement in anxiety. There was no significant element influencing the children's major knowledge increase.
Weeks et al., 2021. The USA.	To evaluate the effectiveness of the MBF Child Safety Matters® (CSM) curriculum.	The Child Safety Matters curriculum Using the MBF 5 Safety Rules™ (1) Know What's Up, (2) Spot Red Flags (3) Make a Move (4) Talk It Up	RCT	Six schools across 3 counties agreed to participate, and 136 Kindergarten to 5th-grade classrooms. For pre-test, 2414 students (1195 CSM and 1219 control)	4–8-week program 2 lessons: 1st 16 days-2nd 16 days	a) Pre-test b) Post-test (1 month after the program) **Measures** -Student Assessment (Finkelhor et al., 2018)	Intervention students demonstrated a larger improvement in their understanding of the CSM program material. No mean difference by school, gender and age.

Table 1 (*continued*)

Authors, Year, Country	Objectives	Intervention	Study Design	Participants	Intervention Length	Instruments and Measures	Main Findings
		(5) No Blame, No Shame Presentations, lesson scripts (interactive), videos Child Safety Matters mobile app.		and for post-test, 2260 (1159 CSM and 1101 control).			

4.2. Skills

Some of the studies focused solely on knowledge outcomes (Pulido et al., 2015; Morris et al., 2017; Bustamente et al., 2019; Jones et al., 2020; Weeks et al., 2021), while others examined both knowledge and skills (Hebert et al., 2001; Muller et al., 2014; Dale et al., 2016; Moon et al., 2017; White et al., 2018; Nickerson et al., 2019; Urbann et al., 2020). Notably, the study by Krahe and Knappert (2009) specifically focused on cognitive skills and used eight short scenarios to assess children's abilities. Vignettes were employed in several studies, such as those conducted by Krahe and Knappert (2009), Nickerson et al. (2019), and Urbann et al. (2020). The *What If Situation Test* was commonly used across studies to evaluate how children would respond in hypothetical cases of sexual abuse. In this test, children are asked how they would react or what actions they would take in various situations. This test allows researchers to gauge children's understanding of appropriate responses, their ability to identify potentially abusive situations, and their knowledge of protective measures.

In terms of instructional methods, Urbann et al. (2020) utilized a combination of pictures, multisensory exercises, role plays, and puppets, which yielded more effective results in contrast to Nickerson et al. (2019) who employed discussions, pictures, and vignettes. Urbann et al. (2020) achieved the highest skills score among all the studies analysed, indicating the potential effectiveness of their multimodal approach.

Several studies reported improvements in children's abilities, awareness, and self-protective skills related to sexual abuse prevention. For instance, Nickerson et al. (2019), Krahe and Knappert (2009), Dale et al. (2016), and Moon et al. (2017) found positive outcomes in children's abilities to recognise, avoid, and report instances of sexual abuse. White et al. (2018) examined disclosure skills, which are crucial in responding to sexual abuse, but their results did not show significant improvements in disclosure intentions, safety identification skills, or interpersonal safety skills in the post-test compared with the pre-test. Interestingly, the follow-up assessment revealed a decrease in these skills even compared to the pre-test results. This decline could be attributed to two potential explanations: either the intervention did not adequately address potential side-effects, or the acquisition of knowledge resulted in fear or reduced confidence in disclosing instances of abuse (White et al., 2018).

Skills acquisition in the context of sexual abuse prevention programmes for children can be measured through various assessments and tests designed to evaluate children's abilities to recognise, respond to, and prevent instances of sexual abuse. These assessments aim to assess children's practical skills, decision-making abilities, and their capacity to apply the knowledge gained from the prevention programmes to real-life situations.

Nickerson et al. (2019); Krahe and Knappert (2009), and Urbann et al. (2020) applied the *What If Situation Test* to assess children's skills acquisition. These studies reported improvements in children's abilities, such as recognizing warning signs, avoiding risky situations, and reporting instances of sexual abuse. The results indicated that children who participated in the prevention programmes demonstrated a better understanding of appropriate responses and were more likely to exhibit self-protective behaviours.

Additionally, some studies incorporated role-playing exercises, vignettes, or other interactive methods to assess children's skills acquisition. Through role-playing, children have the opportunity to practise and demonstrate their understanding of appropriate behaviours and responses in simulated situations. Researchers can observe and evaluate their actions, decision-making processes, and communication skills.

Urbann et al. (2020) employed a combination of pictures, multisensory exercises, role plays, and puppets in their prevention programme, and the effectiveness of these methods was measured through skills assessments. This study achieved the highest skills score among the analysed studies, indicating that their approach was particularly successful in facilitating children's acquisition of practical skills related to
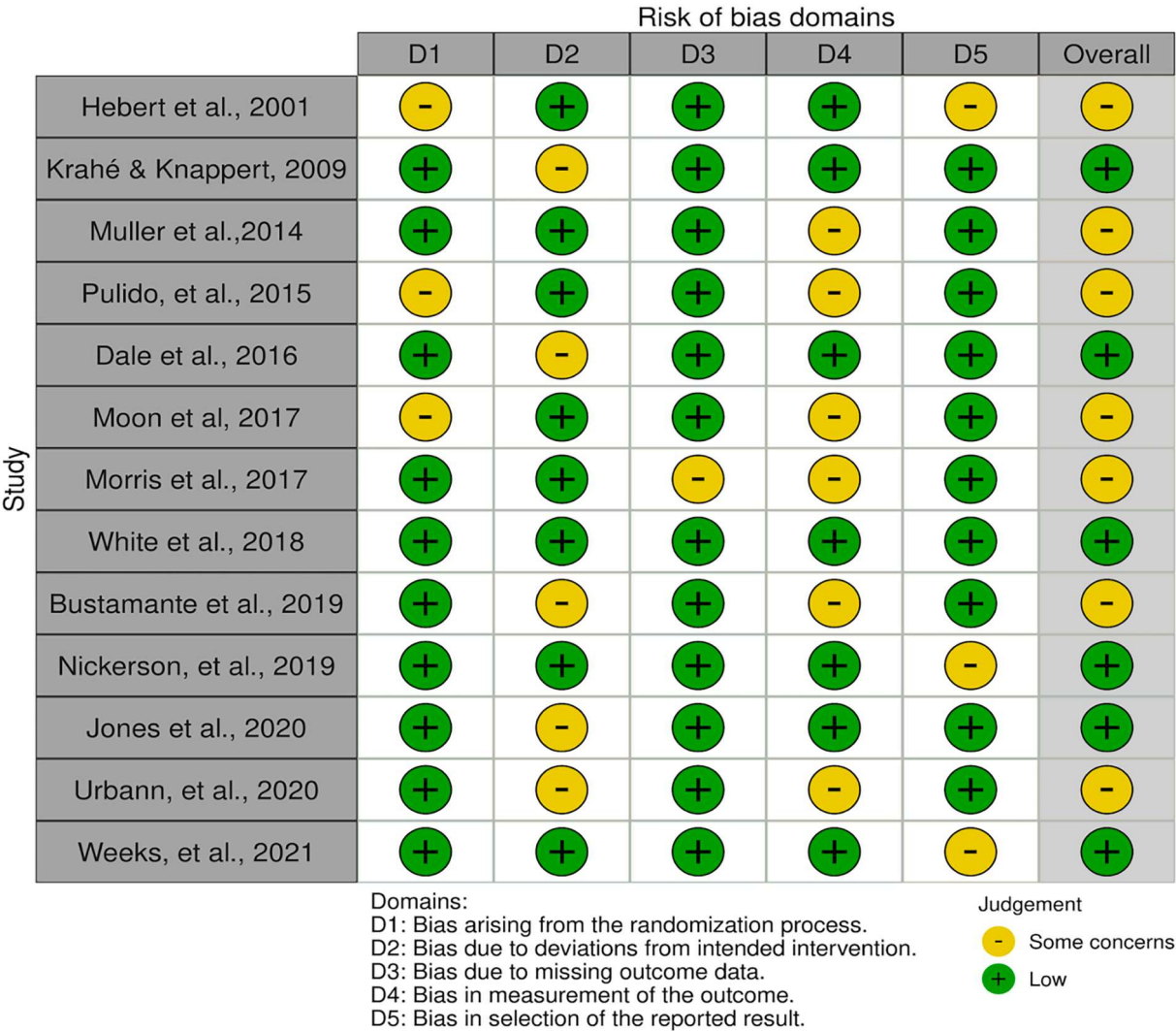
Risk of bias domains

Study	D1	D2	D3	D4	D5	Overall
Hebert et al., 2001	−	+	+	+	−	−
Krahé & Knappert, 2009	+	−	+	+	+	+
Muller et al.,2014	+	+	+	−	+	−
Pulido, et al., 2015	−	+	+	−	+	−
Dale et al., 2016	+	−	+	+	+	+
Moon et al, 2017	−	+	+	−	+	−
Morris et al., 2017	+	+	−	−	+	−
White et al., 2018	+	+	+	+	+	+
Bustamante et al., 2019	+	−	+	−	+	−
Nickerson, et al., 2019	+	+	+	+	−	+
Jones et al., 2020	+	−	+	+	+	+
Urbann, et al., 2020	+	−	+	−	+	−
Weeks, et al., 2021	+	+	+	+	−	+

Domains:
D1: Bias arising from the randomization process.
D2: Bias due to deviations from intended intervention.
D3: Bias due to missing outcome data.
D4: Bias in measurement of the outcome.
D5: Bias in selection of the reported result.

Judgement
− Some concerns
+ Low

Fig. 2. Risk of Bias Assessment.

sexual abuse prevention.

While many studies reported positive outcomes in terms of skills acquisition, White et al. (2018) found fewer significant improvements in certain areas. White et al. examined disclosure skills, which are crucial for children to report instances of abuse. Their results showed no noticeable differences in children's disclosure intentions, safety identification skills, or interpersonal safety skills in the post-test compared to the pre-test. Moreover, the follow-up assessment revealed a decrease in these skills compared to the pre-test, suggesting a potential decline in confidence or fear associated with disclosure. These findings highlight the complexity of measuring and assessing skills acquisition and the need for further exploration into the factors that may influence these outcomes.

Overall, these findings emphasize the importance of addressing not only children's knowledge but also their practical skills and abilities in sexual abuse prevention programmes. The use of varied instructional approaches, such as vignettes, role plays, and multisensory exercises, can enhance children's engagement and understanding.

4.3. Unanticipated consequences

While sexual abuse prevention programmes aim to empower children with knowledge and skills to protect themselves, it is essential to consider the potential negative consequences that may arise as a result of these interventions. Although anxiety is often mentioned as a potential concern, it is important to critically evaluate whether increased awareness and caution should be perceived as negative outcomes or as indicators of heightened vigilance.

One unanticipated consequence that requires attention is the potential development of negative attitudes or mistrust towards adults. While it is crucial for children to be aware of inappropriate behaviours and to exercise caution, an unintended consequence might be that children become overly suspicious or fearful of adults. This may lead to strained relationships, difficulty in differentiating between safe and unsafe individuals, or a reluctance to seek help when needed. It is important for prevention programmes to strike a balance between promoting awareness and empowering children while fostering healthy relationships and maintaining trust in adults who are safe and supportive.

Furthermore, there may be other unexplored factors that could have negative consequences but have not been thoroughly evaluated. For example, children's attitudes towards their own bodies, their perceptions of personal boundaries, or their understanding of healthy relationships could be influenced by prevention programmes. Without comprehensive assessments of these factors, it is difficult to fully grasp the potential impact on children's overall well-being.

In the study conducted by Hebert et al. (2001), parents reported some negative changes in their children's behaviour following the intervention. Children displayed increased aggression towards siblings and peers and exhibited fear when approaching adult strangers.
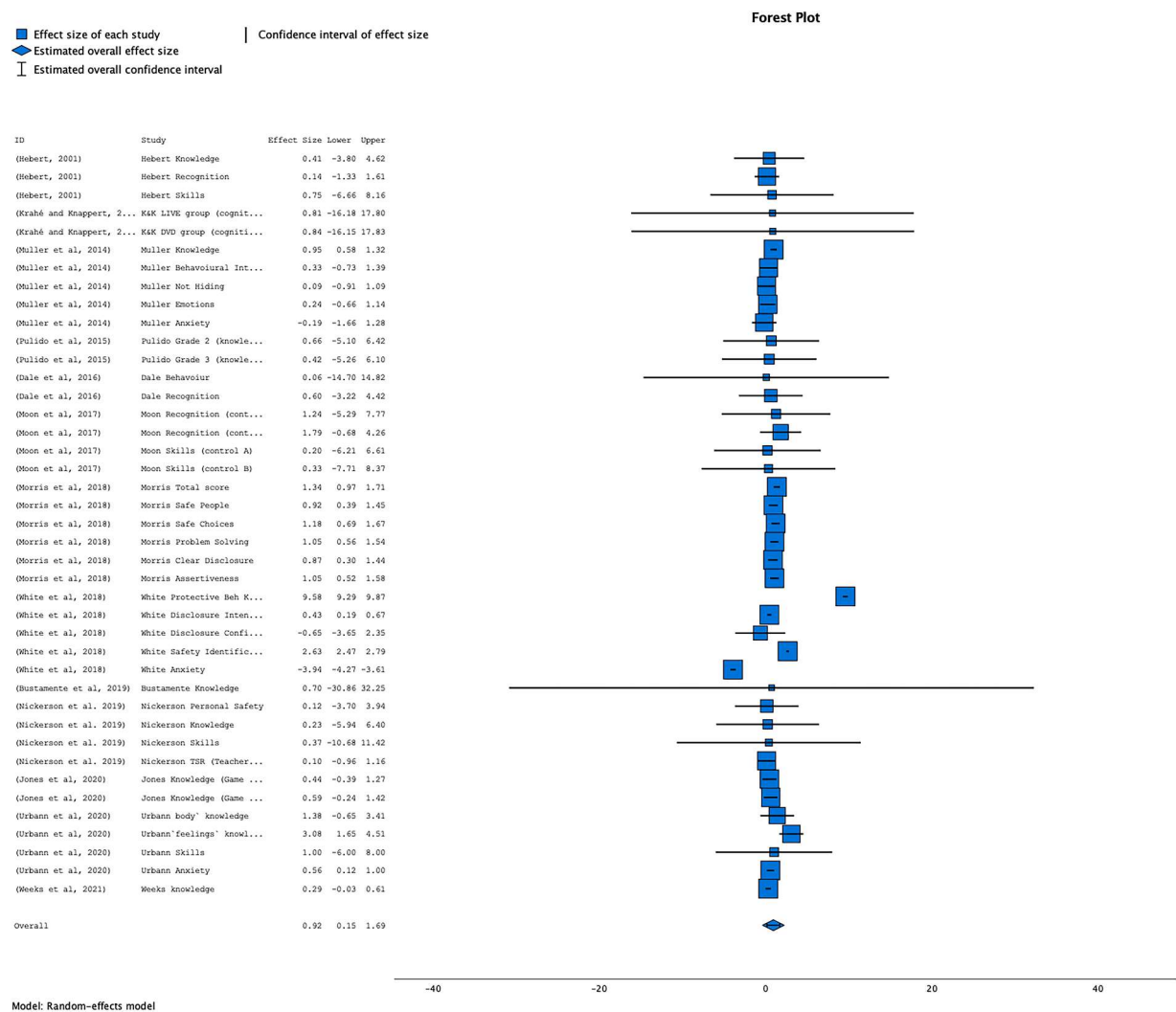
Fig. 3. Forest Plot.

Additionally, they showed resistance to authority figures and demonstrated a stronger attachment to their parents. These findings suggest that the intervention may have inadvertently influenced children's behaviour and attitudes in unexpected ways. However, it is important to note that the study had a relatively low response rate from parents, limiting the generalizability of these findings.

4.4. Limitations

It is important to acknowledge and address the potential limitations and biases present within the studies themselves. Variations in sample sizes, demographics, and geographic locations across the studies may impact the generalizability of the findings. Future research should strive for larger and more diverse samples to enhance the external validity of the results (Hebert et al., 2001; Nickerson et al., 2019; Urbann et al., 2020). Additionally, employing objective measures and qualitative approaches, such as interviews or focus groups, could provide deeper insights into children's experiences and perceptions of the prevention programmes.

Based on the findings of this systematic literature review, it is evident that school-based prevention programmes have shown effectiveness across different countries. It is essential to tailor prevention programmes to specific cultural contexts by addressing cultural sensitivities and incorporating culturally appropriate content and instructional strategies. Recognising and respecting the diverse backgrounds and experiences of children is fundamental to ensure the effectiveness and inclusivity of these programmes. However, it is important to acknowledge the limitations of existing studies and identify areas for future research that can enhance our understanding and improve prevention strategies.

One significant limitation observed in the studies reviewed is the difficulty of assessing generalization and transition skills. Evaluating how children respond to real-life attempts at sexual abuse presents ethical challenges. Researchers have understandably refrained from subjecting children to such situations. However, it is crucial to explore ways to bridge this gap by finding innovative methodologies or alternative approaches to assess children's application of knowledge and skills in real-world contexts. Future research could consider employing advanced simulations, virtual reality technologies, or scenario-based assessments that closely approximate real-life situations while ensuring the ethical well-being of participants.

Another limitation found in several studies is the inability to randomly assign children due to the practical constraints of classroom settings. This limitation hampers the ability to establish clear causal relationships between interventions and outcomes. To overcome this limitation, future studies could explore alternative designs, such as cluster randomised controlled trials or quasi-experimental designs, that allow for greater control and randomisation at the classroom or school level while still accounting for practical considerations.

5. Conclusion and recommendations

While the current systematic literature review highlights the effectiveness of school-based prevention programmes, it also identifies several limitations and areas for future research. By addressing the challenges of generalization and transition skills assessment, employing alternative research designs, increasing sample sizes, including children with learning disabilities, exploring online interventions, and considering the role of peers and parents in prevention efforts, future research can contribute to the development of more robust and effective sexual abuse prevention programmes for children. In addition, it is crucial to continue examining the long-term impact of these programmes and address potential challenges, such as the potential for fear or decreased confidence in disclosures. Future research should aim to refine prevention strategies, consider the specific needs and cultural contexts of diverse populations, and explore innovative approaches that can maximize the effectiveness of sexual abuse prevention programmes for children.

Critical analysis reveals several areas that require further investigation and improvement. While the studies primarily focused on knowledge acquisition and retention, they often neglected to explore the transfer and generalisation of this knowledge beyond the immediate programme context. It is important to assess whether children can effectively apply their knowledge to diverse situations and environments, including those that may differ significantly from structured programme settings. Future research should examine the practical application and generalisation of knowledge to enhance the real-world efficacy of prevention programmes.

Moreover, the reliance on traditional educational approaches, such as texts, videos, and role-playing, raises questions about the potential for innovation and integration of emerging technologies in sexual abuse prevention programmes. The study conducted by Moon et al. (2017) in Korea demonstrated the advantages of an app-based education curriculum, which proved to be more effective than traditional text-based programmes. Exploring the use of virtual reality, interactive games, or mobile applications could provide novel and engaging ways to educate children about sexual abuse prevention. This finding highlights the potential of integrating interactive and immersive technologies to enhance engagement, knowledge retention, and the overall effectiveness of prevention programmes.

Another critical consideration is the cultural and contextual relevance of prevention programmes. Most of the studies reviewed were conducted in Western societies, which possess unique social and cultural dynamics. Cultural norms, values, and beliefs play a crucial role in shaping children's understanding and responses to sexual abuse.

To gain a more comprehensive understanding of potential negative consequences, future research should systematically assess a broader range of variables, including changes in attitudes, emotional well-being, relationships, and overall adjustment. This would enable researchers and practitioners to identify any unintended adverse effects and tailor prevention programmes to mitigate such risks effectively. While sexual abuse prevention programmes for children are crucial in empowering them to protect themselves, it is essential to critically consider potential negative consequences. These may include the development of negative attitudes towards adults or the emergence of unanticipated changes in behaviour and relationships. Future research should explore these potential negative outcomes and develop strategies to minimize their occurrence. By addressing these concerns, prevention programmes can better ensure the overall well-being and healthy development of children in their efforts to prevent sexual abuse.

Future research should strive for larger sample sizes to enhance the statistical power and generalizability of the results. Additionally, incorporating a diverse range of participants from different countries and cultural contexts could provide a more comprehensive understanding of the effectiveness of prevention programmes and their applicability across diverse populations.

There is a notable gap in the literature regarding the inclusion of children with intellectual disabilities in sexual abuse prevention programmes. The current review did not identify any randomised controlled trials specifically targeting this population. Future research should include children with intellectual disabilities and adapt prevention programmes to their specific needs and capabilities. Online interventions, including mobile applications, may serve as a promising avenue for reaching and engaging children with intellectual disabilities. These types of interventions can provide tailored educational materials and interactive activities in a safe and secure environment, allowing repeated exposure to prevention messages and addressing ethical concerns associated with real-world assessments.

To advance the field of sexual abuse prevention, it is crucial to consider a holistic approach that goes beyond the focus on adult offenders. Research should explore the prevalence and dynamics of abuse perpetrated by peers and develop prevention models that specifically address this issue. Understanding the unique risk factors, patterns, and prevention strategies related to peer-to-peer abuse can help create comprehensive prevention programmes that encompass the full spectrum of potential perpetrators.

Finally, further research is needed to investigate the role of parents in sexual abuse prevention. Understanding the effectiveness of parental involvement and the impact of parent-focused prevention strategies can provide valuable insights into enhancing the overall effectiveness of prevention programmes, and such interventions may be more enduring as a result of parental support. By examining the connections between research on youth and research on parents, a more comprehensive and coordinated approach to prevention can be developed.

CRediT authorship contribution statement

Pinar Celik: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments and credits

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