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Frameworks, models and theories for prevention of child maltreatment – Protocol for a Scoping Review from a population health perspective

Journal:	BMJ Open	
Manuscript ID	bmjopen-2024-098429	
Article Type:	Protocol	
Date Submitted by the Author:	23-Dec-2024	
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Keywords:	Child protection < PAEDIATRICS, PUBLIC HEALTH, Primary Prevention	

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- 1 Frameworks, models and theories for prevention of child
- 2 maltreatment Protocol for a Scoping Review from a population
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- **Keywords:** child maltreatment, child abuse, neglect, prevention, framework, public
- 21 health approach
- **Word-count**: 3052
- **Pre-registration:** https://osf.io/49g7z/
- 24 Abstract
- **Introduction** Child maltreatment (CM) is a major public health issue with lifelong
- consequences on mental health, quality of life, educational and economic prospects of
- 27 children who experienced CM. Early identification of maltreated children is important
- 28 to prevent further CM and ensure that children's basic needs are met, as well as
- 29 address and avoid further consequences. However, above and beyond early
- identification, it is crucial to avoid the occurrence of CM. This may include the reduction

- Methods and Analysis A broad search in four databases (PubMed (NIH NLM), PsycInfo (Ovid), CINAHL Plus (EBSCOhost) and Web of Science (Clarivate)) will be conducted from 2009 to current. Additionally, grey literature on websites from key public health organizations will be considered. Results will be reported following the PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation (2018). The review will include articles describing a theory, model or framework on prevention strategies for CM. Studies focussing on single interventions, that do not describe prevention strategies conceptually will be excluded. General characteristics of the frameworks, theories and models and information on types of prevention strategies they describe will be extracted. Findings will be presented in a structured table format as well as narratively.
- **Ethics and dissemination** As we will not collect any personal, confidential or sensitive data, ethical approval is not required. We will publish our results in a scientific journal, present them on conferences and use them for further knowledge translation activities.

Strength and limitations

- This scoping review will analyse theories, models or frameworks of CM prevention from a broad public health perspective. Hence different disciplines and fields in addition to health care will be covered, considering multiple systems and sectors playing a role in CM prevention.
- For feasibility reasons, the search strategy in this scoping review will be limited to the last 15 years (2009-current).
- The comparability across identified theories, models and frameworks may be impaired, for example due to heterogeneity in terms of included components, methodological underpinnings and quality. The generated overview can be used to guide the development of conceptions and research on prevention of CM.

This review will provide an overview of strategies for prevention of CM from a population health perspective, which can guide the conception of novel preventive interventions, specifically those focussing on primary prevention. The overview might serve as a communication tool between professionals from multiple disciplines and sectors involved in CM prevention.

Background

The World Health Organization (WHO) defines CM as the abuse and neglect that occurs to minors (1) at home, in schools or in orphanages at the hands of parents, caregivers or other authority figures (2). WHO provides the following definition: "It includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power." (1)

Child maltreatment (CM) is a risk factor for mental illness across the lifespan (3–5) and an important public health issue (6–10), lifelong health consequences for exposed individuals (9) and a high financial burden (6, 1, 10). The health consequences include but are not limited to acute injuries, such as fractures, head injuries or burns (11). Adults who experienced CM during childhood have a higher risk for both mental health as well as physical conditions, and for limiting behavioural problems (1). The WHO divides the potential health consequences of violence against children into direct and indirect effects and allocates them to five main categories: mental health problems, injury, noncommunicable diseases and risk behaviour, communicable disease and risk behaviour and maternal and child health (11). Direct effects are for instance depression and anxiety, post-traumatic stress disorder, burns, fracture, obesity, smoking, HIV, multiple partners, pregnancy complications, death (including foetal death), indirect effects due to high-risk behaviour are for example cancer, diabetes or heart diseases (11).

Based on population-based data from approximately half of the world's countries, a study of Hillis et al. estimated that over 1 billion children between the ages of 2 and 17 years experienced violence in 2014 (12). Witt et al. reported the prevalence of exposure to CM in Germany to be 31.0 % of all adult study participants (estimated

94 using Childhood Trauma Questionnaire (CTQ)) with at least one form of CM in their childhood (6).

 Considering the prevalence as well as the individual, and societal burden, prevention efforts are inevitable, not only for mitigating the consequences, but also to reduce the number of children experiencing CM. Prevention science distinguishes different strategies for prevention. These include universal, selective or indicated prevention as well as primary, secondary or tertiary prevention approaches (13, 14). Universal prevention refers to interventions that can benefit the entire population, such as sex education and drug education in schools (15). Selective prevention involves targeting groups of people who may be at increased risk, such as support groups for children of parents who use alcohol/drugs or student and parent training in areas that are labelled as socially deprived (15). Indicated prevention is aimed, for example, at families where CM has already taken place and is to be prevented from reoccurring (15). Primary prevention aims to prevent diseases before they occur, for example, by eliminating risks (15). In terms of CM, this can be, for example, the promotion of a non-violent parenting (13), the reduction of opportunities or the learning of personal safety strategies (14). Secondary prevention is about detecting CM at an early stage (15); this can be done, for example, through risk screening (13). The goal of tertiary prevention is to prevent the worsening of a disease and its recurrence (15, 14). Preventive interventions should take place as early as possible because this generates the largest benefits for the child (e.g., cognitive development, behavioural and social competence, educational attainment) (1). In addition to the direct positive effects at the level of the child, interventions implemented early in life can also have indirect positive impacts of preventive interventions on parents, enabling more sustainable impact on the society in the whole (1).

CM prevention is also attracting more and more political attention due to various scandals in the church, sports or educational settings. The disclosure of various sexual abuse scandals in the Catholic Church and in educational institutions has not only led to a change in the public perception of maltreatment, abuse and neglect of children under the age of 18, but the media coverage and political reactions to the scandals also triggered advances in research (16). Publications in this context have increased tremendously in the last 20 years (16).

 To date, several reviews have examined interventions to prevent CM (17–22). For example, a systematic review and meta-analysis of van der Put et al. (22) identified interventions effective to prevent or reduce CM. These included cognitive behavioural therapy, home visiting (for example counselling, support or coaching of parents at home) and parent education (22) (e.g. Triple P-Positive Parenting Program (23)).

Strategies for early prevention of CM have been described in a number of individual articles (14, 11, 24), but a comprehensive overview on conceptual prevention

Strategies for early prevention of CM have been described in a number of individual articles (14, 11, 24), but a comprehensive overview on conceptual prevention strategies (theories, models and frameworks) in relation to CM is currently lacking. Such an overview is necessary to guide systematic and effective intervention development, implementation and evaluation. This scoping review aims to address the problem of conceptual clarity regarding prevention strategies for CM. It will systematically identify and characterize different theories, frameworks or models that describe conceptual strategies for CM prevention. Our scoping review will give a broad overview, realign terminology and support the development of a new conceptual framework to guide prevention activities in future. Furthermore, this review can help to categorize further research, the schematic representation of intervention approaches and thus serve as a communication tool in the field of preventive child protection. The review will adopt a broad population health perspective and consider all forms of prevention, ranging from primary/universal to tertiary/indicated prevention.

The need for such a conceptual overview has been expressed by other researchers, e.g., by McCartan et al. (25) who called for more evidence-based models for secondary prevention of child sexual abuse in the United Kingdom.

Based on the existing scientific and grey literature, the following research questions will be answered:

- What frameworks, theories or models exist to describe conceptual prevention strategies (theories, models and frameworks) for CM?
- What elements do these theories, models and frameworks include with respect
 to intervention level (e.g., individual or relationship), prevention strategy (e.g.,
 primary or universal), intervention techniques (e.g., training, education) or
 targeted groups (e.g., families, neighbourhood, health and other professional
 groups)?

- What are commonalities and differences between the existing frameworks, theories and models?
- How were they developed (and to what extent are they supported by empirical evidence or theory)?

Methods

We will follow the guidance of the JBI Handbook for the conduct of scoping reviews (26). The results of this Scoping Review will be reported in accordance with the PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation (27) and the PRISMA Statement for Reporting Literature Searches in Systematic Reviews (PRISMA-S) (28). The key elements (inclusion and exclusion criteria, search strategy) are presented below according to the Population-Context-Concept (29). The Scoping review is registered with the Open Science framework: https://osf.io/49q7z/.

Eligibility criteria

- *Population:* We will include all studies which provide a theory, model or framework,
- focussing on the prevention of child maltreatment in children under age 18.
 - Concept: Our study considers frameworks, models and theories addressing the prevention of child maltreatment. Prevention of child maltreatment is conceptualized from a population health perspective and can comprise a broad range of prevention strategies. These may be categorized as primary, secondary and tertiary prevention activities or as universal, selective or indicated prevention activities (13, 15). Primary prevention are all interventions aiming to prevent the occurrence of CM, secondary prevention is the identification of children experiencing or at risk for CM and tertiary prevention means mitigating the consequences and to prevent the reoccurrence (13-15). On the other hand, universal prevention targets the whole population, selective prevention focused on specific target groups for example in areas with a low socioeconomic status and indicated prevention is aimed at high risk groups (15). They may include activities focussed on individuals or populations. Child maltreatment will be defined to include physical, sexual and emotional abuse as well as physical and emotional neglect (1). In addition, exposure of children to intimate partner violence will be considered as a form of child maltreatment (30). The theories, models and frameworks to be included in this review guiding the prevention of CM may describe prevention strategies in a more conceptual way (e.g., by providing a structure or categorization of prevention activities) or explain mechanisms involved in specific

prevention strategies (e.g., how social marketing approaches alter harmful social norms and practices). The frameworks, models and theories may be supported more or less by empirical research findings but should go beyond merely testing statistical associations between child maltreatment and possible predictor variables. Purely statistical data analysis models, as well as all animal models and genetic models will be excluded.

Context: The theories, models and frameworks included in this review guide prevention strategies directed at children, parents/caregivers or professionals within the family context, the child protection system, the health care system and other settings, such as neighbourhoods and schools (11, 31).

	Inclusion criteria	Exclusion criteria		
Population	The study focus on	The study focus on		
Population		,		
	prevention of CM among	ļ ·		
	children under 18 years of	maltreatment/violence over		
	age.	18 years of age.		
		(E.g., college students,		
	7.	adults)		
Child Maltreatment	The study focus on child	The study does not focus on		
	maltreatment.	child maltreatment.		
	Child Maltreatment can	It describes for example:		
	include:	violence in general,		
	maltreatment in general,	• violence between		
	abuse (sexual, physical,	children,		
	psychological/emotional),	intimate partner violence		
	neglect (physical,	itself,		
	psychological/emotional,	• terrorism,		
		·		
	• exposure to IPV e.g.,	violence in adulthood,		
	witnessing	ACEs without specifics to		
		CM		
		adults suffer from CM in		
		the past,		
Prevention	The study describes	The study does not describe		
	conceptual prevention	conceptual prevention		

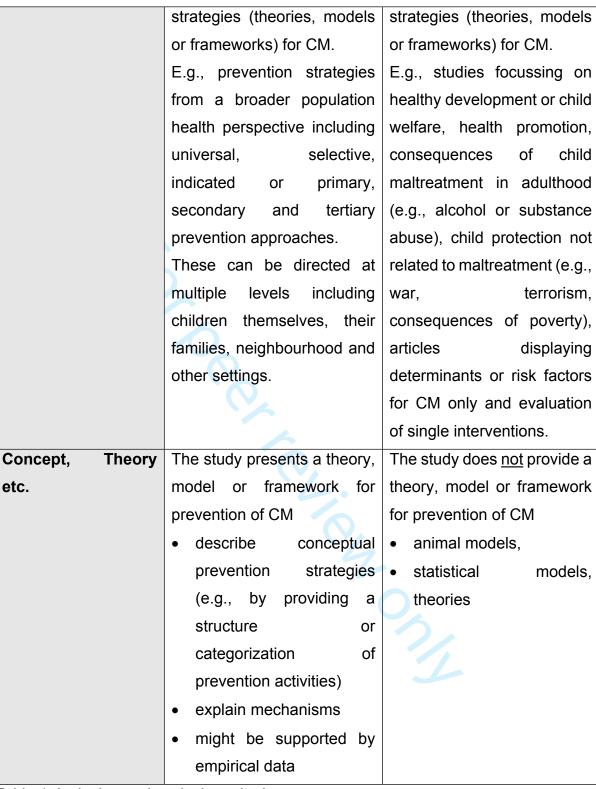


Table 1. Inclusion and exclusion criteria

Databases and Search strategy

To define our search string, we used similar articles to identify keywords and MeSH-Terms (32, 33). Due to feasibility reasons, we will limit our search to publications from the last 15 years (2009 to present) without any additional filters.

To identify relevant literature, we will search the following databases PubMed (NIH NLM), PsycInfo (Ovid), CINAHL Plus (EBSCOhost) and Web of Science (Clarivate). The full search strategy for PubMed can be found in Appendix 1. In addition, we will carry out a targeted hand search of organizations' websites with key public health tasks (World Health Organization (WHO), World Health Organization Europe, Centers for Disease Control and Prevention (CDC), United Nations (UN), United Nations International Children's Emergency Fund (UNICEF), United Nations High Commissioner for Refugees (UNHCR), European Center for Disease Prevention and Control (ECDC), as well as German institutions such as the Federal Ministry of Health (BMG), Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ), Nationales Zentrum Frühe Hilfen (BZgA),Koordinierende Kinderschutzstellen (KoKi)) and in addition the homepages of different expert associations such as the German Society for Child Protection in Medicine (DGKiM) and scientific associations focusing on public health/disease prevention (DGSPJ. Bündnis für Kindergesundheit). Finally, we will perform backward citation tracking and if feasible, we will perform forward citation tracking using an online tool e.g., Citationchaser (34).

Data management

References will be exported and uploaded to Covidence. For removing duplicates, we will use Covidence and in addition we will check the references for further duplicates manually. The title/abstract and full text screening will be performed by using Covidence.

Selection process

Based on the pre-defined inclusion and exclusion criteria described above, two independent reviewers will perform the title/abstract screening. Conflicts will be resolved by discussion and, if necessary, we will ask a third reviewer. If the abstract does not provide enough information, the full text will be scanned. Afterwards, the full text will be screened and all articles that do not meet the inclusion criteria will be excluded. Any inconsistencies between the reviewers will be resolved by discussing the articles or consulting a third reviewer. Reasons for exclusion in full-text screening will be documented.

Data extraction

 For this scoping review we will use a deductively and inductively developed data extraction template. The template will include information on general characteristics (e.g., author, year of publication, country, study design), prevention strategies, intervention technique, intervention level or targeted groups and will be classified according to their field of origin (e.g., social sciences, public health, medicine, or psychology). The data extraction form will be tested on approximately five articles and adjusted for further use. Results will be reported and summarized either in a numerical or narrative form. The data extraction will be executed in Covidence by two independent reviewers, disagreement will be cleared in discussion or if necessary, with a third reviewer. We expect a broad range of articles from scientific journals as well as grey literature. Therefore, we will assess whether a quality appraisal is feasible and rewarding.

Data synthesis and reporting data

Included articles will be categorized by study characteristics, prevention strategies, field of origin and methodological approach. Results of the screening and the decision-making process will be presented in a flowchart. Study characteristics and key elements of the frameworks, theories and models will be reported and presented in a structured table format. The literature-analyses will be narrative using the data extraction template and results will be reported either in a table format or in narrative. As we expect heterogenic articles from scientific journals as well as grey literature and do not extract patient outcomes, a meta-analysis is not planned.

Patient and public involvement

We decided that we will not include patients or their parents as this scoping review takes a rather theoretical approach and is about strategies and concepts for interventions and policies existing at the population health level. Instead, we consulted different experts in the field of child protection for the development of our review to seek their advice for identifying and synthesizing the data, reporting results and implications for practice.

Ethics and Dissemination

As we will perform a scoping review, synthesising publicly available information without collecting any personal, identifying or sensitive data, ethical approval is not required.

268	The scoping review will be submitted for publication in an international peer-reviewed
269	journal. In addition, we will present our findings at a conference.

Patient consent for publication

271 Not applicable

Contributorship

- FDB conceived the idea, LR, AA, JVAF and FDB planned and designed the study protocol. LR wrote the first draft of the study protocol, all authors contribute to the manuscript and agreed on methods for this scoping review and will read and approve the final manuscript. LR will be the corresponding author and FDB the guarantor of the review.
- 278 Funding
- 279 The paper represents independent research part funded by the Jürgen Manchot
- 280 Stiftung, an institution subject to public law.
- 281 Conflict of interest
- 282 None
- 283 Patient consent for publication
- 284 Not applicable

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Appendix 1: Search strategy

PubMed

- "child*"[Title/Abstract] OR "infan*"[Title/Abstract] OR "adolescen*"[Title/Abstract] OR "teen*"[Title/Abstract] OR "youth*"[Title/Abstract] OR "pediatr*"[Title/Abstract] OR "paediatr*"[Title/Abstract] OR "young*"[Title/Abstract] OR "baby"[Title/Abstract] OR "babies"[Title/Abstract] OR "toddler*"[Title/Abstract] OR "minor*"[Title/Abstract] OR "preschool"[Title/Abstract] OR "girl"[Title/Abstract] OR "boy"[Title/Abstract] OR "newborn"[Title/Abstract] OR "child, preschool"[MeSH Terms] OR "Child"[MeSH Terms] OR "infant, newborn"[MeSH Terms] OR "Infant"[MeSH Terms] OR "Adolescent"[MeSH Terms]
- "Emotional Abuse" [MeSH Terms] OR "Child Abuse" [MeSH Terms] OR "Physical Abuse" [MeSH Terms] OR "child abuse, sexual" [MeSH Terms] OR "abus*" [Title/Abstract] OR "sexual abuse" [Title/Abstract] OR "Physical Abuse" [Title/Abstract] OR "Emotional Abuse" [Title/Abstract] OR "psychological abuse" [Title/Abstract] OR "physical neglect" [Title/Abstract] OR "emotional neglect" [Title/Abstract] OR "psychological neglect" [Title/Abstract] OR "maltreat*" [Title/Abstract] OR "maltreat*" [Title/Abstract] OR "ill-treatm*" [Title/Abstract] OR "ill treatm*" [Title/Abstract] OR "neglect" [Title/Abstract] OR "negligence" [Title/Abstract] OR "endangerment" [Title/Abstract] OR "non-accidental injur*" [Title/Abstract] OR "non accidental injur*" [Title/Abstract] OR "deliberate injur*" [Title/Abstract] OR "rape" [Title/Abstract] OR "incest*" [Title/Abstract]
- 3 ("witness*"[Title/Abstract] AND "intimate partner violence"[Title/Abstract]) OR "witness* intimate partner violence"[Title/Abstract] OR "exposure to intimate partner violence"[Title/Abstract]
- 4 #2 OR #3
- 5 #4 AND #1
- "Tertiary Prevention" [MeSH Terms] OR "Secondary Prevention" [MeSH Terms] OR "Primary Prevention" [MeSH Terms] OR "Public Health Practice" [MeSH Terms] OR "prevent*" [Title/Abstract] OR "Primary Prevention" [Title/Abstract] OR "Secondary Prevention" [Title/Abstract] OR "Tertiary Prevention" [Title/Abstract] OR "universal prevention" [Title/Abstract] OR "indicated prevention" [Title/Abstract] OR "selected prevention" [Title/Abstract] OR "protect*" [Title/Abstract] OR "safe guard*" [Title/Abstract] OR "safeguard*" [Title/Abstract] OR "disease prevention" [Title/Abstract] OR "Public Health" [Title/Abstract]
- 7 "concept"[Title/Abstract] OR "framework"[Title/Abstract] OR "approach"[Title/Abstract] OR "model*"[Title/Abstract] OR "theor*"[Title/Abstract] OR "pathway"[Title/Abstract] OR "mechanism"[Title/Abstract]
- 8 #5 AND #6 AND #7
- 9 #5 AND #6 AND #7 FILTERS: FROM 2009 2024

PsycInfo (Ovid)

- 1 (child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn).ti,ab.
- 2 (abus* or "sexual abuse" or "Physical Abuse" or "Emotional Abuse" or "psychological abuse" or "physical neglect" or "emotional neglect" or "psychological neglect" or maltreat* or "mal treat*" or illtreatm* or "ill treatm*" or "ill-treatm*" or neglect or negligence or endangerment or "non accidental injur*" or "deliberate injur*" or rape or incest*).ti,ab.
- 3 Child Abuse/ or Child Maltreatment/ or Child Neglect/
- 4 2 or 3
- 5 ((witness* and "intimate partner violence") or "exposure to intimate partner violence").ti,ab.
- 6 ((child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn) adj3 (abus* or "sexual abuse" or "Physical Abuse" or "Emotional Abuse" or "psychological abuse" or "physical neglect" or "emotional neglect" or "psychological neglect" or maltreat* or "mal treat*" or illtreatm* or "ill treatm*" or "ill-treatm*" or neglect or negligence or endangerment or "non accidental injur*" or "deliberate injur*" or rape or incest*)).ti,ab.
- 7 3 or 5 or 6
- 8 (prevent* or "Primary Prevention" or "Secondary Prevention" or "Tertiary Prevention" or "universal prevention" or "indicated prevention" or "selected prevention" or protect* or safeguard* or "disease prevention" or "Public Health Practice" or "Public Health").ti,ab.
- 9 Violence Prevention/ or Prevention/
- 10 8 or 9
- (concept or framework or approach or model* or theor* or pathway or mechanism).ti,ab.
- 12 7 and 10 and 11
- 13 limit 12 to yr="2009 -Current"

Web of Science Core Collection (Clarivate)

- 1: TS=(child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn)
- 2: TS=(abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR ill-treatm* OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest* OR (witness* AND "intimate partner violence") OR "exposure to intimate partner violence")
- 3: TS=((child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn) NEAR/3

(abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR ill-treatm* OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest*))

- 4: T S=(witness* AND "intimate partner violence") OR TS=("exposure to intimate partner violence")
- 5: #3 OR #4

- 6: TS=(prevent* OR "Primary Prevention" OR "Secondary Prevention" OR "Tertiary Prevention" OR "universal prevention" OR "indicated prevention" OR "selected prevention" OR protect* OR safeguard* OR "disease prevention" OR "Public Health Practice" OR "Public Health")
- 7: TS=(concept OR framework OR approach OR model* OR theor* OR pathway OR mechanism)
- 8: #5 AND #6 AND #7
- 9: #5 AND #6 AND #7 AND 2024 OR 2023 OR 2022 OR 2021 OR 2020 OR 2019 OR 2018 OR 2017 OR 2016 OR 2014 OR 2015 OR 2013 OR 2012 OR 2011 OR 2010 OR 2009 (PUBLICATION YEARS)

CINAHL Plus (EBSCOhost)

- S1 TI ((child* OR infan* OR adolescen* OR teen* OR youth* OR pediatr* OR paediatr* OR young* OR baby OR babies OR toddler* OR minor* OR preschool OR pre-school OR girl OR Expanders Apply equivalent subjects Search modes Boolean/Phrase Interface EBSCOhost Research Databases Search Screen Advanced Search Database CINAHL Plus 21,626 boy OR newborn) N3 (abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR "ill-treatm*" OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest*)) OR AB ((child* OR infan* OR adolescen* OR teen* OR youth* OR pediatr* OR paediatr* OR young* OR baby OR babies OR toddler* OR minor* OR preschool OR pre-school OR girl OR boy OR newborn) N3 (abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR "ill-treatm*" OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest*)
- S2 (MH (child abuse OR child maltreatment OR child neglect)) OR (MM "CHILD ABUSE, SEXUAL") OR (MM "CHILD ABUSE")
- S3 TI ((witness* AND "intimate partner violence")) OR AB ((witness* AND "intimate partner violence")) OR TI "exposure to intimate partner violence" OR AB "exposure to intimate partner violence"
- S4 S1 OR S2 OR S
- S5 TI (prevent* OR "Primary Prevention" OR "Secondary Prevention" OR "Tertiary Prevention" OR "universal prevention" OR "indicated prevention" Expanders Apply equivalent subjects Search modes Boolean/Phrase Interface EBSCOhost Research Databases Search Screen Advanced Search

Database - CINAHL Plus 669,229 OR "selected prevention" OR protect* OR safeguard* OR "disease prevention" OR "Public Health Practice" OR "Public Health") OR AB (prevent* OR "Primary Prevention" OR "Secondary Prevention" OR "Tertiary Prevention" OR "universal prevention" OR "indicated prevention" OR "selected prevention" OR protect* OR safeguard* OR "disease prevention" OR "Public Health Practice" OR "Public Health")

- S6 MH prevention 366 (SmartText Searching)
- S7 MW prevention
- S8 S5 OR S7
- S9 TI (concept OR framework OR approach OR model* OR theor* OR pathway OR mechanism) OR AB (concept OR framework OR approach OR model* OR theor* OR pathway OR mechanism)
- \$10 \$4 AND \$8 AND \$9

BMJ Open

Frameworks, models and theories for prevention of child maltreatment – Protocol for a Scoping Review from a population health perspective

Journal:	BMJ Open		
Manuscript ID	bmjopen-2024-098429.R1		
Article Type:	Protocol		
Date Submitted by the Author:	1 / /-Δnr- /11/5		
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Primary Subject Heading :	Paediatrics		
Secondary Subject Heading:	Public health		
Keywords:	Child protection < PAEDIATRICS, PUBLIC HEALTH, Primary Prevention		

SCHOLARONE™ Manuscripts

- 1 Frameworks, models and theories for prevention of child
- 2 maltreatment Protocol for a Scoping Review from a population
- 3 health perspective
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- **Keywords:** child maltreatment, child abuse, neglect, prevention, framework, public
- 21 health approach
- 22 Word-count: 2984
- **Pre-registration:** https://osf.io/49g7z/
- 24 Abstract
- **Introduction** Child maltreatment (CM) is a major public health issue with lifelong
- consequences on mental health, quality of life, educational and economic prospects of
- 27 children who experienced CM. Early identification of maltreated children is important
- 28 to prevent further CM and ensure that children's basic needs are met, as well as
- 29 address and avoid further consequences. However, above and beyond early
- identification, it is crucial to avoid the occurrence of CM. This may include the reduction

Methods and Analysis A broad search in four databases (PubMed (NIH NLM), PsycInfo (Ovid), CINAHL Plus (EBSCOhost) and Web of Science (Clarivate)) will be conducted from 2009 to current. Additionally, grey literature on websites from key public health organizations will be considered. Results will be reported following the PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation (2018). The review will include articles describing a theory, model or framework on prevention strategies for CM. Studies focussing on single interventions, that do not describe prevention strategies conceptually will be excluded. General characteristics of the frameworks, theories and models and information on types of prevention strategies they describe will be extracted. Findings will be presented in a structured table format as well as narratively.

Ethics and dissemination As we will not collect any personal, confidential or sensitive data, ethical approval is not required. We will publish our results in a scientific journal, present them on conferences and use them for further knowledge translation activities.

Strength and limitations

- We conducted the search in four different databases allowing us to generate a broad overview of theories, frameworks and models for prevention of child maltreatment across disciplines.
- To achieve a high sensitivity in our search strategy we included a great number of articles and therefore limited our search to the past 15 years (2009-current).
- The comparability across identified theories, models and frameworks may be impaired, for example due to heterogeneity in terms of included components, methodological underpinnings and quality.

Background

The World Health Organization (WHO) defines CM as the abuse and neglect that occurs to minors [1] at home, in schools or in orphanages at the hands of parents,

 caregivers or other authority figures [2]. WHO provides the following definition: "It includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power." [1]

Child maltreatment (CM) is a risk factor for mental illness across the lifespan [3-5] and an important public health issue [6-10], lifelong health consequences for exposed individuals [9] and a high financial burden [1, 6, 10]. The health consequences include but are not limited to acute injuries, such as fractures, head injuries or burns [11]. Adults who experienced CM during childhood have a higher risk for both mental health as well as physical conditions, and for limiting behavioural problems [1]. The WHO allocates the potential health consequences of violence against children into five main categories: mental health problems, injury, noncommunicable diseases and risk behaviour, communicable disease and risk behaviour and maternal and child health [11]. Negative health effects are for instance depression and anxiety, post-traumatic stress disorder, burns, fracture, obesity, asthma, cancer, diabetes or heart diseases [7, 11-13].

Based on population-based data from approximately half of the world's countries, a study of Hillis et al. estimated that over 1 billion children between the ages of 2 and 17 years experienced violence in 2014 [14]. Witt et al. reported the prevalence of exposure to CM in Germany to be 31.0 % of all adult study participants (estimated using Childhood Trauma Questionnaire (CTQ)) with at least one form of CM in their childhood [6].

Considering the prevalence as well as the individual, and societal burden, prevention efforts are inevitable, not only for mitigating the consequences, but also to reduce the number of children experiencing CM. Prevention science distinguishes different strategies for prevention. These include universal, selective or indicated prevention as well as primary, secondary or tertiary prevention approaches [15, 16]. Universal prevention refers to interventions that can benefit the entire population, such as sex education and drug education in schools [17]. Selective prevention involves targeting groups of people who may be at increased risk, such as support groups for children of parents who use alcohol/drugs or student and parent training in areas that are labelled as socially deprived [17]. Indicated prevention is aimed, for example, at families where

 CM has already taken place and is to be prevented from reoccurring [17]. Primary prevention aims to prevent diseases before they occur, for example, by eliminating risks [17]. In terms of CM, this can be, for example, the promotion of a non-violent parenting [15], the reduction of opportunities or the learning of personal safety strategies [16]. Secondary prevention is about detecting CM at an early stage [17]; this can be done, for example, through risk screening [15]. The goal of tertiary prevention is to prevent the worsening of a disease and its recurrence [16, 17]. Preventive interventions should take place as early as possible because this generates the largest benefits for the child (e.g., cognitive development, behavioural and social competence, educational attainment) [1]. In addition to the direct positive effects at the level of the child, interventions implemented early in life can also have indirect positive impacts of preventive interventions on parents, enabling more sustainable impact on the society in the whole [1].

CM prevention is also attracting more and more political attention due to various scandals in the church, sports or educational settings. The disclosure of various sexual abuse scandals in the Catholic Church and in educational institutions has not only led to a change in the public perception of maltreatment, abuse and neglect of children under the age of 18, but the media coverage and political reactions to the scandals also triggered advances in research [18]. Publications in this context have increased tremendously over recent years.

To date, several reviews have examined interventions to prevent CM [19-24]. For example, a systematic review and meta-analysis of van der Put et al. [24] identified interventions effective to prevent or reduce CM. These included cognitive behavioural therapy, home visiting (for example counselling, support or coaching of parents at home) and parent education [24] (e.g. Triple P-Positive Parenting Program [25]).

Strategies for early prevention of CM have been described in a number of individual articles [11, 16, 26], but a comprehensive overview on conceptual prevention strategies (theories, models and frameworks) in relation to CM is currently lacking. Such an overview is necessary to guide systematic and effective intervention development, implementation and evaluation. This scoping review aims to address the problem of conceptual clarity regarding prevention strategies for CM. It will systematically identify and characterize different theories, frameworks or models that describe conceptual strategies for CM prevention. Our scoping review will give a broad

 The need for such a conceptual overview has been expressed by other researchers, e.g., by McCartan et al. [27] who called for more evidence-based models for secondary prevention of child sexual abuse in the United Kingdom. Based on the existing scientific and grey literature, the following research questions will be answered:

- What frameworks, theories or models exist to describe conceptual prevention strategies (theories, models and frameworks) for CM?
- What elements do these theories, models and frameworks include with respect
 to intervention level (e.g., individual or relationship), prevention strategy (e.g.,
 primary or universal), intervention techniques (e.g., training, education) or
 targeted groups (e.g., families, neighbourhood, health and other professional
 groups)?
- What are commonalities and differences between the existing frameworks, theories and models?
- How were they developed (and to what extent are they supported by empirical evidence or theory)?

Methods

We will follow the guidance of the JBI Handbook for the conduct of scoping reviews [28]. The results of this Scoping Review will be reported in accordance with the PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation [29] and the PRISMA Statement for Reporting Literature Searches in Systematic Reviews (PRISMA-S) [30]. The key elements (inclusion and exclusion criteria, search strategy) are presented below according to the Population-Context-Concept [31]. The Scoping review is registered with the Open Science framework: https://osf.io/49g7z/.

Eligibility criteria

 Population: We will include all studies which provide a theory, model or framework, focussing on the prevention of child maltreatment in children under age 18.

Concept: Our study considers frameworks, models and theories addressing the prevention of child maltreatment. Prevention of child maltreatment is conceptualized from a population health perspective and can comprise a broad range of prevention strategies. These may be categorized as primary, secondary and tertiary prevention activities or as universal, selective or indicated prevention activities [15, 17]. Primary prevention are all interventions aiming to prevent the occurrence of CM, secondary prevention is the identification of children experiencing or at risk for CM and tertiary prevention means mitigating the consequences and to prevent the reoccurrence [15-17]. On the other hand, universal prevention targets the whole population, selective prevention focused on specific target groups for example in areas with a low socioeconomic status and indicated prevention is aimed at high risk groups [17]. They may include activities focussed on individuals or populations. Child maltreatment will be defined to include physical, sexual and emotional abuse as well as physical and emotional neglect [1]. In addition, exposure of children to intimate partner violence will be considered as a form of child maltreatment [32]. The theories, models and frameworks to be included in this review guiding the prevention of CM may describe prevention strategies in a more conceptual way (e.g., by providing a structure or categorization of prevention activities) or explain mechanisms involved in specific prevention strategies (e.g., how social marketing approaches alter harmful social norms and practices). The frameworks, models and theories may be supported more or less by empirical research findings but should go beyond merely testing statistical associations between child maltreatment and possible predictor variables. Purely statistical data analysis models, as well as all animal models and genetic models will be excluded.

Context: The theories, models and frameworks included in this review guide prevention strategies directed at children, parents/caregivers or professionals within the family context, the child protection system, the health care system and other settings, such as neighbourhoods and schools [11, 33].

Table 1 presents an overview of our inclusion and exclusion criteria.

	Inclusion criteria	Exclusion criteria		
Population	The study focus on prevention of CM among children under 18 years of age.	The study focus on prevention of maltreatment/violence over 18 years of age. (E.g., college students, adults)		
Child Maltreatment	The study focus on child maltreatment. Child Maltreatment can include: • maltreatment in general, • abuse (sexual, physical, psychological/emotional), • neglect (physical, psychological/emotional, witnessing • exposure to IPV e.g., witnessing The study does not focus child maltreatment. It describes for examplest violence in general, • violence betwoe children, • intimate partner violence in adulthood itself, • adults suffer from Clipton adults a			
Prevention	The study describes conceptual prevention strategies (theories, models or frameworks) for CM. E.g., prevention strategies from a broader population health perspective including universal, selective, indicated or primary, secondary and tertiary prevention approaches.	The study does <u>not</u> describe conceptual prevention strategies (theories, models or frameworks) for CM. E.g., studies focussing on healthy development or child welfare, health promotion, consequences of child maltreatment in adulthood (e.g., alcohol or substance abuse), child protection not related to maltreatment (e.g.,		

Databases and Search strategy

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To define our search string, we used similar articles to identify keywords and MeSH-Terms [34, 35]. Due to feasibility reasons, we will limit our search to publications from the last 15 years (2009 to present) without any additional filters.

To identify relevant literature, we will search the following databases PubMed (NIH NLM), PsycInfo (Ovid), CINAHL Plus (EBSCOhost) and Web of Science (Clarivate). The full search strategy for PubMed can be found in Appendix 1. In addition, we will carry out a targeted hand search of organizations' websites with key public health tasks (World Health Organization (WHO), World Health Organization Europe, Centers for Disease Control and Prevention (CDC), United Nations (UN), United Nations International Children's Emergency Fund (UNICEF), United Nations High Commissioner for Refugees (UNHCR), European Center for Disease Prevention and Control (ECDC), as well as German institutions such as the Federal Ministry of Health (BMG), Federal Ministry for Family Affairs, Senior Citizens, Women and Youth

(BMFSFJ), Frühe Hilfen Koordinierende Nationales Zentrum (BZgA), Kinderschutzstellen (KoKi)) and in addition the homepages of different expert associations such as the German Society for Child Protection in Medicine (DGKiM) and scientific associations focusing on public health/disease prevention (DGSPJ. Bündnis für Kindergesundheit). Finally, we will perform backward citation tracking and if feasible, we will perform forward citation tracking using an online tool e.g., Citationchaser [36].

Data management

- References will be exported and uploaded to Covidence. For removing duplicates, we will use Covidence and in addition we will check the references for further duplicates manually. The title/abstract and full text screening will be performed by using Covidence.
- **Selection process**
- Based on the pre-defined inclusion and exclusion criteria described above (Table 1), two independent reviewers will perform the title/abstract screening. Conflicts will be resolved by discussion and, if necessary, we will ask a third reviewer. If the abstract does not provide enough information, the full text will be scanned. Afterwards, the full text will be screened and all articles that do not meet the inclusion criteria will be excluded. Any inconsistencies between the reviewers will be resolved by discussing the articles or consulting a third reviewer. Reasons for exclusion in full-text screening will be documented.

Data extraction

For this scoping review we will use a deductively and inductively developed data extraction template. The template will include information on general characteristics (e.g., author, year of publication, country, study design), prevention strategies, intervention technique, intervention level or targeted groups and will be classified according to their field of origin (e.g., social sciences, public health, medicine, or psychology). The data extraction form will be tested on approximately five articles and adjusted for further use. Results will be reported and summarized either in a numerical or narrative form. The data extraction will be executed in Covidence by two independent reviewers, disagreement will be cleared in discussion or if necessary, with a third reviewer. We expect a broad range of articles from scientific journals as well as grey literature. Therefore, we will assess whether a quality appraisal is feasible and rewarding.

Data synthesis and reporting data

 Included articles will be categorized by study characteristics, prevention strategies, field of origin and methodological approach. Results of the screening and the decision-making process will be presented in a flowchart. Study characteristics and key elements of the frameworks, theories and models will be reported and presented in a structured table format. The literature-analyses will be narrative using the data extraction template and results will be reported either in a table format or in narrative. As we expect heterogenic articles from scientific journals as well as grey literature and do not extract patient outcomes, a meta-analysis is not planned.

Patient and public involvement

We decided that we will not include patients or their parents as this scoping review takes a rather theoretical approach and is about strategies and concepts for interventions and policies existing at the population health level. Instead, we consulted different experts in the field of child protection for the development of our review to seek their advice for identifying and synthesizing the data, reporting results and implications for practice.

Ethics and Dissemination

As we will perform a scoping review, synthesising publicly available information without collecting any personal, identifying or sensitive data, ethical approval is not required.

The scoping review will be submitted for publication in an international peer-reviewed journal. In addition, we will present our findings at a conference.

Patient consent for publication

265 Not applicable

Contributorship

FDB conceived the idea, LR, AA, JVAF and FDB planned and designed the study protocol. LR wrote the first draft of the study protocol, all authors contribute to the manuscript and agreed on methods for this scoping review and will read and approve the final manuscript. LR will be the corresponding author and FDB the guarantor of the review.

Funding

The paper represents independent research part funded by the Jürgen Manchot

Stiftung, an institution subject to public law.

Conflict of interest

None

Patient consent for publication

Not applicable



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Appendix 1: Search strategy

PubMed

- "child*"[Title/Abstract] OR "infan*"[Title/Abstract] OR "adolescen*"[Title/Abstract] OR "teen*"[Title/Abstract] OR "youth*"[Title/Abstract] OR "pediatr*"[Title/Abstract] OR "paediatr*"[Title/Abstract] OR "young*"[Title/Abstract] OR "baby"[Title/Abstract] OR "babies"[Title/Abstract] OR "toddler*"[Title/Abstract] OR "minor*"[Title/Abstract] OR "preschool"[Title/Abstract] OR "girl"[Title/Abstract] OR "boy"[Title/Abstract] OR "newborn"[Title/Abstract] OR "child, preschool"[MeSH Terms] OR "Child"[MeSH Terms] OR "infant, newborn"[MeSH Terms] OR "Infant"[MeSH Terms] OR "Adolescent"[MeSH Terms]
- "Emotional Abuse" [MeSH Terms] OR "Child Abuse" [MeSH Terms] OR "Physical Abuse" [MeSH Terms] OR "child abuse, sexual [MeSH Terms] OR "abus*" [Title/Abstract] OR "sexual abuse" [Title/Abstract] OR "Physical Abuse" [Title/Abstract] OR "Emotional Abuse" [Title/Abstract] OR "psychological abuse" [Title/Abstract] OR "physical neglect" [Title/Abstract] OR "emotional neglect" [Title/Abstract] OR "psychological neglect" [Title/Abstract] OR "maltreat*" [Title/Abstract] OR "maltreat*" [Title/Abstract] OR "ill-treatm*" [Title/Abstract] OR "ill treatm*" [Title/Abstract] OR "neglect" [Title/Abstract] OR "negligence" [Title/Abstract] OR "endangerment" [Title/Abstract] OR "non-accidental injur*" [Title/Abstract] OR "non accidental injur*" [Title/Abstract] OR "deliberate injur*" [Title/Abstract] OR "rape" [Title/Abstract] OR "incest*" [Title/Abstract]
- 3 ("witness*"[Title/Abstract] AND "intimate partner violence"[Title/Abstract]) OR "witness* intimate partner violence"[Title/Abstract] OR "exposure to intimate partner violence"[Title/Abstract]
- 4 #2 OR #3
- 5 #4 AND #1
- "Tertiary Prevention" [MeSH Terms] OR "Secondary Prevention" [MeSH Terms] OR "Primary Prevention" [MeSH Terms] OR "Public Health Practice" [MeSH Terms] OR "prevent*" [Title/Abstract] OR "Primary Prevention" [Title/Abstract] OR "Secondary Prevention" [Title/Abstract] OR "Tertiary Prevention" [Title/Abstract] OR "universal prevention" [Title/Abstract] OR "indicated prevention" [Title/Abstract] OR "selected prevention" [Title/Abstract] OR "protect*" [Title/Abstract] OR "safe guard*" [Title/Abstract] OR "safeguard*" [Title/Abstract] OR "disease prevention" [Title/Abstract] OR "Public Health" [Title/Abstract]
- 7 "concept"[Title/Abstract] OR "framework"[Title/Abstract] OR "approach"[Title/Abstract] OR "model*"[Title/Abstract] OR "theor*"[Title/Abstract] OR "pathway"[Title/Abstract] OR "mechanism"[Title/Abstract]
- 8 #5 AND #6 AND #7
- 9 #5 AND #6 AND #7 FILTERS: FROM 2009 2024

PsycInfo (Ovid)

- 1 (child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn).ti,ab.
- 2 (abus* or "sexual abuse" or "Physical Abuse" or "Emotional Abuse" or "psychological abuse" or "physical neglect" or "emotional neglect" or "psychological neglect" or maltreat* or "mal treat*" or illtreatm* or "ill treatm*" or "ill-treatm*" or neglect or negligence or endangerment or "non accidental injur*" or "deliberate injur*" or rape or incest*).ti,ab.
- 3 Child Abuse/ or Child Maltreatment/ or Child Neglect/
- 4 2 or 3
- 5 ((witness* and "intimate partner violence") or "exposure to intimate partner violence").ti,ab.
- 6 ((child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn) adj3 (abus* or "sexual abuse" or "Physical Abuse" or "Emotional Abuse" or "psychological abuse" or "physical neglect" or "emotional neglect" or "psychological neglect" or maltreat* or "mal treat*" or illtreatm* or "ill treatm*" or "ill-treatm*" or neglect or negligence or endangerment or "non accidental injur*" or "deliberate injur*" or rape or incest*)).ti,ab.
- 7 3 or 5 or 6
- 8 (prevent* or "Primary Prevention" or "Secondary Prevention" or "Tertiary Prevention" or "universal prevention" or "indicated prevention" or "selected prevention" or protect* or safeguard* or "disease prevention" or "Public Health Practice" or "Public Health").ti,ab.
- 9 Violence Prevention/ or Prevention/
- 10 8 or 9
- (concept or framework or approach or model* or theor* or pathway or mechanism).ti,ab.
- 12 7 and 10 and 11
- 13 limit 12 to yr="2009 -Current"

Web of Science Core Collection (Clarivate)

- 1: TS=(child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn)
- 2: TS=(abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR ill-treatm* OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest* OR (witness* AND "intimate partner violence") OR "exposure to intimate partner violence")
- 3: TS=((child* or infan* or adolescen* or teen* or youth* or pediatr* or paediatr* or young* or baby or babies or toddler* or minor* or preschool or pre-school or girl or boy or newborn) NEAR/3

(abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR ill-treatm* OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest*))

- 4: T S=(witness* AND "intimate partner violence") OR TS=("exposure to intimate partner violence")
- 5: #3 OR #4
- 6: TS=(prevent* OR "Primary Prevention" OR "Secondary Prevention" OR "Tertiary Prevention" OR "universal prevention" OR "indicated prevention" OR "selected prevention" OR protect* OR safeguard* OR "disease prevention" OR "Public Health Practice" OR "Public Health")
- 7: TS=(concept OR framework OR approach OR model* OR theor* OR pathway OR mechanism)
- 8: #5 AND #6 AND #7
- 9: #5 AND #6 AND #7 AND 2024 OR 2023 OR 2022 OR 2021 OR 2020 OR 2019 OR 2018 OR 2017 OR 2016 OR 2014 OR 2015 OR 2013 OR 2012 OR 2011 OR 2010 OR 2009 (PUBLICATION YEARS)

CINAHL Plus (EBSCOhost)

- S1 TI ((child* OR infan* OR adolescen* OR teen* OR youth* OR pediatr* OR paediatr* OR young* OR baby OR babies OR toddler* OR minor* OR preschool OR pre-school OR girl OR Expanders Apply equivalent subjects Search modes Boolean/Phrase Interface EBSCOhost Research Databases Search Screen Advanced Search Database CINAHL Plus 21,626 boy OR newborn) N3 (abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR "ill-treatm*" OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest*)) OR AB ((child* OR infan* OR adolescen* OR teen* OR youth* OR pediatr* OR paediatr* OR young* OR baby OR babies OR toddler* OR minor* OR preschool OR pre-school OR girl OR boy OR newborn) N3 (abus* OR "sexual abuse" OR "Physical Abuse" OR "Emotional Abuse" OR "psychological abuse" OR "physical neglect" OR "emotional neglect" OR "psychological neglect" OR maltreat* OR "mal treat*" OR illtreatm* OR "ill treatm*" OR "ill-treatm*" OR neglect OR negligence OR endangerment OR "non accidental injur*" OR "deliberate injur*" OR rape OR incest*)
- S2 (MH (child abuse OR child maltreatment OR child neglect)) OR (MM "CHILD ABUSE, SEXUAL") OR (MM "CHILD ABUSE")
- S3 TI ((witness* AND "intimate partner violence")) OR AB ((witness* AND "intimate partner violence")) OR TI "exposure to intimate partner violence" OR AB "exposure to intimate partner violence"
- S4 S1 OR S2 OR S
- S5 TI (prevent* OR "Primary Prevention" OR "Secondary Prevention" OR "Tertiary Prevention" OR "universal prevention" OR "indicated prevention" Expanders Apply equivalent subjects Search modes Boolean/Phrase Interface EBSCOhost Research Databases Search Screen Advanced Search

Database - CINAHL Plus 669,229 OR "selected prevention" OR protect* OR safeguard* OR "disease prevention" OR "Public Health Practice" OR "Public Health") OR AB (prevent* OR "Primary Prevention" OR "Secondary Prevention" OR "Tertiary Prevention" OR "universal prevention" OR "indicated prevention" OR "selected prevention" OR protect* OR safeguard* OR "disease prevention" OR "Public Health Practice" OR "Public Health")

- S6 MH prevention 366 (SmartText Searching)
- S7 MW prevention
- S8 S5 OR S7

- S9 TI (concept OR framework OR approach OR model* OR theor* OR pathway OR mechanism) OR AB (concept OR framework OR approach OR model* OR theor* OR pathway OR mechanism)
- \$10 \$4 AND \$8 AND \$9