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Prevalence of Adverse Childhood Experiences in Foster and Residential Care Population

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Abstract

Childhood adversity is associated with adverse outcomes, including mental health issues, among other challenges. Children in out-of-home care, particularly in Residential and Foster Care, face a heightened risk of Adverse Childhood Experiences. Nonetheless, research has not thoroughly examined the prevalence of ACEs in this vulnerable population. This systematic review aims to fill this gap by identifying ACE prevalence among children and youth in these care settings. It involved a thorough search across 32 electronic databases, resulting in 18 relevant studies. The findings suggest that these children experience a high prevalence of ACEs, with Neglect, Emotional Abuse, and Physical Abuse being the most common. Moreover, these prevalence rates surpass those found in the general community, highlighting the unique challenges these children encounter. In addition, children in Foster Care appear to have higher risk of Sexual Abuse than the Residential Care population. Tailored interventions and prevention strategies are urgently needed to address these traumatic experiences and improve the well-being of these vulnerable children. Further research, especially within diverse cultural contexts is encouraged.

Keywords: adverse childhood experiences, foster care, residential care, out-of-home care, prevalence

Resumo

As adversidades na infância estão associadas a problemas de saúde mental, problemas comportamentais, entre outros desafios. Crianças em acolhimento fora do lar, como Acolhimento Residencial e Acolhimento Familiar, enfrentam um risco elevado desses problemas, derivado de experiências traumáticas na infância. Até à data, a investigação não se focou detalhadamente na prevalência de Experiências Adversas de Infância (EAI) nesta população vulnerável. Assim, esta revisão sistemática tem como objetivo colmatar esta lacuna, identificando a prevalência de EAI entre crianças e jovens nestes contextos de acolhimento. Foi realizada uma pesquisa em 32 bases de dados eletrónicas, resultando em 18 estudos relevantes. Os resultados sugerem que estas crianças experienciam uma elevada prevalência de EAI, sendo a Negligência, o Abuso Emocional e o Abuso Físico os mais comuns. Estas taxas de prevalência ultrapassam as da comunidade em geral, destacando os desafios únicos que estas crianças enfrentam. Além disso, a população em Acolhimento Familiar apresentou prevalências mais altas de Abuso Sexual quando comparada com a população em Acolhimento Residencial, exaltando a necessidade de investigação e intervenção futuras neste tema. Estratégias de apoio e prevenção personalizadas são urgentemente necessárias para abordar estes problemas e melhorar o bem-estar desta população vulnerável. Recomenda-se e discute-se a realização de mais investigação, especialmente em contextos culturais diversos.

Palavras-chave: experiências adversas de infância, prevalência, acolhimento residencial, acolhimento familiar

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Introduction

Adverse Childhood Experiences (ACEs) can be defined as stressful and potentially traumatic events occurring during the first 18 years of life (Dube et al., 2003). The Kaiser ACE Study (1998) lists ACEs as follows: abuse (emotional, physical, sexual); exposure to domestic violence; household substance abuse; mental illness in the household; parental separation or divorce; a household member with a criminal history; and neglect (emotional or physical).

Studies have shown that ACEs are prevalent in the general adult population, with estimates ranging from 9% to 15% of individuals having experienced at least one ACE (Boullier & Blair, 2018). Among child maltreatment forms, abuse and neglect (physical, sexual, or psychological/emotional) are the most prevalent worldwide (Kessler et al., 2010). It is important to note that the known cases of child maltreatment likely represent only a small fraction of the actual occurrences (Stoltenborgh et al., 2015).

A substantial body of research highlights the adverse outcomes associated with childhood adversity, including learning disabilities, academic failure, mental health issues, interpersonal difficulties, social maladjustment, and substance abuse (Hillis et al., 2004; Larkin, Shields, & Anda, 2012). Furthermore, research indicates that ACEs can induce structural changes in the brain due to chronic hyperactivation of the stress-response neural systems (Bremner, 1999; Glaser, 2000), with profound consequences for adult brain function. Neuroimaging studies suggest that stress can lead to alterations in brain regions responsible for emotional regulation, learning, memory, attention, and executive control (Horner & Hamner, 2002). As a result of the stress to which these children are exposed, they are more likely to present lower academic performance (Mothes, 2013) and engage in behaviors that jeopardize their health, such as smoking, alcohol consumption, drug abuse, and antisocial behavior. This sets them on a path toward poor health in adulthood, with a heightened risk of developing various health problems, including cancer, cardiovascular diseases, liver disorders, and lung diseases (Boullier & Blair, 2018).

A recent study conducted by Basto-Pereira et al. (2022) identified physical abuse, sexual abuse, and neglect as predictors of criminal behavior during young adulthood, regardless of gender and cultural context. Furthermore, multiple studies suggest a link between childhood adversity and the development of traits consistent with psychopathy and antisocial personality disorder (Baskin-Sommers & Baskin, 2016; Blair & Lee, 2013; Douglas et al., 2011). Herman et al. (1989) also demonstrated a strong association between the development of borderline

personality disorder and childhood trauma experiences, further contributing to the growing body of evidence linking ACEs to the development of mental health issues. In this context, several studies have unequivocally demonstrated the impact of ACEs on the development of mental health issues (Carr, Martins, Stingel, Lemgruber, & Juruena, 2013). For example, physical and emotional neglect have been associated with depression, bipolar disorder, anxiety disorders, schizophrenia, substance abuse, personality disorders, and suicidal behavior (Costa et. al., 2019).

Residential Care

According to UNICEF, about 2.7 million children are in residential care settings, all over the world. In Portugal, in 2019, there were more than 8000 children in this type of out-of-home care (Campos et al., 2019). Before the residential care admission, these children are very likely to have experienced ACEs like deprivation, neglect, and abuse. As it is known, these experiences become obstacles for the child's healthy development, favoring the occurrence of mental health issues (Pereira et al., 2010). Erol and colleagues (2010) stated that the reasons that lead to out-of-home care admissions, constitute a big risk for the development of children, with serious repercussions in adulthood. To these risk factors, we must add the impact of the residential care admission on the child (Richardson e Joughin, 2000). The environmental rupture caused by this moving of placements results in the constant loss of attachment figures (Schmid et al., 2008).

Johnson, Browne and Hamilton-Giachritsis (2006), in their systematic review, concluded that neglect and early deprivation of basic needs (which most of these children go through in their childhood) leads to attachment disorders and development delays (in social, behavioral, and cognitive domains). Also, up to a third of children in residential care have problematic sexual behaviors, possibly caused by such attachment difficulties (Friedrich et al., 2008).

These children and youth will likely experience school failure, unemployment, or a criminal career, because of their high risk of developing a chronic mental disorder (Schmid et al., 2008). Additionally, these children have a higher prevalence of developing learning and language disabilities than other children, which results in worse educational outcomes (Crawford, 2006). Multiple studies have stated that the prevalence of emotional and behavioral

problems is greater in children in residential care, when compared with children that live with their families (Calcing & Benetti, 2014; Gearing, Schwalbe, MacKenzie, & Ibrahim, 2014; Jozefiak et al., 2016; Schmid et al., 2008;).

In a study conducted by Campos, Barbosa, Dias & Rodrigues (2019) with children in residential care, it was observed that all the participants (*n*=77) showed signs of mental health issues related to childhood experiences that led them to out-of-home care. These results may indicate the higher risk of psychopathology in these children, when compared to the overall population. Tarren-Sweeney (2008) also indicated that children in residential care manifest severe psychopathology, characterized by attachment difficulties, relationship insecurity, sexual deviant behavior, conduct problems, among others, concluding that this population presents more mental health problems that other children (in a family-type care, for example). Also, in a study conducted by Millán et al., (2009) it was possible to conclude that being in a residential care facility is associated with a worse social adjustment, academic problems, and the development of disruptive and aggressive behavior. Finally, in the US, a survey regarding teenage substance abuse, observed that adolescents in care had a higher incidence of substance abuse, accompanied by psychiatric symptoms and suicide attempts (Pilowsky & Wu, 2006). In Germany, Schmid et. al. (2008) conducted a study that tested the prevalence of behavioral and emotional problems, and mental health disorders in a German residential care population. They found that 59.9% of this population had some type of mental disorder (high rates of comorbidity were found), with a predominance of externalizing and disruptive disorders. Also in Germany, Graf et. al. (2008) in a study with 103 children and adolescents in group homes (residential care facilities), observed an 80% prevalence of mental health disorders (Pawliczuk et al., 2018).

In the UK, Tizard and Rees (1975) led a study on a group of 65 young children (4 years old) who had been institutionalized for at least 2 years. They concluded that these children presented different problems than their control group, like difficulties in contact with peers, anger issues and poor concentration and attention.

Also in the UK, Ford et al. (2007), analyzed about 300 children (between 11 and 15 years old) from residential institutions and concluded that 71% of them presented mental disorders, meanwhile only about 48% of children living in their family home presented the same. In Poland, Pawliczuk (2018) and colleagues conducted a study in residential care facilities, where they found that the prevalence of mental disorders among these children was about 53% throughout their lifetime.

All this research shows that mental disorders are very present in children and youth in residential institutions. These mental and behavioral problems are often connected to the ACEs that occurred during childhood.

Wathier et. al. (2007) studied the manifestation of depressive symptoms and the frequency and impact of stressful events in institutionalized children and adolescents. The author concluded that the institutionalized youth are more often exposed to dangerous situations (like domestic violence and substance abuse) which may be related to the depressive symptoms that they manifested. The author explains that this result is probably connected to the breakage in family bonds. This study emphasizes the need for special attention to the life narratives of this population, to provide them with the correct and needed care (Whathier, 2007). Also, Abreu (2000), argues that the lives of this youth have been greatly impacted by ACEs, what can possibly explain the association between institutionalization and mental health issues.

Collin-Vézina et al. (2011) conducted a study where they explore the trauma experiences, trauma-related sequels, and resilient features of a sample of 53 Canadian youths, between the ages of 14 and 17, in residential care. Their results showed that these individuals have experienced multiple forms of trauma, particularly abusive and neglectful experiences. According to this study, 68% had experienced emotional abuse, 60% physical abuse, 48% emotional neglect, 98% physical neglect and 38% sexual abuse. These results indicate that all the participants experienced maltreatment, and that more than half of the sample had experienced, at least, four different forms of ACEs. These multiple forms of trauma were related to mental distress, particularly anxiety, depression, anger, sexual concerns and PTSD. A study also led in Canada, by Van Vught et al. (2014), proceeded to examine the association between child maltreatment and trauma related symptoms in adulthood, in a sample of teenage girls in residential care. Their results found that child maltreatment is related do anxiety, depression, and anger issues development in adulthood. Therefore, it was possible to conclude that the traumatic experiences reported by the girls were significantly correlated with mental health issues in adulthood.

Finally, in a study conducted by Delgado et al., (2019), the subjective well-being of children in residential and foster care, in comparison to children in the general population was measured. Additionally, the author studied the influence of factors such as school and relationships with peers and adults in this subjective well-being. The results of this study indicated that children in residential care have lower subjective well-being than children in foster families and in their biological family. This way, this studied suggests that the residential

environment is not capable of compensating the vulnerable situation in which these children are, opposite of what can be obtained in a family environment. These children (foster and general) present a closer relationship to their care takers than the ones in residential care – the rotation of professionals and the shift-like organization of institutions can help explain this data (Palacios, 2015; Rodrigues et al., 2013).

Foster Care

According to Lawrence et al. (2006), foster care is a protective intervention meant to provide out-of-home care and placement to children at risk. In a study conducted by the author, the effects of foster care on the development of children, (particularly in behavior and psychological functioning) was measured. This study compared three groups: children in foster care, children maltreated that stayed in their home, and children who weren't mistreated and have not experienced foster care, despite being from the same social and economic environment. In this study, children in out-of-home care exhibited significant behavior problems, when compared to children in their biological families (Lawrence et al., 2006). Foster care children also showed elevated levels of behavior problems in comparison to children who received adequate care (Lawrence et al., 2006).

Children in Foster Care have a higher chance to experience family instability (Freisthler, 2004), to live in deprived neighborhoods (Taylor, Guterman, Lee, & Rathouz, 2009), and to be exposed to socioeconomic disadvantages, than their peers (Cancian, Yang, & Slack, 2013).

The circumstances that lead to children´s placement in out-of-home care put them at risk of developing psychological disorders – most of these children are from biological families affected by poverty (Gruber, 1978) and have been exposed to family and cultural deprivations, related to that situation. Also, many foster children have been neglected and/or abused, and some have been fostered due to their caregivers being hospitalized or incarcerated (McIntire e al., 1986).

In a study conducted by Zlotnik et al., (2012), the prevalence of mental and physical health problems was compared between individuals with history of foster care and individuals without. The authors concluded that those who were in the foster care system had more than twice the odds to be unable to work, because of a mental or physical disability. Additionally, in a study conducted by McIntire et al. (1986), the prevalence of psychological disorders was

measured in a population of 162 foster care children, between the ages of 4 and 18 years old in the US. The authors found that nearly half of the population (48.7%) that participated in the study manifested evidence of at least one psychological disorder. Gruber (1978) also studied the handicaps among the foster care population in Massachusetts, US. In this study, the author found that about 40% of that population was described as handicap, including both medical and psychological disorders. Within this population, 32% of the reported handicaps were behavioral/emotional.

Other studies of this population also suggest that the psychosocial problems present in some children in foster care can manifest, later in their life, as severe social problems, like teen pregnancy, substance abuse, and problems with the law (Smithgall et al., 2005; National Center for Youth Law, 2006).

A study conducted by Rebbe et al. (2018) concluded that youth that has experienced foster care is at greater risk of chronic health experiences, due to the ACEs exposure that they have endured, when compared to the general population, that has also experienced some type of ACEs. Turney et. al. (2017) used the data from the 2012 U.S. National Survey of Children's Health (NSCH) to measure the association between exposure to ACEs and foster care. The authors found that children in foster care were more likely to experience ACEs like parental divorce/separation, parental death, parental incarceration, exposure to violence, exposure to substance abuse, mental health problems in the household, and others. They also concluded that these children are more likely to experience ACEs than children with socioeconomical disadvantage backgrounds and with different family structures, who live with their biological families. These results confirm the findings of other literature on the subject, of how children in foster care are disproportionately exposed to ACEs. This exposure has implications in these children's health and wellbeing in the future.

Along these lines, more authors have found that children in foster care were three to five times more likely to experience mental health issues (depression, anxiety, behavioral problems, and others) than children living with their families (Turney & Wildeman, 2016). These findings are consistent with other literature that suggests that children in foster care have worse mental and physical health than other children (Woods et. al., 2013; Kessler et. al., 2008)

Also, research has indicated that the psychosocial problems that children in foster care express as adults is often caused by cumulative adversities and the constant change or lack of caregivers (Bruskas et al., 2013). A study conducted by Bruskas et al., (2013) assessed the

relationship between ACEs and the psychosocial well-being of women who were in the foster care system as children. Their findings indicated that children that enter the system are already vulnerable to ACEs, including in their foster care placements. Therefore, the risk of psychopathology for these children is often caused by the number of adversities associated with this setting (Ahktar, 2010; Keilson, 1980).

Theoretical Framework

Toth, Harris, Goodman, and Cicchetti (2011) concluded that mistreated children struggle to recognize, understand, and express their emotions, making them more predisposed to aggressive behavior and better at detecting angry emotions. Along these lines, Howes, Cicchetti, Toth, and Rogosh (2000) suggested that abusive families tend to have children with anger issues and face great difficulties in managing them. Both effects can lead to significant changes in the emotional development of the child, which can later be connected to violent and aggressive behavior (Toth and Rogosh, 2000). Therefore, according to the authors' model of Developmental Psychopathology (Cicchetti & Toth, 1995, 2005), childhood experiences of maltreatment can affect development. As per the authors, the frequency of risk factors associated with ACEs represents an obstacle to establishing the conditions that promote normal development. Consequently, abused children have a higher chance of developing problems at a developmental and psychopathological level (Cicchetti & Toth, 1995).

Lee & Hoaken's (2007) theory, based on biological mechanisms, suggests that child maltreatment represents a significant risk for long-term health. According to this theory, recurrent exposure to stress associated with traumatic events lead to last longing changes in the hormonal systems and brain circuits responsible for regulating stress. In this way, child maltreatment can disrupt the biological stress system, affecting brain structures involved in this process (such as the hippocampus and pre-frontal cortex). Such changes can lead to premature aging of the body, increasing vulnerability to diseases (Lee & Hoaken, 2007).

It's also relevant to consider the Cumulative Disadvantage Approach (Sampson & Laub, 1997, 2003), which posits that advantages/disadvantages in childhood play a critical role in shaping individuals' behavior throughout their lives. Children exposed to these disadvantages "accumulate" unfavorable conditions for their development.

Finally, the Attachment Theory (Bowlby & Ainsworth, 1979) provides an important framework for understanding the development of children in out-of-home care settings. Attachment can be defined as a universal tendency, with a biological foundation, to establish emotional bonds between the child and the caregiver, especially the mother, which persist throughout adult life (Bowlby & Ainsworth, 1979; Kornadt, 2002; Martinéz & Santalices, 2005a). As the attachment to the caregiver figure is established, the self develops from this attachment (Kirsh & Cassidy, 1997; Sroufe & Flesson, 1986). These initial relationships influence personality, predict differences in behavioral organizations, create expectations for future relationships, and predict their quality (Sroufe & Flesson, 1986). A study by Sagi & Lamb (1988) suggests that children with a secure attachment type showed more empathy, dominance, and independence, contrasting with children with insecure and resistant attachment types. Teixeira et al. (2011) indicated that adults with an insecure attachment style had experienced stressful experiences in their childhood, with family atmosphere and psychological stress significantly impacting the development of insecure attachment as adults. Therefore, it is possible to argue that due to the ACEs that children in residential care tend to experience, they end up developing unhealthy forms of attachment, which may constitute the cause of disruptive behaviors and problematic relationships often observed in this population.

The Current Study

The unique life conditions of children in out-of-home care emphasize the need to be aware of the current context in terms of mental health issues in this population. Few studies have focused on the psychological adjustment of children in these special conditions, as the most common focus is on children living with their biological families (Schmid, Goldbeck, Nutzel, & Fegert, 2008).

Recent research in this field has mainly focused on measuring trauma in the child welfare (foster and adoption) population, documenting high rates of prevalence of all forms of child maltreatment (Whitt-Woosley, 2020; Anthony et. al., 2022). Additionally, research has failed to examine the prevalence of ACEs in the residential population, as it is sometimes challenging to access this information without a proper caregiver who has accompanied the life course of the child (Campos et al., 2019).

Studies that focus on the foster and residential population tend to identify behavioral and emotional problems (Landsverk et al., 2009) but often overlook the prevalence of different forms of childhood adversity and how they contribute to these problems (Van Vught et al., 2014).

As previously mentioned, a substantial amount of research (Smyke, Dumitrescu, & Zeanah, 2002, Johnson, Browne, & Hamilton-Giachritsis, 2006; Erol, Simsek, & Munir, 2010;) points to the bigger risk inherent to the out-of-home care population, of developing emotional and mental issues, related to the traumatic experiences that they endured. Therefore, the objective of this work is to review across studies the prevalence of the different ACEs in children and youth in residential and foster care.

Method

Eligibility criteria

Studies were considered for inclusion if: a) the prevalence of ACEs were evaluated and/or identified in the foster/residential care population; b) are published in peer-reviewed journals; and c) written in English, Portuguese, or Spanish. Grey literature was not considered for this review.

Studies that featured a specific population (within the foster/residential care) were excluded (example: “Pregnant foster care girls under 18 years old”). Studies that mixed data obtained through self-report and case records were excluded. Finally, studies that used other types of report (therapist, doctor, worker) to obtain data were also excluded.

Information sources and search process

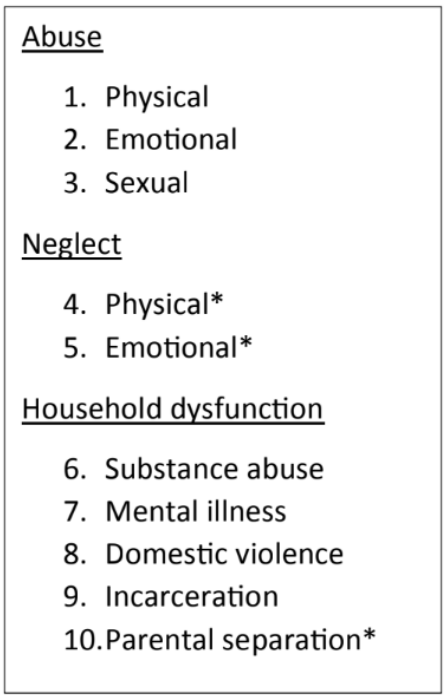
Studies were identified through 17 electronic databases: Web of Science, SCOPUS and EBSCO, that includes 15 databases (Academic Search Complete, Business Source Complete, APA PsyncInfo, APA PsycBooks, APA PsycArticles, Criminal Justice Abstracts with Full Text, MEDLINE, eBook University Press Collection, eBook Collection, Regional Business News and Library, Information Science and Technology Abstracts, PEP Archive, ERIC, Teacher Reference Center). There were no restrictions for the time of publication. The latest search was run on April 2022. The following equation was used (residential care OR foster care OR group home) AND (adverse childhood experiences OR trauma OR maltreatment OR neglect OR abuse) AND (child* OR adol* OR youths*) and search by abstract, which resulted in 45 combinations and 135 searches. Additional studies were sought through snowball sampling.

Study selection

To be included, studies had to present a prevalence of ACEs in the form of percentage, and those ACEs were considered under the CDC-Kaiser ACE Study (Felitti et al., 1998) (**Fig. 1**). These experiences had to have occurred before the out-of-home placement. Participants had to be foster/residential care youth (under 18 at the time of the study) and the articles needed: (a) to involve those that had been exposed to ACEs either directly or indirectly, (b) to contain original data, c) and the ACEs needed to be measured trough self-report or caregiver report, or trough case records, separately.

The first author coded all the studies, and a fellow student independently coded a random 10% of the sample, in which the same results arose.

Figure 1. Adverse Childhood Experiences included in the Kaiser/CDC ACE scale



From: Petruccelli, Kaitlyn, Joshua Davis, and Tara Berman. "Adverse childhood experiences and associated health outcomes: A systematic review and meta-analysis." *Child abuse & neglect",*97 (2019): 104127, p.2.

Data collection process and Synthesis

The following data was extracted: a) authors and year of publication: b) study design, c) country where the study was conducted, d) sample size and study type (e.g., presence of a comparison or control group), e) age mean of the participants; f) gender of the participants; g) method(s) used to gather data (e.g., self-report, caregiver report, case file records); i) type of out-of-home care, j) ACE assessed; k) prevalence of each ACE that was assessed. This data was synthesized in **Table 2**, organized by author and can be consulted in the results section of this study.

Methodological quality analysis

In order to prevent errors from extrapolating results and evaluation bias, the methodological quality of studies was assessed using six criteria designed for non-intervention quantitative studies (Shepherd et al., 2006). Each study was scored on a scale between 0 (minimum score) to 6 (maximum score) points (**Table 1**). To be included, each study had to score at least 4 points (Shepherd et al., 2006).

Table 1. Methodological quality analysis for non-intervention studies

(1) An explicit account of the theoretical framework and/or the inclusion of a literature review which outlined a rationale for the intervention
(2) Clearly stated aims and objectives
(3) A clear description of context which includes detail on factors important for interpreting the results
(4) A clear description of the sample
(5) A clear description of methodology, including systematic data collection methods
(6) The inclusion of sufficient original data to mediate between data and interpretation

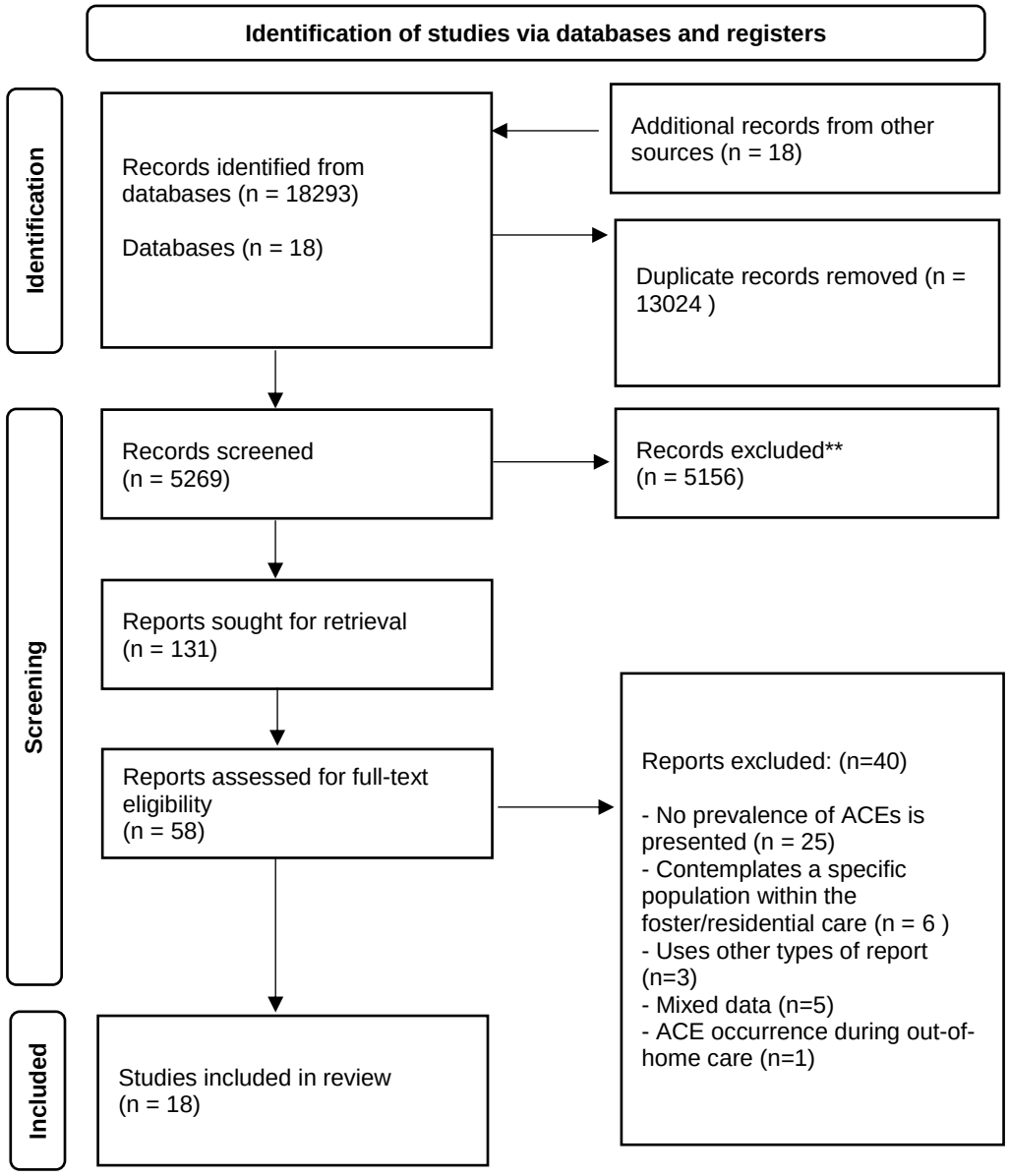
From: Shepherd, J., Harden, A., Rees, R., Brunton, G., Garcia, J., Oliver, S., & Oakley, A. (2006). Young people and healthy eating: A systematic review of research on barriers and facilitators. Health Education Research, 21,

Study selection

The data was analyzed in accordance with the PRISMA checklist. The search strategy resulted in 18293 potentially relevant studies. After being stored, *Endnote* identified 10950 duplicates, and another 2074 duplicates were manually identified, leaving 5269 for a more rigorous assessment. Manual inspection of the titles left 131 studies to be assessed by the abstract. Additionally, 3 studies were included by snowball research. Finally, 58 full-texts were examined (**Fig.2**). Of the 58 articles that were reviewed thoroughly, 40 were excluded, leaving 18 as the final sample.

Studies were excluded for the following reasons: a) 25 articles did not present prevalence for ACEs; b) 6 studies focused on a specific population within the foster/residential care, thus not contributing for the generalization of results throughout this population; and c) 5 studies mixed data from self-report and case studies, d) 3 studies obtained data through other people's reports (ex: therapist; pediatrician), e) and one study evaluated ACEs which occurred during the out-of-home care. The methodological quality of studies was assessed to control for possible evaluation bias errors and prevent erroneous extrapolation of results.

Figure 2. Search Process Flow Chart



From**:** Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *International journal of surgery*, *88*, 105906, p.6.

Study Characteristics

A total of 18 studies were included in this review from nine different countries. In the included studies, seven were conducted in the United States (Baker, Schneiderman & Licandro, 2017; Liming, Brook & Akin, 2020; Villodas et. al., 2016; Edmond et. al., 2008; Cho & Jackson, 2016; Gresson et. al., 2011; Mishra et. al., 2019), three in Canada (Thompson & Fuhr, 1992; Holland & Gorey, 2004; Dubois-Comtois et. al., 2016), one in Portugal (Pinto & Maia, 2013), one in the UK (Harris et. al., 2020;), one in Japan (Suzuki & Tomoda, 2015), two in the Netherlands (Euser et. al., 2013; Euser et. al., 2013), one in Israel (Ben-David, 2021) one in Sweden (Khoo, Skoog & Dalin, 2011), and one in Norway (Lehman et. al., 2020). These studies were published between 1992 (Thompson & Fuhr, 1992;) and 2021 (Ben-David, 2021) in peer-reviewed journals.

Participants were mostly females (52%), and around 11 years old. Seven studies were based on case records from child protective services, and six studies were based on self-reports, such as scales, questionnaires, and interviews. Additionally, reports from caregivers were also used (k = 2). Lastly, some studies used more than one source to gather information and data (k = 3). **Table 2** displays the descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study**.**

Table 2.

Descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study.

Author	Design	Country	Sample	Age	Sex	Source	Sample	ACE	% ACEs	Met. Quality
Baker et al. (2017)	Longitudinal Study	USA	156 youths in foster care who were referred for mental health treatment	13.8 years	37.8% males	Mental health treatment referral forms completed by the foster care agency clinicians about the children's mental health and life story	Foster Care	Physical Abuse	51.9%	5
								Sexual Abuse	30.2%	
								Emotional Abuse	71.3%	
								Neglect	58.9%	
								Parental Substance Abuse	33.3%	
								Parental Mental Illness	5.4%	
								Exposure to Domestic Violence	57.4%	
Liming et al. (2020)	Longitudinal study	USA	2,998 children in foster care, from 6 to 18 years old	No information available	No information available	Assessment (self-report) about childhood exposure to adverse events, when entering foster care	Foster Care	Physical Abuse	61.1%	4
								Sexual Abuse	52.3%	
								Emotional Abuse	49.5%	
								Neglect	74.3%	
								Parental Mental Health/Substance Use Issues	69.1%	
								Parental Loss/Incarceration	55.1%	
Ben-David (2021)	Longitudinal study	Israel	125 children in out-of-home care were assessed for their maltreatment history and mental health state	3.89 years	54% females	Legal case records of maltreatment	Foster and Residential Care	Emotional Abuse	88%	6
								Emotional Neglect	42%	
								Physical Abuse	14.7%	
								Physical Neglect	79.3%	
								Sexual Abuse	1.3%	
								Exposure to Domestic Violence	70.7%	

Table 2.

Descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study (Cont.).

Author	Design	Country	Sample	Age	Sex	Source	Sample	ACE	% ACEs	Met. Quality
Villodas et al. (2016)	Longitudinal study	USA	28 children and respective caregivers in out-of-home care. The study ranged from when they were 4 until they were 14 years old.	No information available	44% females	Caregiver interviews, reports and scales	Out-of-home care (all types)	Parental Incarceration	22%	4
								Parental Mental Health Problems	19%	
								Family member substance abuse	10%	
								Exposure to domestic violence	30%	
								Physical Abuse	39%	
								Sexual Abuse	16%	
								Neglect	34%	
								Emotional maltreatment	27%	
Pinto & Maia (2013)	Longitudinal study	Portugal	86 out-of-home care young people accessed for physical complaints and risk behaviors	17.05 years	49% males	CPS records	Residential Care	Emotional Abuse	11,8%	6
								Physical Abuse	30,6%	
								Sexual Abuse	9.4%	
								Emotional neglect	38.8%	
								Physical Neglect	94.1%	
								Exposure to Domestic Violence	32.9%	
								Parental Substance Abuse	60%	
								Parental Mental Illness	20%	
								Parental Separation	34.1%	
						Self-report		Emotional Abuse	36%	
								Physical Abuse	34.9%	
								Sexual Abuse	21%	
								Emotional neglect	57%	
								Physical Neglect	45.3%	
								Exposure to Domestic Violence	39.5%	
								Parental Substance Abuse	61.2%	
								Parental Mental Illness	37.2%	
								Parental Separation	50%	

Table 2.

Descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study (Cont.).

Author	Design	Country	Sample	Age	Sex	Source	Sample	ACE	% ACEs	Met. Quality
Edmond et al. (2008)	Descriptive Study	USA	190 girls from out-of-home care were separated between sexually abused and non-sexually abused and compared	16.33 years	100% females	Self-report	Out-of-home care (all types)	Sexual Abuse	54%	4
Thompson & Fuhr (1992)	Longitudinal Study	Canada	31 children from 6 to 18 years old in out-of-home placement were assessed for psychological problems	No information available	38% females	Self-report	Out-of-home care (all types)	Sexual Abuse Neglect Physical Abuse	29% 19% 10%	5
Cho & Jackson (2016)	Descriptive Analysis	USA	285 children from foster care completed self-reports about life-time maltreatment.	13.3 years	45.1% female	Self-report	Out-of-home care (all types)	Physical Abuse Emotional Abuse Sexual Abuse	89.5% 93.7% 48%	6
						Self-report by caregivers		Neglect Physical Abuse Emotional Abuse Sexual Abuse Neglect	71.1% 69% 51.8% 38.2% 85%	
Suzuk & Tomoda (2015)	Descriptive study	Japan	342 children in residential care facilities	13.5 years	43.5% males	Self-report	Residential Care	Physical Abuse Sexual Abuse Emotional Abuse Neglect	28% 5.6% 28.7% 42.4%	5

Table 2.

Descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study (Cont.).

Author	Design	Country	Sample	Age	Sex	Source	Sample	ACE	% ACEs	Met. Quality
Holland and Gorey (2004)	Three descriptive studies together	Canada	3 agency-based studies explored traumatic childhood histories in 125 children in foster care	10.9 years	49% females	Self-report	Foster Care (study 1, n= 27)	Physical Abuse	57%	6
								Sexual Abuse	52%	
								Neglect	61%	
								Parental Substance Abuse	61%	
								Domestic Violence	44%	
							Foster Care (study 2, n= 45)	Physical Abuse	54%	
								Sexual Abuse	22%	
								Emotional Abuse	71%	
							Foster Care (study 3, n= 53)	Sexual Abuse	30%	
								Emotionally Abuse	59%	
								Parental Substance Abuse	34%	
Dubois et al. (2016)	Exploratory study	Canada	25 foster care children and their caregivers were accessed for sleep quality and its correlation with maltreatment history	5.02 years	No information available	Child Protective Services records	Foster Care	Neglect	100%	4
								Physical Abuse	36%	
								Sexual Abuse	16%	
Euser et al. (2013)	Descriptive Study	Netherlands	The prevalence of child sexual abuse was accessed in a sample of 6610 children in foster and residential care	No information available	No information available	Self-report	Foster and Residential Care	Sexual Abuse	24.8%	4

Table 2.

Descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study (Cont.).

Author	Design	Country	Sample	Age	Sex	Source	Sample	ACE	% ACEs	Met. Quality
Euser et al. (2013)	Descriptive study	Netherlands	The prevalence of physical abuse in 329 adolescents in out-of-home care was examined and compared with the general population.	15.67 years	56% males	Pre-existing data from the Netherland´s Prevalence study of Maltreatment of children and youth (2011).	Foster Care		16.4%	5
								Physical Abuse	30.4%	
Khoo et al. (2011)	Longitudinal study	Sweden	Presentation of a profile of the children (from 0 to 16 years) in out-of-home care in a county in Sweden, between 2005 and 2006 (n=213)	No information available	53% females	Case file records	Out-of-home care (all types)	Parental Substance Abuse	37%	4
								Parental Mental Health Problems	29%	
								Exposure to Domestic Violence	20%	
								Sexual Abuse	6%	
								Physical Abuse	15%	
								Neglect	89%	
Lehman et al. (2020)	Exploratory study	Norway	Traumatic events in 303 foster youth were examined.	14.8 years	53% males	Self-report and Caregiver report	Foster Care	Exposure to Domestic Violence	16.2%	6
								Physical Abuse	18.5%	
								Emotional Abuse	24.5%	
								Neglect	36%	
								Sexual Abuse	24.6%	
Greeson et al. (2011)	Exploratory study	USA	Assessment of the traumatic histories of 2,251 children in foster care who were referred to a National Child Traumatic Stress Network site for treatment	9.5 years	52.2% females	The National Child Traumatic Stress Network database	Foster Care	Neglect	68%	5
								Exposure to Domestic Violence	54.2%	
								Emotional Abuse	51.4%	
								Physical Abuse	48.4%	
								Sexual Abuse	32%	

Table 2.

Descriptive data for the 18 studies included in the review, as well as the prevalence for each ACE accessed in each study (Cont.).

Author	Design	Country	Sample	Age	Sex	Source	Sample	ACE	% ACEs	Met. Quality
Harris et al. (2020)	Exploratory study	UK	To identify the predictors of behavioral and emotional disfunction in adolescence, the ACE history of 60 young people (14-18 years old), in residential care, was assessed.	No information available	25.9% females	Case file records	Residential Care	Parental Separation	80%	4
								Emotional Abuse	66.7%	
								Exposure to Domestic Violence	58.3%	
								Neglect	50%	
								Parental Substance Abuse	50%	
								Sexual Abuse	38.3%	
								Physical Abuse	35%	
								Parental Mental Illness	33.3%	
								Parental Incarceration	13.3%	
Mishra et al. (2019)	Exploratory study	USA	To identify the combination of ACEs that are associated with out-of-home placements, data from 1657 children in OOHP was examined.	11.47 years	44% males	Pre-existing data from the National Survey of Child and Adolescent Wellbeing study, updated annually.	Out-of-home care (all types)	Physical Abuse	35%	5
								Sexual Abuse	21%	
								Emotional Abuse	15%	
								Neglect	22%	
								Parental Mental Health Problems	24%	
								Parental Incarceration	15%	
								Parental Substance Abuse	14%	
								Parental Alcohol Abuse	13%	
								Exposure to Domestic Violence	36%	

Metasynthesis

Every single one of the ACEs (**Fig.1**) was accessed in the studies included in this review, in at least one study. The most studied form of ACE was Sexual Abuse, (all the studies included in this review assessed this ACE, *k* = 18), followed by Physical Abuse (*k* =17), and Neglect (*k* = 16). Emotional Abuse was featured in twelve of the studies, followed by Domestic Violence featured in ten of the studies. Parental Substance Abuse was featured in half of the studies (*k*=9). Parental Mental Illness was presented in seven studies, followed by Parental Incarceration (k=4) and Parental Separation (k=2).

Every single one of the ACEs (Fig.1) was accessed in this sample of studies, although not all the studies accessed every ACE. Parental Incarceration was only studied through case records, in both populations. Eight of the studies included in this review focused on samples of both types of out-of-home care (foster and residential), followed by the Foster Care population, that was the most studied (*k*= 3). Only three of the studies in this review focused on the Residential Care population.

Most studies (*k*=11) had at least one ACE presenting a prevalence equal or higher than 50%. The least prevalent form of ACE was Parental Incarceration, because it was accessed in only one study, and the one with the biggest discrepancies in prevalence results was Parental Mental Illness (that ranged from 5% to 69%) followed by Sexual Abuse, (that ranged from 1% to 54%).

Table 3 displays the minimum and maximum prevalence found for each ACE across studies. For the self-reported categories, both the lowest and highest prevalence of Child Emotional Abuse identified across studies was higher when compared to other forms of child adversity, both for children in residential care and foster care. In the case records, the exact same pattern was found for child neglect.

In the comparative analysis between Residential and Foster Care populations based on self-report data, there was a higher prevalence of Sexual Abuse (both in min and max categories) in Foster Care. This may suggest that the prevalence of this ACE is lower for children in Residential Care compared to those in Foster Care.

Note that, for these comparisons, we considered only ACEs that were examined in at least three studies to ensure validity.

Table 3. Maximum and minimum prevalence found for each ACE for the Foster and Residential Care populations

	Self-Report and Other						Case Records					
ACE	**Residential Care**			**Foster Care**			**Residential Care**			**Foster Care**		
	k	***Min %***	***Max %***	***k***	***Min %***	***Max %***	***k***	***Min %***	***Max %***	***k***	***Min %***	***Max %***
Sexual Abuse	8	5,6%	48%	12	16%	54%	5	1%	38%	4	6%	32%
Physical Abuse	7	10%	89%	9	10%	89%	6	15%	35%	6	15%	48%
Neglect	5	19%	71%	7	19%	74%	5	22%	94%	4	22%	100%
Emotional Abuse	5	29%	94%	7	24%	94%	4	12%	88%	2	15%	51%
Parental Substance Abuse	2	10%	61%	4	33%	69%	4	14%	60%	2	14%	37%
Domestic Violence	2	30%	39%	4	16%	57%	5	20%	71%	3	20%	54%
Parental Mental Ilness	2	19%	37%	5	5%	69%	4	20%	33%	2	24%	29%
Parental Incarceration	1	22%	22%	1	22%	22%	2	13%	15%	1	15%	15%
Parental Separation	1	50%	50%	0	-	-	2	34%	80%	0	-	-

Risk of bias in studies

Following the methodological quality analysis conducted above, all the studies were accessed through the 0-6 points system. No study was excluded of the review trough this analysis, due to having a score above the cutoff (<4), thus presenting the methodological quality needed to be included. About 37% of the studies were punctuated with 4 points, another 37% were evaluated with 5 points, and 29% with 6 points.

Discussion

This systematic review is particularly significant because it acknowledges the prevalence of trauma history in out-of-home care children and youth, which provides crucial knowledge for structuring effective psychological and social interventions. The purpose of this systematic review was to explore the prevalence of different ACEs in children and youth in residential and foster care and to compare this prevalence between the two populations.

In our review, Neglect appears to have one of the highest prevalences among ACEs. This aligns with findings from similar studies (Dube et al., 2003; Soares et al., 2016), raising concerns about the frequent occurrence of neglect in households and families, leading to the institutionalization of children. However, it is more prevalent in the case records category, what indicates that it is often the reason for a child protective services intervention. Sexual Abuse was the most examined ACE across the studies reviewed, followed by Physical Abuse. These results align with previous reviews, primarily because these trauma experiences are the focus of child protective services and researchers, given their well-known long-term consequences and public impact. Consequently, child Sexual Abuse typically receives more financial resources for intervention, in part due to its immediate visibility (Finkelhor et al., 2007; Higgins and McCabe 2001; Widom et al., 2008). Additionally, the prevalences in the self-report category seem to be higher than those in the case records category. A meta-analysis conducted on a general population sample aligns with our findings (Stoltenborgh et. al., 2015), suggesting that official records only explore the tip of the iceberg, regarding the occurrence of ACEs. Nonetheless, the prevalence of Sexual Abuse, Physical Abuse, and Neglect across studies containing case records was particularly striking.. This might reflect the reality that Child Protective Services (CPS) are more vigilant in tracking and addressing these experiences compared to other forms of ACE, such as Emotional Abuse.

Consistent with other studies involving community samples (Dube et al., 2003; Barbosa et al., 2014; Soares et al., 2016), Emotional Abuse had the widest prevalence range in both populations. Recent studies have suggested that Emotional Abuse may be also more prevalent than Sexual and Physical Abuse in community populations, with more severe consequences for mental health (Coates and Messman-Moore 2014; Gagné et al. 2005; Kerley et al. 2010; Paul and Eckenrode 2015; Shepherd-McMullen et al. 2015; Spertus et al. 2003). In a US study of adults from 23 states in a community sample, Emotional Abuse also had the highest prevalence

rates (ranging from 33% to 35%), albeit considerably lower than the studies included in this review (Merrick et al., 2018). However, this high prevalence is only present in the self-report category, what shows that case records fail to identify ACEs that do not translate into physical indicators.

All participants in the reviewed studies included in this review experienced at least one ACE, while in two community samples, only about 75% and 45% did so (Pace et al., 2022; Sacks & Murphey, 2018), indicating that the out-of-home care population is more likely to be exposed to these experiences. When compared with a community sample from a systematic review, the out-of-home care population exhibited higher maximum prevalence rates in ACEs, specifically in Physical Abuse (89% foster and residential care vs. 77% community), Emotional Abuse (94% foster and residential care vs. 72% community), and Sexual Abuse (48% foster care and 54% residential care vs. 40% community), (Pace et al., 2022).

In another study concerning a community sample in Brazil (N = 3951), the prevalence of ACEs found was considerably lower than the lowest prevalence in the samples from this study. For instance, Physical Abuse had a prevalence of 7%, (Soares et al., 2016). Additionally, in another study concerning a community sample (Crouch et al., 2019), it was found that 8% of children had lived with someone with drug and/or alcohol problems. When compared with the prevalence found in the studies featured in this review, it is possible to observe that the lowest prevalence in the out-of-home care population was higher than the prevalence in these community sample studies, in both ACEs (Physical Abuse and Parental Substance Abuse), across both populations and through both information sources. These findings suggest that the out-of-home care population seems to be at a higher risk for these types of experiences, translating into higher prevalence rates when accessed.

When comparing the type of out-of-home care, studies show that children living in foster families tend to report feeling safe twice as much as children living in a group home (80% vs. 47%; Fox & Berrick, 2007). Another study reported that children living in a group type of placement were less likely to feel secure in their environment than children living with caregivers (Gil & Bogart, 1982). These findings may explain the results of this review, in which the foster care population presented lower rates of ACE prevalence in certain dimensions (Emotional Abuse, Domestic Violence) found in case records. Our results also suggest that children in foster care may have a higher risk of experiencing Sexual Abuse, probably due to contact with older children and multiple adults, in settings with limited oversight. A study in the Netherlands found that the overall prevalence estimate of Sexual Abuse in Foster Care was

2.0 per 1,000 children (Euser et. al., 2013). However, this topic needs to be investigated further, in order to design appropriate prevention and intervention in these cases. Finally, this prevalence, across studies, appears to be higher in self-reports studies. This might indicate that the child protective system often fails in identified potentially endangering situations both in the households and in the foster families where these children are integrated.

The majority of youth living in out-of-home care have histories of trauma experiences. These experiences come from the lack of a sustainable emotional environment that can help contain their emotional pain. When this type of trauma occurs during a developmental phase, there is a significant risk that these children and youth will fail to acquire the skills necessary to navigate and cope with life at that stage and in subsequent stages (Ko et al., 2008).

This systematic review seeks to cover research on trauma among the out-of-home care population. These findings argue that future research should focus on the impact of traumatic experiences on the lives of these children, and how to better intervene and prevent these experiences.

Adverse Childhood Experiences of Out-of-Home Care Children: Literature Shortcomings

Considerable differences were found in the prevalence rates, that might be explained by methodological differences between studies, sample size, and differences between countries where the study was conducted.

Also, European countries tend to have more residential care resources than foster care, whereas in North America, the opposite occurs (del Valle, 2013). Because most of the studies are from these two continents, the residential care population ends up not being the focus of most investigations. Additionally, this leaves many underdeveloped countries without representation in research on out-of-home care for children, creating a significant gap in the literature.

Most of the investigations on this subject use case records as a source of information, which causes the prevalence of ACEs to be underestimated, since they depend on the identification through child protective services and other official services. Additionally, recent research on out-of-home care is scarce, and what exists mostly focuses on foster care, neglecting other types of care. Moreover, the studies included in this review used a wide range of assessment instruments, which translates into heterogeneous results and conclusions. Additionally, the phrasing of the items of each instrument is not specific to certain behaviors, especially when focusing on traumatic experiences. As a result, some measures are limited to assess only one type of trauma (e.g., physical abuse) This restricted scope makes it difficult to accurately compare prevalences across studies regarding the same type of ACE (Frueh, Elhai, & Kaloupek, 2004).

As observed in other studies, the placement may influence a child's reaction to trauma, and comparisons between the psychological state of children in residential care and in foster care indicate that the latter population may present a decreased externalization of problems (Leloux-Opmeer et. al., 2016). Therefore, there might be a bias in the way children describe their experiences, as it may be influenced by their level of externalization of problems, which in turn is associated with the type of placement, potentially leading to differences in the reports provided by these two populations.

When comparing the two sources of information (case records and self-report), a study conducted by Pinto & Maia (2013) showed that the prevalence of ACEs accessed through self-

report tends to be lower than when official records are consulted. This study identified a discrepancy in prevalence rates of approximately 50%, suggesting potential bias in disclosing childhood trauma experiences may have occurred in the studies considered in this review. This study also suggests that professionals in the justice system and in the Child Protective Services fail to identify the occurrence of various ACEs. In addition, other studies have suggested that many victims do not report experiences of child maltreatment because they perceive such events as acceptable forms of discipline (May-Chahal and Cawson, 2005). Finally, a study by Pinto et al. (2013) also found that only a small fraction of self-reports (17% of respondents) was consistent with official records.

To sum up, all these biases translate the difficulty in accessing the real prevalence of ACEs, which conditioned the findings in this and other studies alike.

Limitations, Implications and Future Research

The number of identified studies in this review was relatively small, primarily due to the very specific eligibility criteria (e.g., Restricted to out-of-home care population). Grey literature was also not included.

This review couldn't accurately compare ACE prevalence between Foster Care and Residential Care populations because there has been less research and analysis on the latter. It would greatly benefit the research field if a meta-analysis of these findings were conducted in the future, even with the limited pool of studies for each category.

It's important to note that the included studies were mostly conducted in Europe and North America (alike most of all research). Therefore, the observations reported here cannot be considered representative of the Asian and South American out-of-home care populations, which are underrepresented. Additionally, there was virtually no representation of the Oceanic and African populations in the studies.

Based on the 18 studies that met the inclusion and exclusion criteria, it is possible to make some suggestions for future research to enrich our understanding of the prevalence of ACEs. This knowledge is essential for caretakers and institutions to better identify and intervene with children who have experienced these events.

The development of children's resilience to overcome adversity is crucial. Resilience programs aimed at developing coping skills, for example, can be delivered in schools and out-of-home care institutions and adapted to meet the needs of vulnerable children in various settings (Center on the Developing Child at Harvard University, 2015).

Additionally, these findings and future research in this field could serve as a basis for a more conscious and effective matching process between children and the out-of-home care settings in which they are placed. This could help protect the child from further adverse experiences. In the case of residential care institutions, research can contribute to a therapeutic and protective approach within the care provided, considering the child's trauma history.

Moreover, this type of research can inform public policies related to child protective services, particularly in terms of prevention. By understanding the prevalence of ACEs and their consequences on the overall health of the population, public policymakers can prioritize addressing this issue through increased referrals to mental health services, family support services, social and economic support services, and more.

Finally, it is recommended that further studies be conducted in this field, particularly exploring different cultures and child protection services, to gain a better understanding of the prevalence and impact of ACEs on a global scale. Research on ACEs is far from complete, and there is a compelling need for increased focus on the prevention of ACEs worldwide, especially in groups of children who live in particularly vulnerable situations and contexts.

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Attachments

Systematic Review: Search Equation

residential care OR foster care OR group home

AND

adverse childhood experiences OR trauma OR maltreatment OR neglect OR abuse

AND

child* OR adol* OR youths*

Systematic Review: Scientific Database and Hyperlinks

Web of Science

Link: https://www.webofscience.com/wos/woscc/basic-search

SCOPUS

Link: https://www.scopus.com/search/form.uri?display=basic#basic

EBSCO (Academic Search Complete, Business Source Complete, APA PsyncInfo, APA PsycBooks, APA PsycArticles, Criminal Justice Abstracts with Full Text, MEDLINE, eBook University Press Collection, eBook Collection, Regional Business News and Library, Information Science and Technology Abstracts, PEP Archive, ERIC, Teacher Reference Center).

Link: https://web.p.ebscohost.com/ehost/search/advanced?vid=1&sid=29a471fd-0e00-4512-a99c-aed15cc49d39%40redis