INSPQ INSTITUT NATIONAL DE SANTÉ PUBLIQUE DU QUÉBEC

# Preventing Suicide by Reducing Adverse Childhood Experiences and Their Consequences: Possible Courses of Action

STATE OF KNOWLEDGE

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KNOWLEDGE SYNTHESIS

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# FOREWORD

The Institut national de santé publique du Québec is a public health expertise and reference centre located in Québec. Its mission is to support Québec's Minister of Health and Social Services, regional public health authorities, and local, regional and national institutions in performing their duties and responsibilities.

The *État des connaissances* (state of knowledge) collection brings together a variety of scientific publications that summarize and relay what the science has to say on a number of issues. To that end, it uses rigorous methods to review and analyze the scientific literature and other relevant information.

The present knowledge synthesis was prepared at the request of the Ministère de la Santé et des Services sociaux. It focuses on promotion and prevention interventions that can reduce adverse childhood experiences and their consequences and contribute to preventing suicide. It is thus in keeping with the vision laid out in the recent 2022-2026 national suicide prevention strategy, *Rallumer l'espoir* (rekindling hope), which recommends [Translation] "measures that can be implemented, insofar as possible, prior the emergence of situations requiring care and services that can assist people across the life course" (p. 18). The synthesis is also in keeping with the first key initiative of the new 2022-2026 interdepartmental action plan on mental health, *S'unir pour un mieux-être collectif* (joining forces for collective well-being), which calls for the promotion of mental health and the prevention of mental disorders through, for example, suicide prevention.

This document is intended for actors concerned with the implementation of suicide prevention interventions at the local, provincial and national levels, as well as for those concerned with reducing adverse childhood experiences and their consequences, in particular stakeholders who work in early childhood prevention and promotion.

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# HIGHLIGHTS

Adverse childhood experiences in families (e.g. physical violence, sexual violence, exposure to domestic violence, parent with a mental health issues) are one of the factors that increase the risk of suicide. This synthesis of eight literature reviews analyzes the characteristics and effectiveness of interventions implemented outside clinical settings in reducing adverse childhood experiences and their consequences. It also discusses the results obtained regarding suicide prevention. Prior to examining the interventions, the synthesis presents a conceptual framework explaining the mechanisms by which adverse childhood experiences affect suicide risk. This has revealed that:

- Three interrelated mechanisms, namely, neurobiological, psychological and relational disruptions, explain the impact of adverse childhood experiences on mental and physical health and lifelong suicide risk. The consequences of these experiences are likely to induce psychological suffering, which can be a warning sign for suicide.
- The interventions identified in this synthesis are associated with the positive effects of reducing adverse childhood experiences or their consequences. They fall into five categories:
  - Interventions to reduce poverty, which act on the occurrence of adverse experiences and some of their consequences;
  - Interventions to promote access to community-based prevention services, which are associated with reducing the consequences of adverse experiences;
  - Interventions to make schools conducive to mental health promotion, which are also associated with reducing the consequences of adverse experiences;
  - Interventions to support parenting, which reduce the occurrence of adverse experiences and several of their consequences;
  - Interventions to support young people with a view to promoting their mental health and well-being, which reduce stress-related symptoms and strengthen socioemotional skills.
- This analysis shows that interventions which reduce adverse childhood experiences and their consequences have the potential to prevent suicide. They make it possible to take actions at various levels (public policy, living environments, individuals) as of childhood and adolescence. Therefore, they help to reduce suicide risk factors and to increase certain protective factors.

# SUMMARY

Although a decrease in the suicide rate has been observed in Québec since the early 2000s, suicide continues to be a major cause of death, particularly among people under 35 years of age. The fact of having experienced childhood adversity from the age of 0 to 18 in a family context (e.g. maltreatment, parents with mental health issues) substantially increases the lifetime risk of suicide, especially when several types of adversity have been experienced. Although many public health interventions target suicide risk factors, the potential of interventions to reduce adverse childhood experiences and their consequences has been underexplored from a suicide prevention perspective.

A review of literature reviews was conducted to document the characteristics and effectiveness of interventions implemented outside clinical settings that can reduce adverse childhood experiences and their consequences. Eight reviews were studied. All of them were of high quality, except for one systematic review, whose quality was moderate. The analysis was based on a conceptual framework explaining the mechanisms whereby adverse childhood experiences affect mental and physical health and lifetime suicide risk.

**Mechanisms whereby adverse childhood experiences affect suicide risk:**

- Adverse childhood experiences lead to **neurobiological** disruptions related to stress-response systems, **psychological** disruptions related to socioemotional development and **relational** disruptions, through the impact of such experiences on parent-child relationships. These three types of interrelated disruptions constitute the mechanisms whereby adverse childhood experiences affect physical and mental health as well as lifelong suicide risk. These disruptions and their consequences (particularly, physical and mental health issues) are likely to induce psychological suffering. Such suffering can be a warning sign for suicide.
- Some personal characteristics or unfavourable social and economic factors, such as poverty, exacerbate disruptions related to adverse childhood experiences. They make people who have had such experiences more vulnerable to health issues and suicide. On the other hand, favourable factors, such as a meaningful social support network, can help to mitigate disruptions related to adverse experiences and their consequences. Personal characteristics and social and economic factors affect not only the consequences of such adversity (among people who have experienced them), but also their occurrence.

**Characteristics of the interventions identified and impact on the reduction of adverse childhood experiences and their consequences**

The interventions identified in the reviews were implemented in a range of environments, namely, across society as a whole as well as in the various living environments formed by communities, schools and families. Some interventions were designed for a universal population and others for specific groups of population. The reviews documented different types of interventions that can reduce adverse childhood experiences and their consequences. Five categories of interventions with varying effects were identified, based on their objective:

- **Interventions to reduce poverty,** which consist for example, of income supplements and housing assistance. These interventions are likely to reduce the occurrence of several adverse childhood experiences, in particular, exposure of children to domestic violence and psychoactive substance abuse.
- **Interventions to promote access to community-based prevention services,** which correspond, in particular, to the implementation of new programs or the coordination of prevention services for young people and their families. These interventions are associated with the reduction of some of the consequences of adverse childhood experiences, such as mental health issues among youth. They were not assessed with regard to the occurrence of adverse experiences.
- **Interventions to make schools conducive to mental health promotion**, which are usually in keeping with what is known as a "trauma-informed" approach. This approach makes it possible to raise awareness about trauma among students and school staff, and helps young people to develop their socioemotional skills. These interventions also have an impact on reducing the consequences of adverse childhood experiences (e.g. improvement of socioemotional skills, reduction of anxiety and peer victimization).
- **Interventions to support parenting**, which take the form of home-based interventions and workshops with parents or parent-child meetings, and are psychoeducational or psychological in nature. They help to reduce the occurrence of several adverse childhood experiences, including child maltreatment and substance abuse among parents. They also reduce several of the consequences of these experiences among young people, such as trauma-related symptoms and drug and alcohol use, while improving the socioemotional skills of children and adolescents.
- Lastly, **interventions to support young people directly** (i.e. not including their family) with a view to promoting their mental health and well-being. These interventions take the form of psychoeducational or psychological initiatives or mentoring programs, designed to provide young people with psychosocial support. Psychoeducational and psychological interventions improve, in particular, young people's socioemotional skills and reduce difficulties in that regard. As for mentoring by adults, it helps, in particular, to decrease the use of psychoactive substances, while reducing violence.

### Implications for suicide prevention

Interventions that reduce adverse childhood experiences and their consequences have significant potential for preventing suicide as of childhood and adolescence. This is because this type of experience is a suicide risk factor in itself and interventions to decrease it reduce several other known risk factors, such as mental health issues, including substance use. Lastly, interventions to reduce adverse childhood experiences help to increase several suicide protective factors by contributing, in particular, to improving the family and school environment and to strengthening bonds within the community.

Five main observations with implications related to practices or research can be made:

- Policies that reduce poverty provide major leverage for improving the living conditions of socioeconomically disadvantaged families. Therefore, they can help to prevent suicide and to reduce the social health inequalities associated with it.
- Interventions aimed at improving access to prevention services in the community are underexplored in relation to adverse childhood experiences and suicide prevention; however, some important results are noteworthy, including reduced substance abuse among youth and strengthened community bonds.
- Interventions to create a school environment that is conducive to promoting mental health contribute, in particular, to improving the connection among students, and more generally, among the various school-based actors. Such interventions are useful for reducing the consequences of adverse childhood experiences, improving youth mental health, and helping to prevent suicide.
- Interventions to support parenting help to reduce adverse childhood experiences. They also have positive effects on the quality of parent-child interactions, as well as on the development of young people's mental health and that of their parents.
- Interventions that directly support young people with a view to promoting their mental health and well-being help to reduce adverse childhood experiences, such as psychoactive substance use or delinquent behaviour.

This analysis provides an overview of the interventions that have been implemented at various ecological levels and are likely to reduce the occurrence and consequences of adverse childhood experiences and thus help to prevent suicide. It highlights examples of promising interventions that should be considered and then describes their characteristics. The analysis also underscores the importance of integrating, in programs implemented in living environments (especially, schools), both universal actions and actions that target vulnerable groups (e.g. children experiencing adversity, families at risk of poverty).

# 1 INTRODUCTION

## 1.1 Suicide prevention: a public health priority

In Canada, in 2019, suicide was the second leading cause of death among people aged 15 to 34 (1), after unintentional injuries (2). The same observation was made in Québec for people aged 18 to 39. In 2016, 32.4% of the deaths observed for that age group were caused by suicide (3). Even though there has been a major decline in Québec's suicide rate since 2002, 1055 people took their own lives in 2020, which represents an average of three people per day (4). Generally speaking, the suicide rate is higher among men than women, but some worrisome facts have been observed among young girls and young women. For example, from 2014-2015 to 2020-2021, an increase in serious suicidal ideation was observed among girls aged 15 to 19 (11% of adolescents had such ideations in 2020-2021, compared to 5.4% in 2014-2015) and women aged 20 to 34 (6% in 2020-2021 compared to 3.7% in 2014-2015) (5). A substantial increase in emergency visit and hospitalization rates for suicidal behaviour was also observed among girls and women aged 15 to 34, from 2008 to 2022 (4).

## 1.2 Adverse childhood experiences: a suicide risk factor

Adverse childhood experiences (ACEs) correspond to various forms of adversity experienced from 0 to 18 years of age. Such experiences are associated with several issues later on in life, including suicide (6). The ACEs most commonly considered in studies are of two types, namely: 1) violence toward children, that is, physical, psychological or sexual violence, exposure to domestic violence and neglect; and 2) other issues experienced in a family, such as household dysfunction, mental disorder symptoms in parents, alcohol or drug abuse, incarceration, and parental separation (6, 7).

People reporting a history of ACEs, which at times are also considered to be traumatic events[a], are at greater risk of presenting suicidal thoughts and behaviours. This association between ACEs and suicide has been studied and demonstrated extensively (6, 8–12). In Canada, in 2018, the likelihood of having seriously contemplated suicide was roughly three times higher among adults who had been victims of violence in childhood than among adults who had never experienced such violence, after taking the main demographic characteristics into account (13). Data published in Québec in 2012 were consistent with these findings (14). The results of some studies indicate that vulnerability to suicide can vary depending on the ACE experienced. For example, the risk of suicide attempts might be greater when a person has a history of sexual violence compared to other types of violence (8, 9). Generally speaking, sexual, physical or emotional violence and the incarceration of a parent seem to be associated with a greater risk of subsequent suicide ideation and attempts, which is not the case with neglect or the alcoholism

[a] ACEs are *potentially* stressful or traumatic experiences that occur during the first 18 years of a person's life. Such experiences go beyond a person's ability to cope with and incorporate thoughts and emotions that can occur at any age. A distinction is made between historical trauma, external trauma (e.g. war and natural disasters) and the interpersonal trauma that can stem from ACEs.

of a parent (9). In any case, it is well established that an accumulation of ACEs increases the risk of suicidal thoughts and attempts. The higher the number of ACEs, the higher is the risk of suicide ("dose-response" effect). For example, the fact of having experienced one ACE raises by 2- to 5- fold (9, 15) the risk of suicide attempts, while people who have experienced 7 or more ACEs are 31 times more likely to have already attempted suicide than people who have had no such experiences (15). The Canadian data also show that the accumulation of ACEs (physical and sexual violence) significantly increases the risk of seriously contemplating suicide (13).

## 1.3 Reducing adverse childhood experiences and their consequences: a useful approach for suicide prevention interventions

Traditionally, suicide prevention efforts have been focused on people who have already attempted suicide or who present a major risk of suicidal behaviours. This has involved, in particular, identifying and treating mental disorders, as well as reducing access to means for committing suicide. Many authors have underscored the importance of upstream suicide prevention interventions, conducted well before mental disorders or suicidal behaviours appear (16, 17). For example, Ports et al. (17) have stressed that interventions to reduce ACEs and their consequences are a good way to prevent suicide. They argue for a comprehensive approach that occurs across the social ecology (i.e. at the individual, family, school, community and societal level). This vision is in keeping with Québec's public health program (18).

Attempting to reduce ACEs and their consequences for the purpose of preventing suicide as early as possible is justified for several reasons, notably:

- First, as mentioned above, the fact of having experienced ACEs significantly increases the risk of suicide. Therefore, it is useful to understand the mechanisms whereby ACEs affect suicide risk and to intervene in order to address them.
- Second, ACEs are a far-reaching phenomenon. In 2014, a population study using data from the Canadian Community Health Survey concluded that among people aged 12 years and older, 32% have experienced physical abuse, sexual assault and/or exposure to family violence occurred (19). What is more, the co-occurrence of ACEs appears to be common. For example, the *Alberta ACE Study* showed that 55.8% of participants reported having experienced one or more ACEs, while 20% reported having experienced at least three or more (20). In Québec, the data on having a history of maltreatment in childhood show that 20% of people over age 16 have experienced one of three forms of violence, namely, physical violence, sexual violence and exposure to violence among adults in the home, while 5.9% have experienced two of these forms of violence and 1.9% all three.
- Third, several well-documented consequences of ACEs (e.g. victimization, substance abuse, mental disorders) are major risk factors for suicide. Therefore, interventions likely to mitigate these consequences would help to prevent suicide indirectly.

- Fourth, attempting to reduce ACEs and their consequences allows, in particular, acting as early as possible, that is, in childhood or adolescence, when the brain is at its most malleable.
- Lastly, such actions help to break the cycle of social inequalities, including those related to health. The suicide rate follows a social gradient. For example, from 2009 to 2013, if everyone had the same death by suicide rate as the most privileged population group, 32% of deaths by suicide would have been prevented among men and 31%, among women (21).

## 1.4 Background and objective of the project

The Ministère de la Santé et des Services sociaux (MSSS) tasked the Institut national de santé publique du Québec (INSPQ) with preparing a knowledge synthesis to make it easier to understand how interventions likely to reduce adverse childhood experiences (ACEs) and their consequences can help to prevent suicide. More specifically, this synthesis aims to analyze the characteristics and effectiveness of interventions implemented outside clinical settings for reducing ACEs or their consequences, and to discuss the results obtained with regard to suicide prevention. Prior to analyzing the various interventions, a conceptual framework has been developed to explain the mechanisms whereby ACEs affect suicide risk. This framework underpins the analysis of the various interventions and the discussion of the results obtained.

# 2 CONCEPTUAL FRAMEWORK

The conceptual framework explains the mechanisms whereby ACEs influence suicide risk. A literature review was conducted on the subject in order to develop the framework. First of all, several search engines were consulted, along with specialized journals and scientific watch databases (e.g. *SafetyLite*). A "snowball" strategy was then used to complete the research using the bibliographies of the references identified. Suggestions made by the scientific committee were also considered.

Two conceptual documents dealing specifically with the links between ACEs and suicide were identified, and they provided the basis for developing the conceptual framework (22, 23). Other documents were used to obtain specific knowledge. In particular, documents explaining the links between ACEs and physical or mental health issues were analyzed (6, 22–26). Documents presenting various theoretical models dealing with suicide in general were also consulted. These models explored hypotheses likely to explain vulnerability to suicide. Several of them base their explanations on ACEs, considering them to be a factor strongly associated with such vulnerability (18, 19).

In general, three interrelated mechanisms are identified in the scientific literature as underlying the impact of ACEs on mental and physical health and lifetime suicide risk (6, 22–26). The first mechanism is neurobiological (22–24). In children living with ACEs, the neurobiological stress-response systems may be over-activated or, on the contrary, underactivated in order to cope with a context of adversity. Such over-activation or under-activation interferes with the typical development of brain structure and disrupts the formation of neuron connections at a sensitive time when the brain is very malleable. Repercussions can be seen at different levels, particularly the behavioural level (emotional issues) and the biological level (increase in stress hormones, variations in heart and breathing rates). Over the medium and long term, people may continue to have problems modulating stress, which makes them even more vulnerable to stressful situations later on.

The second mechanism, which is psychological in nature, is related to the fact that experiences in childhood and adolescence affect socioemotional development. Children and adolescents who have experienced ACEs are more likely to see themselves in a negative light, because they integrate the negative feedback of their parents or the people who take care of them, which affects, among other things, their self-esteem. Children and adolescents who experience ACEs are also at greater risk of having trouble regulating their emotions, especially because they react more strongly to them and have more difficulty accessing regulation strategies. All these issues can generate internalized (e.g. anxiety) and externalized symptoms (e.g. aggressivity) that are likely to persist over time and lead, in some cases, to the development of mental health disorders (22, 23).

The third mechanism, which is relational in nature, concerns the parent-child relationship and, more broadly, interpersonal relationships. Among very young children, ACEs can have a particularly strong influence on attachment. Insecure attachment is linked to experienced

adversity can make it difficult for infants to explore the world around them with confidence and affect the way they enter into relationships. At any age, the disruption of a parent-child relationship also increases the risk of family conflicts, which in themselves are vectors of stress and predispose young people to interpersonal issues in their relationships, which in turn can be associated with mental health issues (22, 23).

These mechanisms can influence each other and cause fairly major issues likely to induce psychological suffering, which according to many authors, underpins suicide. Psychological suffering results from an excess of painful emotions (sadness, anxiety, guilt, shame, fear, etc.) and a person's perception that these emotions are intolerable, unbearable and unacceptable (23, 29). It may stem from disruptions directly caused by ACEs. In fact, greater reactivity to stress (neurobiological mechanism), issues related to self-esteem and self-regulation (psychological mechanism), and difficulty maintaining healthy and stable interpersonal relationships (interpersonal mechanisms) can all give rise to psychological suffering, which can in turn lead to suicide (23). Psychological suffering can also be caused over the medium and long term by the consequences of such disruptions (poor socioemotional skills, mental or physical health issues, and comorbidities).

ACEs, which are themselves a major risk factor for poorer health, inevitably interact with other health determinants (22, 30–33). Such interrelations are crucial to explaining whether or not people who have experienced ACEs are vulnerable to physical and mental health issues and suicide risk throughout their life span. The accumulation of ACEs with certain personal characteristics (e.g. having a family history of mental disorders) or unfavourable social or economic factors (e.g. living in an environment characterized by material deprivation) exacerbates neurobiological, psychological and interpersonal disruptions and strengthens the potentially negative impact of ACEs. On the other hand, certain personal characteristics (e.g. a temperament that makes it easier to cope) or favourable social and economic factors (e.g. financial resources, a meaningful social network, a stimulating school environment) can mitigate the disruptions associated with ACEs, as well as their negative consequences. In fact, the presence of such factors increases the likelihood that young people will have "positive experiences" that promote their development (34).

Personal characteristics and social and economic factors not only modulate ACE consequences (35), but they also affect their occurrence. For example, having a poor socioeconomic status in childhood is associated with an increased risk of experiencing ACEs, especially maltreatment (36, 37). Moreover, experiencing ACEs can, in turn, affect a person's socioeconomic status in adulthood. For example, during the COVID-19 lockdown in the United Kingdom in 2020, people who had experienced physical violence in childhood were twice as likely to stop working than those who had not experienced this, and it made them more vulnerable from a socioeconomic standpoint (38). In the Québec context, one study showed that there was a longitudinal association between having experienced ACEs and having had recourse to social assistance later on in life (39). In short, it is important to take into account the relationship between ACEs and social and economic factors. These factors affect the likelihood that ACEs will occur, and those

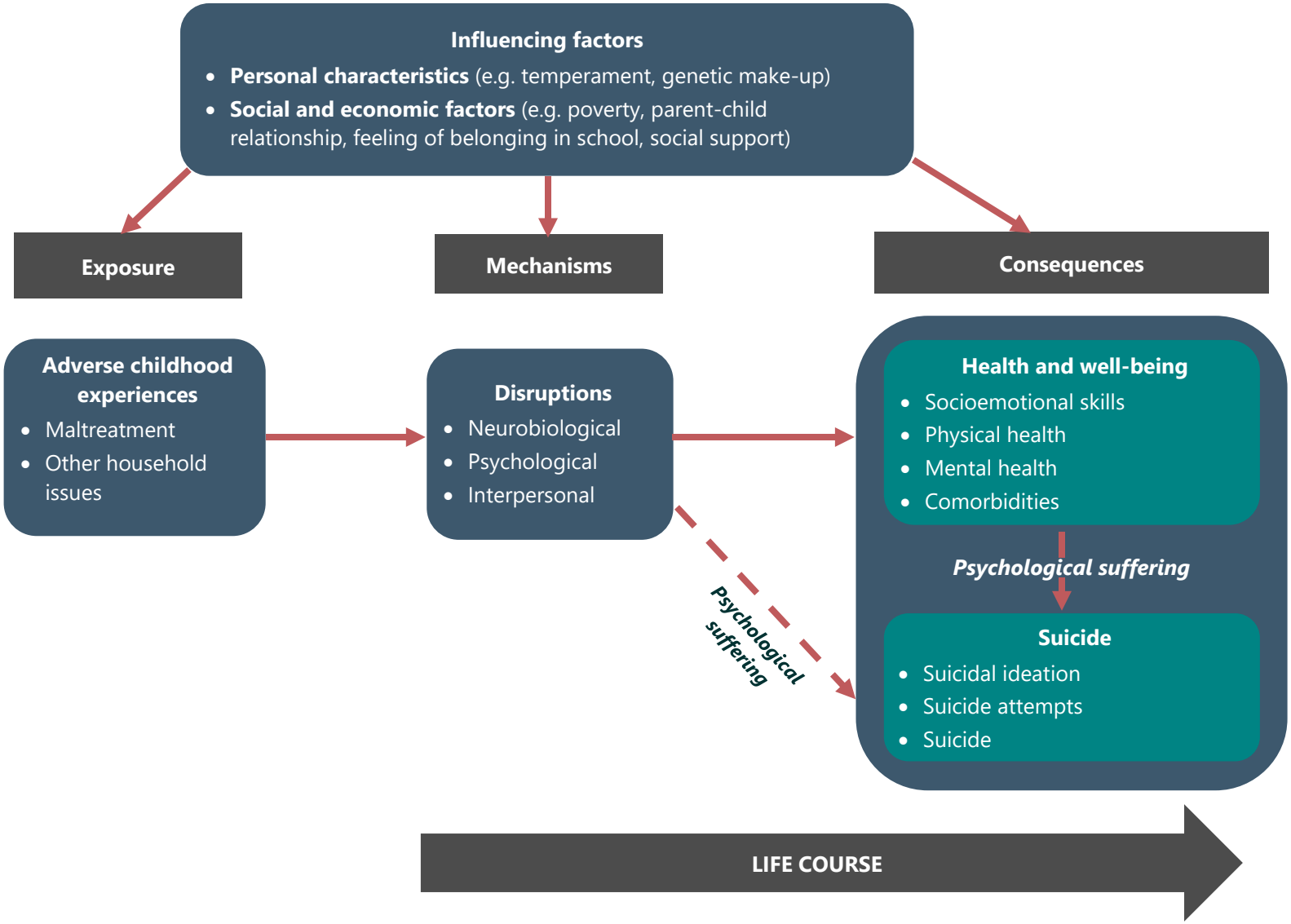
ACEs themselves can have socioeconomic repercussions later on in life. These factors also affect the consequences of ACEs.

In light of the above, suicide prevention interventions that take ACEs into account can have two objectives:

- Reduce the occurrence of ACEs by acting on social and economic factors (e.g. reduce poverty and foster stronger social support networks).
- Reduce the consequences of ACEs by acting directly on them (e.g. improve mental health) or on the mechanisms that underpin them (e.g. support the development of a secure attachment with parents). It is also possible to act on ACE consequences by working on personal characteristics and social and economic factors.

Figure 1 presents a summary of the mechanisms that explain the influence of ACEs on suicide risk.

**Figure 1** Mechanisms whereby adverse childhood experiences influence health, well-being and suicide risk



# 3 REVIEW OF REVIEWS METHODOLOGY

A review of reviews was conducted to answer the following two questions:

- What are the characteristics of interventions implemented outside clinical settings that are likely to reduce adverse childhood experiences (ACEs) or their consequences?
- How effective are these interventions?

### Search strategy and selection of reviews

A search strategy was developed with the help of a librarian from the INSPQ. Key words related to the following three concepts were selected: “interventions”, “adverse childhood experiences” and “literature review”. Documents published in scientific journals and the grey literature were considered. The Medline, PsycInfo, SocIndex, Psychology and Behavioral Sciences Collection and Health Policy Reference Center databases were queried. There were no restrictions on the period of publication. The search was limited to documents published in French or in English.

The scientific database search identified 820 documents, following the removal of duplicates. The search strategy used in the various databases is presented in Appendix 1. An additional search was also carried out in the scientific literature based on a “snowball” strategy and consultation of specialized journals. The grey literature search was conducted with Google and the search engines of various organizations. A “snowball strategy” was also used for that purpose.

### Review inclusion and exclusion criteria

Following the literature search, all of the documents identified were examined and selected using several inclusion and exclusion criteria. The reviews taken into account reported quantitative results on the effectiveness of interventions in reducing ACEs or their consequences. This included meta-analyses, systematic reviews and narrative reviews with information on methodology, which presented data tied to the assessment of the effectiveness of interventions. Reviews that focused on ACEs in general rather than on one in particular were included so as to maintain an overview of interventions taking ACEs into account.

Reviews dealing with interventions implemented exclusively in clinical settings were excluded so as to prioritize interventions likely to prevent ACEs or the health issues that stem from them, and targeting young people as a whole or those at high risk of experiencing ACEs. This made it possible to consider solely primary suicide prevention interventions, that is, interventions implemented upstream from the appearance of suicidal thoughts and behaviours and not concerning the treatment of mental disorders (17).

We also excluded reviews concerning traumatic events (e.g. war, natural disasters) other than ACEs experienced within a family since the action mechanisms involved are different and external traumas were not the focus of this review.

The literature search identified 820 documents. After examining the title and abstract of each one, we considered reading 63 of them in full. In the end, eight reviews of these documents were included in the synthesis. The references were selected by two analysts. Differences were resolved through consensus. The figure in Appendix 2 summarizes the process used to select the reviews that were included. It is based on an adaptation of the PRISMA framework (40).

### Data extraction and analysis

The data were extracted using a framework including, among other things, the objectives of the review, the methodology used, including the inclusion and exclusion criteria, the list of interventions studied, their reported effectiveness and their limits.

The analysis was aimed at achieving two research objectives: 1) a description of the characteristics of the interventions and 2) an analysis of their effectiveness. First of all, the reviews identified were categorized depending on whether they concerned interventions implemented at the societal level (specifically, public policies), in the community or in people's living environments, namely, families and schools. The interventions identified for each of these ecological levels were described, taking into account their purpose, the target population and the type of activities carried out. The description of the interventions' characteristics made it possible to develop a typology based on the purpose of the interventions.

Secondly, the effectiveness of interventions was analyzed based on the types identified. The outcomes were reported for each type of intervention depending on whether they were associated with reducing ACEs or their consequences. In regard to the reduction of ACEs, the results concerning maltreatment (physical violence, sexual violence, neglect, exposure to domestic violence) were differentiated from those related to other ACEs (mental disorders, substance abuse, incarceration or parental separation). As for the reduction of ACE consequences, the effects reported concerned those that affected the children or adolescents who had experienced them (e.g. mental health and socioemotional skills).

### Quality assessment

The eight reviews included were made up of three systematic reviews, one meta-analysis and four narrative reviews. The AMSTAR-R tool *(Revised Assessment of Multiple Systematic Reviews)* (41) was used to assess the methodological quality of the systematic reviews and the meta-analyses (41), while the SANRA tool *(Scale for the Quality Assessment of Narrative Review Articles)* was used to assess the methodological quality of the narrative reviews (42). These tools list a series of quality criteria. A review that met all of the criteria obtained a score of 100%. The reviews were grouped into three quality levels based on their score: high quality (70 to 100%), average quality (50 to 70%) or low quality (0 to 50%). The assessment was conducted by two double-blind analysts. Any differences were resolved through consensus. No reviews were excluded on the basis of their quality assessment. The assessment was done solely to appraise and compare the methodological quality of the reviews selected.

### Role of the scientific community and peer review

A scientific committee made up of experts on the issues discussed (ACEs, suicide, public health interventions) assisted with the work. The committee was approached for its input on three occasions at different stages in preparing the synthesis. A preliminary version was reviewed by the scientific committee. A version taking into account the comments made was then submitted to external reviewers in accordance with the *Cadre de référence sur la révision par les pairs des publications scientifiques de l'Institut national de santé publique du Québec* (reference framework for the peer review of scientific publications of the Institut national de santé publique du Québec). In line with the INSPQ's quality assessment framework, the reviewers were asked to validate the relevance of the methods used and the conclusions proposed. The final version of the synthesis takes into account the reviewers' comments.

# 4 RESULTS

The results are presented in two sections. The first one describes the reviews included in this synthesis, while the second presents the characteristics of the interventions studied and reports on the main findings made with regard to their effectiveness.

## 4.1 Description of the reviews included

Eight reviews were included following the literature search. They consisted of recent reviews published between 2018 and 2021. Most of them focused on interventions in more than one type of setting. Only one dealt with societal interventions. The reduction of ACE consequences was studied to a greater extent than the reduction of ACEs themselves. In fact, four of the reviews focused on the reduction of ACEs and their consequences, while the others dealt with the reduction of ACE consequences alone. Overall, the methodological quality of the included reviews was high. In fact, 7 out of 8 reviews were of high quality, while only one was of moderate quality. In all, 352 primary references were included in the eight reviews. Table 1 summarizes the reviews' characteristics.

It should be noted that none of the reviews consulted reported results on suicidal behaviours. Generally speaking, the primary studies on which the reviews were based assessed the effects on reducing maltreatment or its consequences among children, such as stress-related symptoms. In the conceptual framework presented earlier, suicide is considered to be a distal consequence of ACEs. Nevertheless, several reviews focused on the reduction of ACE consequences that constitute suicide risk factors. The next section discusses the results of the various interventions and their impact on the occurrence and consequences of ACEs. The implications for suicide prevention will be addressed in the discussion.

## Table 1. Description of the reviews included

| **Author and year**<br>Type of review (number of studies included) | **Ref.** | **Implementation settings of the interventions studied** | | | | **Outcomes studied** | | **Assessment of methodological quality** |
|---|---|---|---|---|---|---|---|---|
| | | **Society** | **Commu-nity** | **School** | **Family** | **Reduction of ACEs** | **Reduction of ACE consequences** | |
| Carsley et al., 2020<br>Narrative review (32 studies) | (43) | | X | X | X | X | X | High |
| Courtin et al., 2019<br>Systematic review (33 studies) | (44) | X | | | | X | X | High |
| Di Lemma et al., 2019<br>Narrative review (180 studies) | (45) | | X | X | X | X | X | High |
| Herrenkohl et al., 2019<br>Narrative review (30 studies) | (46) | | | X | | | X | High |
| Johnson et al., 2018<br>Meta-analysis (22 studies) | (47) | | X | | | | X | High |
| Marie-Mitchell et al., 2019<br>Systematic review (22 studies) | (32) | | X | | X | X | X | High |
| Roseby et al., 2021<br>Systematic review (15 studies) | (48) | | | X | | | X | Moderate |
| Purewal-Boparai et al., 2019<br>Narrative review (40 studies) | (49) | | X | X | X | | X | High |

## 4.2 Typology of interventions identified according to their objectives

When the interventions were described according to their implementation settings, it could be seen that many of them pursued the same objectives regardless of their settings. For example, several of the interventions carried out in the community and in families targeted parenting support. When the various interventions were grouped according to their objectives, five main intervention categories were identified: 1) reducing poverty; 2) promoting access to community-based prevention services; 3) making schools conducive to mental health promotion; 4) supporting parenting; and 5) helping young people to promote their mental health and well-being.

The interventions identified targeted different population types, specifically: 1) universal populations regardless of whether they had experienced ACEs or not; 2) populations with characteristics that could increase the risk of experiencing ACEs (e.g. low-income families or young people using psychoactive substances), and 3) populations that were experiencing or had experienced ACEs. The following sections describe the main categories of interventions identified (including the target populations). Table 2 provides a brief summary of the interventions according to their objectives and target populations.

**Table 2. Intervention categories identified according to their objectives and target populations**

| | | Target population | | |
|---|---|---|---|---|
| **Intervention categories by objective** | **References** | **Universal population** | **Population at high risk for ACEs** | **Population affected by ACEs** |
| **1. Reducing poverty**<br>1 review | (44) | | | |
| **2. Promoting access to community-based prevention services**<br>2 reviews | (45, 49) | X | X | |
| **3. Making schools conducive to mental health promotion**<br>4 reviews | (43, 45, 46, 48) | X | X | X |
| **4. Supporting parenting**<br>5 reviews | (32, 43, 45, 47, 49) | X | X | X |
| **5. Helping young people to promote their mental health and well-being**<br>4 reviews | (45, 46, 48, 49) | | X | X |

## 4.3 Intervention characteristics and effectiveness

This section discusses the five intervention categories identified. It begins by describing the characteristics of the interventions in each category and then reports on the main findings made with regard to their effectiveness based on three types of outcomes: 1) reduction of maltreatment and other ACEs; 2) reduction of the consequences of ACEs among children or adolescents; and 3) other outcomes relating mainly to parents or the family environment in general and to schools. In addition, it is important to note that the narrative reviews generally reported the effectiveness of certain programs taken individually, whereas the systematic reviews and the meta-analyses proposed subsequent analyses that provided an overview of the effectiveness of all the interventions studied. The impact of potential moderating factors was often addressed as well.

### 4.3.1 Interventions to reduce poverty

#### Intervention characteristics

Of the eight reviews identified, only one dealt with socioeconomic interventions aimed at reducing family poverty and analyzed their effects with regard to ACEs. This review, by Courtin et al (44), was the first of its kind and it included 33 studies covering a total of 28 interventions. Many of the interventions consisted of new programs, while others concerned the broadening of existing policies. The authors grouped the interventions into seven types, according to their delivery method: income supplements (12 studies), social assistance reforms (8 studies), conditional cash transfers (6 studies), non-conditional cash transfers (2 studies), housing-related interventions (2 studies), health insurance (1 study), and multimodal interventions, including access to financial resources and services (1 study). Conditional cash transfers (as opposed to non-conditional cash transfers) are payments made to recipients under certain conditions, including the obligation to participate in training programs. They are intended to encourage recipients to adopt behaviours that promote their personal development and improve their economic situation.

All of the interventions identified targeted low-income families. The operationalization of targeting criteria varied from one study to the next and depended on the national context. Most of the studies concerned programs implemented in high-income countries (24 studies out of 33). Of these programs, 61% targeted low-income working households, 35% single-parent families, and 4% specific ethnic groups.

#### Intervention effectiveness

Of the 33 studies included in the review, half were randomized; the other half included studies using a quasi-experimental design. In all, the studies included in the review considered 15 different types of outcomes (see Table 3).). The outcomes studied most often were exposure to domestic violence (8 studies), general quality of the family environment (assessed with the *HOME* tool, which combines several items, including the quality of parent-child interactions)

(7 studies), household financial issues (6 studies), parental separation (6 studies), negative parenting practices (6 studies) and mental health issues in a family member (5 studies).

Thirty-five percent of the socioeconomic interventions reported at least one significant effect on one of the elements measured. In fact, the magnitude of the observed effects varied depending on the types of effects studied. The observed effects were large for children who had witnessed or been victims of crime, and for family members struggling with substance abuse. They ranged from moderate to large in the case of exposure to domestic violence, physical abuse, quality score for the general family environment, parental separation and criminal activity on the part of a family member. Lastly, they were small for family financial issues, negative parenting practices, mental health issues in the household and other indicators of maltreatment (sexual abuse, neglect, reports to child protection services). The most promising interventions were those concerning housing, conditional cash transfers and income supplements. In fact, large effects were observed for programs dealing with these three types of intervention.

A summary of the main findings on the effectiveness of the interventions to reduce poverty (44) is presented in Table 3. Appendix 3 details the results according to the type of interventions and the type of outcomes studied.

**Table 3. Effects of interventions to reduce poverty**

| Types of interventions* | Outcomes studied | | | Factors explaining outcome variability |
|---|---|---|---|---|
| | Reduction of ACEs | Reduction of ACE consequences | Other outcomes concerning families | |
| • *Income supplements*<br>• Social assistance<br>• *Conditional direct transfers*<br>• Non-conditional direct transfers<br>• *Housing assistance*<br>• Health insurance<br>• Multimodal delivery | **Maltreatment**<br>• Sexual abuse<br>• Physical abuse<br>• Neglect<br>• Exposure to domestic violence<br>**Other ACEs**<br>• Parents' mental health issues<br>• Substance abuse<br>• Criminality<br>• Parental separation | • Injuries or physical health of child<br>• Separation from family<br>• Victimization<br>• Reports to youth protection services | • Improved quality of the family environment (overall score)<br>• Decrease in negative parenting practices<br>• Decrease in household financial issues | • Types of intervention<br>• Types of effects (indicators considered) |

* Types of interventions: those associated with large effect size are indicated in italics.

### 4.3.2 Interventions to promote access to community-based prevention services

#### Intervention characteristics

Two reviews (43, 45) reported on a number of interventions aimed at promoting the implementation or coordination of community-based prevention services. Some of these interventions, like *Communities That Care*, reduce ACEs. This intervention is a cross-sectoral community program, whose aim is to plan, develop and provide preventive services to support the development of children and adolescents in the community, while ensuring that programs are science based (45). Its objectives include, for example, reducing the school drop-out rate, mental health issues and substance abuse.

Other interventions strove to reduce the consequences of ACEs for young people. This is the case of the *Multidimensional Treatment Foster Care* program, which targets young people who are having (or have had) adverse experiences and present major difficulties, such as substance use or delinquent behaviour. It aims to promote the coordination and accessibility of different types of services (designed for families, set up at school or in the community) with a view to raising community awareness, reducing the consequences of adverse experiences for young people and improving their well-being, as well as ultimately enabling them to continue living in the community (instead of being taken into care by youth protection services) (45). Another program, the *Wraparound Model*, which is used by Children's Aid Societies, follows the same approach (43). It focuses in particular on the establishment of partnerships and collaboration between different community-based actors, on human resource training, and on ensuring the accessibility of appropriate services for young people and their families. Although such interventions are not directly tied to a public health perspective, but rather to social services, they are intended for a population that is particularly at risk of experiencing significant disturbances and consequences associated with ACEs.

#### Intervention effectiveness

The interventions studied were assessed with regard to their reduction of certain ACE consequences. They were accompanied by positive effects for young people, and concerned mainly the improvement of socioemotional skills and the reduction of behavioural issues, mental health issues and substance use. These interventions also had positive effects in terms of school attendance. In the *Communities That Care* program, there was a strengthening of bonds between community members who participated in the intervention. This is one of the factors likely to explain the positive effects of this program when it comes to reducing mental health issues (45). A summary of the main findings of the two reviews identified is presented in Table 4. Appendix 4 details the results according to the reviews and interventions identified.

**Table 4. Effects of interventions to promote access to community-based preventionservices**

| **Types of interventions** | **Outcomes studied** | **Factors explaining the positive effects of the interventions** (45) |
|---|---|---|
| | **Reduction of ACE consequences among young people** (43, 45) | |
| • Interventions to implement cross-sectoral programs adapted to community realities<br>• Interventions to improve access to services (for young people placed in institutions) | **Improvement:**<br>• Socioemotional skills<br>**Decrease:**<br>• Mental health issues<br>• Behavioural issues (e.g. internalized behaviours)<br>• Substance abuse | • Regular participation in group activities<br>• Strong bond between community members<br>• Very positive perception of the support offered by public services or employers |

### 4.3.3 Interventions to make schools conducive to mental health promotion

#### Intervention characteristics

Four of the reviews discussed interventions that were aimed at making schools conducive to the promotion of positive mental health, particularly by ensuring that they adopted a trauma-informed approach. These interventions, which involved various school-based actors, helped to create a safe environment that supported learning and could be implemented at the classroom or school level (43, 45, 46, 48). Classroom-based interventions often took the form of modules integrated into education programs. All students in the class participated. The training was generally aimed at informing students and improving their knowledge of trauma (e.g. its prevalence and effects). It also sought to help them develop their socioemotional skills, including the ability to cope with stress, regulate their emotions, resolve conflicts with peers and develop empathy toward people who have experienced trauma.

Other programs extended beyond the classroom in order to target school staff as a whole and its organization. They generally combined several components, with interventions at different levels, including universal services, such as psychoeducational services aimed at developing stress-coping skills in all students, and trauma-related training for teaching staff. Targeted services for students with a history of trauma or students from communities at greater risk were also offered in the form of trauma symptom detection or psychosocial support, among other things. In addition, some programs involved parents and community members in order to raise their awareness of trauma-related issues and/or establish partnerships to provide additional services to students and families in need of such services.

In short, the interventions identified helped to reduce ACE consequences by making schools conducive to the promotion of students' mental health. To that end, these interventions generally adopted a universal approach targeting all students and other school-based actors. Some universal programs also included actions intended for students who were at risk of trauma or had experienced it.

### Intervention effectiveness

Generally speaking, the programs studied in the four reviews identified (43, 45, 46, 48) had positive effects among young people. In particular, they reduced trauma-related symptoms, improved socioemotional consequences and boosted academic success. Positive effects were also mentioned with regard to the school environment in participating schools (46, 48). In fact, a better link was observed among school-based actors (students, teachers, and students and teachers). In programs involving families or communities, stronger bonds were also noted between schools and parents and with the broader community. A summary of the main effects reported and any explanatory factors mentioned is presented in Table 5. Appendix 5 details the effectiveness results according to the reviews identified.

**Table 5. Effects of interventions to make schools conducive to mental health promotion**

| **Types of interventions** | **Outcomes studied** | | **Factors explaining outcome variability** (46, 48) |
|---|---|---|---|
| | **Reduction of ACE consequences** (43, 45, 46, 48) | **Other outcomes (school-related)** (43, 45, 46, 48) | |
| • Classroom-based interventions<br>• School-wide interventions<br>• Interventions to create bonds between schools and the community | **Improvement:**<br>• Socioemotional skills<br>• Academic success<br>**Decrease:**<br>• Anxiety<br>• Externalized behaviours<br>• Conduct disorders<br>• Criminality<br>• Risky lifestyles<br>• Peer victimization | **Improvement:**<br>• Positive teacher-student relationships<br>• Strong bonds between schools and families/communities<br>• Knowledge (trauma, drugs and drug use)<br>• Satisfaction with the curriculum<br>• Strengthening of bonds between schools and families/communities<br>**Decrease:**<br>• Mental health stigmatization<br>• Use of punishment or exclusion | • Length of programs<br>• Children's age |

More specifically, Roseby et al. (48) conducted a systematic review in which they identified 15 studies on education programs implemented school-wide in order to create trauma-informed school settings. The interventions were assessed in terms of their effects on academic success and related indicators (e.g. marks, attendance, school attachment, teacher-student relationships). The authors noted that the positive effects of interventions were not always consistent across the studies. They mentioned two types of factors that were likely to explain this variability, namely, program length and children's age. Long-term interventions, that is, those that lasted for at least one year and were intended for preschool age children had positive effects on all the aspects studied. The same finding was made, although to a lesser degree, for long-term interventions for older children, that is, of primary and secondary school age. In another review, Herrenkhol et al. (46) also underscored the length of such interventions as one of the parameters likely to explain their effectiveness. It should be noted that, like Roseby et al., they pointed out the poor quality of many of the primary studies included in their review and emphasized the importance of conducting future research using different methodological designs, particularly prospective studies, in order to better assess the effects of "trauma-informed" programs implemented in schools (46, 48).

### 4.3.4 Interventions to support parenting

#### Intervention characteristics

Five reviews focused on interventions with children and their families, implemented to support parents and foster high-quality parent-child interactions (32, 43, 45, 47, 49). Such interventions to support parenting were delivered through home-based interventions, information sessions and workshops for parents, and parent-child (individual or group-based) meetings held as part of community-based programs.

#### *Home-based interventions*

In regard to home-based interventions, it should be noted that (*Period of PURPLE Crying*), only one universal intervention was identified and included in programs of this type, which are usually carried out after the birth of a child. This intervention relies on the dissemination of informational material (43). The other interventions targeted specific clienteles, such as families with low socioeconomic status (43). Certain targeted interventions were intended to prevent ACEs among children living in vulnerable families (e.g. *Families First Home Visiting*) (43), while others aimed to reduce the consequences of ACEs (e.g. home visiting programs for mothers with depression). Such interventions were sometimes based on identifying, in clinical settings, children exposed to ACEs, particularly as a result of parents' mental health issues or substance abuse (32). Home visiting was sometimes the only method of intervention; however, another method was added, if necessary, to follow up on a parent's mental health outside the family setting (32).

Most of these interventions were conducted by nurses, although they were sometimes carried out by other health and social services professionals such as social workers or trained peers. The objectives often included the development of supportive parenting practices and the reduction of parenting stress or mental health issues, and the interventions were assessed on the basis of these aspects. Home-based interventions often provided an opportunity to talk to parents about community-based resources (32).

#### *Community-based parenting support programs*

Interventions implemented for families in community settings were of a psychoeducational or psychological nature. Psychoeducational family interventions were aimed mainly at improving parenting skills and children's well-being. They were often intended exclusively for parents. The information provided to parents concerned children's behavioural issues, physical punishment and attachment issues. Certain programs, like *Triple P*, were intended for all parents, that is, a universal clientele. One of its components also targeted parents living with difficulties related to their children's behaviour (45). Other programs, such as *Safecare,* were intended for a target clientele, namely, parents of young children at risk of maltreatment (45). The intervention for teenage mothers, *Families and Schools Together,* is another example of a targeted psychoeducational intervention (45). It should be noted that the reviews did not always say if the family-based interventions were individual or group-based.

Psychological family-based interventions often addressed issues experienced by parents that had an impact on the family, such as substance abuse (e.g. *Breaking the Cycle*) or domestic violence (e.g. *Mom's Empowerment*). Some interventions were also aimed at reducing conflicts or improving parent-child relationships (e.g. *Multisystematic Therapy*). They were based, in some cases, on trauma-informed and/or cognitive behavioural approaches. Ultimately, these interventions usually aimed to improve parenting practices and children's well-being. Some of them included only parents, but most involved parents and children. All of these interventions addressed target clienteles.

### Intervention effectiveness

All of the reviews (5) dealing with interventions to support parenting (32, 43, 45, 47, 49) reported that this type of program had positive effects for children (e.g. improved socioemotional skills), for parents (e.g. decreased parenting stress) and for parent-child relationships (e.g. attachment). Three of the five reviews also focused on effects related to the reduction of ACEs. In several programs, a decrease was noted in various forms of maltreatment and other ACEs in participating families (e.g. reduction of parent's mental health issues and substance abuse) (32, 43, 45). A summary of the effectiveness of interventions to improve the family setting through parenting support is presented in Table 6. Appendix 6 details the effectiveness results for the reviews concerning interventions targeting the family setting through parenting support.

**Table 6. Effects of interventions targeting parenting support**

| Types of interventions | Outcomes studied | | | Factors explaining outcome variability (32, 47) |
|---|---|---|---|---|
| | **Reduction of ACEs** (32, 43, 45) | **Reduction of ACE consequences** (32, 43, 45, 47, 49) | **Other outcomes** (32, 43, 45, 47, 49) | |
| • Psychoeducational interventions<br>• Mental health consultation/ counselling<br>• Referrals to social services | **Maltreatment**<br>• Abuse<br>• Neglect<br>• Domestic violence (exposure)<br>**Other ACEs**<br>• Caregivers' mental health issues<br>• Substance abuse by parents | **Improvement:**<br>• Childrens' socioemotional skills<br>**Decrease:**<br>• Trauma-related symptoms<br>• Use of drugs or alcohol | **Family level**<br>**Improvement:**<br>• Parent-child relationships<br>• Positive parenting practices<br>• Sense of parenting efficacy<br>**Decrease:**<br>• Parenting stress<br>**Community level**<br>**Improvement:**<br>• Use of community-based health and social services | • Characteristics of interventions: components, intensity, duration, involvement of a professional<br>• Type of trauma<br>• Child's gender |

The systematic review by Marie-Mitchell et al. (32) dealt specifically with interventions for children under the age of 5 living with ACEs as well as their families, recruited in pediatric clinical settings. The interventions studied were programs often consisting of several components, in particular, home visiting, mental health counselling and social service referrals. Generally speaking, these interventions were accompanied by decreased exposure to domestic violence and positive effects for children, such as a reduction of trauma-related symptoms, and for parent-child relationship. The interventions most likely to be effective were those comprising several components, high-intensity interventions, such as home visiting over a period of at least three months, and those provided by a pediatric primary care professional. The review by Johnson et al. (47) concerned community-based parent-child workshops and reported positive effects for children. The authors noted that effects varied depending on the duration of interventions. In the case of the narrative reviews (43, 45, 49), several of the programs identified were accompanied by positive effects with regard to reducing maltreatment and other ACEs, as well as improving the family environment. It should be noted that the narrative reviews rarely provided information on factors likely to explain the results pertaining to the effectiveness of interventions.

### 4.3.5 Interventions to support young people with a view promoting their mental health and well-being

#### Intervention characteristics

Three reviews (43, 45, 46) dealt with interventions targeting exclusively young people (that is, not involving the family). These interventions were implemented in the community or in schools, and allow to act with young people directly in order to provide them with psychological support likely to promote their mental health and well-being.

The community-based interventions targeted adolescents. They were of two types, namely, mentoring interventions and psychological interventions. They both helped to mitigate the consequences of ACEs experienced by young people. The *Big Brothers Big Sisters Program* is one example of a mentoring program implemented in the community, and it consists in pairing adolescents with an adult who plays a positive role in their life, is of the same gender and has the same interests. The few psychological interventions implemented in community settings and targeting adolescents were often based on a cognitive behavioural approach (49).

The other interventions targeting young people were carried out in schools. Basically, they involved individual or small group-based psychological and/or psychoeducational interventions implemented in addition to education programs. Generally speaking, two types of programs can be identified: those based exclusively on a psychological approach and using primarily a cognitive behavioural approach, and those that combined both a psychological and a psychoeducational approach. The psychological programs aimed to strengthen students' socioemotional skills and help them to develop skills for coping with stress. They were based on individual or group-based sessions between mental health professionals and students. The students who took part in these sessions usually had symptoms related to stress and trauma or attention issues. Other programs combined the cognitive behavioural approach with other strategies, such as mindfulness. This strategy consists in helping people to be attentive to the effects of stress on their emotions, to develop a meditative approach that they can use in school and during their interactions in general, to strengthen their communication and problem-solving skills, and to develop their ability to cope with stress. The programs were implemented by mental health professionals or individuals recruited from the community and trained for that purpose. Programs of this type were based, in particular, on the *Cognitive Behavorial Interventions for Trauma in Schools* model.

#### Intervention effectiveness

One of the reviews dealt with adult mentoring interventions (45). The results of its assessment showed that adolescents who took part in such programs were more likely to reduce their alcohol and drug use and have less violent or criminal behaviour than adolescents who did not take part.

Individual or group-based psychological and psychoeducational interventions in schools or in the community were effective for reducing symptoms related to stress and trauma, emotional or psychological issues in general (e.g. signs of anxiety or depression) and the behavioural issues of young people exposed to ACEs. A summary of the effectiveness of interventions to provide direct support to young people for promoting their mental health and well-being is presented in Table 7. Appendix 7 details the effectiveness results for the reviews that concern those interventions.

**Table 7. Effects of interventions to help young people promote their mental health and well-being**

| **Types of interventions** | **Outcome studied: Reduction of ACE consequences** (43, 45, 46) | **Factors explaining outcome variability** (44) |
|---|---|---|
| Therapeutic and psychoeducational interventions | **Improvement**<br>• Socioemotional skills<br>**Decrease**<br>• Post-traumatic symptoms<br>• Stress-related biological markers | • Not reported |
| Mentoring | **Decrease**<br>• Alcohol and drug use<br>• Violence and criminality | • Degree of implementation |

# 5 DISCUSSION

This review of reviews focused on interventions whose effectiveness was measured with regard to reducing ACEs and their consequences. The review identified interventions with a wide range of targets. No results pertaining directly to effects on suicide were reported in the reviews. However, a number of observations were made, and the following sections will discuss and highlight the implications for suicide prevention for each type of intervention. The review's strengths and limits will then be presented.

## 5.1 Interventions to reduce poverty: creating leverage to reduce ACEs and prevent suicide

The interventions aimed at reducing poverty took the form of income supplements and housing assistance. Such interventions are likely to reduce the occurrence of different types of ACEs, particularly maltreatment. This finding is supported by more recent studies (50–52) concerning the *Earned Income Tax Credit* (EITC), a program implemented in the United States to support low-income workers through benefits paid by both federal and state governments. These studies have drawn attention to the importance of taking benefit amounts into account in order to better analyze the impact of social policies on ACE reduction. For example, one study (50) showed that a 10% increase in the amounts provided by individual states (compared to those awarded by the federal government) was associated with a decline in cases of maltreatment, especially neglect (a decrease of 241 cases of neglect per 100,000 children aged 0 to 17 years). The EITC program has also been associated with a reduction in the percentage of children entering foster care (51), as well as with a decrease in alcohol use and depressive symptoms among single mothers, particularly among those less educated (52).

Although the present review did not directly assess the benefits of poverty reduction interventions on suicide, two primary studies from the scientific literature on suicide have examined this question (53, 54). They looked at the U.S. government program mentioned above, namely, the EITC. Their main finding was that this program was associated with a decrease in death by suicide rates, suicidal ideation and suicide attempts when it was fairly generous (53, 54). Using suicide data for the period between 1996 and 2016, one of the studies showed that the suicide rate fell significantly (by 3.91%) in states that had provided generous benefits compared to states that had not implemented the program (54).

In keeping with the conceptual framework of this review, the links between ACEs and suicide presented above suggest that interventions which address social and economic factors such as family poverty are likely to reduce the occurrence of ACEs and their consequences, including suicide. In fact, Québec's suicide prevention strategy underscores the importance of supporting, in particular, socioeconomically disadvantaged population groups. It should be noted that for the period 2009-2013 in Québec, the death by suicide rate for people from disadvantaged groups was twice as high as among people from privileged groups (21). Other reference documents at the international level have stressed the relevance of measures implemented to

support families economically (55) and thus create leverage to prevent suicide and reduce social health inequalities.

## 5.2 Interventions to promote access to community-based prevention services: some promising results

In this review, the number of interventions to improve community-based services was much lower than for other types of interventions. Some had positive effects on young people, particularly with regard to reducing mental health issues. *Communities That Care* is one of the programs that was studied in the reviews identified. It demonstrates the positive effects with respect to the reduction of suicide risk factors and the increase in protection factors. In fact, it helps to improve young people's mental health and social skills, while strengthening community bonds. This program has been assessed in other studies, whose findings show significant results concerning, in particular, the decline in psychoactive substance use and delinquency among young people who take part in the program (56, 57).

In short, interventions to promote access to community-based prevention services for young people and families experiencing major difficulties (especially ACEs) are likely to reduce ACE consequences and to help prevent suicide. More studies are needed on this topic.

## 5.3 School-based interventions: a good way to reduce ACE consequences, improve mental health and help to prevent suicide

Several of the reviews concerning interventions carried out in schools focused on programs that are based on a *trauma-informed approach* (46, 48) This approach aims to create trauma-informed settings (in this case schools), avoid retraumatization and promote mental health. In general, such interventions include a universal action component targeting students as a whole as well as members of the educational community. They sometimes include the family and the community. In addition, some programs comprise an action component targeting students at risk of trauma, or young people presenting symptoms that might be linked to trauma, such as emotional or behavioural issues. They are psychological interventions intended to help young people promote their mental health and well-being. They are described in section 4.3.5.

All of the interventions designed to make schools trauma-informed were assessed with regard to their effects on ACE consequences, but not to their occurrence. The results highlight their potential for reducing ACE consequences, some of which constitute suicide risk factors (58). In fact, interventions that use a trauma-informed approach help to reduce post-traumatic symptoms and to improve mental health and socioemotional skills (32, 46, 48). In that regard, it is important to stress that the existence of school-based interventions likely to improve mental health is considered to be a suicide protection factor in itself (58).

Some of the interventions identified in the reviews selected were also assessed in other studies not dealing specifically with the effectiveness of such interventions for reducing ACEs or their consequences. These interventions were implemented on a large scale and assessed, in particular, on the basis of cohort follow-ups lasting for several years. The results confirm the long-term effects of these programs on suicide risk factors. For example, the *Life Skills Training* (LST) program, implemented in more than 40 countries over the past 30 years (59), helps to reduce psychoactive substance use (60–62), delinquency and violent behaviour, which constitute suicide risk factors (63). *Promoting Alternative Thinking Strategies* (PATHS) is another example of a large-scale program that has been studied on numerous occasions (64–66). It should be noted that such interventions were identified as being compatible with the trauma-informed approach included in the reviews identified (46, 48); however, they also target, in a general way, mental health promotion among students. Programs of this type build on universal interventions or targeted interventions, and sometimes both. In that regard, the literature demonstrates that universal school-based interventions intended for all students and staff (67–69) or targeted interventions for at-risk young people (70–72) have all proved their worth when it comes to improving students' mental health and well-being. However, to maximize the effectiveness of school-based programs, it is important to combine universal and targeted interventions, especially by incorporating targeted actions into universal programs. It is also important to focus interventions on positive mental health promotion (59, 73).

All of these findings demonstrate the usefulness of school-based interventions for reducing ACE consequences, improving young people's mental health and potentially preventing suicide risk. In light of the above-mentioned studies, a global approach for promoting mental health in schools, based on a combination of universal and targeted actions for both students and the school community appears to be a good way to address these different issues. It is important to take the time to better understand the factors likely to help improve the effectiveness of school-based programs.

## 5.4 Interventions to support parenting: positive effects on the development of young people, their mental health and that of their parents

Several reviews focused on interventions carried out with families in order to support parenting and improve parent-child interactions (32, 43, 45, 47, 49). This type of intervention has been studied widely. Interventions take the form of home visiting programs, information sessions and workshops for parents or parent-child meetings held as part of community-based programs. Interventions targeting specifically the reduction of ACEs (e.g. maltreatment and parent alcohol use) are often psychological interventions, sometimes carried out with families recruited in clinical settings. Generally speaking, interventions targeting parenting support are effective for both children and parents. They improve children's attachment and socioemotional skills and reduce parenting stress. Certain interventions are also associated with a decrease in ACEs, specifically exposure to domestic violence, as well as with parental depression and substance

abuse (32). A recent article based on a systematic review and a meta-analysis demonstrated the effectiveness of home visiting interventions to reduce the recurrence of ACEs (74).

Although none of the reviews selected identified interventions with a specific effect on suicide prevention, family-based interventions make it possible to act on suicide risk and protection factors. The conceptual framework presented earlier highlights the effect of parenting support interventions. Such interventions can be used to 1) act on ACEs even before they occur, by preventing their occurrence; 2) act directly on the interpersonal action mechanism of ACEs, by giving priority to attachment and a positive parent-child relationship; and 3) act on the consequences of ACEs by attempting, for example, to reduce symptoms related to trauma or mental disorders. In short, several targets of family-based interventions can prevent suicide. Moreover, a document put out by the Centers for Disease Control and Prevention underscores the usefulness of this kind of interventions to prevent suicide (55).

## 5.5 Interventions aimed at supporting young people on a psychosocial level: a contribution to reducing ACE consequences

Direct interventions with young people (i.e. not involving the family) are carried out in schools or communities. Usually they are psychoeducational or psychological in nature. They make it possible to reduce ACE consequences. They have positive effects on young people's mental health and the development of their socioemotional skills and can thereby help them to reduce the risk of suicide. Interventions that offer psychological support are more likely to be effective when they involve a mental health professional rather than school- or community-based actors trained for that purpose (32, 72). However, psychological interventions carried out in living environments (community, school or family) are often incorporated into other activities, thus giving rise to a series of related actions that are more likely to be effective for improving a young person's mental health and well-being. Interventions of this type are implemented with a view to preventing and promoting young people's mental health (70, 75).

Mentoring by adults is another intervention that was mentioned in the reviews selected. It consists in pairing a young person with an adult of the same gender and sharing the same interests to enable the young person to develop a positive relationship. An analysis of the effectiveness of this type of intervention has highlighted the positive effects, particularly on the reduction of substance use and delinquency among youth at risk of trauma. A meta-analysis of mentoring interventions supports these findings (76). It would be useful to conduct studies dealing specifically with the effects of this type of intervention on suicide.

## 5.6 Strengths and limits of the analysis

### Strengths

This synthesis has adopted an innovative approach in that it focuses on ACEs as a suicide risk factor and on taking such events into account in promotion and prevention interventions. It has thus helped to support concrete reflection on ways to consider ACEs in suicide prevention. It should also be noted that this synthesis is based on a review of both the scientific literature and the grey literature. As a result, the design selected, namely, a review of reviews, has made it possible to develop a typology of interventions incorporating a wide range of promising practices for reducing ACEs and their consequences. A large number and variety of intervention targets were identified in the course of the review. Lastly, the fact that the analysis was done in various complementary stages has shed even more light on potential actions for reducing ACEs and their consequences. In addition to analyzing the characteristics and effectiveness of the interventions identified in the reviews, this synthesis has led to the development of a conceptual framework. The interventions have been discussed in relation to this framework and additional literature.

### Limits

Certain limits are inherent to the review of reviews methodology. Despite the literature selected, certain types of documents may not have been identified, including articles presenting primary studies on specific interventions not contained in the reviews chosen (e.g. interventions aimed specifically at reducing domestic violence or public policies that indirectly reduce maltreatment). Nonetheless, additional research in the scientific literature has made it possible to discuss certain studies not highlighted in the reviews. In the same vein, only interventions that had been assessed were selected. Documents on the implementation of interventions and related factors were not considered, which means that certain innovative interventions that had not been assessed with regard to their effectiveness may have been set aside. In addition, with regard to the impact of social policies, future studies evaluating policies implemented in Québec would help to identify specific courses of action for the province. The lack of studies dealing specifically with the effects of the interventions identified on reducing suicidal behaviours or actions among people who have experienced ACEs limits conclusions about the interventions' effectiveness. That being said, many of the aspects discussed in this analysis provide arguments that demonstrate the usefulness of actions based on the types of interventions studied in order to act on suicide determinants and prevent their occurrence.

# 6 CONCLUSION

Interventions likely to reduce ACEs and their consequences have significant potential to prevent suicide because they can address several major suicide risk factors and increase protective factors as of childhood and adolescence. Since multilevel interventions are effective, a global approach based on the synergy of interventions appears to be a good choice and can be given priority. The present analysis has identified some examples of interventions based on different targets and it describes their characteristics. It thus provides an overview of various types of useful interventions that should be considered. The analysis also sheds light on the effectiveness of different types of interventions for reducing the occurrence of ACEs and/or their consequences. As well, it underscores the importance of ensuring that programs implemented in various living environments, that is, families, schools and communities, include actions targeting at-risk groups (that are experiencing ACEs or are vulnerable from a socioeconomic standpoint) and also actions intended to universal population, so that these settings can be conducive to preventing or reducing ACEs and their consequences. Lastly, this analysis has identified a few avenues for future research, concerning, in particular, the importance of having access to data on the effectiveness of the interventions concerning suicide prevention.

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# APPENDIX 1 LITERATURE SEARCH STRATEGY

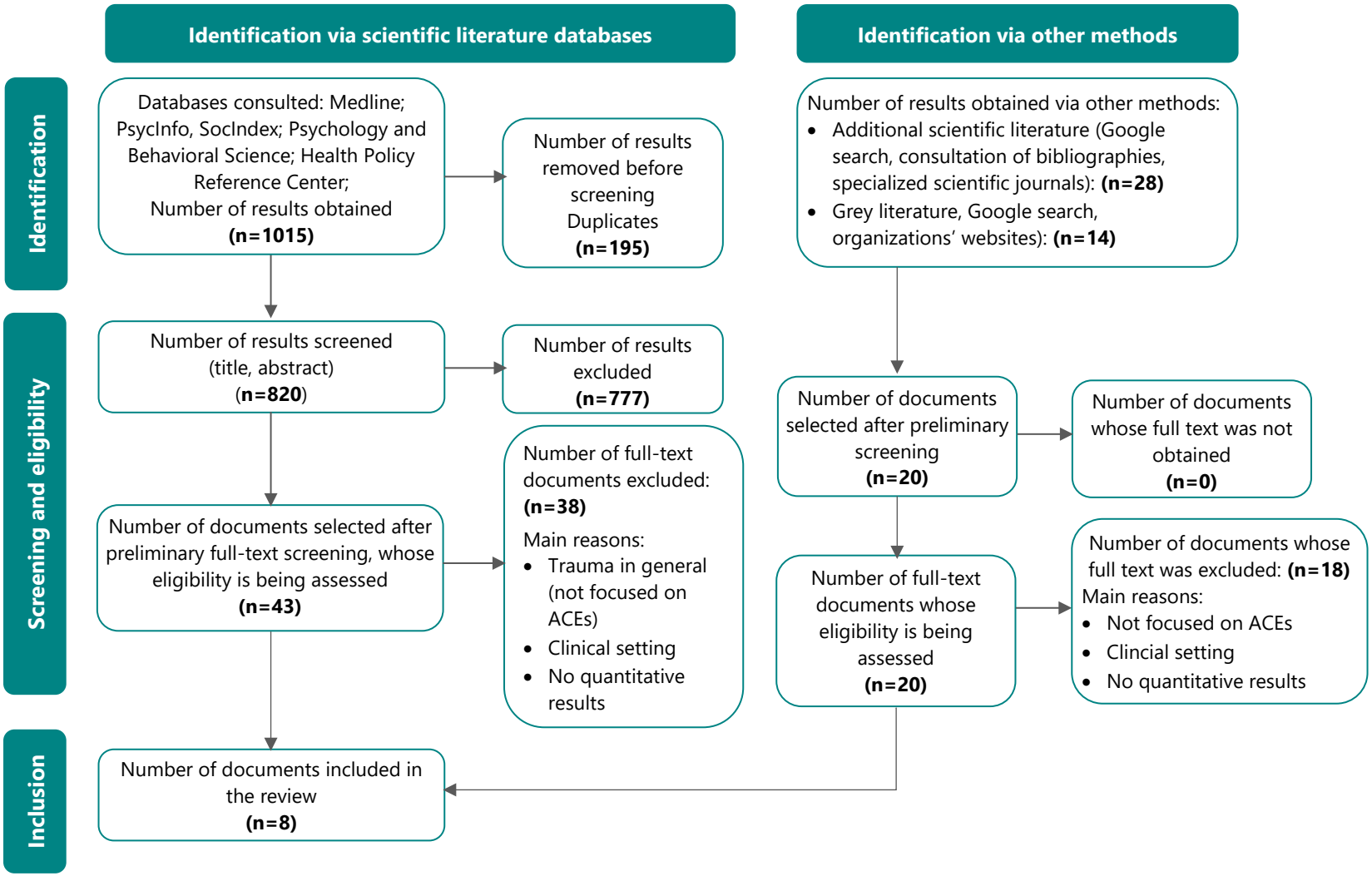
## Ovid search strategy

| # | Query | Results |
|---|---|---|
| 1 | ("adverse childhood experience*" or ((childhood or adolescen* or "early life") adj (trauma or traumas or (traumatic adj3 experience*))) or "trauma informed").ti,ab. or adverse childhood experiences/ | |
| 2 | (intervention* or policies or policy or practice* or program* or prevent* or promot* or mitigat*).ti,ab. | |
| 3 | (((systematic OR state-of-the-art OR scoping OR literature OR umbrella OR narrative) ADJ (review* OR overview* OR assessment*)) OR "review* of reviews" OR meta-analy* OR metaanaly* OR ((systematic OR evidence) ADJ1 assess*) OR "research evidence" OR metasynthe* OR meta-synthe*).tw. OR exp Review Literature as Topic/OR exp Review/OR Meta-Analysis as Topic/OR Meta-Analysis/OR "systematic review"/ | |
| 4 | 1 and 2 and 3 | |

## EBSCO search strategy

| # | Query | Results |
|---|---|---|
| S1 | TI("adverse childhood experience*" or ((childhood or adolescen* or "early life") N1 (trauma or traumas or (traumatic N3 experience*))) or "trauma informed") OR AB("adverse childhood experience*" or ((childhood or adolescen* or "early life") N1 (trauma or traumas or (traumatic N3 experience*))) or "trauma informed") | |
| S2 | TI(intervention* or policies or policy or practice* or program* or prevent* or promot* or mitigat*) OR AB(intervention* or policies or policy or practice* or program* or prevent* or promot* or mitigat*) | |
| S3 | TI (((systematic OR state-of-the-art OR scoping OR literature OR umbrella OR narrative) W0 (review OR reviews OR overview* OR assessment*)) OR "review* of reviews" OR meta-analy* OR metaanaly* OR ((systematic OR evidence) N1 assess*) OR "research evidence" OR metasynthe* OR meta-synthe*) OR AB (((systematic OR state-of-the-art OR scoping OR literature OR umbrella OR narrative) W0 (review OR reviews OR overview* OR assessment*)) OR "review* of reviews" OR meta-analy* OR metaanaly* OR ((systematic OR evidence) N1 assess*) OR "research evidence" OR metasynthe* OR meta-synthe*) OR KW (((systematic OR state-of-the-art OR scoping OR literature OR umbrella) W0 (review OR reviews OR overview* OR assessment*)) OR "review* of reviews" OR meta-analy* OR metaanaly* OR ((systematic OR evidence) N1 assess*) OR "research evidence" OR metasynthe* OR meta-synthe*) | |
| S4 | S1 AND S2 AND S3 | |

# APPENDIX 2 PRISMA FLOW DIAGRAM




Adapted from the *PRISMA 2020 flow diagram*. Links to the guide *Organigramme de la recherche documentaire: Guide d'élaboration étape par étape* and *the PRISMA 2009 flow diagram.*

# APPENDIX 3 EFFECTIVENESS OF INTERVENTIONS TO REDUCE POVERTY

| | Types of interventions | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Income supplements** (12 studies) | **Social assistance reforms** (8 studies) | **Conditional transfers** (6 studies) | **Non-conditional transfers** (3 studies) | **Housing** (2 studies) | **Health insurance** (1 study) | **Multimodal interventions** (1 study) |
| **Maltreatment** | | | | | | | |
| Sexual abuse | | 0 | 0 | | | | |
| Physical abuse | 0 | 0 | | | | | |
| Neglect | √ | √ | | | | | |
| Exposure to domestic violence | √ | √ | √ | 0 | | | 0 |
| **Other adverse childhood experiences related to parents' issues** | | | | | | | |
| Mental health issues | 0 | 0 | 0 | | | | |
| Substance abuse | √ | | | | | | |
| Criminality | √ | | | | | | |
| Separation | √ | √ | √ | | 0 | | |
| **Other outcomes studied concerning children** | | | | | | | |
| Injuries and physical health | 0 | | | | | | |
| Separation from family | | 0 | | | | | |
| Victimization (crimes involving children) | | | | | √ | | |
| Reports to or placement in youth protection | | √ | | | | | |

# APPENDIX 3 EFFECTIVENESS OF INTERVENTIONS TO REDUCE POVERTY (CONT.)

| | Types of interventions | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Income supplements** (12 studies) | **Social assistance reforms** (8 studies) | **Conditional transfers** (6 studies) | **Non-conditional transfers** (3 studies) | **Housing** (2 studies) | **Health insurance** (1 study) | **Multimodal interventions** (1 study) |
| **Other outcomes studied concerning families** | | | | | | | |
| Quality of family environment | √ | 0 | 0 | | | | |
| Negative parenting practices | √ | 0 | | 0 | | | |
| Financial issues | √ | 0 | | | | 0 | |

Legend:

- 0: Indicates that the effect was measured, but that no significant effect was noted.
- √: Indicates that the effect was measured and that a significant effect was noted.

# APPENDIX 4 EFFECTIVENESS OF INTERVENTIONS TO PROMOTE ACCESS TO COMMUNITY-BASED PREVENTION SERVICES

| **References**<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome variability** |
|---|---|---|---|---|
| | | **Reduction of ACEs** | **Other outcomes** | |
| **Di Lemma et al., 2019**<br>Narrative review<br>(180 studies,<br>110 interventions)<br>Universal population and target groups (young people placed in institutions) | • Interventions targeting groups/communities according to geographical location (neighbourhood), cultural affiliation or link to organizations (e.g. in the workplace).<br>Two programs identified:<br>• *Communities That Care* (CTC) Universal, multiagency community-based program.<br>• *Multidimensional Treatment Foster Care* (MTFC) Program to promote implementation of and access to services through cooperation between various organizations for young people placed in foster care. | **Maltreatment**<br>• No effect<br>**Other ACEs**<br>• No effect | **Young people**<br>**CTC**<br>• Decrease in mental health issues<br>• Improvement of socioemotional skills<br>**MTFC**<br>• Decrease in school absence, school failure, substance abuse, mental health issues behavioural issues and at-risk lifestyles. | **CTC**<br>• Strong cultural connection<br>• Regular participation in group activities<br>• Very positive perception of the support offered by public services or employers |
| **Carsley et al., 2020**<br>Narrative review<br>(32 studies)<br>Target groups | One program identified:<br>• *Wraparound Model* used for Children's Aid Societies<br>Program to coordinate services for young people in youth protection. | **Maltreatment**<br>• No effect<br>**Other ACEs**<br>• No effect | • Non-significant effects studied. | |

# APPENDIX 5 EFFECTIVENESS OF INTERVENTIONS TO MAKE SCHOOLS CONDUCIVE TO MENTAL HEALTH PROMOTION

| **REFERENCES**<br>Settings<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome variability** |
|---|---|---|---|---|
| | | **Reduction of ACEs** | **Other outcomes** | |
| **Roseby et al., 2021**<br>Systematic review<br>(15 studies included)<br>• Schools<br>• Population exposed to ACEs | • School-wide interventions, programs often included in the curriculum. | • No effect | **Children:**<br>• Decrease in internalized behaviours.<br>• Improvement of self-regulation, resilience, attention and school attendance.<br>**Schools:**<br>• Improved school attachment, more positive teacher-student relationships. | • Length of programs<br>• Children's age<br>• Types of effects |
| **Herrenkohl et al., 2019**<br>Literature review<br>(30 studies included)<br>• Schools<br>• Universal population and target groups | • Classroom-based or school-wide interventions, programs often included in the curriculum, and implemented on a large scale.<br>• Programs implemented only in schools, or in collaboration with families or communities.<br>Examples:<br>• *The Resilience Classroom Curriculum,*<br>• *Curriculum Adjustment and Trauma Services* (CATS)<br>• *Healthy Environments and Response to Trauma in Schools* (HEARTS) | • No effect | **Children:**<br>• Decrease in post-traumatic symptoms.<br>• More empathy for peers and better problem-solving skills.<br>**Schools:**<br>• Increase in knowledge about trauma, strong bond among students, and among teachers, positive student-teacher relationships, satisfaction with education programs.<br>• Decrease in stigmatization associated with mental health issues, use of punishment or exclusion for bad behaviour. | • Length of programs |

# APPENDIX 5 EFFECTIVENESS OF INTERVENTIONS TO MAKE SCHOOLS CONDUCIVE TO MENTAL HEALTH PROMOTION (CONT.)

| **References**<br>Settings<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome variability** |
|---|---|---|---|---|
| | | **Reduction of ACEs** | **Other outcomes** | |
| **Di Lemma et al., 2019**<br>Narrative review<br>(180 studies,<br>110 interventions)<br>• Schools<br>• Universal population and target groups | School-wide programs, included in the curriculum or implemented separately<br>Examples:<br>• *Good Game Behaviour* (GBG)<br>• *Promoting Alternative Thinking Strategies* (PATHS)<br>• *Families and Schools Together* (FAST) | • No effect | **Young people:**<br>• Decrease in trauma symptoms (anxiety, externalized behaviours, violence)<br>• Improved socioemotional skills<br>• Decrease in behavioural issues, criminality and at-risk lifestyles<br>• Improved school indicators<br>**Schools:**<br>• Improved climate in schools | • Not reported |
| **Carsley et al., 2020**<br>Narrative review<br>*(*32 studies*)*<br>• Schools<br>• Universal population and target groups | School-wide programs, included in the curriculum or implemented separately.<br>Examples:<br>• *ESPACE Workshop*<br>• *Fourth R*<br>• *Life Skills Training* (LST) | • No effect | **Young people:**<br>• Improved knowledge/recognition of situations of abuse (inappropriate touching)<br>• Decrease in peer victimization<br>• Improved knowledge about drugs and their use<br>**Schools:**<br>• Decrease in violence in participating schools<br>• Increase in connections between school members and the community | • Not reported |

# APPENDIX 6 EFFECTIVENESS OF INTERVENTIONS TO SUPPORT PARENTING

| **References**<br>Settings<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome variability** |
|---|---|---|---|---|
| | | **Reduction of ACEs** | **Other outcomes** | |
| **Marie-Mitchell et al., 2019**<br>Systematic review<br>(22 studies included)<br>• Families, communities<br>• Population exposed to ACEs | Multicomponent interventions including **home-based interventions**:<br>• Parenting support<br>• Mental health consultation/counselling<br>• Referrals to social services | **Maltreatment:**<br>• Exposure to domestic violence<br>**Other ACEs:**<br>• Parents' mental health (depression)<br>• Alcohol or drug abuse | **Children:** trauma symptoms, socioemotional and cognitive development, chronic or physical health issues, biomarkers.<br>**Family/interpersonal:** parent-child relationships<br>**Communities:**<br>• Use of health services<br>• Use of community services | Three characteristics of interventions:<br>• Multicomponent,<br>• High intensity,<br>• Involvement of a mental health/ primary care professional |
| **Johnson et al., 2018**<br>Meta-analysis<br>(22 studies)<br>• Communities<br>• Population exposed to ACEs | **Parent-child sessions:**<br>• Psychotherapy<br>• Parenting education<br>• Referrals to social services | • No effect | **Children:** trauma symptoms, socioemotional skills (internalized behaviours* externalized behaviours*).<br>**Family/interpersonal:** negative parenting practices, positive parenting practices, parenting stress. | • Type of trauma<br>• Length of interventions (only significant factor)<br>• Study design |
| **Purewall-Boparai et al., 2019**<br>Systematic review<br>(40 studies)<br>• Communities<br>• Population exposed to ACEs | **Parent-child sessions:**<br>• Psychotherapy<br>• Parenting education<br>• Referrals to social services | • No effect | **Children:** biological markers | |

# APPENDIX 6 EFFECTIVENESS OF INTERVENTIONS TO SUPPORT PARENTING (CONT.)

| **References**<br>Settings<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome variability** |
|---|---|---|---|---|
| | | **Reduction of AECs** | **Other outcomes** | |
| **Di Lemma et al. 2019**<br>Narrative review<br>(180 studies)<br>• Families, communities<br>• Universal population and target groups | **Home-based interventions:**<br>Example:<br>• *Family Nurse Partnership* (FNP)<br>**Parent-child sessions**<br>(community)<br>Examples:<br>• *Triple P*<br>• *Incredible Years* (IY) | **Maltreatment**<br>**Other ACEs:**<br>• Caregiver's mental health<br>• Substance abuse | **Children:** socioemotional skills, decrease in substance abuse (adolescents).<br>**Family/interpersonal:** parenting practices, decrease in household financial issues | |
| **Carsley et al. 2020**<br>Narrative review<br>(32 studies)<br>• Families, communities<br>• Universal population and target groups | **Home-based interventions**<br>Examples:<br>• *Nurse-Family Partnership* (NFP)<br>• *Family First Home Visiting* (FFHV)<br>• *Period of PURPLE Crying* (PURPLE)<br>**Parent-child sessions**<br>Examples:<br>• *Renascent's Children's Program*<br>• *Families and Schools Together* (FAST)<br>• *Incredible Years* (IY)<br>• *Positive Discipline in Everyday Parenting* (PDEP) | **Maltreatment:**<br>• Abuse<br>• Neglect<br>**Other ACEs:**<br>• Caregiver's mental health<br>• Substance abuse | **Children:** decrease in trauma-related symptoms (depression), socioemotional skills, fewer placements in foster care, fewer hospitalizations due to maltreatment, decrease in intimate partner violence (adolescents), and less substance abuse (adolescents).<br>**Family/interpersonal:** attachment, parenting practices, feeling of parental effectiveness, reduced parenting stress, fewer household financial issues, more cohesion/communication in the household. | • Gender |

# APPENDIX 7 EFFECTIVENESS OF INTERVENTIONS TO HELP YOUNG PEOPLE PROMOTE THEIR MENTAL HEALTH AND WELL-BEING

| **References**<br>Settings<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome viability** |
|---|---|---|---|---|
| | | **Reduction of ACEs** | **Other outcomes** | |
| **Herrenkohl et al., 2019**<br>Literature review<br>(30 studies included)<br>• Schools<br>• Population exposed to ACEs | **School-based therapy and psychoeducational interventions**<br>• Psychotherapy sessions (individual or in small groups)<br>• Programs implemented outside the curriculum<br>• Mainly CBT<br>Examples:<br>• *Trauma-Focused Cognitive Behavioral Therapy* (TF-CBT)<br>• *RAP Club program* | • No effect | **Children:**<br>• Decrease in symptoms associated with post-traumatic stress disorder<br>• Decrease in other trauma-related symptoms (depression, anxiety, behavioural issues)<br>• Socioemotional skills<br>• Academic success<br>**Family/interpersonal:**<br>• None | |
| **Di Lemma et al. 2019**<br>Narrative review<br>(180 studies,<br>110 interventions)<br>• Schools, communities<br>• Universal population and target groups | **Mentoring** (community-based)<br>• Making support and a support network available to adolescents at risk of adversity<br>Example:<br>• *Big Brothers Big Sisters* (BBBS) | • No effect | **Young people:**<br>• Decrease in drug or alcohol use<br>• Decrease in violence and criminality<br>• Academic success<br>**Family/interpersonal:**<br>• None | • Degree of implementation |
| | **School-based therapy and psychoeducational sessions**<br>Example:<br>• *Safe Dates* | • No effect | **Young people:**<br>• Socioemotional skills<br>• Decrease in behavioural issues (aggressive behaviour)<br>• Maltreatment including domestic violence)<br>• Decrease in violence *(dating abuse victimization and perpetration)*<br>**Family/interpersonal:**<br>• None | • Not reported |

# APPENDIX 7 EFFECTIVENESS OF INTERVENTIONS TO HELP YOUNG PEOPLE PROMOTE THEIR MENTAL HEALTH AND WELL-BEING (CONT.)

| **References**<br>Settings<br>Target population | **Interventions** | **Outcomes studied** | | **Factors explaining outcome variability** |
|---|---|---|---|---|
| | | **Reduction of ACEs** | **Other outcomes** | |
| **Carsley et al. 2020**<br>Narrative review<br>(32 studies)<br>• Schools<br>• Universal population and target groups | **Therapeutic interventions**<br>Examples:<br>• *Adolescents Coping with Stress*<br>• *Pare-Chocs*<br>• *FRIENDS Program* | • No effect | **Young people:**<br>• Decrease in behavioural issues<br>• Decrease in anxiety and depression<br>**Family/interpersonal:**<br>• None | • Not reported |

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