



Literature Review

Risk and Protective Factors of Self-Harm and Suicide in Adolescents in The Era of Society 5.0: A Systematic Review

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ABSTRACT

Introduction: Suicide and self-harm have been ranked as the fourth leading causes of mortality among adolescent population. Preventive interventions are necessary due to the rising prevalence. The aimed of this study was to identify the risk and protective factors of self-harm and suicidal behavior among adolescents in the era of society 5.0.

Methods: This study was a literature review. Published, English articulated were retrieved from Scopus, Web of Science, PubMed, and CINAHL databases, limited to the last five years from 2018 to 2023. The specific keywords used to search for articles were ("Self-harm" OR "Self-injurious behavior" OR "Self-destructive behavior") AND suicid* AND (adolescent OR youth OR teenager).

Results: Eleven (n=11) articles were synthesized and resulted based on thematic analysis of eleven articles, five risk factors and three protective factors for self-harm and suicidal behavior in adolescents were found. Five risk factors consist of family dysfunction, experience of being a victim of bullying, history of self-harm, maladaptive coping and having a history of mental disorders. Meanwhile, three protective factors for prevention are family support and attachment, school support and positive activities.

Conclusions: The rapid influence of technology in the era of society 5.0 which was triggering self-harm and suicide behaviors can be suppressed with a strong support system in adolescents. Family, education, and peers play crucial roles in fostering adolescents' emotional well-being. Considering both risk and protective factors, Further examination is to deeply understand adolescents engage in self-harm and suicide is warranty.

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1. INTRODUCTION

The era of *society* 5.0 was pioneered by Japan in 2016, which is defined by the advancement digital technology (Mayumi Fukuyama, 2018). The word of society 5.0 has been referred to as the Internet of Things (IoT), artificial intelligence (AI), and robotics. These advancements have a profound effect on every area of peoples' lives (Rahmawati et al., 2021). For the most recent, the positive and negative impacts of the evolution of digital technology on physical or mental health are increasing simultaneously (Putri & Afiati,

2021). As the largest users of technology among the group of ages, the impact of technological advances was widely reported among teenagers (Benvenuti et al., 2023; Moreno et al., 2022). The usability of technology has been studied to be associated with adolescent's mental health such as PIU, depression, anxiety, FOMO, and body image concerns (Milyavskaya et al., 2018; Moreno et al., 2013; Sedgwick et al., 2019; Viner et al., 2019; Woods & Scott, 2016). With the development of this technology, the boundaries between the internet, social networking sites (SNS), social media, online

gaming, and digital technology are becoming increasingly blurred. This can lead to self-harming behaviors, suicidal ideation, and suicide attempts.

Deaths from suicide and self-harm still rank among the top three causes of death among adolescents in the world in 2022 (Fonseca-Pedrero et al., 2022). In general, one in a hundred deaths that occur in the world is due to suicide, or about 1 person dies every 40 seconds (Lovero et al., 2023). According to data from worldwide community-based studies, between 10% and 30% of adolescents commit self-harm, and between 1% and 10% report they have attempted suicide at least once in their lifetime (Farbstein et al., 2022). Adolescent suicide (10-19 years) accounts for one-third of suicides globally and is the fourth leading cause of death among the adolescent age group (Dadras & Wang, 2023). Currently, the incidence of suicide and self-harm is still relatively high, these numbers are even higher in specific at-risk populations.

Numerous initiatives have been launched to prevent teenage suicide attempts and self-harm (Farbstein et al., 2022). Identifying youth at risk of self-harm and suicide attempts remains tough. Numerous investigations have been carried out with the aim of clarifying particular risk variables linked to suicidal thoughts and behaviors in adolescent populations as well as self-harm. Pre-existing psychopathology symptoms that are internalizing (such as depression or anxiety) or externalizing (such as behavioral issues) have been demonstrated to be important risk factors for suicide behavior (Soto-Sanz et al., 2019). Additional risk factors include socio-economic hardship and psychological conditions like depression, anxiety disorders, and drug abuse issues (Farbstein et al., 2022). Adolescents are believed to be predisposed to self-harm and suicide by stressful life events, particularly childhood abuse (Liu et al., 2014), and social factors, such as relationships with friends, bullying and victimization, and the use of social media (Borschmann et al., 2020; Victor et al., 2019). Therefore, a reference is required that not only emphasises prevention but also enhances current aspects to decrease the incidence of self-harm and suicidal behaviour in teenagers.

Research on self-harm behavior and suicide attempts among adolescents is limited. Previous studies have been dominated by research that focuses on finding risk factors alone without including predictor factors (Carballo et al., 2020; Epstein et al., 2020). The clinical value of these studies is also limited, despite the fact that some previous studies have clarified risk variables linked to suicidal conduct and self-harm. Many of the previous studies included *cross-sectional* studies. *Cross-sectional* studies may be very informative and appropriate when used to examine the relationship between various exposures and outcomes. However, because the time sequence between predictors and outcomes is uncertain, risk variables or protective factors looked at in cross-sectional research cannot predict future events

(Farbstein et al., 2022). The aim of this systematic review was to gather information from longitudinal studies on all risk factors associated with teenage self-harm and suicide behavior.

2. METHODS

2.1 Literature Research

This work is a systematic review. A thorough investigation was conducted to identify the risk and protective factors in adolescents involved in self-harm or suicide during the society 5.0 era, based on the most recent and reliable scientific information available. The literature search was conducted in October 2023. The study used secondary data obtained from previous studies rather than from direct observation. Secondary data sources obtained in the form of internationally reputable journal articles in accordance with predetermined themes. The literature used was obtained from the Scopus, PubMed, Web of Science, and CINAHL databases. Specific keywords were used to search for articles using the following terms: ("Self-harm" OR "Self-injurious behavior" OR "Self-destructive behavior") AND suicid* AND (adolescent OR youth OR teenager). Articles included in the search were those published between 2018 and 2023. In the search process, we used Boolean operators and wildcard characters appropriately to focus the search and detect singular or plural forms of the same term across all databases used. The keyword search used MeSH terms to include synonyms or spelling variations 2.2 Population, Sample, and Sampling.

2.2 Inclusion and Exclusion Criteria

Articles were considered eligible if they were written in English and published in internationally reputable journals, research with longitudinal study methods, discussing risk factors or protective factors for self-harm and suicidal behavior, and articles involving adolescents aged 11 to 18 years as respondents. Experimental intervention studies, qualitative studies, review articles, articles specifically related to psychiatric and physical illnesses, and assisted suicide or euthanasia were excluded from this systematic review. We also excluded articles that included adolescents with sexual disorders (e.g., LGBT) as the main respondents, as this topic area has a very broad literature base, which merits separate investigation.

2.3 Study Selection and Quality Assessment

The steps of data collection in this systematic review research began with a comprehensive search for relevant articles. Two researchers (NH and FT) initially screened articles by selecting titles that appeared pertinent to the study. Following this, they read the abstracts to filter articles deemed eligible. Another researcher (TP) served as a third party to resolve any conflicts that arose. Finally, the full texts

were reviewed to identify studies that met the predetermined inclusion and exclusion criteria aligned with the scope of the review.

Collectively, the researchers determined the appropriate information for data extraction based on the review's focus, clinical experience, and insights from previously published reviews. A table was constructed to present key findings, into which data from each article were systematically entered and examined for potential discrepancies. The quality of the entire text was evaluated independently by the three researchers (NH, FT, and TP). In cases of differing assessments regarding the quality of the articles, RD acted as a third party to mediate and provide solutions.

3. RESULTS

Based on the results of the literature search, 657 articles were obtained that matched the keywords with detailed articles from four international databases namely Scopus (n = 357), Web of Science (n = 79), PubMed (n = 124) and CINAHL (n = 97). The Literature Review selection process uses the PRISMA method which includes checking for duplicates, followed by checking for appropriate titles and abstracts, and ends by conducting an eligibility assessment of the full text articles that have been found. Researchers conducted an article eligibility check using the Joanna Briggs Institute (JBI) Critical Appraisal Tools so that 11 eligible articles were found. The flow of the article selection process is illustrated in the PRISMA chart in Figure 1.

This study reviewed 11 articles on risk factors and protective factors for self-harm and suicidal behavior in adolescents from 9 countries conducted between 2018 and 2023. The data extracted from the articles can be seen in Table 1.

Based on the results of thematic analysis of the eleven articles above, five risk factors and three protective factors were found as follows.

1) Risk Factors

- a. Family role dysfunction, in the form of: poor parental figures, not being responded to well by parents, poor *interpersonal* relationships within the family, coping skills and history of mental illnesses (Baker et al., 2023; Baldwin et al., 2019; Cassels et al., 2018, 2019; Villar et al., 2018).
- b. Victims of *bullying*, in the form of *body shaming* and being physically abused (Baker et al., 2023; Baldwin et al., 2019; Sutin et al., 2018a).
- c. A prior history of self-harm or suicide can potentially lead to repeated behaviors in adolescents (Neupane & Mehlum, 2023; Villar et al., 2018).
- d. Maladaptive coping of adolescents in the form of wanting to run away from unpleasant feelings (del Carpio et al., 2020).

- e. Having a previous history of mental illness (Villar et al., 2018).
- #### 2) Protective Factors
- a. The level to which teenagers feel loved, cared for, respected, and appreciated by their parents is one indicator of family support and attachment. Another indicator is the amount of attention provided to teenagers when they need it (Baker et al., 2023; Baldwin et al., 2019; Cassels et al., 2018, 2019; del Carpio et al., 2020a).
 - b. School environment support from both instructors or teachers and peers (Baetens et al., 2021a; Baker et al., 2023).
 - c. Positive activities such as physical activity (sports) (Latina et al., 2022).

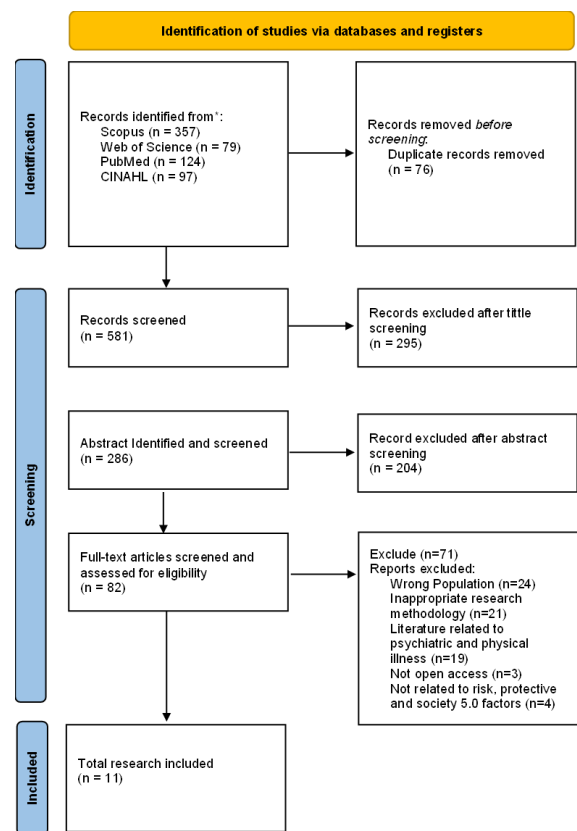


Figure 1. PRISMA diagram

4. DISCUSSION

Based on the findings from the analyzed literature, family dysfunction is the most influential as well as significant risk factor in self-harm and suicidal behavior (Baker et al., 2023; Baldwin et al., 2019; Cassels et al., 2018, 2019; Villar et al., 2018). With a total of 5 out of 11 articles referenced in the preparation of this review, it discusses in depth why family dysfunction has the most influence in adolescent self-harm and suicidal behavior. Family role dysfunction experienced by adolescents in childhood triggers the onset of self-harm and suicidal

Table 1. Article data extractions

Title	Author and Year	Country	Participants	Results
<i>Predictors and consequences of non-suicidal self-injury in relation to life, peer, and school factors</i>	Baetens et al (2021)	Belgium	Adolescents aged 12-15 years The first year study consisted of 1443 participants with 1374 valid reports, the second year study consisted of 1132 participants with 799 valid reports and the third year study consisted of 3839 participants with 756 valid reports.	There is a relationship between <i>Non-suicidal Self Injury</i> (NSSI) Behavior and adolescents' attitudes towards school life and stressful life experiences. Stressful life experiences in the second year (T2) of school predicted the occurrence of NSSI in the third year (T3). The occurrence of NSSI in the second year predicted increased stress in the third year. Negative attitudes towards the school environment led to the occurrence of NSSI in the second year of school which may further lead to negative attitudes in the third year. Academic achievement in the first year (T1) and relationships with peers did not influence the onset of NSSI behavior at T2. The presence of stress in interpersonal relationships (e.g., arguments with parents or friends) was more influential in the stress experienced by school-age adolescents than events that did not involve other people (e.g., work or other busy activities). Peer support, teachers and school environment both in terms of academic and non-academic are protective factors that can prevent self-harm and suicide attempts in school-age adolescents.
<i>Adolescent Victimization and Self-Injurious Thoughts and Behaviours': A Genetically Sensitive Cohort Study</i>	Baldwin et al (2019)	English	2232 respondents were followed from 0-18 years of age, at 18 years of age an assessment and interview was conducted.	Adolescents who have experiences of being victimized (crime, sexual violence, bullying or mistreatment in the family) are at risk of suicidal ideation, self-harm and attempted suicide. Other analyses showed a relationship between family and individual vulnerability that had previously occurred as a risk factor for self-harm and suicide attempts. Specialized therapy and family support are some of the protective factors for adolescents who have experience of being victimized to suppress the desire to make harm and suicide attempts.
<i>Can participation in organized sports help adolescents refrain from self-harm? An analysis of underlying mechanisms</i>	Latina et al (2022)	Sweden	998 Swedish teenagers who were in grades 7 and 8	The findings demonstrated a positive correlation between active sports involvement and improved self-esteem, as well as a reduction in depressed symptoms and thoughts of self-harm.

Table 1. Article data extractions

Title	Author and Year	Country	Participants	Results
<i>Adolescents With Non-Suicidal Self-Harm-Who Among Them Has Attempted Suicide?</i>	Neupane, S P and Mehlum, L (2022)	Norway	Sixty-eight adolescents with an average age of 15.6 years seeking treatment at a child and adolescent psychiatry outpatient clinic for repeated self-harm in Oslo, Norway, were included.	Twenty-six participants (38.2%) reported having a history of suicidal ideation, compared to participants with no history of suicidal ideation. Individuals with a past history of suicidal thoughts exhibited greater levels of emotional and behavioral issues, had self-harmed more, and had utilized more fatal techniques. Additionally, they scored higher on measures of emotional dysregulation, hopelessness, threshold pathology, depressive symptoms, and suicide thoughts.
<i>Attachment and Non-Suicidal Self-Injury among Young Adolescents: The Indirect Role of Behavioral Problems</i>	Cassels, Matthew, et al (2019)		The study used 13-year-old and 14-year-old respondents, who were subsequently included in wave 1 and wave 2 of the study. The sample included 827 adolescents who provided valid reports at wave 1. Of these, 559 adolescents also provided data at wave 2.	It was discovered that, rather than through emotional issues, there is an indirect link between the occurrence of NSSI and childhood attachment to family through behavioral issues. The results emphasize how behavioral issues play a part in early adolescence as a risk factor for NSSI. By addressing behavioral issues, therapies that enhance child-parent attachment may both directly and indirectly lower NSSI in teenagers.
<i>Perceived Body Discrimination and Intentional Self-Harm and Suicidal Behavior in Adolescence</i>	Sutin, R., et al (2018)	Australia	Participants (N = 2948) were drawn from the <i>Longitudinal Study of Australian Children</i> (LSAC) with the children studied aged between 14-15 years old.	After adjusting for sociodemographic variables, body mass index, and depressive symptoms, discrimination was linked to a higher incidence of suicidal ideation, deliberate self-harm, contemplation of suicide, planning a suicide attempt, and suicidal thoughts. Poor adult results have frequently been linked to weight discrimination, or body shaming. Peer bullying and discrimination together can raise the risk of suicide and self-harm. According to this research, there is a significant risk of intentional self-harm and suicidal conduct among adolescents who suffer social experiences related to weight.
<i>Poor family functioning mediates the link between</i>	Cassels, Matthew, et al (2018)	English	In total, 27 secondary schools (25 public and two private schools) were selected for the sample,	Results showed that poor family functioning at age 14 mediated the relationship between <i>Childhood Family Adversity</i> (CFA)

Table 1. Article data extractions

Title	Author and Year	Country	Participants	Results
<i>childhood adversity and adolescent nonsuicidal self-injury</i>			and 18 of them agreed to participate. Through the consenting schools, 3,762 students were invited to participate. Overall, consent forms were received from 1,238 (33%) students; 675 girls (54.5%), and 563 (54.5%), and 563 (45.5%) boys.	before age 5 and the onset of NSSI between ages 14 and 17. This finding supports the cumulative suboptimal environmental harm hypothesis (proximal family relationships as mediator). Family role dysfunction leads to adverse childhood experiences. Improving the family environment at 14 years of age may reduce the effect of CFA on the onset of NSSI in adolescents.
<i>Timing of childhood adversities and self-injurious thoughts and behaviors in adolescence</i>	North, J., et al (2023)	United States of America	The LONGSCAN study was conducted with 1,354 families in five regions across the United States. The current study examined whether there is an association between childhood adversity predicting parent-reported SITB and adolescents at ages 12 and 16 in the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) cohort (n = 970).	Researchers found that adversity or unpleasant experiences at 11-12 years of age consistently predicted Self-Injurious Thought and Behaviour (SITB) self-harm thoughts and behaviors at 12 years of age, while greater adversity at 13-14 years of age consistently predicted SITB at 16 years of age. These findings suggest that there may be a sensitive period in which adversity may be more likely to cause SITB in adolescents, which may form the basis for prevention and treatment.
<i>A Theory-Based Longitudinal Investigation Examining Predictors of Self-Harm in Adolescents With and Without Bereavement Experiences</i>	Carpio, Laura, et al (2020)	Scotland	185 pupils, aged 11-17 years with a mean age of 13.16 years and a standard deviation of 1.49, were recruited from nine secondary schools in Scotland at T1.	The findings indicated that self-harm thoughts and actions are common among Scottish teenagers, and a considerable number of them have experienced mourning or encountered the loss of a loved one. Understanding the prevalence and characteristics of suicide loss among adolescents is crucial because to its serious effects. Social support from family shows promise in various elements of the IMV model, particularly in identifying stigmatising and normalising views about suicide, and self-harm ideation as predictors of future behaviour.
<i>Predictors of Suicide Behavior Relapse in Pediatric Population</i>	Villar, Francisco, et al (2018)	Spain	Participants were Patients aged between 8-17 years who were admitted to the psychiatric emergency department of a tertiary children's hospital for suicide attempts and who exhibited suicidal behavior	From the results obtained in this study, it can be observed that the relationship between nineteen variables that are potential predictors and the recurrence of suicide attempts during the six months after the adolescent's first

Table 1. Article data extractions

Title	Author and Year	Country	Participants	Results
<i>Non-Suicidal Self-Injury Among Adolescents: A Structural Model with Socioecological Connectedness, Bullying Victimization, and Depression</i>	Baker, Ashley, et al (2022)	UK and USA	with a total of 417 participants aged between 8 and 17 years, at a follow-up period of six months. Participants were recruited from public schools with ≥ 25 students enrolled in regular 5th grade at schools in and around the Birmingham, Houston, and Los Angeles metropolitan areas.	hospitalization was assessed. In the bivariate analysis, several precipitating factors for self-harm and suicide attempts were found viz: fact of having made a previous attempt, presence of suicidal behavior in the family, and personality disorder. In order to investigate the relationship between NSSI in mid-adolescence among girls and boys and being socio-ecologically linked to victims of bullying and depressed symptoms, this study used a sample of more than 4000 teens from a range of backgrounds. First, past research indicates that girls in their mid-adolescence reported engaging in NSSI almost twice as frequently as boys did the year before. Secondly, the probabilities of NSSI were lower for all adolescents with strong parental and familial interactions. Nevertheless, these circumstances are not insignificant; instead, they indicate that a positive family environment is likely the most crucial factor in the behaviour of teenagers who participate in NSSI. Peer relationships, school, and neighbourhood connectedness were not directly associated with NSSI, contrary to what we anticipated. Parent-family and school connectivity seem to be linked to NSSI through bullying victimisation and depressive symptoms. Depressive symptoms seem to be particularly important for females, but the bullying victimization pathway seems to be essential for boys, even if the pathways leading to different kinds of social connection differ for boys and girls. When faced with stressful situations, such as depressive symptoms or being the subject of bullying when their relationships with their parents and school aren't good, it's likely that boys and girls utilize NSSI for different reasons.

examples of family role dysfunction. Other factors in family dysfunction that can influence self-harm and suicidal behavior include: impulsive behavior, poor emotion regulation, self-esteem, interpersonal relationships within the family, coping skills and mental illness (Cassels et al., 2018). This aligns with a prior study indicating that disruptions in adaptability

and harmony within families of adolescents can lead to reduced interpersonal functioning. These affective factors, when combined with impaired emotional regulation, may contribute to self-harm and suicidal behaviour (Shao et al., 2021). Additional research has demonstrated comparable findings indicating that parental rejection in adolescents raises the

probability of engaging in self-harming behaviour. This link is partially influenced by pent-up anger, substance usage, and the release of anger (Cipriano et al., 2020). Inadequate mother-child attachment and a family history of mental disorders create an unfavourable environment for adolescent development, indirectly increasing the risk of self-harm and suicidal behaviour. (Cassels et al., 2019; Villar et al., 2018).

The next risk factor is *bullying* victimization where 3 out of 11 articles discuss why victimization in *bullying* behavior is a precipitating factor for the emergence of self-harm and suicidal behavior in adolescents (Baker et al., 2023; Baldwin et al., 2019; Sutin et al., 2018b). Adolescents who experience bullying are more prone to self-harm compared to those who do not. Additionally, adolescents who have been bullied in the past have a higher likelihood of suicide and self-harm due to the impact of victimisation on their mental health (Baker et al., 2023; Baldwin et al., 2019). Consistent with prior studies conducted by Monto et al., (2018) adolescents with self-harm and suicidal behavior can be caused by several factors, one of which is being a victim of *bullying* carried out through electronic media. Due to the rapid advancement of technology in the society 5.0 era and widespread internet connection, distance is seemingly eliminated, making it simpler for bullies to target their victims. The findings in the following study specifically discuss *bullying* behavior through *body shaming* or unfair treatment based on the body shape of adolescents. In detail explained that this form of discrimination is associated with a doubled risk of self-harm and suicidal behavior. It is further discussed that there is an evidence-based link between weight discrimination and poor outcomes in the form of maladaptive behaviors, just as with adults in the case of adolescents it can lead to stress, feelings of worthlessness in their surroundings and even feelings of loneliness that lead to self-harm and suicidal behavior. This discriminatory behavior is not limited to body shape with a specific BMI (Body Mass Index) but is experienced by adolescents with BMI categories of *underweight*, *overweight*, or *obesity* equally (Sutin et al., 2018). Prior research have consistently found a correlation between abnormal BMI in adolescents and a higher likelihood of suicide attempts and fatalities by suicide (Hawton et al., 2020).

Experiences of self-harm and even attempted suicide are further risk factors that contribute to the potential for self-harm and suicidal behavior (Neupane & Mehlum, 2023; Villar et al., 2018). According to a study by Neupane & Mehlum (2023) adolescents with a history of self-harm and suicide showed higher levels of psychopathology, including depressive disorders, borderline personality disorder, lower functioning levels, and recurrent suicidal ideation, in comparison to those without a history of such behavior. There are notable disparities in clinical significance between teenagers

with a history of suicide and those without. Adolescents who have a history of self-harm or suicidal behavior are more likely to commit another offense during the next 1 to 2 years. (Sutin et al., 2018). In line with a prior study, teenagers with a self-harm history face up to a 30-fold higher risk of suicide within the first year compared to those without such a past (Hawton et al., 2020).

Although some of the following factors are not widely discussed, it is possible that if ignored, they can lead to self-harm and suicidal behavior in adolescents, including: maladaptive coping of adolescents in the form of wanting to run away from unpleasant feelings and adolescents who have a history of mental disorders (del Carpio et al., 2020a; Villar et al., 2018). Previous study indicates that teenagers who have engaged in self-harm are more susceptible to displaying maladaptive coping mechanisms when dealing with negative emotional situations like depression, anxiety, or isolation. Maladaptive responses range from fighting with peers or family, engaging in delinquency or rule-breaking behavior to destroying property (Steege et al., 2023). It is further explained in the results of other studies where maladaptive responses are also shown in vulnerable adolescents when they are exposed to various content on social media about images of self-harm or when they are victims of *online* bullying (Rodway et al., 2023). The responses they show vary from an increase in stress symptoms to a tendency to imitate self-harming behavior.

Self-harm and suicidal behavior can be reduced by relying on the protective factors described in the findings of this *review*. In contrast to being found to be the greatest risk factor, family was found to be the strongest protective factor through adolescents' support and attachment to family (Baker et al., 2023; Baldwin et al., 2019; Cassels et al., 2018, 2019; del Carpio et al., 2020a). As stated by Cassels et al., (2018) where when adolescents get positive support from their family members, it can reduce the potential danger of self-harm and suicidal behavior when facing difficulties. Due to the influence of family support, it is further suggested to improve family functioning through social care, addressing problems in family relationships directly and investigating potential methods to improve family relationships such as attachment-based family therapy. Family support refers to the degree to which adolescents perceive love, care, value, and respect from their parents (Baker et al., 2023). It can also be in the form of attention given when adolescents are experiencing problems (Cassels et al., 2019). As the closest person to the family, they are the first to realize when behavioral problems arise in adolescents, including one of them is self-harm and suicidal behavior so that appropriate treatment can be given immediately (Cassels et al., 2019; del Carpio et al., 2020a). In order to maximize the role of the family as a preventive factor in overcoming self-harm and suicidal behavior in adolescents, an important primary intervention is

to establish a supportive family environment (Baldwin et al., 2019), simultaneously reestablishing the family's responsibility to acknowledge the health issues of each member, fostering a home environment conducive to the well-being of family members, and sustaining mutual ties among families. So as to be able to build good *interpersonal* relationships for adolescents with the aim of improving their mental health and having an impact on reducing self-harm and suicidal behavior in adolescents.

The next protective factor is engagement in positive activities such as sports activities (Latina et al., 2022). Engaging in structured team sports is linked to several favorable mental health metrics, such as elevated self-worth and reduced indications of despair and anxiety. More specifically, involvement in organized sports is associated with a lower risk of self-harm and suicidal thoughts and behaviors (Latina et al., 2022). Prior research indicates that fostering positive competencies through engagement and empowerment in adolescents is an effective method for cultivating culturally specific coping mechanisms to manage stress and safeguard mental health in adolescents (Wilhelm et al., 2021). Furthermore, teens who engage in frequent participation in organized sports demonstrate improved emotional regulation, leading to less depressed symptoms. Teenagers also exhibit higher self-esteem within a year, which is followed by a decline in self-harm behavior (Latina et al., 2022).

School environment support is the last protective factor based on the findings in this *review*. Friendship and peer relationships play a crucial role in an adolescent's life and can impact emotional growth. Peer support, social skills, strong connections, and close friendships can help protect against self-harm and suicidal tendencies. Likewise, academic achievement in the school environment is an aspect of life associated with better mental health in adolescents (Baetens et al., 2021). The connection between adolescents and schools can indicate a feeling of belonging and attachment to schools. This school connectedness is considered a crucial protective factor against adolescent self-harm and suicide conduct (Baker et al., 2023). Prior research has demonstrated that school engagement and positive student-teacher relationships are beneficial for teenagers. Enhancing school connectedness through teacher-student relationships can promote resilience and enhance psychological well-being (Wilhelm et al., 2021). There are several ways to achieve an inclusive and welcoming school environment to increase adolescents' sense of belonging, starting with intensively building teacher-student relationships based on mutual trust and respect from both parties, increasing teacher capacity through training to build skills and comfort levels in facilitating classroom interactions and providing resources and guidance so that teachers can integrate learning strategies in the curriculum with culturally relevant content. The creation of a conducive school

environment will create an attachment between adolescents and the school and this in turn will lead to improved psychological health of adolescents, while minimizing the potential for self-harm and suicidal behavior.

However, this study still has some limitations. The research was conducted in disparate countries such as Belgium, Australia, Spain, and the U.S., potentially introducing cultural biases. The generalizability of findings from one setting to another may be limited by variations in social norms and values regarding mental health. Although numerous studies have considered sociodemographic variables, there may still be unaccounted confounding factors that impact the correlation between risk factors and self-harm behaviours.

5. CONCLUSION

The current research provides an updated analysis of the risk variables and protective factors associated with adolescent's self-harm and suicidal conduct in today's society. The data indicate multiple risk variables that can elevate self-harm and suicide behavior in adolescents in this current environment. Strategies that can be done to overcome these risk factors include providing a strong support system for adolescents. This support can come from the family, the environment (e.g. school and peers) and from the adolescent themselves. Adolescents with a history of unpleasant experiences in the family, victims of bullying, have attempted suicide, and have poor coping problems should receive special support and attention from their family, medical and environment.

In addition, this review identified the urgency of further research, particularly risk and protective factors of self-harm, and-suicidal behavior emotional closeness between children and parents in the prevention of mental illnesses leading to suicide.

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