



Prevalence and factors associated with the perpetration and victimization of teen dating violence: A systematic review and meta-analysis protocol [☆]



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Prevalence and Factors Associated with the Perpetration and Victimization of Teen Dating Violence: A Systematic Review and Meta-Analysis Protocol

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ABSTRACT

Dating violence is a global health problem that affects adolescents physically, psychologically and sexually. During adolescence, there is a high prevalence and negative consequences in both perpetration and victimization, which can vary according to culture, but maintain common characteristics in traditional societies. Factors associated with the perpetration and victimization of gender-based violence among adolescents include gender inequality, discrimination, substance use, parental neglect, peer influence and exposure to family violence. Despite modern criticisms of gender expectations, traditional views that legitimize violence persist. In this sense, the collection of global data on the prevalence and factors associated with dating violence among adolescents could favour comparative studies between Western and Eastern cultures and is fundamental for informing public policies in a globalized world. It is hoped that the results will contribute to expanding scientific knowledge in the area, as well as helping managers and the academic community to target resources, identify risk groups and promote gender equality from adolescence onwards. In this sense, this study aims to globally assess the prevalence and factors associated with the perpetration and victimization of dating violence among adolescents. It is hoped that the results will expand scientific knowledge in this area.

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Specifications table

Subject area:	Psychology
More specific subject area:	Social Sciences
Name of your protocol:	Prevalence and Factors Associated with the Perpetration and Victimization of Teen Dating Violence: A Systematic Review and Meta-Analysis Protocol
Reagents/tools:	None
Experimental design:	The experimental design of this research will be organized around five main categories of variables: Individual Factors, which include mental health (depression, anxiety, stress), self-esteem, body image, substance use, academic performance, history of victimization and sexual and reproductive health; Family Factors, such as exposure to domestic violence, family conflicts, family emotional support, socioeconomic status and family structure; Peer Group Factors, which consider peer pressure, social norms of the group and the quality of friendships; Social and Cultural Factors, including gender norms, cultural stereotypes, media influence and digital violence; and Developmental Factors, such as emotional and social maturity, communication and conflict resolution skills, and conceptions about relationships in adolescence. The outcome variable will be dating violence, analyzed in terms of victimization and perpetration. These categories aim to capture a broad spectrum of influences, allowing for a detailed analysis of the prevalence and factors associated with dating violence among adolescents.
Trial registration:	Prospero: CRD42024577540
Ethics:	Ethical approval is unnecessary because this study analyses previously published articles (i.e., secondary data). The results will be published in a peer-reviewed journal.
Value of the Protocol:	This protocol establishes clear guidelines for reviewing studies on dating violence among adolescents, ensuring the structured application of selection criteria and methodology. By defining specific inclusion and exclusion criteria, the protocol minimizes bias in the selection of articles on prevalence and associated factors, resulting in a more impartial analysis. The methodology adopted also facilitates the replication of the review by other researchers, strengthening the validity and usefulness of the findings on the perpetration and victimization of dating violence.

Background

The motivation for this protocol arises from the urgent need to understand Teen Dating Violence (TDV), a serious public health problem that affects young people all over the world. Adolescence is a vulnerable period in which power and control dynamics in affective relationships can have a profound impact on young people's development. Despite the growing academic interest in DVT, existing reviews are fragmented and limited to specific contexts or groups, leaving a gap in knowledge about the factors that influence both the victimization and perpetration of violence.

This protocol seeks to fill this gap by providing a global systematic review that analyzes the prevalence and factors associated with TDV, covering different cultures and regional contexts. Dating violence reflects inequalities of gender, racism, heteronormativity and socioeconomic conditions, and is more common in contexts of poverty and among ethnic and sexual minorities. The purpose of this study is to systematize existing knowledge, identifying the main associated factors, to support the creation of effective, evidence-based interventions.

The protocol will be useful for health, education and public policy professionals, providing a scientific basis for developing prevention and awareness programs. By identifying factors such as cultural norms, attitudes towards violence and family influences, the study aims to target interventions that are more appropriate to local realities, contributing to the promotion of healthy relationships and the prevention of violence in future generations.

Description of protocol

Teen dating violence (TDV) is a severe public health problem [1–3] affecting both adults and adolescents [4–6]. It comprises one or more acts of physical violence (pushing/hitting, kick/punch, slapping/pulling hair, punching, or throwing something), sexual violence (rape or unwanted touching), and psychological violence (humiliation, intimidation, or manipulation) [7,8] that can occur between partners and affects both sexes [9]. TDV is detrimental to the health and well-being of individuals [3,10,11], as it can result in post-traumatic stress, low self-esteem, eating problems, alcohol and drug abuse, unprotected sex, anxiety, depression, and low academic performance [12–15].

Moreover, adolescence is defined as the period between 10 and 19 years of age [16], a phase involving risky sexual behavior, experimentation with substances, and high probability of depressive symptoms' manifestation among aggressors and victims [17–19]. High prevalence rates and adverse outcomes of dating violence perpetration and victimization are reported during adolescence [20]. Perpetration involves committing acts of violence (physical, psychological, and sexual), whereas victimization involves suffering from these same acts [4]. Adolescents of both sexes are equally likely to perpetrate emotional violence; however, girls are at a greater risk of sexual and physical violence [21]. Research from the United States shows that adolescent partner violence is frequent [22]. There is an interchange in the roles of the victim and perpetrator for both sexes [21,23], with the prevalence varying according to the stage of adolescence [12]. Research also shows that TDV is more prevalent in the context of poverty, especially among Black American and sexual minority couples [12].

Broadly, violence in romantic relationships reflects the cultural structures that sustain male dominance [24] and, therefore, gender inequality, and it is often associated with racism, heterosexism, and poverty [12]. Many factors are associated with perpetration and victimization in regions with high prevalence of such violence [25]. Belonging to a group with deviant behaviors is identified as a risk factor significantly related to perpetration, while witnessing intimate-partner violence among parents is a strong predictor of victimization [26]. At the individual level, acceptance of violence, tolerant attitudes toward aggression, and acceptance of rape myths

Table 1

Keywords included in the search strategy are organized in blocks.

Blocks	Keywords used
#1	(adolescent OR teenager OR teen OR juvenile OR minor OR pubescent OR underage OR adolescence OR youth OR young OR teenage)
#2	(prevalence OR prevalences OR "associated factor" OR "correlated factor" OR "related factor" OR "related factors" OR "associated factors" OR "correlated factors" OR "related factors")
#3	("gender-based violence" OR "courtship violence" OR "dating violence" OR "intimate partner violence" OR "intimate partners violence" OR "abusive relationship" OR "abusive relationships" OR "adolescent romantic relationships" OR victimization OR perpetration OR "sexual violence" OR "psychological violence" OR "physical violence" OR "sexual aggression" OR "psychological aggression" OR "physical aggression" OR "sexual abuse" OR "psychological abuse" OR "physical abuse" OR "emotional manipulation" OR "sexual assault")
Search string:	(#1) AND (#2) AND (#3)

increase the risk of perpetrating TDV as does adherence to sexual role stereotypes [27]. A review of the prevalence of and factors associated with gender-based violence in females in sub-Saharan Africa identifies a combination of risk factors, including the place of residence, educational status, marital status, substance abuse, and witnessing of parental violence [28]. Although parental neglect is less studied, evidence indicates that this issue, particularly lack of parental supervision or involvement in the lives of adolescents, increases young people's vulnerability to relationship violence [29,30].

Interest in this area of research has intensified in recent years [31]. However, no recent global review is found that systematically identifies the factors associated with both perpetration and victimization of TDV. The reviews focus on diffuse data, investigations with samples of only one sex, and specific contexts [21,32–34]. Therefore, a systematic and detailed analysis of this research topic will provide a better understanding of the prevalence and associated factors, thus contributing to possible interventions for VTD, as well as allowing the comparison of different cultural and regional realities and how each context and factor can influence the outcome of interest. In this sense, we propose a systematic review based on the following research question: "What prevalence and factors are associated with the perpetration and victimization of TDV?" To answer this question, this proposed systematic review protocol aims to analyze the prevalence and factors associated with the perpetration and victimization of TDV. The results will address a significant gap in the literature and support managers and policymakers in implementing effective preventive actions and interventions for adolescent relationship violence.

Method

Protocol and registration

This systematic review protocol is drafted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols 2015 (PRISMA-P 2015) [35,36], as documented in the Supplementary Material (S1 File).

The study protocol is registered with the International Register of Prospective Systematic Reviews (PROSPERO) under number CRD42024577540, as it is a proposal for a systematic review reporting the comprehensive results of interest directly related to human health [37]. Prospective registration is crucial because it is a means of publishing details about a research project to increase research transparency, allowing peers to assess whether all steps have been carried out and reported as planned [38]. Any modifications to the protocol design during this study will be recorded in PROSPERO and the final manuscript [39]. Such studies do not require a direct approach to the human participant, as the analysis will be carried out using secondary sources, including previously published articles. Therefore, ethical approval is unnecessary.

Search strategy and databases

This systematic review will identify and gather scientific evidence from multidisciplinary databases—ScopusTM and Web of Science Core CollectionTM—and specific databases—MEDLINE/PubMed[®] via the National Library of Medicine[®] interface, EmbaseTM, American Psychological Association PsycNet[®], and Cumulative Index to Nursing and Allied Health Literature[®] Plus). The databases will be searched in November 2024 to identify potential articles for inclusion in the systematic review.

The eligibility criteria for this review are based on the population, exposition, comparison, and outcome or PECO strategy [41]: **P** = adolescent (10–19 years); **E** = prevalence and associated factors; **C** = not applied; and **O** = dating violence perpetration and victimization. The Boolean operators "OR" and "AND" will be used; "OR" will be used to include synonyms or similar terms in the search related to a block, and "AND" will be used to combine the blocks [40], as shown in Table 1.

To ensure that the search strategy effectively identifies the relevant articles in the databases [40], we will use an evidence-based checklist from the guideline Peer Review of Electronic Search Strategies 2015 (PRESS 2015) [41]. These provide guidelines and recommendations for accurately and effectively defining strategies for searching electronic literature [41,42].

Finally, to ensure that the search strategy is adapted correctly and optimized for each database [40], the guidelines of the PRISMA Statement for Reporting Literature Searches (PRISMA-S) will be followed [43]. These guidelines indicate the requirements for documenting the process of extracting metadata from databases using the search strategy [42]. PRISMA-S addresses several aspects, including specific database details, search strategy (record limits, restrictions, filters used, etc.), and the documentation process for

the retrieved records [43]. Thus, we will apply specific refinement filters to eliminate studies that do not meet the eligibility criteria for this systematic review and register all the procedures we adopt (see Supplementary Material: S2 File).

Eligibility criteria

This systematic review will consider relevant articles addressing the prevalence of and factors associated with dating violence among adolescents, with no language restrictions, published in the last five years (2019–2024). Studies will be excluded if they meet at least one of the previously defined exclusion criteria. In addition, eligible studies will be checked to confirm whether the evidence is valid or whether any retraction is recorded using the *Scite* tool (<https://scite.ai>) [40,44]. This online tool uses artificial intelligence, among other features, to confirm the validity of the evidence and identify any retraction records [42,44]. Therefore, for eligibility, the articles must meet all the following inclusion criteria:

Inclusion criteria:

- (i1) Original, peer-reviewed journal articles published in the last five years (2019–2024) [45].
- (i2) Studies on the prevalence and factors associated with the perpetration and victimization of physical, sexual, or psychological violence in the context of adolescent dating.
- (i3) Observational study: cohort, cross sectional and case control studies, with qualitative, quantitative and mixed approaches.
- (i4) Studies with a sample of adolescents aged 10–19 years, according to the World Health Organization definition [16].

Exclusion criteria:

- (e1) Duplicate studies: If several articles are published by the same author and deal with the same dataset and topic, only the most comprehensive article will be considered [40]. Duplicates will be removed following Bramer's method [46], and we will carry out a manual review to confirm their exclusion [47].
- (e2) Opinion articles, commentaries, editorials, letters to the editor or similar, dissertations, theses, reviews, case reports, and books.
- (e3) Studies that are not fully available in the searched databases or that could not be accessed, even after several attempts to contact the authors [39].
- (e4) Studies with incomplete data.
- (e5) Studies that deal exclusively with online dating, cyberbullying, or cyber violence.
- (e6) Studies that deal exclusively with specific populations, such as those with disability, pregnant women, sexual and gender minorities (LGBTQ+), ethnic minorities, rural communities, or immigrants.
- (e7) Studies that deal exclusively with incarcerated adolescents or adolescent offenders.
- (e8) Specific studies dealing with adolescents in the context of drug use.
- (e9) Studies that focus exclusively on the relationship between infectious diseases (HIV/AIDS, human papillomavirus, syphilis, chlamydia, hepatitis, etc.) and adolescence.
- (e10) Studies specifically focused on adolescents diagnosed with mental disorders, anxiety, depression, behavioral problems, physical disabilities, or chronic illnesses at the time of sampling.
- (e11) Articles written in a restricted language that cannot be adequately translated: This criterion will only apply if we have exhausted all translation possibilities, such as i) seeking support from our international collaboration network, ii) using artificial intelligence tools, and iii) hiring specialized companies for the necessary translations. We will indicate this in the findings of our systematic review [40].
- (e12) Studies with retraction records [42].

Review process

To ensure quality and transparency of the systematic review when screening studies, metadata of the articles identified using the search strategy will be imported into the Rayyan software (<https://www.rayyan.ai/>; Rayyan Systems Inc., Cambridge, MA, USA). This online application was designed to help conduct systematic reviews [48]. Rayyan is a systematic review engine that incorporates artificial intelligence to eliminate duplicates, assist in screening, and remove studies that do not meet specific criteria. Rayyan allows two or more reviewers to conduct a systematic review in parallel or independently [40] by making available the blinding feature [42], thus avoiding the introduction of biases [49].

The experts' recommendations include at least two evaluators conducting independent evaluations; implementing a process to resolve disagreements; and establishing procedures, such as pilot tests, calibration exercises, and predefined decision rules, to ensure inter-rater reliability [50–53]. Thus, after one reviewer (R1) removes the duplicates, blinding will be activated, and two independent reviewers (R1 and R2) will analyze the articles' titles and abstracts [54,55]. After the screening, disagreements will be resolved by consensus through the mediation of a senior researcher (R3 or R4) [54,56]. Two independent reviewers (R1 and R2) will also review the full texts of the selected articles, and a third reviewer (R3 or R4) will resolve any disagreements.

The PRISMA 2020 flowchart for article selection organizes the steps and guides the systematic review (Fig. 1) [56]. At the end of this process, the selected articles will be included in the systematic review. In addition, reference lists of the included articles will be checked (reference screening) to identify additional eligible studies the search strategy may have missed [50].

Reliability of the component classification will be assessed by calculating the percentage of agreement [42] and Cohen's kappa coefficient, denoted by κ [57,58]. This coefficient will be calculated using the Statistical Package for the Social Sciences (IBMTM SPSSTM Statistics), version 26 for Microsoft WindowsTM (IBM Corp., NY, Armonk, USA).

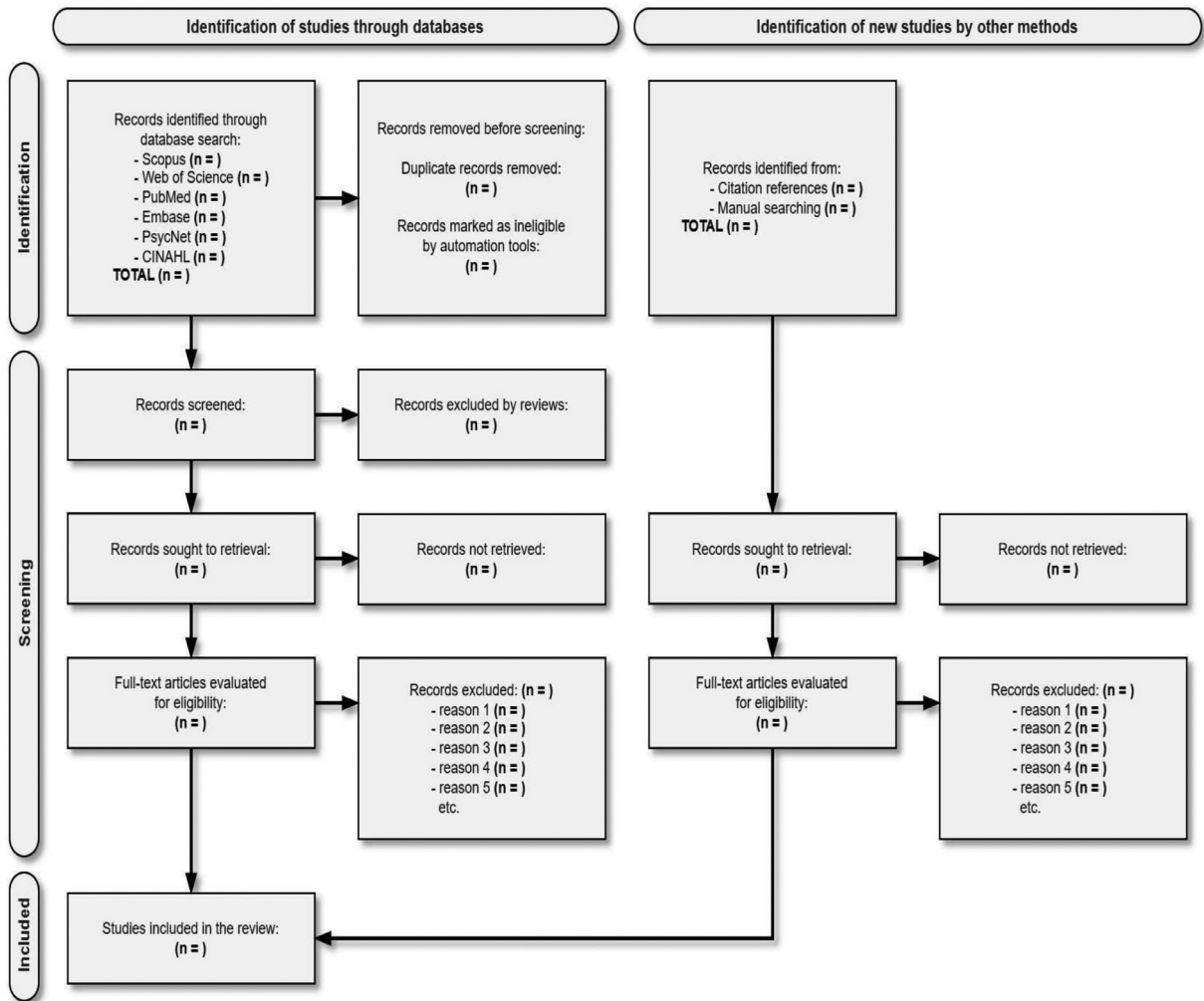


Fig. 1. Flow diagram of PRISMA 2020 for the process of identification, screening, and inclusion of studies.

Data extraction, synthesis, and analysis

The data extraction process will be carried out using spreadsheets considering the following aspects (see Supplementary Material: S3 File):

- Name of the author, year of publication, and location of study.
- Type of study.
- Number of participants and type of sample.
- Instruments used to assess violence.
- Types of violence addressed.
- Information on the prevalence of violence perpetration and victimization and its associated factors in the context of this research.
- Interventions and public policies reported by the studies and their impact on mitigating TDV.
- Gaps reported in each study.

A mixed-methods approach [59,60], combining qualitative and quantitative methods, will be used to synthesize results of the studies included in the systematic review [61]. For quantitative and mixed-methods studies, factors associated with the perpetration and victimization of TDV will be extracted, including those determined through statistical analysis [40]. For these studies, quantitative synthesis will be conducted first to quantify each component's prevalence, followed by a qualitative synthesis.

The data will be transcribed into a spreadsheet (Table 2) for qualitative analysis, which will allow exploration of the contextual factors contributing to this issue. The ultimate aim is to inform intervention practices and policies to reduce the prevalence and impact of TDV among young people.

Table 2
Factors associated with the perpetration and victimization of TDV.

Estudo	Sexo	Fatores associados	
		Perpetração	Vitimização
Varela (2021) *	F	- Uso de entorpecentes. - Influência social e cultural. - Histórico de violência na família.	- Baixa autoestima. - Problemas de saúde mental.

Note:

* Hypothetical example data.

Table 3
Prevalence of the perpetration and victimization of TDV.

Estudo	Prevalência							
	Perpetração				Vitimização			
	física	psicológica	sexual	...	física	psicológica	sexual	...
Shin (2019) *	177 (17.7%)	239 (23.9%)	140 (14.0%)		208 (20.8%)	412 (41.2%)	240 (24.0%)	

Note: Prevalence per 1000 inhabitants.

* Hypothetical example data.

The qualitative results will be categorized and, if necessary, subcategorized objectively and synthetically [40]. The quantitative data will be converted into categories or themes [62]. These data can also be presented using figures, diagrams, and other graphic elements that best represent the grouping of the identified factors, patterns, and trends [63,64]. For example, the widely used visual mapping technique can effectively conceptualize the processed data [65].

For quantitative analysis, data related to the prevalence of perpetration and victimization in dating violence will be collected (Table 3). The physical, psychological, and sexual domains will also be considered. The results of the sociodemographic groups will be compared to identify patterns. Additionally, a meta-analysis will be considered. A meta-analysis is a statistical synthesis method used to aggregate the results of previous studies [62,66]. Therefore, a meta-analysis will be conducted only if the quantitative results of our investigation contain standardized data that are sufficient to perform this type of analysis. The analyses will be carried out using STATA (version 16.0; StataCorp, College Station, TX, USA).

These analytically detailed components will be integrated to comprehensively understand the phenomena studied and formulate evidence-based recommendations.

Evaluation of the strength of evidence and risk of bias

The evidence strength of the included studies will be assessed using the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) [67,68]. The strength of the evidence will be classified as high, moderate, low, or very low [68] using GRADE and the GRADEpro GDT software (McMaster University, Inc., Hamilton, Canada), which is available online (<https://www.gradepro.org/>) [69].

The risk of bias in the included qualitative studies will be assessed using the Critical Appraisal Skills Program (CASP) checklist [70,71]. The quality of each study will be scored according to three categories: (a) low quality (one star; 0–6 points), (b) moderate quality (two stars; 7–12 points), and (c) high quality (three stars; 13–18 points) [71,72]. A summary table will be generated using the CASP classifications [73].

On the other hand, risk of bias in quantitative studies will be assessed using the 27-item Downs and Black Checklist [74]. Some items on this scale may not apply to observational studies; therefore, we will use different scores for cross-sectional studies (0–12 points) from a list of 12 items [75] adapted from the original (items 1–3, 6, 7, 9–12, 16, 18, and 20). Moreover, for longitudinal studies, 16 items (0–16 points) will be similarly adapted (items 1–3, 5–7, 9–12, 17, 18, 20, 21, 25, and 26) [54,75]. A summary quality score will be calculated for each selected study and expressed as a percentage of the maximum possible score for the specific design of each evaluated study [76]. Scores $\geq 70\%$ will be considered as “low risk of bias”, while scores $< 70\%$ will be classified as “high risk of bias” [74,76]. Similar to the qualitative studies, a summary table containing the scores of quantitative studies will be developed.

Two independent reviewers (R1 and R2) will assess the strength of evidence and risk of bias. In the event of disagreement, a third independent reviewer (R3 or R4) will be consulted to resolve any differences. If the findings are sufficient for a meta-analysis, one reviewer (R1) will conduct the analysis, supervised by experienced researchers with expertise.

Cochran’s Q test and the I^2 statistic will be used to assess the effect sizes’ heterogeneity [77,78]. The degrees of low, moderate, substantial, and high heterogeneity are indicated by values of I^2 , which are 0–40%, 30–60%, 50–90%, and 75–100%, respectively [79]. For meta-analyses that include 10 or more effect sizes, we will assess publication bias using the funnel plot with enhanced contours and Egger’s asymmetry test [80,81].

Finally, the systematic review will synthesize the most relevant evidence from previously published studies on the prevalence, perpetration, and victimization of TDV with a clear objective, thus enabling the grouping of evidence from similar studies. A critical assessment of the included studies' strength of evidence and risk of bias will make it possible to determine the quality and robustness of the conclusions drawn. The data extracted from the studies will be assessed using the methodological approach detailed in the systematic review protocol.

Training of reviewers

The researchers assigned to the reviews to assess the eligibility of the articles will be trained to use the inclusion and exclusion criteria, and an eligibility test will be conducted on 50 titles and abstracts before coding the articles [82]. This training will also cover the instruments' application for the standardized analysis of the studies' methodological quality and risk of bias, as well as extraction of data from the articles.

Conclusion

Understanding and addressing TDV is crucial for mitigating this global public health problem. This systematic review seeks to assess the prevalence of and factors associated with the perpetration and victimization of TDV, thus providing essential data to guide effective intervention policies and practices. By recognizing the prevalence and factors associated with TDV, we can promote educational changes that foster gender equality from adolescence onwards and implement health policies that offer victims support. Collaborative efforts among researchers, health professionals, educators, and policymakers are crucial to tackle this challenge comprehensively and effectively.

Protocol validation

Discussion

Gathering data on the prevalence of and factors associated with the perpetration and victimization of TDV worldwide could provide evidence that can be used to reduce public health problems related to this issue. Although contemporary adolescents criticize gender expectations, they often reproduce traditional views that legitimize violence in intimate relationships [83]. Dating violence is a global problem that manifests in different ways and varies according to culture [84]. However, common characteristics arise from a society in which traditional and cultural gender role beliefs prevail [85].

Despite the studies on TDV in the last decade, there remain many knowledge gaps [86]. Prominent among these gaps is the lack of a concise study that gathers consistent data from the global literature, especially concerning the prevalence and factors associated with both the perpetration and victimization of TDV, and that considers the commonalities among different cultural contexts, data collection instruments, and other sociodemographic differences [84]. Understanding how the prevalence of TDV occurs, in which contexts it is most evident, and the factors associated with different cultural contexts will help identify high-risk groups and direct resources through public prevention policies and practical interventions [87]. Identifying the countries seeking solutions to this problem will provide public policymakers with a consolidated reference as a model for observations.

The results of this research could fill the gaps in the literature, support future studies, and contribute to public policies aimed at reducing violent behavior among adolescents [88]. It can also promote reeducation to build a society that fosters gender equality and cultivates healthier interpersonal relationships from adolescence.

Limitations

We highlight four main strengths of this systematic review protocol. First, this study pioneers the global dimension of TDV using a well-designed and robust method. Second, it provides a comprehensive search strategy, multiple databases, and explicit inclusion and exclusion criteria to identify the relevant studies. Third, assessment of the strength of evidence and risk of bias will guarantee the results' reliability. Fourth, the meta-analysis technique will allow for the integration and quantitative synthesis of the results of different studies, if possible, thus offering a consolidated and comprehensive view of the prevalence of TDV.

Our planned also has some limitations. For example, the results' interpretation may be influenced by factors not considered in the included studies and by variations in the results according to the cultural, social, and economic contexts in which each study is conducted. Finally, this study will provide significant evidence to guide public policies and professional practices to prevent and intervene in mitigating dating violence among adolescents. However, considering these limitations, the results should be interpreted with caution.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used DeepL to translate the texts into English. After using this tool/service, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication..

Declaration of competing interest

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

CRedit authorship contribution statement

Naiane Queiroz Ribeiro: Conceptualization, Methodology, Software, Project administration, Resources, Formal analysis, Investigation, Validation, Writing – original draft, Visualization. **Carolina Rodrigues de Mendonça:** Methodology, Formal analysis, Investigation, Supervision, Validation, Writing – review & editing. **Woska Pires da Costa:** Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing. **Lauryane Fonseca Terra:** Methodology, Writing – original draft, Writing – review & editing. **Ryan Vítor Pires da Cruz:** Investigation, Resources. **Isabel Cristina Esposito Sorpreso:** Formal analysis, Supervision, Validation, Writing – review & editing. **Priscilla Rayanne E. Silva Noll:** Methodology, Supervision, Validation. **Matias Noll:** Conceptualization, Methodology, Formal analysis, Resources, Supervision, Validation, Writing – review & editing.

Data availability

The authors do not have permission to share data.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.mex.2024.103003](https://doi.org/10.1016/j.mex.2024.103003).

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