The relationship between community violence and mental health symptoms in adolescents: Protocol for a systematic review

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Protocol

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Abstract

Background: Mental health diseases are responsible for 16% of the global burden of disease in adolescents. Identifying the main determinants of these disorders in this age group can direct public and political efforts aimed at their prevention. Two previous meta-analyses showed a moderate and positive effect between exposure to community violence and mental health symptoms; however, there are still significant gaps to be addressed.

Objectives: To evaluate whether adolescents’ exposure to a higher degree of community violence is associated with a higher risk of internalizing mental health symptoms and to investigate whether degrees of community violence events (victimization, witnesses and heard about) is associated with a higher risk of internalizing mental health outcomes (depression, anxiety and posttraumatic stress disorder).

Methods: A systematic review, research question and inclusion and exclusion criteria were developed according to the PEO format. The population consists of adolescents aged 10 to 24 years, the exposition involves individuals who were exposed to community violence, the comparison is adolescents who were not exposed or who were exposed to community violence to a smaller degree, and the outcome consists of internalizing mental health symptoms. Selection, extraction and quality assessment are being performed independently by two researchers.

Results: A narrative synthesis will be presented. If possible, a meta-analysis will be performed with subgroup analyses of age, sex, degree of community violence and race. Publication bias will be assessed using funnel plots.

This protocol has been registered in the International Prospective Register of Systematic Reviews (PROSPERO) - CRD 42019124740.

Background

Mental health diseases are responsible for 16% of the global burden of disease in adolescents between 10 and 19 years of age. Half of all mental illnesses begin by the age of 14 and three-quarters by the mid-20s; however, most of these cases are undetected and untreated. Moreover, depression is one of the leading causes of illness and disability among adolescents globally, and suicide is the third-leading cause of death in the population of individuals 15–19 years old. The consequences of not addressing adolescent mental health conditions may extend to adulthood, causing functional impairment.¹

Mental health problems can be classified into two major groups: externalizing and internalizing. This classification is based on symptomatic patterns.² Internalizing problems include pathologies with symptoms of anxiety and depression. Externalizing problems include pathologies with aggressive behavior, impulsiveness, anger, and disturbing behavior.
Common mental disorders (CMDs) correspond to a group of symptoms of anxiety, depressive, and somatic complaints but not necessarily a pathology.³ CMDs are highly prevalent in the general population. A systematic review estimated the prevalence of one-time and lifelong CMDs around the world as 17.6% and 29.2%, respectively.⁴ A study conducted in Brazil with adolescents showed a prevalence of CMDs of 30.0%, with a higher prevalence among girls (38.4%) and older adolescents (36.6%).⁵

Posttraumatic stress disorder (PTSD) is also an important health condition that affects children and adolescents. A metanalysis showed that the overall rate of PTSD in this group was 15.9% (95% CI 11.5–21.5), which varied according to the type of trauma and gender, girls exposed to interpersonal trauma were the group more affected (32.9%, 95% CI 19.8–49.3).⁶ Another metanalysis that focused delayed PTSD found that the proportion of PTSD cases with delayed PTSD was 24.8% (95% CI = 22.6–27.2%) after adjusting for differences in study methodology, demographic features, and event-related characteristics.⁷

Given the high prevalence of CMDs and TEPT in adolescence and the potential consequences associated with their occurrence and persistence, the identification of the main determinants of these disorders in this age group can direct public and political efforts aimed at their prevention. This review will focus on one contextual factor in the literature that influences mental health conditions in adolescence—community violence.⁸,⁹ The World Health Organization (WHO) defines violence as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation”.¹⁰ Community violence is a type of interpersonal violence that occurs among individuals outside of personal relationships, including acts in the streets or within institutions (schools and workplaces, for instance).¹¹ Additionally, community violence could be classified by the nature of the violence, i.e., physical, sexual, or psychological. Community violence is becoming more common in many cities and can be considered a public health problem.¹²,¹³

The clarification of the impact of exposure to community violence on adolescent mental health has been at the core of a large body of research.¹⁴–¹⁶ Before starting this protocol, we conducted a preliminary search for previous systematic reviews and meta-analyses from Cochrane Library, Medline, Joannas’ Bridge Institute Database of Systematic Reviews and Implementation Reports and International prospective register of systematic reviews (PROSPERO). To date, scholars have conducted two meta-analyses showing a mild to moderate and positive effect between these two factors.⁸,⁹ However, these association need to be confirmed since there were many primary studies published after 2009, also there are still significant gaps to be addressed. For instance, it is not yet clear how different degrees of community violence (victimization, witnessing or hearing about) influence various mental health outcomes (depression, anxiety and PTSD). Moreover, little is known about the variables that could be confounders, mediators, and effect modifiers in this relationship.
Conducted by Cody and Rosenthal, the first meta-analysis in this area included studies with adolescents aged 12 to 19 years, exposure to chronic community violence, and psychological symptoms as outcomes. The results showed a positive relationship in 33 of 37 samples, with effect sizes that were mild to moderate in magnitude. The results indicated the critical role of race and degrees of community violence (victimization, witnessing and heard about). However, sex and age did not influence the results.

The second meta-analysis included children and adolescents. However, the authors conducted the analyses separately for children younger than 11 years and adolescents older than 11 years. The results corroborated the authors’ hypothesis that community violence has a stronger impact on children’s mental health than on that of adolescents. However, the research was not able to analyze whether sex moderated these associations, given the large number of studies with boys only. In addition, unlike previous meta-analyses, it was not possible to test whether race was an effect modifier of the study associations due to the pooling of samples.

More recently, adding elements to the discussion of which variables could play an essential role in the relationship between environment and mental health, Curtis and colleagues developed a structured review. The researchers concluded that personal characteristics seem to function as moderators, but there is still conflicting evidence about this. Regarding age, some studies have demonstrated that younger adolescents are more vulnerable to community violence, while others have noted a higher risk for older adolescents. Ethnicity appears to function as a modifier in some studies, showing that some people can be discriminated by their race and that it could contribute to the effect of violence on mental health. Other factors, such as resilience and self-esteem, seem to influence this relationship, protecting adolescents.

Upon completion of this systematic review, we hope to address the above gaps in the literature:

- Identify the magnitude of the association between community violence and internalizing mental health symptoms.
- Evaluate whether degrees of community violence events (victimization, witnesses and heard about) is associated with different types of internalizing mental health symptoms (depression, anxiety, and posttraumatic stress symptoms).
- Identify whether sex, age, and race moderate the association between different degrees of community violence and internalizing mental health symptoms (depression, anxiety, and posttraumatic stress symptoms).

**Review Question**

The review question of this systematic review can be explained as follows: are adolescents exposed to community violence at higher risk of developing internalizing mental health symptoms? This question was broken down according to the acronym PEO: population or types of participants (P), exposure of interest/independent variable (E), and outcome/dependent variable (O).
Elegibility criteria

Population/types of participants

The population of this review will consist of individuals aged 10–24 years, based on WHO classification, which divides adolescence into three stages: (a) preadolescence, from 10 to 14 years of age; (b) adolescence, from 15 to 19 years of age; and (c) youth, from 20 to 24 years of age.\textsuperscript{27}

This review will consider the following inclusion criteria for the population: original studies that contain individuals aged 10–24 years. No population exclusion criteria will be considered.

Exposure of interest/independent variable

The exposure of interest is community violence, including different types of actions that often take place on the streets, such as robbery with or without the use of weapons, homicides, kidnappings, gang violence, and drug sales.

Inclusion criteria for exposure will be original studies that measure community violence through a questionnaire with adolescents, parents or relatives responsible for the child, and teachers or professionals who are associated with the adolescents or who address crime rates. Regarding the exclusion criteria, original studies that include other types of violence, such as domestic violence, bullying or sexual violence, and in which it is not possible to separate data on community violence will be removed.

Comparison groups will include adolescents not exposed to community violence or adolescents exposed to community violence at a lower level than other adolescents.

Inclusion criteria for comparison will include original studies that have a comparison group composed of adolescents who were not exposed to community violence or who were exposed to a lower level of violence than other groups of adolescents were. There will be no exclusion criteria for comparison.

Outcome/dependent variable

This review will consider studies that include internalizing symptoms as the primary endpoint, which can be represented by depression, anxiety, and posttraumatic stress symptoms.

As inclusion criteria for the outcome, we will use studies that have measured the mental health symptoms through a questionnaire with the adolescents themselves, their parents, or teachers or professionals related to them. There will be no exclusion criteria for the outcome.

Types of studies

We will include the following types of studies: observational studies (longitudinal, sectional and case-control) and will exclude case reports, case series, reviews, qualitative methodologies, interventions, descriptive studies and methodologic studies. We will include studies that had an association measure
and will exclude works with other measures and with association measures from regression models without adjustment (which does not consider possible confounders).

**Methods**

This protocol was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) 2015 checklist and the Joanna Briggs Institute Reviewers Manual—Chapter 7: Systematic reviews of etiology and risk.\(^{24,25}\) This protocol has been registered in the International Prospective Register of Systematic Reviews (PROSPERO) under study protocol registration CRD 42019124740.

**Objectives**

The primary objective of this review is to evaluate whether adolescents’ exposure to a higher degree of community violence is associated with a higher risk of internalizing mental health symptoms.

The secondary objective is to investigate whether different degrees of community violence (victimization, witnesses and heard about) is associated with a higher risk of different types of internalizing mental health symptoms (depression, posttraumatic stress disorder, and anxiety).

**Search strategy**

The search terms were based on the question in the PEO format and were constructed with a librarian. The main concepts were as follows: “adolescents” OR “youth” OR “teenagers” AND “community violence” OR “urban violence” OR “neighborhood violence” AND “mental health” OR “anxiety” OR “depression” OR “posttraumatic” OR “substance abuse” OR “aggression” OR “internalizing” OR “externalizing” OR “psychological symptoms”. The complete path of the search structure is available in appendix one. We added a filter for human research and types of studies only, no filters for year of publication were applied. Studies from all languages will be included. The lists of references in the included studies will be examined to verify whether other studies can fit the spectrum of the systematic review and could not be identified in the structured search. A librarian will work on obtaining the full-text works and seeking in the bibliographic bases, libraries and contact authors.

The first search was conducted on March 9\(^{th}\), 2019. It had the third field encompassing externalizing and internalizing symptoms besides learning disabilities. The search was updated on January 14\(^{th}\), 2021. At this time, it included only internalizing symptoms and a new filter were applied for year of publication (2019 to 2021). Due to this characteristics, the second search, naturally, yield less results.

**Information sources**

We started the search in six allied health research databases: Medline accessed through PubMed, PsycINFO, Embase, LILACS, Web of Science and Scopus. Regarding gray literature, only those
corresponding to theses and dissertations will be included; these will be identified in the databases above, and the platform ProQuest Dissertation and Theses will be used to search for full texts. Conference abstracts and lectures will be excluded.

**Study selection**

Data selection will be operation operationalized in Mendeley and carried out in three stages: (i) title, (ii) abstract, and (iii) full texts. For each study, a critical reading of each work will be performed independently by two researchers, according to the pre-established inclusion and exclusion criteria. All steps will be preceded by a pilot when the research team will analyze and discuss 10% of the total number of works of each phase. The concordance between researchers in the pilot study will be acceptable if it is larger than 75%. In the first and second stages of selection (title and abstracts), disagreements do not need to be resolved, and the studies can be included. In the third stage (full-text reading), the discordances will be discussed between two researchers, and when it is not possible to resolve them, a third researcher will be called. Alternating pairs of researchers will be programmed to avoid selection bias. The reasons for the exclusion of the papers will be recorded individually by each researcher.

When necessary, the authors will be contacted for further clarification. Since we will exclude studies that consider school violence and sexual violence in the construct of community violence, it will be necessary to determine whether all included studies did not contain questions related to school and sexual violence, or if they contained these questions, whether they were analyzed separately.

**Data extraction**

A standardized prepiloted formulary will be used to extract data from the included studies for the assessment of study quality and evidence synthesis. Extracted information will include the following: study setting; study population; participant demographics; details of the exposure of interest and comparable group; study methodology; recruitment and study completion rates; outcomes; and times of measurement. Two review researchers will work on this phase independently, and when discrepancies are identified, they will resolve them through discussion or consultation with a third author. The study authors will be contacted in cases of missing data. Extraction will be operationalized in Epidata 3.1.

**Assessment of methodological quality**

The quality of the studies will be evaluated independently by two researchers through a predefined quality assessment form for cohort/case-control studies and descriptive studies published in the Joanna Briggs Institute Reviewers’ Manual.²⁸

**Data synthesis**

We will provide a narrative synthesis of the findings from the included studies, target population characteristics, categories of degree of exposition (victimization, witnesses and heard about) and
subtypes of outcomes (depression, anxiety and PTSD). We will also provide summaries of association measures for each study. A flowchart indicating the number of studies identified in each phase and the causes of exclusion will be presented.

If possible, we will pool the results using a random-effects meta-analysis with risk ratios for outcomes, and we will calculate 95% confidence intervals and two-sided P-values for each outcome. Heterogeneity between the studies in effect measures will be assessed using both the Q² test and the I² statistics. We will consider an I² value greater than 60% to be indicative of substantial heterogeneity. We will conduct sensitivity analyses based on study quality.

We will stratify meta-analyses to explore heterogeneity in effect estimates. If the necessary data are available, subgroup analyses will be performed for degree of exposition (victimization, witnesses and heard about), age, sex and race, as the scientific literature points to a probable modification of effect in these four categories. Age will be divided into the following categories as per the WHO classification: 10-14 years (preadolescence), 15-19 years (adolescence) and 20-24 years (youth). Sex will be divided into male and female. Types of violence will be divided into being victimized, witnessing and hearing about; ethnicity will be categorized into black, white and other.

We will use meta-regression to analyze whether the characteristics above influence the outcome in a statistically significant way. If heterogeneity is not present, publication bias will be assessed using funnel plots. In addition, we will use the approach presented by Begg and Mazumdar. ²⁹

Assessing certainty in the findings

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA-P) checklist and Grading of Recommendations Assessment, Development and Evaluation (GRADE) system will be used for grading the certainty of evidence.

Declarations

Ethics and dissemination

Ethical approval is not required for this systematic review and meta-analysis as only a secondary analysis of data already available in scientific databases will be conducted. The results of this review will be submitted for peer-reviewed publication and will be presented at relevant conferences.

Additional File

Additional file: PRISMA-P 2015 checklist

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**Availability of data and materials**

The studies included in the review will be available upon request.

**Author’s contributions**

DPS and VLC – participated in the search, selection, extraction, writing and final revision phases of the manuscript. CSL and WJ participated in the elaboration of the research design, search structured, methodological issues related to the selection and extraction, guidance in the elaboration of the results and final revision of the manuscript. JGRNV participated in the elaboration of the results, assistance in the selection and extraction process and final revision of the manuscript. CLRM elaborated the study design, search structure, coordination and execution of the selection and extraction, writing of the results and final manuscript.

**Consent for publication**

Not applicable

**Conflicts of interest**

The authors declare no conflict of interest.

**References**

1. World Health Organization. Adolescent Mental Health [Internet]. Geneva: World Health Organization; 2019 Ouct 2018. [cited 2020 Jan 14]. Available from: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health.

2. Achenbach TM. Manual for the Child Behavior Checklist/4–18 e 1991 profile. Department of Psychiatry, University of Vermont, 1991. 288 p.
3. Goldberg D, Huxley P. Common mental disorders: A bio-social model. London: Tavstok/Routledge; 1992. 194 p.

4. Stell Z, Marnane C, Iranpour C, Chey T, Jackson JW, Patel, et al. The global prevalence of common mental disorders: a systematic review and meta-analysis 1980–2013. Int J Epidemiol. 2014;43(2):476–93.

5. Lopes CS, Abreu GA, Santos DF, Menezes PR, Carvalho KMB, Cunha CF, et al. ERICA: Prevalence of common mental disorders in Brazilian adolescents. Rev Saude Publica 2016. 50 (1): 1–9.

6. Alisic E, Zalta AK, Wesel FV, Larsen SE, Hafstad GS, Hassanpour K, et al. Rates of post-traumatic stress disorder in trauma-exposed children and adolescents: meta-analysis. Br J Psychiatry. 2014;204:335–40.

7. Smid GE, Mooren TT, Van der Mast RC, Gersons BP, Kleber RJ. Delayed posttraumatic stress disorder: systematic review, meta-analysis, and meta-regression analysis of prospective studies. J Clin Psychiatry. 2009. Nov;70(11):1572–82.

8. Cody WW, Rosenthal BS. The Relationship Between Exposure to Community Violence and Psychological Distress Among Adolescents: A Meta-Analysis. Violence Vict. 2003;18(3):335–52.

9. Fowler PJ, Tompsett CJ, Braciszewski AJ, Baltes BB. Community violence: A meta-analysis on the effect of exposure and mental health outcomes of children and adolescents. Dev Psychopathol. 2009;21(1):227–59.

10. World Health Organization. Global status report on violence prevention 2014. Geneva: World Health Organization; 2014.

11. Dalhberg L, Krug EG. Violência: um problema global de saúde pública. Cien Saude Colet. 2007;11(sup):1163–78.

12. Ozer EJ. The impact of violence on urban adolescents longitudinal effects of perceived school connection and family support. J Adolesc Res. 2005;20(2):167–92.

13. Richards MH, Romero E, Zakaryan A, Carey D, Deane K, Quimby D, et al. Assessing urban African American youths exposure to community violence through a daily sampling method. Psychol Violence 5(3): 275–284.

14. Chen P, Voisin DR, Jacobson KC. Community Violence Exposure and Adolescent Delinquency: Examining a Spectrum of Promotive Factors. Youth Soc. 2016;48(1):33–57.

15. Gaylor-Harden NK, So S, Bay GC, Henry DB, Tolan PH. Examining the Pathologic Adaptation Model of Community Violence Exposure in Male Adolescents of Color. J Clin Child Adolesc Psychol. 2017;46(1):125–35.

16. Margolin G, Gordis EB. Children's Exposure to Violence in the Family and Community. Curr Dir Psychol Sci. 2004;13(4):152–5.

17. Curtis S, Pain R, Fuller S, Kathib Y, Rothon C, Stansfeld SA, et al. Neighbourhood risk factors for Common Mental Disorders among young people aged 10–20 years: A structured review of quantitative research. Health Place. 2013;20:81–90.
18. Lynch M, Cicchetti D. An ecological–transactional analysis of children and contexts: the longitudinal interplay among child maltreatment, community violence, and children's symptomatology. Dev Psychopathol. 1998;10(2):235–57.

19. McCabe KM, Lucchini SE, Hough RL, Hazen A. The relation between violence exposure and conduct problems among adolescents: a prospective study. Am J Orthopsychiatry. 2005;75(4):575–84.

20. Hanson RF, Self-Brown S, Fricker-Elhai A, Kilpatrick DG, Saunders BE, Resnick H. Relations among parental substance use, violence exposure and mental health: the national survey of adolescents. Addict Behav. 2006;31(11):1988–2001.

21. Aneshensel CS, Sucoff CA. The neighborhood context of adolescent mental health. J Health Soc Behav. 1996;37(4):293–310.

22. Abada T, Hou F, Ram B. The effects of harassment and victimization on self-rated health and mental health among Canadian adolescents. Soc Sci Med. 2008;67(4):557–67.

23. Durant RH, Pendergrast RA, Cadenhead C. Exposure to Violence and Victimisation and fighting behavior by urban black-adolescents. J Adolesc Health. 1994;15(4):311–8.

24. Moher D, Shamseer L, Clarke M, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Syst Rev. 2015;4:1–9.

25. Moola S, Munn Z, Tufanaru C, Aromataris E, Sears K, Sfetc R et al. Chapter 7: Systematic reviews of etiology and risk. In: Aromataris E, Munn Z, editors. Joanna Briggs Institute Reviewer's Manual [Internet]. Adelaide: Joanna Briggs Institute; 2017 [Jan, 15th, 2020]. Available from: https://reviewersmanual.joannabriggs.org/.

26. Moola S, Munn Z, Sears K, Sfetcu R, Currie M, Lysi K, et al. Conducting systematic reviews of association (etiology): The Joanna Briggs Institute's approach. Int J Evid Based Healthc. 2015;13:163–9.

27. Eisenstein E. Adolescência: definições, conceitos e critérios. Adolesc Saude. 2005;2(2):6–7.

28. Aromataris E, Munn Z, editors. Joanna Briggs Institute Reviewer's Manual [Internet]. Adelaide: Joanna Briggs Institute; 2017 [Jan, 15th, 2020]. Available from: https://reviewersmanual.joannabriggs.org/.

29. Begg CB, Mazumdar M. Operating characteristics of a rank correlation test for publication bias. Biometrics 1994. 50: 1088–1101.

30. Transparent Reporting of Systematic Review and Meta-analysis. The Prisma Statement. [Internet]. Available from http://www.prisma-statement.org/PRISMAStatement/PRISMAStatement.

31. GRADE Working Group. Grading quality of evidence and strength of recommendations. BMJ. 2004;328:1–8.

32. APENDIX I. - Search strategy and results.

**Figures**
Figure 1

Eligibility Criteria

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Appendix.docx
- PRISMAPchecklist2.docx