



Published in final edited form as:

J Public Health Manag Pract. 2018 ; 24(Suppl 1 INJURY AND VIOLENCE PREVENTION): S42–S50.
doi:10.1097/PHH.0000000000000681.

Indicators for Evaluating Community- and Societal-Level Risk and Protective Factors for Violence Prevention: Findings From a Review of the Literature

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Abstract

Programs geared toward preventing violence before it occurs at the community and societal levels of the social ecology are particularly challenging to evaluate. These programs are often focused on impacting the antecedents (or risk and protective factors) to violence, making it difficult to determine program success when solely relying on measures of violence reduction. The goal of this literature review is to identify indicators to measure risk and protective factors for violence that are accessible and measured at the community level. Indicators of community- and societal-level risk and protective factors from 116 articles are identified. These indicators strengthen violence prevention researchers' and practitioners' ability to detect proximal effects of violence prevention programs, practices, and policies, and provide timely feedback on the impact of their work. Thus, opportunities exist for violence prevention researchers to further study the associations between various indicators and different violent outcomes and to inform practitioner, evaluator, and funder developed logic models that include indicators of relevant risk and protective factors for crosscutting violence prevention measures and outcomes.

Keywords

indicators; program evaluation; protective factors; risk factors; violence prevention

Public health is the science and practice of protecting population health. Priority is placed on approaches that are likely to achieve the greatest health impact for the largest number of people. As such, public health strategies for achieving population-level impact on violence often focus on preventing violence before it occurs (primary prevention) and are increasingly shifting toward implementation of strategies focused on the community and societal levels of the social ecology where broad-scale impacts are likely to occur.^{1,2} For example, the Centers for Disease Control and Prevention's (CDC's) Division of Violence Prevention developed a

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The authors declare no conflicts of interest.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (<http://www.JPHMP.com>).

series of technical packages* to summarize the best available evidence to prevent or reduce different forms of violence. The packages include strategies and approaches that are focused at the community and societal levels, such as strengthening economic supports to families^{3,4} and promoting social norms that protect against violence.⁴ These strategies and approaches largely seek to make changes in the antecedents to violence, or risk and protective factors that impact violence outcomes.

At the community level, risk factors are the conditions that increase the likelihood that a community will experience violence (eg, diminished economic opportunities, social norms that support aggression); while protective factors are the conditions that help increase communities' resilience and lower the likelihood of violence (eg, community support, cohesion, and connectedness). Monitoring and evaluation of community-level prevention approaches are critical for tracking their impact on violence outcomes, building the evidence base of effective and promising approaches, and expanding knowledge about *how* these approaches work across varying contexts and populations and interact with one another. Therefore, the goals of this review are to (1) identify indicators for community- and societal-level risk and protective factors associated with multiple forms of violence and (2) present a summary of these indicators for use by violence prevention researchers and practitioners. Indicators are defined as observable and measurable metrics (eg, percentage, number, rate, value) that can be used to measure either a risk or protective factor or a community construct that has a theoretical or empirical relationship to a risk or protective factor or violence outcome. Innovation is a critical component of effective public health implementation,⁵ and in this review, we seek to highlight innovative indicators that move "beyond" some of the challenges of measuring risk and protective factors and improve program evaluations of promising violence prevention approaches.

Rationale for shared risk and protective factor focus

The strategic vision of CDC's Division of Violence Prevention proposes preventing multiple forms of violence using a crosscutting approach that (1) focuses on children and adolescents to achieve long-lasting prevention effects, (2) prioritizes the populations and communities at highest risk for experiencing or perpetrating violence, (3) addresses shared risk and protective factors that are most likely to reduce multiple forms of violence, and (4) promotes identification, implementation, and scale-up of prevention approaches that address shared risk and protective factors and have crosscutting impact.⁶ As noted in the study by Wilkins et al⁷ and again in this special issue,⁸ different types of violence are connected and often co-occur in communities, families, and among individuals. For example, intimate partner violence and youth violence are both more likely to occur in neighborhoods with high rates of community violence and greater disadvantage.⁹⁻¹² By implementing prevention strategies on risk and protective factors that are linked to multiple forms of violence, public health practitioners and communities may be able to prevent multiple types of violence simultaneously. From a public health perspective, a combination of approaches provides great promise for achieving broad violence prevention impact at the population level and offers the potential for achieving impact more efficiently. In addition, public health

*<https://www.cdc.gov/violenceprevention/pub/technical-packages.html>.

approaches to prevention are increasingly focusing more on communities and societies, rather than individuals and couples, and the identification of violence risk and protective factor indicators at the community level enable impact evaluation of programs at the intended level of intervention.

Measurement challenges

There are a number of measurement challenges associated with evaluating community- and societal-level approaches to violence prevention. These are discussed in the following paragraphs and include the following: (1) demonstrating changes in violence outcomes through evaluation takes time, (2) common measurement tools and statistical techniques conflate the aggregation of individual-level data with the measurement of community phenomena, and (3) it is difficult to compare findings of the impact of violence prevention programs on communities because definitions and boundaries of the “community” vary across contexts.

Strategies that focus on community-level risk and protective factors lay the groundwork for preventing violence, but detecting changes in actual violent outcomes from these approaches can take time. This presents a challenge to communities and public health practitioners who are engaging in community- and societal-level approaches to violence prevention and rely on logic models and timely feedback to determine how well their programs are working. One solution is to measure the impact of prevention strategies on risk and protective factors as a way of benchmarking progress toward eventual violence outcomes. This approach, however, requires that public health practitioners, evaluators, and the communities with which they work have access to indicators that measure impact on these community-level risk and protective factors and are feasible to measure. What is more, indicators for community-level risk and protective factors that are actually measured at the “community” level (versus aggregated individual-level surveys or interviews) have historically been underrepresented in the research literature¹³ and are, therefore, difficult for practitioners and evaluators to find and use.

From a measurement standpoint, hierarchical linear modeling and other statistical techniques have emerged to strengthen the scientific basis for the methodological assessment of nested, environmental, and community phenomena¹⁴ and address the measurement challenge of using aggregated data of individual-level attributes (eg, perceptions, attitudes, and behaviors) to represent a community-level attribute. However, Sampson et al¹³ challenged the field to measure communities, community processes, and community phenomena as units of analysis in their own rights. Ecological settings, environmental factors, and community processes are not merely the aggregate of individual experiences in that environment.¹⁵ Community phenomena stand on their own and do not need to have psychometric properties (individual level) when they are conceptually distinct and observable.

To date, many community- and societal-level risk and protective factors for violence have been measured by aggregating individual-level perceptions, attitudes, knowledge, and behaviors.^{16–18} This strategy often entails surveying and then aggregating responses from individuals in a community to measure a community risk or protective factor (eg,

community support or connectedness). Aggregating individual-level responses can introduce measurement bias. For example, using residents' self-reported perceptions of social disorder has the potential for conflating residents' perceived fear of crime with their perception of disorder in their community.¹⁹ Also, this method of data collection is often time consuming for both evaluators and respondents and unfeasible for many public health practitioners who do not have the capacity or funding to collect individual-level data at a neighborhood, city, county, or state level. In addition, certain populations that may be more likely to experience risk factors for violence may be harder to reach through traditional surveys and other reporting mechanisms and, thus, may be excluded from community studies, resulting in an underestimation of the risk factors experienced by these populations. Rather than measuring individual perceptions of a community, true community-level indicators are those that measure attributes of the community itself.

Finally, defining community and appropriate community boundaries is challenging because there are many definitions and types of communities, from geographically based communities (eg, neighborhoods) to virtual ones (eg, Internet-based groups).²⁰ Communities may also be defined by varying geographic boundaries (eg, informal neighborhood boundaries, census tracts, counties).²⁰ To address these challenges, this literature review identifies published indicators* and data sources for measuring community- and societal-level risk and protective factors linked to multiple forms of violence (ie, child abuse and neglect, intimate partner violence, teen dating violence, sexual violence, youth violence, bullying, suicide, and elder abuse and neglect). These indicators should be feasible for public health practitioners, evaluators, and communities to use through observation or available secondary data sources.

Methods

For the purpose of this review, community-level indicators that met any definition of community (eg, geographic or virtual), at any community level (eg, neighborhood, county, or state), and unit of analyses (eg, census tract or census block group) were included. To manage the scope of the review, only studies that measured risk and protective factors that are common across 4 or more forms of violence and occur at the community or societal level⁷ were included. These risk and protective factors are consistent with those outlined in CDC's *Connecting the Dots: An Overview of the Links Among Multiple Forms of Violence*.^{†8} Risk factors at the community and societal levels include neighborhood poverty; diminished economic opportunities; alcohol outlet density; community violence; poor neighborhood support and cohesion; societal income inequality; health, educational, economic, and social policies/laws aligned with best available research evidence; cultural norms that support aggression toward others; and rigid norms around masculinity and femininity. Protective factors at the community and societal levels include community

*In the literature reviewed, the risk and protective factors are measured using underlying community constructs; therefore, the indicators reported are of the community constructs or proxies of the community constructs. This is explained in greater detail in the methods section.

†For a more complete description of the shared risk and protective factors described in *Connecting the Dots*, see Wilkins, Myers, Kuehl, Bauman, and Hertz, this issue.

support and connectedness and coordination of resources and services among community agencies.⁷

In *Connecting the Dots*, these risk and protective factors were empirically linked to different forms of violence indirectly through community constructs. For example, diminished economic opportunities were empirically linked to child abuse and neglect through neighborhood unemployment rates,²¹ intimate partner violence through concentrated disadvantage,²² sexual violence through the unemployment rate,²³ suicide through the unemployment rate,²⁴ and youth violence through concentrated disadvantage.²⁵ In some cases, the community construct was a direct measurement of the risk or protective factor (eg, alcohol outlet density, income inequality, and poverty). It is important to note that studies often use proxies to measure underlying community constructs for shared risk and protective factors (eg, using voter turnout as an indicator of social capital to measure community support and connectedness), and while overarching risk and protective factors may be linked to 4 or more forms of violence, the underlying constructs and indicators may be linked to less than 4 forms of violence in the extant literature. However, when the community construct has been empirically linked to violence, the indicator used to measure the construct is promising for violence outcomes. Consequently, we have taken the approach of being as inclusive as possible.

The literature related to the community constructs and indicators for violence outcomes is emergent. As such, the findings from this review provide opportunities for prevention researchers to expand the evidence base by testing the direct relationship between specific constructs and indicators identified in this study and multiple forms of violence. Also, while previous research has linked the community and societal risk and protective factors in *Connecting the Dots* to multiple forms of violence, many of these studies measured these community- and societal-level factors by aggregating data from individual-level surveys. This review sought to identify additional indicators, such as those derived from the United States (US) Census Bureau and other secondary data sources, to measure these risk and protective factors at the community level, mitigate the time-consuming nature of primary data collection of individual-level data, and avoid measurement bias of aggregating individual perceptions, attitudes, and knowledge by reporting only observable indicators of community constructs.

Search strategy

Studies were identified through parallel searches on MEDLINE, EMBASE, PsychInfo, Sociological Abstracts, and ERIC. While the search strategy was tailored to the different databases, all search terms are listed in the Supplemental Digital Content Appendix, available at <http://links.lww.com/JPHMP/A382>.^{*} “Violence” was included as a search term to best capture studies measuring the community violence risk factor. The review process included 4 coders who completed both an initial abstract review and full article review (review process described in detail later). Questions regarding inclusion/exclusion of

^{*}It was difficult to identify specific search terms for indicators related to the “health, educational, economic, and social policies/laws aligned with best available research evidence.”Therefore, all articles returned in our search were reviewed for policies and laws that were known to be consistent with the best available research evidence in relation to violence outcomes.

articles, or discrepancies between coders, were brought to the full group and resolved through group consensus.

Review process

The initial literature search returned 2880 articles that were published in years 2000 to 2014 (see the Figure). Unduplicated abstracts were included if they

- were published in a peer-reviewed journal (eg, no book chapters, conference proceedings, or abstracts);
- were published in English using US-based samples;
- measured community-level constructs (eg, no medical drug studies or clinical treatment studies);
- did not engage in primary data collection (eg, surveys, interviews) of individual-level data; and
- measured the community or societal risk or protective factors of interest and their related community constructs.

After this initial abstract review, 1710 articles were excluded because they did not meet the inclusion criteria listed previously, and 1170 articles were retained and included in a full article review, in which complete articles were obtained and downloaded from the CDC Library or Google Scholar and an additional set of inclusion criteria were applied. In addition to the aforementioned inclusion criteria from the abstract review stage, the following inclusion criteria were applied on the basis of information provided in the methods section of each article:

- When the data source included primary data collection, data sources had to measure community phenomena (eg, vandalism) at the community level using document reviews (eg, newspapers) or observation assessments (eg, checklists),
- When the data source was secondary data, it had to be from ongoing data collection systems (eg, U.S. Census) and not one-time or discontinued data collection systems (eg, a one-time national report), and
- Data had to be representative of or available at the state or local (county, city, or census tract) level.

This process resulted in the exclusion of an additional 911 articles that did not meet the stated inclusion criteria.

Selection process

The remaining 259 articles were reviewed and exclusion criteria were applied to distill the most parsimonious list of indicators. For exact duplication of *indicators*, the duplicates were removed and at least 1 example was kept with priority given to those studies with (1) a more recent publication date, (2) use of unique data sources (eg, the Census Neighborhood Change Database), (3) use of unique computation of indicators (if the indicators were part of an index), or (4) use of free-versus cost-associated data sources. In addition, studies that

used a list or index of indicators that were comprehensive and representative of indicators in other studies (eg, if other studies used 1 or more of the indicators in different combinations) were given further weight over studies using less comprehensive lists or indexes of indicators. One exception to this was in the case when an indicator or index of indicators was the most commonly used indicator for measuring a risk or protective factor in the literature (even if they were simple indicators and not as comprehensive). For example, the most typical indicator of poverty is the percentage or proportion of residents, individuals, or families living below the poverty line. In these cases, we reported the commonly used indicators and included only additional indicators of the risk or protective factor if they were unique in data source or computation. This resulted in 113 articles being excluded.

In the final step of the selection process, in addition to confirming that all of the inclusion criteria were met, articles were removed if construct validity was difficult to ascertain. Specifically, if the empirical relationship between the indicator and the risk and protective factors was weak, then it was excluded because there was less likelihood that indicator would be useful in the evaluation of a violence prevention program, practice, or policy. Also excluded were indicators that included nonmodifiable variables (eg, race, female head of household) as proxies to measure underlying social phenomena²⁶ except when part of indices measuring a community construct critical to the research linking the risk or protective factor to violence (ie, concentrated disadvantage and collective efficacy). While nonmodifiable variables could help provide important information about the community context in which the prevention program was implemented, they cannot be changed through prevention programs or used to evaluate prevention impact. This resulted in the exclusion of 30 articles. The remaining 116 articles are presented in the results tables.

Results

The results tables are reported by the shared risk and protective factors for multiple forms of violence (see Supplemental Digital Content Tables 1–8, available at <http://links.lww.com/JPHMP/A383>, <http://links.lww.com/JPHMP/A384>, <http://links.lww.com/JPHMP/A385>, <http://links.lww.com/JPHMP/A386>, <http://links.lww.com/JPHMP/A387>, <http://links.lww.com/JPHMP/A388>, <http://links.lww.com/JPHMP/A389>, and <http://links.lww.com/JPHMP/A390>). As outlined previously, due to the number of indicators found through this comprehensive review, and the amount of overlap and repetition in these findings (eg, 17 indicators for concentrated disadvantage across 30 studies), the results tables report indicators that were unique (either in definition or data source) and include just 1 example of an indicator when multiple cases were found in the literature.* The community constructs associated with each indicator are reported in the results tables using the language indicated in the cited articles. Subconstructs with unique indicators are underlined to distinguish them from each other and the overall construct. The results tables do include some study-specific data sources for instances in which indicators can also be measured using publicly available data sources. In addition some data sources, such as the General Social Survey, require additional permissions to access state or county-level data.

*The corresponding author can be contacted for the full results tables that were too lengthy to include in their entirety.

Although there are 10 risk and protective factors in *Connecting the Dots*⁷ shared by 8 types of violence, there are only 8 results tables (see Supplemental Digital Content Tables 1–8, available at <http://links.lww.com/JPHMP/A383>, <http://links.lww.com/JPHMP/A384>, <http://links.lww.com/JPHMP/A385>, <http://links.lww.com/JPHMP/A386>, <http://links.lww.com/JPHMP/A387>, <http://links.lww.com/JPHMP/A388>, <http://links.lww.com/JPHMP/A389>, and <http://links.lww.com/JPHMP/A390>) for 2 reasons. First, no community-level indicators were found for *coordination of resources and services among community agencies*. This protective factor is most often measured in studies using site-specific and nonpublic data sources (eg, local screening and referral data) or qualitative methods such as interviews and focus groups in which no *a priori* themes or indicators were identified and thus, this protective factor is not included in the final results. Second, risk factors were grouped into tables when they shared overlapping community constructs. This occurred for *diminished economic opportunity* and *neighborhood poverty* (see Supplemental Digital Content Table 1, available at <http://links.lww.com/JPHMP/A383>), as well as *cultural norms that support aggression toward others* and *rigid norms around masculinity and femininity* (see Supplemental Digital Content Table 2, available at <http://links.lww.com/JPHMP/A384>). For Table 1 (diminished economic opportunity)—the majority of constructs are derived from publicly available U.S. Census data sources, which means many of the computed indices reported are replicable. There are fewer constructs of the societal-level risk factors in Table 2 (norms), which are often measured by aggregating individual-level attitudes, beliefs, values, and behaviors.

Income inequality (see Supplemental Digital Content Table 3, available at <http://links.lww.com/JPHMP/A385>) was most often measured by the Gini coefficient/Gini index that often uses U.S. Census data to measure a statistical dispersion that represents the income distribution of a nation, state, or community's residents.²⁷ The coefficient ranges between zero (complete equality) and 1 (complete inequality).²⁷ Alcohol outlet density (see Supplemental Digital Content Table 4, available at <http://links.lww.com/JPHMP/A386>) was most frequently measured by the number or density of businesses that sells alcohol, including on-premise establishments (eg, restaurants and bars) and/or off-premise establishments (eg, liquor stores). Community violence (see Supplemental Digital Content Table 5, available at <http://links.lww.com/JPHMP/A387>) was by far the risk factor with the most community constructs (n = 61) while health, educational, economic, and social policies/laws aligned with best available research evidence (see Supplemental Digital Content Table 6, available at <http://links.lww.com/JPHMP/A388>) had the fewest community constructs (n = 2).

A few constructs in the tables are qualitative in nature and can be used in mixed-methods designs. For example, social processes such as social capital, social networks, and social organization are considered community resources¹³ that are built and realized through social relationships²⁸ and the strength of social ties.²⁹ They are measures of the *community connectedness and support* (see Supplemental Digital Content Table 7, available at <http://links.lww.com/JPHMP/A389>) protective factor, which has a wide range of possible data sources from organizational membership rolls to U.S. Census data. Similarly, there are a few qualitative indicators in the results tables. Qualitative indicators are identified by analyzing observational rater assessments or data gathered from online communities. For example, all

of the indicators in the poor neighborhood support and cohesion table (see Supplemental Digital Content Table 8, available at <http://links.lww.com/JPHMP/A390>) can be gathered using either observational methods or secondary data sources. Table 8 includes indicators of physical and social disorder as measures of poor neighborhood support and cohesion. Specifically, indicators of physical environment constructs like neighborhood aesthetics are linked to poor neighborhood support and cohesion through the “broken windows” theory, and studies that find the relationship between physical disorder (eg, graffiti, litter, and broken glass) and violence are mediated by collective efficacy (defined as social cohesion among neighbors combined with their willingness to intervene on behalf of the common good),¹⁶ which is a measure of the ability of people to work together toward common goals like advocating for clean streets and safe neighborhoods.

It is worth noting that while each unique indicator and associated construct are reported under only 1 table, some of the constructs and indicators may be linked to more than 1 risk or protective factor. For example, social disorganization theory describes how social capital operates through social networks and social institutions,²⁸ assumes that delinquency and crime occur in neighborhoods where social relations and social institutions have broken down,^{30,31} and is characterized in communities by concentrated disadvantage (poverty), residential instability, and ethnic heterogeneity.³¹ Although in this review indicators of community constructs associated with social disorganization theory were reported in the poor neighborhood support and cohesion table, social disorganization theory has been used in the literature to measure community support and connectedness as well as diminished economic opportunities and is a clear example of how indicators in 1 results table could be linked to multiple risk and protective factors.

Discussion

The more than 150 indicators found in this literature review can help provide violence prevention practitioners, evaluators, researchers, and communities with a better understanding of the range of indicators available for measuring the impact of violence prevention approaches on shared risk and protective factors at the community and societal levels. Indicators reported in this article are empirically and theoretically tied to risk and protective factors for violence, and a number of them provide particularly innovative approaches to measurement. For example, the reported qualitative indicators are especially promising for measuring the impact of prevention approaches designed to change social norms since norms and other socially sensitive topics are particularly susceptible to validity threats such as social desirability bias when collected through surveys of individuals.³² Also promising are indicators focused on neighborhood aesthetics for measuring poor neighborhood support and cohesion through its relationship to physical disorder and collective efficacy.

In addition, Hausman et al³³ used an innovative approach to elicit from community residents a list of indicators that demonstrated their vision of their community. They asked residents whether the community was improved as a result of successful violence prevention programs what would be changed. The indicators generated from their research could theoretically be connected to known community constructs empirically tied to risk and protective factors for

violence. Unfortunately, the authors did not make this theoretical connection clear and, therefore, the article did not meet our final inclusion criteria. This study is an example, however, of another opportunity that exists for violence prevention researchers to further test the direct relationship between innovative indicators of community constructs associated with risk and protective factors for violence and violence outcomes.

Limitations

The findings from this review are extensive but not exhaustive for a number of reasons. First, as mentioned previously, this review was comprehensive and not systematic. Second, due to the large number of indicators found through the review, the results reported in the tables are representative and not exhaustive. Third, in order for findings to be most applicable to injury and violence prevention practitioners and evaluators in the United States, this review included studies that were focused only on US populations and data sources. While this criterion helped increase the applicability of findings for practice in the United States, it may have resulted in the exclusion of relevant indicators from studies focused outside of the United States. Fourth, this review focused on shared risk and protective factors identified through *Connecting the Dots*, a previous synthesis of the literature on risk and protective factors linked to multiple forms of violence.⁷ Results on indicators, therefore, are not inclusive of risk and protective factors that may have emerged from more recent research literature.

Results also reflect the gaps in the extant literature on shared risk and protective factors. Research on shared risk and protective factors continues to emerge, and there are many gaps in the literature to date, particularly for protective factors at the community and societal levels of the social ecology.⁷ As such, there are likely a number of shared risk and protective factors for violence missing from consideration in this review. Some missing risk and protective factors that are also likely to be related to multiple forms of violence include racism,³⁴ discrimination,³⁵ prisoner reentry,³⁶ and other conditions of vulnerability and invisibility (risk factors); norms supporting gender equity and prosocial conflict resolution (protective factors); and robust economic/job opportunities in communities (protective factors). For example, Drakulich et al³⁶ found that people who live in conditions that are more affluent are substantially more likely to act collectively toward the goal of neighborhood safety, even after controlling for neighborhood crime and residential instability.

This review does not provide guidance or recommendations on how to access the data sources listed in the tables, nor does it provide guidance on how public health practitioners and evaluators should select and use the listed indicators. In recognition of this limitation, the indicators identified in this review can be used to inform the development of resources that provide detailed information and guidance for public health practitioners, evaluators, and their partners for accessing and using indicators and data sources to measure shared risk and protective factors for violence. Also, there are a number of data sources not included in this review that have been developed to help make state-level estimates of violent outcomes more accessible to researchers and practitioners, such as the Web-based Injury Statistics Querying System,³⁷ which provides state-level estimates of homicide and suicide mortality,

and the National Intimate Partner and Sexual Violence Survey, which provides periodic state-level data on sexual violence and intimate partner violence-related outcomes.³⁸

Conclusion

Public health approaches to violence prevention are increasingly focused on addressing shared risk and protective factors linked to multiple forms of violence and strategies geared toward changing community- and societal-level conditions in order to achieve population-level impact.⁶ A key part of this approach is equipping public health practitioners, evaluators, and community partners with the tools and resources they need to measure the impact of their work. This article provides a comprehensive review of indicators that are accessible to the field and can potentially be used or adapted to measure impact on shared risk and protective factors for violence at the community level.

Future research into these and other shared risk and protective factors can expand our understanding of the connections among multiple forms of violence. The community and societal-level indicators reported in this review can be used to inform the extent to which violence prevention programs successfully impact known shared risk and protective factors at the outer levels of the social ecology linked to multiple forms of violence. This, in turn, may help support violence prevention practitioners and researchers to build evidence on “what works” for preventing multiple forms of violence at the community and societal levels to achieve the greatest population-level impact.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention. The authors thank Christopher T. Allen for his assistance during the review process.

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Implications for Policy & Practice

The indicators reported in this review can be applied to strengthen violence prevention work in research, policy, and practice contexts. For example, the strength of the associations between risk and protective factors and violent outcomes, the mechanisms by which risk and protective factors operate, and the community constructs and indicators used to measure these linkages often vary across violence types in *Connecting the Dots* and the violence literature more broadly. There is also variation across the literature in how constructs related to risk and protective factors are defined and operationalized, and any given construct could be measured using a range of indicators (eg, alcohol outlet density). Therefore, many opportunities exist for violence prevention researchers to further study the associations between various indicators of shared risk and protective factors, their associated constructs, and different violent outcomes. Additional policy and practice implications for the use of the indicators identified in this review include

- violence practitioners and evaluators developing logic models that include indicators of crosscutting risk and protective factors at the community and societal levels,
- funding organizations developing announcements that include relevant crosscutting violence prevention measures and outcomes, and
- researchers using the articles reviewed in this and other documents⁷ in conjunction with knowledge of the theoretical and empirical literature linking each type of violence to shared risk and protective factors to provide the most comprehensive understanding of the ways in which indicators and their associated constructs have been linked to different forms of violence.

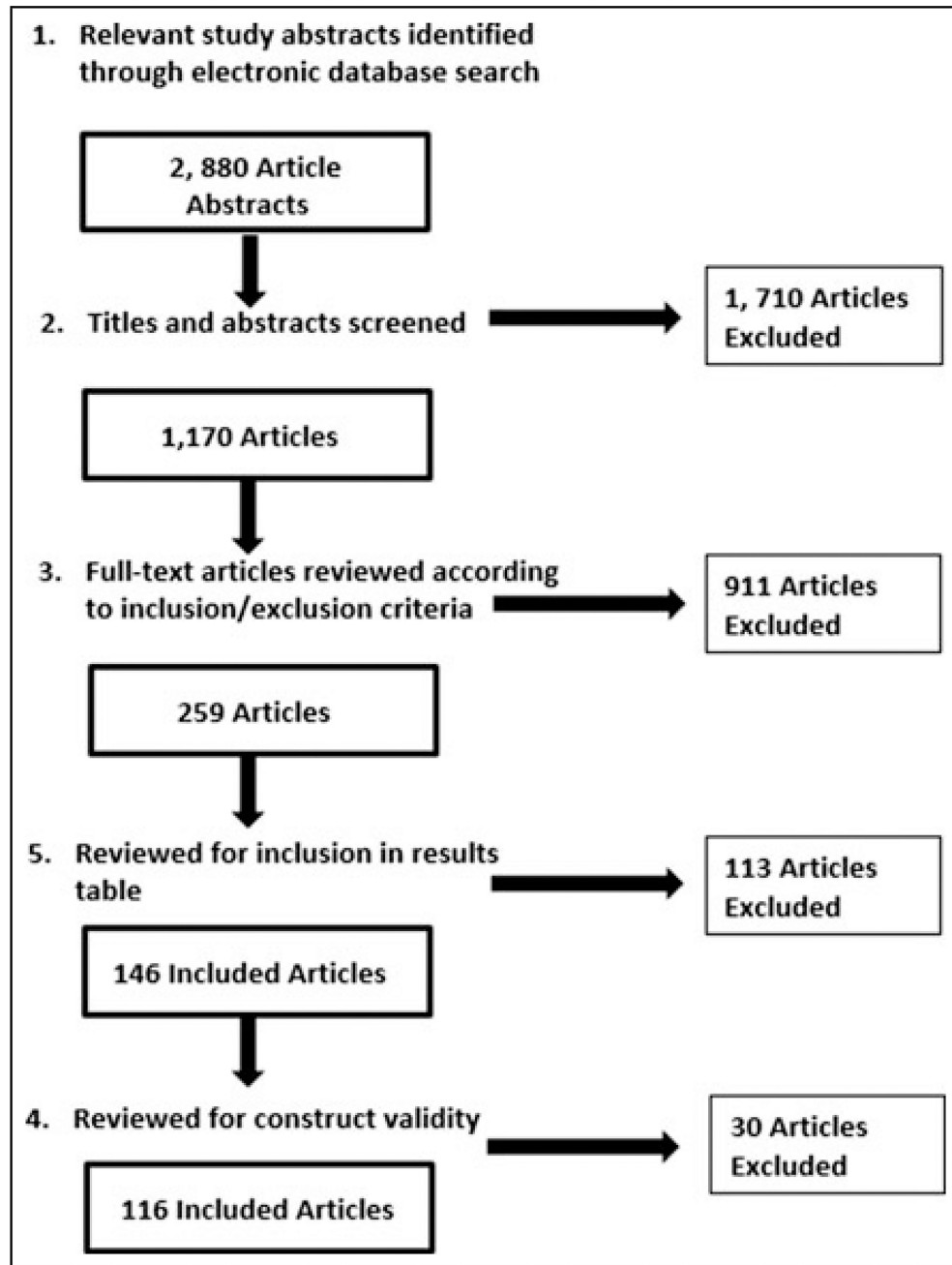


FIGURE.
Steps in the Search, Screening, and Selection