



The mediating effect of sleep quality on exposure to community violence and posttraumatic stress symptoms in the United States

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ABSTRACT

Objectives: The role of sleep quality is not yet fully understood in the context of posttraumatic stress disorder (PTSD) following exposure to community violence. Thus, the primary aim of this study is to examine the mediating effect of sleep quality in the relationship between community violence exposure and posttraumatic stress symptoms.

Methods: Utilizing a cross-sectional survey administered to an online opt-in panel of adults in the United States in 2023 (age ≥ 18 years) (N = 342), respondents reported on their exposure to community violence, sleep quality, and posttraumatic stress symptoms. Covariate-adjusted regressions were used to test these relationships.

Results: Directly experiencing community violence was associated with poorer sleep quality ($\beta = 0.11$, 95 % CI [0.02, 0.20], $p = 0.022$) and posttraumatic stress symptoms ($\beta = 0.33$, 95 % CI [0.17, 0.48], $p < 0.001$), and poorer sleep quality predicted greater posttraumatic stress symptoms ($\beta = 0.74$, 95 % CI [0.58, 0.91], $p = 0 < .001$). Further, sleep quality was a partial mediator ($\beta = 0.24$, 95 % CI [0.04, 0.50], $p = 0.028$), accounting for 24 % of the relationship.

Conclusions: Findings from this study help deepen understanding of the processes that contribute to the development of PTSD and provide insights into possible interventions, including treatment for sleep problems in the aftermath of violence exposure as a means for lessening the mental health burdens of community violence.

1. Introduction

The impacts of sleep quality on daily functioning and health are significant. In the United States (US), approximately one-third of adults experience features of insomnia (Hale et al., 2020; Ohayon, 2011). Common impairments include problems related to the quantity and quality of sleep, which are often long-standing, with individuals most frequently reporting ongoing insomnia issues for more than one year (Ohayon, 2011). The inability to obtain consistent, quality sleep may contribute to an assortment of mental and behavioral health disorders, including posttraumatic stress disorder (PTSD) and comorbid conditions such as depression and substance use disorder (Freeman et al., 2020; Harvey et al., 2003; Harvey, 2022). In one general population study of adults, respondents who met criteria for PTSD more often reported symptoms of insomnia than those without PTSD, including difficulties initiating sleep (41% vs 13%; $p < 0.001$), disrupted sleep (47% vs 18%; $p < 0.001$), and early morning awakening (43% vs 13%; $p < 0.001$); PTSD

was most frequent among respondents who had been victims of aggression, and aggression, more than any other traumatic event, was associated with increased frequency of nightmares (Ohayon & Shapiro, 2000). Given the impacts of poor sleep quality on an array of mental health conditions and the prevalence of comorbidity, prioritizing sleep as a transdiagnostic treatment approach for reducing the consequences of various psychiatric disorders is increasingly well-recognized (Harvey, 2022). It may also prove to be a far-reaching, feasible preventive strategy in the context of behavioral health interventions (Harvey, 2022), including community violence interventions.

In 2021, the National Crime Victimization Survey (NCVS) reported 4,598,306 violent victimizations among US residents ages 12 years and older, including those due to community violence (NCVS; United States Bureau of Justice Statistics, 2021). Community violence exposure (CVE), defined as public and intentional acts of interpersonal violence between individuals who are not personally related to one another, has myriad social and health repercussions (DeCou & Lynch, 2016; Fowler et al.,

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2009; McDonald and Richmond, 2008; Overstreet, 2000; Peterson, 2018). A highly prevalent result of exposure to such violence is the development of PTSD (Overstreet, 2000). In one study using a national sample of adults, the lifetime prevalence of PTSD was estimated to be 8% (Kessler et al., 1995). The prevalence among those with CVE is even higher, as another study found that 27% of low-income African American youth who had experienced violence either directly or indirectly had at least three symptoms of PTSD (Fitzpatrick & Boldizar, 1993). Poor sleep is also a well-established consequence of exposure to violence-related traumatic events (Bagley et al., 2016). Research on the impact of CVE on sleep is more limited, but several recent analyses have linked neighborhoods with higher violent crime rates to later sleep timing among adolescents (Bagley et al., 2016; Heissel et al., 2017). The effects of violent events on sleep-related difficulties in trauma-exposed youth has also been investigated, finding marginally significant effects on bad dreams, trouble sleeping, not sleeping, and feeling overtired (Wamser-Nanney and Chesher, 2017).

While poor sleep quality, including indicators of duration, disturbances, latency, and overall perceived quality of sleep, has long been characterized as a symptom (or consequence) of PTSD (Lydiard and Hamner, 2009; Slavish et al., 2022), there is also evidence to suggest that it has a role in the development and continuation of the disorder (Cox et al., 2017; Lydiard and Hamner, 2009; Slavish et al., 2022). This implied bidirectional relationship has led to expanded areas of inquiry, implicating sleep quality as a potential lever of intervention rather than solely a resultant factor. Further, recent research suggests that treatments for posttraumatic stress may lack significant effects on improved sleep quality, while sleep-focused treatments increasingly indicate a reduction of posttraumatic symptoms (Cox et al., 2017).

Given recent research showing more causal and bidirectional associations between sleep quality and PTSD, further research is needed to help clarify this ambiguity and inform potential sleep-based interventions following stressful events such as exposure to community violence. This is particularly critical due to recent, unprecedented increases in severe forms of community violence (particularly gun violence) amid the COVID-19 pandemic and coincident spikes in firearm acquisition, as well as the well-established association of violence exposure with PTSD (Kravitz-Wirtz et al., 2021; Overstreet, 2000). Research suggests that approximately 20%-45% of individuals exposed to significant trauma will develop PTSD, and insomnia and nightmares are standard features experienced by those exposed to such trauma (Pillar et al., 2000). Since poor sleep quality may no longer be solely an epiphenomenon of PTSD, applying sleep-based interventions with victims of violence may help lessen the tertiary burdens of gun and other forms of community violence.

Building on past research, this study aims to address existing gaps in understanding of the relationships among community violence exposure, sleep quality, and posttraumatic stress symptoms. The overarching purpose of this study is thus to examine the effects of exposure to community violence on posttraumatic stress symptoms and to explore the mediating role of sleep quality in this relationship. To our knowledge, this will be among only a few studies to directly explore the nexus of these three factors. In increasing our understanding of how poor sleep quality may influence the relationship between exposure to community violence and posttraumatic symptoms, we aim to contribute to the growing body of research on sleep health as an intervention for psychological disorders, particularly in the aftermath of violence exposure.

2. Methods and measures

2.1. Participants

Utilizing an opt-in panel of respondents, an Internet-based cross-sectional survey was administered to 362 adults (age ≥ 18 years) residing in cities experiencing varying levels of violence in the United States. Respondents were obtained through the crowdsourcing platform

Prolific (www.prolific.co) [February 2023]. Twenty participants were excluded from the study due to survey non-completion, leaving 342 respondents for analysis. The study design and procedures were reviewed by the University of California, Davis Institutional Review Board and deemed minimal risk (IRB no. 1947912). Due to the potentially upsetting nature of survey content, a list of supportive resources was provided during consent and at the completion of the study.

2.2. Community violence exposure

Data on direct and witnessed community violence victimization were obtained using the Community Experiences Questionnaire (CEQ) (Schwartz & Proctor, 2000). The CEQ is an adapted 25-question version of the Survey of Exposure to Community Violence (SECV) and measures exposure to both direct and witnessed victimization due to community violence (Richters & Saltzman, 1990; Schwartz & Proctor, 2000). The current study focuses on the 11-item subscale that measures the lifetime frequency of direct victimization (e.g., “How many times has someone fired a gun at you or your home?”) as a focal predictor variable. The 14-item subscale measuring witnessed victimization (e.g., “How many times have you seen or heard somebody else get threatened?”) is included as a covariate. To differentiate community violence from other forms of violence, participants were instructed to consider “incidents that have occurred at any time in the past except for incidents with family members or other adults that live with you” and to “only report real-life events in your neighborhood and community.” For each item, response options were: never (1), once (2), a few times (3), and lots of times (4). Items were summed to calculate a total score, ranging from 11 to 44 for direct victimization and 14 to 56 for witnessing.

Respondents also reported on vicarious experiences of community violence in their residential neighborhoods according to two questions adapted from the California Safety and Wellbeing Survey (CSAWS) (Wintemute et al., 2022): (1) The extent to which gunshots and shootings are a problem in their neighborhoods, and (2) The average weekly frequency of encountering sidewalk memorials where someone has died from violence. Response options for the first question were (0) don't know or not a problem, (1) a small problem, and (2) a big problem. The second question allowed for numerical selection, and respondent answers ranged from 0 to 10. These measures of broader experiences of community violence were included in the analyses as confounders to isolate the impacts of direct victimization.

2.3. Sleep quality

Sleep quality was assessed utilizing the shortPSQI survey, a 13-item shortened version of the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989; Famodu et al., 2018). The shortPSQI has demonstrated high correlation and agreement with the previously validated 19-item PSQI and can be used to derive the same outcomes with reduced respondent burden (Famodu et al., 2018). The shortPSQI measures self-reported past-month quality of sleep across five components: sleep latency, sleep duration, sleep efficiency, sleep disturbances, and daytime dysfunction. Each component is scored between 0 and 3 points. Global scores range from 0 to 15, and a score higher than 4 is considered “poor” sleep quality.

2.4. Posttraumatic stress disorder symptoms

Posttraumatic stress symptoms were measured using the abbreviated 6-item PTSD Checklist (PCL-6), a highly correlated version of the widely validated Posttraumatic Stress Checklist – Civilian Version (PCL-C) (Lang & Stein, 2005; Lang et al., 2012; Weathers et al., 1993). The PCL-6 asks respondents how much they have been bothered by each of the following in the past month: (1) Repeated, disturbing memories, thoughts, or images of a stressful experience from the past, (2) Feeling very upset when something reminded them of a stressful experience

from the past, (3) Avoiding activities or situations because they reminded them of a stressful experience from the past, (4) Feeling distant or cut off from other people, (5) Feeling irritable or having angry outbursts, and (6) Difficulty concentrating. For each item, response options range from “not at all” (1) to “extremely” (5). Total scores range from 6 to 30, and higher scores reflect greater severity of PTSD symptoms; a score of 14 or higher is considered a positive screen for high PTSD symptoms.

2.5. Sociodemographic characteristics

Sociodemographic characteristics were self-reported and included age, gender identity, ethnicity/race, marital status, and household income. Age was measured in years. Gender identity included male, female, transgender, and nonbinary or other. Ethnicity and race were cross-categorized into five groups: non-Hispanic Asian (Asian), non-Hispanic Black (Black), non-Hispanic White (White), Latinx (of any race), and all other non-Hispanic racial groups, including those with multiple racial identities (Multiracial and Other). Marital status was recorded as married, never married, and divorced, separated, or widowed. Household income in USD, including combined income from all sources for adult household members over the past twelve months, was categorized as follows: <\$25,000, \$25,000-\$59,999, \$60,000-\$99,999, \$100,000 or more.

2.6. Statistical analysis

All analyses were conducted using R Statistical Software (R Core Team, 2022). Consistent with standard mediation analysis, three sets of regression models were conducted to examine the mediating role of sleep quality on the relationship between community violence exposure and posttraumatic stress symptoms. First, posttraumatic stress symptoms were regressed on community violence exposure, controlling for confounders including sociodemographic characteristics, witnessing violence, and vicarious experiences of violence (Model 1). Next, sleep quality was regressed on community violence exposure, controlling for confounders including sociodemographic characteristics, witnessing violence, and vicarious experiences of violence (Model 2). Lastly, posttraumatic stress symptoms were regressed on both community violence exposure and sleep quality, controlling for confounders including sociodemographic characteristics, witnessing violence, and vicarious experiences of violence (Model 3). The final model used bootstrapped standard errors to assess statistical significance, derived from Tingley et al. (2014)'s non-parametric, bootstrapping mediation approach. Bootstrapping is a statistical method for generating confidence intervals involving random resampling of data, providing higher accuracies for smaller samples (Tingley et al., 2014). This study simulated 1,000 bootstrapped samples. A schematic representation of the mediating pathways can be found in Fig. 1.

3. Results

Participants (N=342) were on average 35.53 years of age (standard deviation [SD]=12.27 years). Approximately half (50.88%) of participants identified as male, 43.86% as female, 2.63% as transgender, and 2.63% as nonbinary or other. Most (61.70%) respondents were White, 11.70% were Asian, 7.89% were Black, 10.82% were Latinx, and 7.89% identified as Multiracial or Other. An overview of respondent sociodemographic characteristics is in Table A1 and Supplementary Table S.1.

The mean score for direct exposure to community violence victimization was 15.77 (SD=5.20) and for witnessed victimization, 25.53 (SD=8.78) (Table A2). Vicarious experiences, including the problem of gunshots in one's neighborhood and frequency of encountering a sidewalk memorial in an average week were 0.41 (SD=0.64) and 0.87 (SD=1.50), respectively. For sleep quality, the mean score was 6.01

(SD=3.07), and 64.33% of respondents scored greater than 4, indicating poor sleep quality. Information on the domains of sleep quality (i.e., latency, duration, efficiency, disturbances, and daytime dysfunction) are in Table A2. The mean PCL-6 score was 12.87 (SD=5.99), and more than one-third (36.84%) of respondents screened positive for PTSD (i.e., scored 14 or above). Those who screened positive for PTSD were, on average, more often younger, Transgender, Latinx, lower-middle income, and were married.

In model 1 of the mediation analysis, direct community violence exposure was a significant predictor of PTSD symptoms, controlling for confounders of sociodemographic characteristics, witnessing violence exposure, and vicarious experiences of violence ($\beta = 0.33$, 95% CI [0.17, 0.48], $p < 0.001$) (Supplementary Table S.2). In model 2, community violence victimization was significantly associated with worse sleep quality, controlling for confounders of sociodemographic characteristics, witnessing violence exposure, and vicarious experiences of violence ($\beta = 0.11$, 95% CI [0.02, 0.20], $p = 0.022$). Lastly, in model 3, which included both direct community violence exposure and sleep quality as focal predictors, as well as sociodemographic characteristics and other experiences of violence as confounders, sleep quality was significantly associated with PTSD symptoms ($\beta = 0.74$, 95% CI [0.58, 0.91], $p = 0 < .001$). Additionally, the significant effect of direct exposure to community violence remained, but was smaller in magnitude ($\beta = 0.25$, 95% CI [0.11, 0.39], $p = 0.001$), indicating that sleep quality partially mediated the relationship between community violence victimization and PTSD symptoms.

Bootstrapping was used to test the significance of the observed mediation effect. This approach produces four results: (1) the total effect of community violence victimization on PTSD symptoms (without sleep quality), which is equivalent to the main effect estimate in model 1; (2) the average direct effect (ADE), the direct effect of community violence victimization on PTSD symptoms after taking into account the mediated (indirect) effect of sleep quality; (3) the average causal mediation effect (ACME), the mediated (indirect) effect of sleep quality, which is equal to the total effect minus the ADE; and (4) the proportion mediated, indicating the share of the total effect of community violence victimization on PTSD symptoms that is mediated through sleep quality.

As shown in Table A3, the mediation analysis produced a statistically significant total effect ($\beta = 0.33$, 95% CI [0.19, 0.49], $p = 0 < .001$); a statistically significant direct effect (ADE) ($\beta = 0.25$, 95% CI [0.12, 0.39], $p = 0.002$); and a statistically significant mediated (indirect) effect (ACME) of sleep quality ($\beta = 0.08$, 95% CI [0.01, 0.16], $p = 0.028$). Sleep quality accounted for approximately 24% of the relationship between community violence victimization and PTSD symptoms ($\beta = 0.24$, 95% CI [0.04, 0.50], $p = 0.028$).

4. Discussion

The aim of this cross-sectional survey study was to examine the mediating role of sleep quality in the relationship between community violence exposure and PTSD symptoms among an opt-in sample of US adults. We found that respondents who experienced direct community violence victimization had higher levels of both PTSD symptoms and poorer sleep quality. Additionally, the negative impacts of community violence victimization on PTSD symptoms operated, at least in part, through worsening sleep quality. This study is particularly timely as practitioners and policymakers struggle to respond to, and mitigate the harm from, recent spikes in community violence (particularly gun violence) with record numbers of gun homicides in 2020 and 2021.

Findings from this work support the previously established relationship between community violence victimization and both PTSD symptoms (Fitzpatrick & Boldizar, 1993; Overstreet & Braun, 2000) and poorer sleep quality (Wamser-Nanney and Chesher, 2017), as well as the effects of poor sleep quality on PTSD symptoms (Cox et al., 2017; Harvey et al., 2003; Lydiard and Hamner, 2009). We found that poor sleep quality accounted for nearly one-quarter (24%) of the relationship

between direct violence victimization and posttraumatic stress symptoms. This finding of partial (not full) mediation is not surprising given that the etiology of PTSD is multidetermined. Nonetheless, interventions addressing sleep problems in the aftermath of violence exposure may be an important and underutilized avenue for preventing or reducing PTSD symptoms and related social and health problems, particularly if improving sleep health is a component of more comprehensive efforts to respond to violence-related trauma in clinical and community settings.

Hospital-based and hospital-linked violence intervention programs (HVIPs) are one site of possible integration. These multidisciplinary programs combine the efforts of medical staff with trusted community partners to provide wraparound community-based services and trauma-informed care to people who have been injured by community violence ([The Health Alliance for Violence Intervention, n.d.](#)). Strengthening partnerships between HVIPs and sleep health providers in community mental health care settings and added training and technical assistance for frontline HVIP staff on screening and evidence-based sleep treatment concepts and techniques may be especially valuable. These may include cognitive behavioral therapy for insomnia (CBT-I) ([Morin et al., 2006](#); [Perlis, et al., 2011](#)), as well as treatments that target the wide array of sleep problems experienced by those with comorbid mental health conditions, such as the Transdiagnostic Intervention for Sleep and Circadian Dysfunction (TranS-C) ([Harvey, 2016](#); [Harvey and Buysse, 2017](#)). Equally important is that therapeutic sleep health services be tailored and responsive to the unique needs and lived experiences of the communities most affected by violence and its upstream social determinants, including factors such as poverty and economic instability, substandard housing, and disinvestment in neighborhood infrastructure. Exploring sleep interventions in the specific context of hospital-based violence intervention, and assessing their impacts on psychological health, trauma healing, and reinjury, is an important future direction.

Findings from this study should be interpreted considering several limitations. As the cross-sectional design limits the ability to examine temporality, whether community violence victimization was associated with later sleep difficulties and if sleep difficulties were associated with later posttraumatic stress symptoms was not examined and cannot be assumed. Future longitudinal studies investigating temporal ordering would prove beneficial in determining whether poor sleep quality operates as a true causal mediator. Additionally, there may be potential confounders that were not assessed in this study. While we included a range of confounding variables (age, gender identity, race/ethnicity, marital status, income, witnessing violence, and vicarious forms of community violence), it is possible that there may be other factors responsible for the observed relationships that were not included. For example, this study did not assess for other psychological disorders and symptoms, psychiatric or physical illnesses, or medications that may also influence sleep. Future research would benefit from collecting this information to better understand these complexities, especially given the high prevalence of comorbidities in this domain.

Another consideration is the self-reported nature of the study variables. While self-reported surveys may allow participants to answer more freely, it is possible that participants had difficulty or lower motivation for answering precisely ([Lelkes et al., 2012](#)). Some studies have shown that subjective measures of sleep are strongly correlated with objective measures (e.g., electroencephalogram), particularly with sleep latency, sleep time, and time spent in bed, all of which were assessed in this study ([Armitage et al., 1997](#)). Although, it has also been found that sleep quality overall is not strongly correlated with objective measures in individuals who have major depressive disorders. Future

research including more objective measures will be valuable.

Lastly, this study utilized an online opt-in research panel for most of the participants. There were a few benefits in doing so (e.g., reduced social desirability bias, increased sample size, and affordability), however, due to the opt-in panel use, this study may not be representative of the US population, and therefore may not be generalizable. Online opt-in panels have been preferable for some research compared to university pools that provide similar conveniences, due to the increased diversity of samples and higher-quality data it may yield ([Chandler et al., 2019](#)). Prolific in particular has been viewed favorably and has shown similar data quality to its online counterparts ([Palan & Schitter, 2018](#)).

5. Conclusion

Overall, findings from this study suggest that sleep quality may partially account for posttraumatic stress symptoms following exposure to community violence; although, given the cross-sectional design of this study, future research is needed to more strongly infer causality. Nonetheless, violence prevention and intervention programs in hospital and community settings would likely benefit from added consideration of sleep health and wellbeing when addressing the well-documented mental health ramifications of community violence exposure. In the community violence ecosystem, this could involve building and expanding trusted partnerships with sleep health service providers. Sleep providers should also consider the high rates of reported sleeping difficulties in communities who frequently experience violence to tailor treatments to the unique needs of this population.

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CRediT authorship contribution statement

Sophia Oliver: Conceptualization, Data curation, Formal analysis, Funding acquisition, Writing – original draft, Writing – review & editing.
Nicole Kravitz-Wirtz: Conceptualization, Data curation, Formal analysis, Funding acquisition, Supervision, Writing – original draft, Writing – review & editing.

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.

Data availability

We have shared the link to the data and code in the data availability section of the manuscript.

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Appendix A

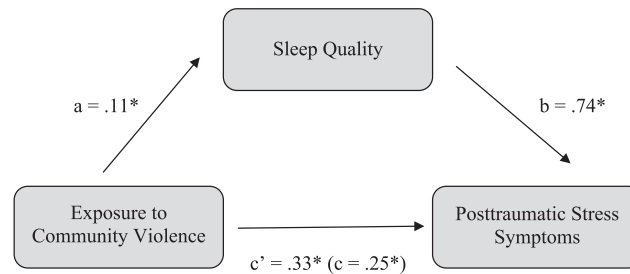


Fig. A1. Schematic Representation. Note. A schematic representation of the mediating model with unstandardized regression coefficients. The c pathway is the total effect, and c-prime is the direct effect. Outcomes reported have been adjusted for confounders of age, race/ethnicity, marital status, income, gender identity, witnessing community violence, and vicarious experiences of community violence.

Table A1
Sociodemographic Characteristics of the Opt-in Panel of US Adults (2023) by Posttraumatic Stress Symptom Severity (Low vs High), Column Totals (N = 342).

	Low Symptoms (N = 216)	High Symptoms (N = 126)	Total (N = 342)
Age (years), M (SD)	37.37 (12.69)	32.38 (10.86)	35.53 (12.27)
Gender Identity, N (%)			
Male	128 (59.26)	46 (36.51)	174 (50.88)
Female	81 (37.50)	69 (54.76)	150 (43.86)
Transgender	3 (1.39)	6 (4.76)	9 (2.63)
Nonbinary and Other	4 (1.85)	5 (3.97)	9 (2.63)
Race and Ethnicity, N (%)			
Asian	29 (13.43)	11 (8.73)	40 (11.70)
Black or African American	18 (8.33)	9 (7.14)	27 (7.89)
Hispanic or Latinx	16 (7.41)	21 (16.67)	37 (10.82)
White	138 (63.89)	73 (57.94)	211 (61.70)
Multiracial and Other	15 (6.94)	12 (9.52)	27 (7.89)
Income, N (%)			
<\$25,000	41 (18.98)	27 (21.43)	68 (19.88)
\$25,000-\$59,999	57 (26.39)	45 (35.71)	102 (29.82)
\$60,000-\$99,999	55 (25.46)	24 (19.05)	79 (23.10)
\$100,000 or more	63 (29.17)	30 (23.81)	93 (27.19)
Marital Status, (N%)			
Married	128 (59.26)	84 (66.67)	212 (61.99)
Never Married	66 (30.56)	31 (24.60)	97 (28.36)
Divorced, Separated, or Widowed	22 (10.19)	11 (8.73)	33 (9.65)

Note. N = Number of Observations. M = Mean, SD = Standard Deviation.

Table A2
Violence Exposure, Sleep Quality, and Posttraumatic Stress Symptoms Among the Opt-in Panel of US Adults (2023) (N = 342).

	M	SD	Min	Max	Median	IQR
Community Violence Victimization	15.77	5.20	11.00	36.00	14.00	7.00
Problem of Gunshots	0.41	0.64	0.00	2.00	0.00	1.00
Sidewalk Memorials	0.87	1.50	0.00	10.00	0.00	1.00
Witnessing Community Violence	25.53	8.78	14.00	56.00	24.00	11.00
Sleep Quality	6.01	3.07	0.00	14.00	6.00	4.00
Latency	1.53	1.04	0.00	3.00	1.00	1.00
Duration	1.26	1.10	0.00	3.00	1.00	2.00
Efficiency	0.56	0.88	0.00	3.00	0.00	1.00
Disturbances	1.34	0.68	0.00	3.00	1.00	1.00
Daytime Dysfunction	1.32	0.91	0.00	3.00	1.00	1.00
Posttraumatic Stress Symptoms	12.87	5.99	6.00	30.00	12.00	9.00

Note. N = Number of Observations. M = Mean, SD = Standard Deviation, and IQR = Interquartile Range.

Table A3
Mediating Effects of Sleep Quality on the CVE-Posttraumatic Stress Symptoms Relationship in the Opt-in Panel of US Adults (2023) (N = 342).

	β	CI	p-value
Average Causal Mediation Effect	0.08	[0.01, 0.16]	0.028
Average Direct Effect	0.25	[0.12, 0.39]	0.002
Total Effect	0.33	[0.19, 0.49]	<0.001
Proportion Mediated	0.24	[0.04, 0.50]	0.028

Note. CVE = Community violence exposure, β = Standardized effect size, CI = 95 % Confidence interval. Bolded numbers denote significant ($p < 0.05$) results. Outcomes reported have been adjusted for confounders of age, race/ethnicity, marital status, income, gender identity, witnessing community violence, and vicarious experiences of community violence. Results estimate that sleep quality accounts for approximately 24 % of the relationship between CVE and posttraumatic stress symptoms.

Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2024.102776>.

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