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EDITORIAL

Understanding the complex interplay between violence, depression and suicidal ideation in women: Time for a comprehensive sex- and gender-based approach

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As a leading cause of disease burden worldwide, depressive disorders are a global health priority. This burden is disproportionately shouldered by women, with most epidemiological studies reporting approximately twice as many women experiencing major depressive disorders as men; however, this disparity may be even higher in certain countries.[1,2] Violence exposure across the lifespan is also a pervasive problem that is unevenly distributed across the sexes, depending on the type of violence. Despite high prevalence rates of depression and violence, consistent links between the two, and evidence of sex differentials, pathways and mechanisms remain poorly understood. Using a novel approach, Carpena et al. attempted to tease apart these nuances in a nationally representative sample in Brazil, adopting a counterfactual framework and multiple modeling approach that examined the additive and multiplicative interactions between biological sex and violence, as well as violence as a mediator between biological sex and outcome.[3] Contradicting the commonly held dogma that sex differences can only be investigated through moderation or stratification, the authors found no evidence of multiplicative interaction, although violence exposure in the last 12 months was a significant mediator, accounting for 10.6% of the association between sex and major depression and 8.0% of the association between sex and suicidal ideation.

The fact that exposure to violence was found to be a mediator raises the question of how pathways in the model are related. How is biological sex, as explicitly defined in the current study, directly associated with violence? Aside from the obvious size and strength difference between male and female mammals, there is extensive research supporting underlying mechanisms of sex differences related to aggression that involve sexually dimorphic neurobiological systems underpinning variations in stress, risk-taking, impulsivity, empathy, and punishment sensitivity.[4] More specifically, there is robust evidence for sex differences in neural structure and function and the chemistry of the human brain, especially differences related to the prefrontal cortex and limbic system. These areas are associated with emotional information processing, impulse control and moral cognition,[4] as well as larger relative total gray matter volume in women, which correlates with higher cooperativeness and altruistic behavior.[5] While much of the literature on sexually dimorphic neurobiology provides clues related to sex differences in the propensity to aggressive or violent behavior, it does not necessarily account for why females would be at greater risk of violence victimization. Risk of violence exposure is not adequately captured by the traditional dichotomy of biological sex. Violence occurs within complex social, local/cultural, gendered systems which may exacerbate or mitigate the risk of violence perpetration and victimization.

Although sex and gender are not mutually exclusive constructs, they are frequently (and erroneously) used interchangeably in the literature. There is increasing recognition by funding agencies and journals to differentiate between biological sex and gender identity. Much of the research to date does not adequately capture both.[6] Some of the challenges may be related to methodological issues, given that there is limited consensus on the measurement of gender, and despite acknowledgement that it occurs along a continuum, researchers consistently dichotomize variables that may limit the validity of our understanding, given the multi-dimensional nature of sex and gender.[6] In their study, Carpena et al.[3] explicitly highlight biological sex as their main predictor, which is a common limitation in many epidemiological surveys. While these results raise important questions about the potential contribution of biological sex differences to mental health outcomes in the context of violence, they do not address the likely contribution of gender and other socially related factors. Gender systems sustain the risk of violence against women through biased norms, practices, and relations across multiple levels, including families, the workplace, and intimate relationships.[7] These same social factors reinforce systemic gender inequalities with negative consequences for health,[8] including depressive disorders.[2] Gender considerations are particularly important within a global health perspective. Gender inequality is greatest in

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many resource-limited environments, and through disparities in resource allocation and access to health care and education, it often disproportionately affects women. Social determinants, including education and socioeconomic status, play an important role in the health and well-being of individuals at a population level and are themselves gendered.[8] This was evident in the study of Carpena et al., who found that education, skin color, and measures of wealth were associated with depression and suicidal ideation in women, but not men.[3]

In general, this study provides further support for the significant public health concern of violence against women and the contribution of violence to depression and suicidal ideation. Women are at risk of exposure to gender-specific adverse experiences and environments that can negatively affect health and well-being (e.g., discrimination, child abuse or intimate partner violence). Many of these factors can co-occur simultaneously or over time, creating a cumulative burden that translates into health inequities over an individual's life. Future research should incorporate measurement of specific types of violence across the lifespan, including child abuse, intimate partner violence and community violence. A coordinated approach to prevention and intervention addressing gender-based violence across societal, community and individual levels is needed.

Disclosure

The authors report no conflicts of interest.

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