



ADVANCING HEALTH EDUCATION & RESEARCH

AVA Research Reviews provides AVA members with recent published, peer-reviewed articles in a broad array of violence and abuse topics. The goal is to highlight and disseminate violence and abuse research in a timely fashion, and to enhance healthcare providers' practice by fostering the educational mission of AVA

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AVA Research Review

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Review Title: Intimate partner violence and incidence of hypertension in women

Reviewer: Martina J. Jelley, MD, MSPH, University of Oklahoma School of Community Medicine

Article(s): Mason, S.M., et al., Intimate partner violence and incidence of hypertension in women. *Annals of Epidemiology* 2012;22:562-567

Article Summary: **Brief Overview:**

Intimate partner violence (IPV) is, unfortunately, a common problem for women in the United States, with 1 in 4 women reporting physical violence by an intimate partner in 2010. The potential physical effects of this violence are well-documented, mostly in retrospective, cross-sectional studies. Establishing causation of physical effects, particularly chronic disease

such as hypertension, has been difficult due to lack of prospective studies in this area. Another problem in defining the connection between IPV and chronic disease has been the confounding effect of child abuse and neglect, as many women who are IPV victims have been abused as children. The large Adverse Childhood Experiences study has shown the connection between childhood trauma and chronic disease, including hypertension, and there is some evidence that child abuse/adversity has a causative effect on elevated blood pressure.

Because cardiovascular disease is the leading cause of death in women, the contribution of intimate partner violence to cardiac risk factors is essential to estimating mortality risks from IPV. This study seeks to make the link between IPV and the incidence of newly diagnosed hypertension in women, while controlling for

the potential confounder of childhood abuse.

Aims/hypotheses of the article:

The authors aim to explore the potential causative relationship of intimate partner violence in adult women by utilizing data from the large epidemiologic project, the Nurses' Health Study II (NHS II). The purpose of the larger study was to examine diet and lifestyle risk factors in a group of young women. This group had previously found an association between child abuse and adult hypertension using data from this nurses' study. The cohort for the entire study included 116,000 nurses ages 25-42 recruited in 1989 and then sent biennial questionnaires that included sociodemographic, behavioral and medical data. Experiences with interpersonal violence were collected in one supplemental questionnaire sent in 2001. The analysis for this study included those 51,000 nurses who were free from a physician-made diagnosis of hypertension and use of antihypertensive medication at the start of study. Using this design, the authors attempted to capture incident cases of hypertension (physician diagnosed, but self-reported) in this group of women in the six years following the Violence

Questionnaire, and thereby better define the relationship and potential cause-effect connection between IPV and hypertension in younger women. The study utilized three measures of IPV: physical IPV in adulthood, sexual IPV in adulthood and the Women's Experience with Battering (WEB) Scale specific for the participants' current relationships. The WEB scale assessed emotional IPV experiences with disempowerment, entrapment, loss of identity and threat in intimate relationships. A history of child physical or sexual abuse was examined using interaction terms and separating severe abuse as a separate term. Other confounders used in the adjustment models were age, race, parents' education, body type and BMI.

Relevant findings:

The study found that, of the over 51,000 women who responded to the Violence Questionnaire and were free of hypertension at the time of that questionnaire, 22% reported being physically hurt and 10% reported being forced into sexual activities by an intimate partner in adulthood. These rates are somewhat lower than national estimates such as the National Intimate Partner and Sexual Violence Survey (2010); however, that survey

included adult women of all ages and was a much more extensive assessment. When looking at the covariates that might be associated with IPV in this population, a history of child abuse was the most strongly correlated, with approximately 80% of women with a history of adult abuse also reporting physical or sexual abuse under age 18.

Looking at the primary aim of the study, the authors did not find evidence of an association between adult physical or sexual IPV and the incidence of a new diagnosis of hypertension in the six years of the study. This analysis was done with both age-adjusted and adjustment with all covariates. The positive association that was found was in the emotional abuse area. In the small portion of women with the highest scores on the WEB scale (40-60, most severely emotionally abused), there was a 24% increase in the incidence of hypertension (hazard ratio 1.24; 95% confidence interval 1.02 - 1.53). Although this group was a relatively small portion of the overall group, there were still 636 women in the severe emotional abuse group due to the overall large sample size of the NHS II. When stratifying by age, the authors noticed that the associations between physical IPV and the WEB scores were stronger for

younger women (<45) as compared to older women which caused them to consider the possibility that their main estimates might be diluted by the exclusion of early-onset hypertension. This prompted an additional analysis to estimate covariate-adjusted prevalence ratios for pre-2001 hypertension comparing IPV-exposed women to IPV-unexposed women. All forms of abuse were more strongly associated with prevalent hypertension (prior to the violence screening in 2001) than incident hypertension in the 6 years following the screen.

Authors' Conclusions:

Although expecting to see an association between incident hypertension and adult physical and sexual violence, there was only limited evidence of such an association in this population. The study did find a relationship between recent emotional abuse and risk of hypertension in women. The authors had previously found an association between childhood physical and sexual abuse and hypertension in adulthood. It is possible the effects of stressful early life experiences on stress hormone responses, altering the development of the hypothalamic-pituitary-adrenal axis, may be the major factor in increases the cardiovascular

disease (CVD) risk and overshadow subsequent adult stressors. The authors also conclude that how one reacts to abuse, the psychological impact of the experience, may be the main trigger to the stress response leading to CVD, as suggested by their finding of an association of the WEB scores and incident hypertension. Additionally, the authors seek to explain their null findings by pointing out that they excluded women who had already been diagnosed with hypertension when the violence screening was done. These may have been the women whose hypertension was related to abuse at an earlier age, and the authors feel they may have missed the strongest abuse-hypertension association.

Potential limitations of the article/ findings:

A causative relationship between violence and/or abuse and health outcomes can be difficult to establish. This study has the strength of a large sample size but suffers from only a one-time screen with limited violence questions that asked about abuse that may have occurred many years previously. The WEB questions may have been found more closely related to hypertension due to the fact that those questions were specific for the current relationship of the participant,

so the abuse may have been more closely related in time to the diagnosis of hypertension. The generalizability of the study is a possible concern as it was done in only nurses, who are more than 90% white and are in a higher education demographic. It is possible that a history of violence in adulthood may be related to hypertension in a more diverse group or in a lower socioeconomic group. As mentioned by the authors, the study may have missed the strongest abuse link by excluding those women with already diagnosed hypertension when the violence questions were asked.

Reviewer's Comments:

This study certainly contributes to the body of knowledge about violence and abuse and relationships to physical health in women. Despite the lack of the results the authors were looking for, there are a few interesting findings about this particular relationship between IPV and hypertension. First, an earlier analysis in this same population found a child abuse/hypertension relationship, which adds evidence to the theory that the childhood stress, during the time of a developing nervous system and HPA axis, may have a stronger effect on physical health in adulthood than adult stressors. Second,

the finding that emotional stress from a current relationship is related to hypertension lends strength to recommendations for health care screening for current abuse, as a potential preventive measure. Lastly, there is certainly enough evidence here to proceed with future research utilizing more detailed violence screens in a diverse population to expand our understanding of violence and abuse and risks for the leading cause of death in women.