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Chronic Diseases, Health Conditions, and Other Impacts Associated With Rape Victimization of U.S. Women

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Abstract

Sexual violence (SV) is an urgent public health issue that is common and has lifelong effects on health. Previous scholarship has documented the association of SV victimization with numerous health conditions and impacts, but much of this past work has focused on negative health outcomes associated with child sexual abuse using non-nationally representative samples. This article used a nationally representative female sample to examine health conditions associated with any lifetime experience of rape. We also examined injury and health outcomes (e.g., fear, injury) resulting from any violence by a perpetrator of rape. About two in five rape victims (39.1%) reported injury (e.g., bruises, vaginal tears), and 12.3% reported a sexually transmitted disease as a result of the rape victimization. Approximately 71.3% of rape victims (an estimated 16.4 million women) experienced some form of impact as a result of violence by a rape perpetrator. Among U.S. women, the adjusted odds of experiencing asthma, irritable bowel syndrome, frequent headaches, chronic pain, difficulty sleeping, activity limitations, poor physical or mental health, and use of special equipment (e.g., wheelchair) were significantly higher for lifetime rape victims compared with non-victims. This article fills gaps in our understanding of health impacts associated with rape of women and is the only nationally representative source of this information to our knowledge. Primary prevention efforts in youth that seek to prevent the first occurrence of rape and other forms of SV may be most effective for reducing the long-term health effects of this violence.

Keywords

anything related to sexual assault; mental health and violence; PTSD; violence exposure

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Introduction

Sexual violence (SV), defined by the Centers for Disease Control and Prevention as any sexual act (e.g., rape, unwanted sexual touching, verbal sexual harassment) perpetrated against someone without their freely given consent, continues to be a significant public health problem in the United States (Smith et al., 2018). U.S. estimates from the National Intimate Partner and Sexual Violence Survey (NISVS) indicate that more than 1 in 3 women and about 1 in 4 men have experienced some form of SV involving physical contact at some point in their life. Women have a particularly high burden of SV victimization. One in five women (21.3%) have been raped (attempted or completed experiences involving forced or alcohol/drug-facilitated penetration), 1 in 6 women (16.0%) have been sexually coerced (i.e., nonphysically pressured to have sex), and more than a third of women (37.0%) have been sexually touched without consent in their lifetime (Smith et al., 2018).

Decades of scholarship have provided evidence of the associations between SV victimization and poor health outcomes and behaviors, including immediate and long-term physical and mental health outcomes, as well as health risk behaviors (e.g., high-risk sexual behavior, substance abuse) (Basile & Smith, 2011). However, much of this past work has focused on negative health outcomes associated with child sexual abuse, and most of this research has focused on SV victimization of any kind. With limited evidence on the associations between specific kinds of SV victimization and poor health outcomes among a nationally representative sample, less is known about what specific forms of SV are driving this association. Understanding the association of health and severe forms of SV can inform prevention and victim services. However, a literature search extending back approximately 10 years identified only a handful of studies using nationally representative data that examined the association of female rape victimization (a severe form of SV) and poor health, and these studies had limitations. For example, most of these studies focused only on college women (Amstadter et al., 2010; Zinzow, Resnick, McCauley, et al., 2010), women who sought medical care (McCauley et al., 2013), or associations with mental health outcomes only (Zinzow, Resnick, Amstadter, et al., 2010). No study to our knowledge has comprehensively examined physical health (including chronic conditions and sexual health), mental health, self-perceptions of health, which have been linked to health status (Yamada et al., 2012), and health-related behaviors (e.g., missing school or work) associated with adult or child rape victimization in a nationally representative sample of women; thus, the generalizability of the studies that exist is limited. The following is a brief summary of literature published in the United States over the last decade (since 2008) about the associations of rape or other SV (e.g., child sexual abuse) and physical health, mental health, health care utilization, and other health-related behaviors.

Physical Health

Numerous physical health impacts are associated with rape victimization, such as immediate genital and other injuries, like abrasions or bruises (Basile et al., 2015; Lincoln et al., 2013). However, many of the physical impacts associated with rape and other SV victimization are long-term and can persist into old age (Sachs-Ericsson et al., 2014). Child sexual abuse has been associated with serious chronic physical health conditions (e.g., hypertension and

heart disease, thyroid disorders and diabetes, cancer) in adulthood (Andersen et al., 2014). In a study of 25 U.S. states, Smith and Breiding (2011) found that previous nonconsensual sex was associated with numerous physical health conditions including high cholesterol, stroke, and heart disease in addition to behaviors that can have an impact on physical health and increase risk for human immunodeficiency virus (HIV), such as receiving money for sex and abusing alcohol or other substances. Santaularia et al. (2014) found that a history of SV victimization was associated with disability (i.e., activity limitations because of physical, mental, or emotional problems and/or use of special equipment such as a cane, wheelchair, etc.) and asthma. Previous research has also established a relationship between a history of rape and other SV victimization and having sexually transmitted diseases (STDs) (Brookmeyer et al., 2017; Jones et al., 2015; Sarkar, 2010; Williams et al., 2013). For example, Brookmeyer and colleagues (2017) found that women who experienced forced sex were more likely than women who did not to be diagnosed with chlamydia, herpes, and genital warts. Research has also found that a history of child SV was associated with sexual health issues and behaviors, such as severe perimenstrual periods (Sarkar, 2010), pain during inter-course, a history of an abnormal pap smear, as well as a significantly larger number of sexual partners than nonvictims (Sutherland et al., 2013), increasing risk for STDs.

Mental Health

Numerous mental health issues have been associated with prior SV victimization. For example, prior rape or other SV victimization was associated with depression (Brabant et al., 2014; Choudhary et al., 2012; Kendler & Aggen, 2014; McDougall et al., 2019; Santaularia et al., 2014; Zinzow et al., 2012; Zinzow, Resnick, Amstadter, et al., 2010; Zinzow, Resnick, McCauley, et al., 2010), post-traumatic stress disorder (PTSD) symptoms (Basile et al., 2015; Basile, Smith, et al., 2016b; Brabant et al., 2014; Choudhary et al., 2012; Iverson et al., 2013; Zinzow et al., 2012; Zinzow, Resnick, Amstadter, et al., 2010; Zinzow, Resnick, McCauley, et al., 2010), distress (Jones et al., 2015), anxiety (Choudhary et al., 2012; Iverson et al., 2013; Santaularia et al., 2014), fear (Amstadter & Vernon, 2008), and suicidal ideation (Brabant et al., 2014; Santaularia et al., 2014; Sarkar, 2010) and attempts (Iverson et al., 2013). While some of these impacts, like fear, can be immediate or happen during the violent incident(s), many of these mental health issues can be lifelong problems for SV survivors. For example, in a national probability sample of older adults, Sachs-Ericsson and colleagues (2014) found that forced sexual contact since the age of 18 was associated with low self-esteem and poor psychological health (including depression, anxiety, and loneliness) in older age (sample ranged from 57 to 85 years old).

Service Utilization and Health-Related Behaviors

Services sought after rape or other SV might involve law enforcement, housing, legal, victim advocacy, or mental health services. For example, previous SV victimization has been associated with the receipt of mental health counseling (Amstadter et al., 2010; Jones et al., 2015; McCauley et al., 2013), medical care (Amstadter et al., 2010), and religious counseling (Amstadter et al., 2010). Studies have also documented the *need* for services after victimization (whether received or not), such as medical care, mental health, and other services from the community (e.g., housing, victim advocacy) (Basile et al., 2015, 2016b). However, previous research documents that the majority of SV acts are not reported

to law enforcement or shared with social workers or other service providers (Hanson et al., 2003). Even given its association with numerous health issues, SV victimization has also been associated with decreased likelihood to seek routine medical checkups (Kapur & Windish, 2012; Watson-Johnson et al., 2012). SV victimization can also have an impact on other behaviors, relationships, and day-to-day living, including work-related behaviors. For instance, Banyard and colleagues (2011) found a link between victimization and work-related outcomes, including increased absenteeism, difficulty concentrating at work, and decreased employee productivity and job satisfaction, in which some job outcomes were mediated by mental and physical health outcomes.

Cumulative Violence and Relationship to Poor Health

While some of the impacts of rape and other SV (e.g., genital injuries, STD diagnosis) may be directly related to these forms of violence, many impacts of SV may occur in the context of cumulative violence from a specific perpetrator, like in the case of an abusive intimate partner relationship or ongoing child abuse victimization. This could manifest as co-occurring types of violence by the same perpetrator or revictimization over time. It is important to recognize the collective stress and associated impacts that one or more forms of violence over time (e.g., sexual, physical, psychological) could create, not only fear and injury, but also increased likelihood for chronic health conditions, such as asthma, sleep difficulties, chronic pain, or high blood pressure. Previous scholarship has proposed different mechanisms by which SV victimization may be associated with poor health. Some have proposed that adverse experiences in childhood and adolescence lead to a stress response that remodels the brain architecture and, as a result, changes behavioral and psychological responses (Shonkoff et al., 2009). Others have argued that SV victimization leads the victim to avoid and suppress negative feelings and memories associated with the sexual trauma, which can lead to negative coping strategies (e.g., substance abuse or overeating) that result in poor health (Polusny & Follette, 1995).

The Current Study

Although previous research has described the relationships between SV victimization and poor health, more information is needed on the associations between severe forms of SV, such as rape victimization, and a wider array of health conditions and impacts among women. This study sought to address this research gap by comprehensively examining the associations between rape victimization and health conditions and other impacts among women. Overcoming the shortcoming of some previously published studies' lack of generalizability to the general population, the current study used data from a nationally representative sample which allows for making inferences of the entire U.S. noninstitutionalized English- or Spanish-speaking adult women population.

Method

Participants

Analyses were based on data from the 2010–2012 administration of the NISVS, an ongoing, nationally representative random-digit-dial telephone survey of noninstitutionalized English- or Spanish-speaking adults in the United States. NISVS uses a dual-frame sampling design

that includes both landline and cell phone. NISVS assesses both lifetime and 12-month prevalence and characteristics of multiple forms of SV, stalking, and intimate partner violence. The survey protocol was approved through an Institutional Review Board. During 2010–2012, 41,174 respondents (22,590 women, 18,584 men) completed the survey, with 56.7% of interviews conducted by cell phone and 43.3% by landline. The overall weighted response rate across the 2010–2012 data years ranged from 27.5% to 33.6%. The weighted cooperation rate (the proportion of respondents who participated in the survey among those contacted and determined to be eligible) ranged from 80.3% to 83.5%. The final female sample size used in the current analysis was 22,590.

Measures

Rape. Rape was measured with 13 items that assessed completed or attempted forced and completed alcohol/drug-facilitated penetration of the victim, including oral, anal, and vaginal penetration. Actual question language can be found in Smith et al. (2017).

Demographics.—Demographics included as control variables in this analysis were the following. *Age* was measured among all survey participants prior to answering questions about victimization. *Education* was assessed with the question: “What is the highest level of education you have completed?” For this analysis, responses were coded into the following categories: less than high school; high school graduate; post–high school but without a 4-year college degree; and 4-year college degree or higher. *Race/Ethnicity* was measured with the following questions: (a) “Are you of Hispanic or {if female: Latina; if male: Latin} origin? and (b) What is your race? You may identify more than one category. Would you say you are White, Black or African American, Asian, Native Hawaiian or Pacific Islander, or American Indian or Alaskan Native?” Responses were recoded into non-Hispanic Black, non-Hispanic Asian/Pacific Islander, non-Hispanic American Indian/Alaskan Native, non-Hispanic multiracial, Hispanic, non-Hispanic others, and Non-Hispanic White.

Sexual violence other than rape.—*Sexual violence other than rape*, a composite measure which included being made to penetrate someone else, unwanted sexual contact, sexual coercion, and noncontact unwanted sexual experiences, was used as a control variable. Additional control variables were the following: stalking by any perpetrator, and psychological aggression (expressive aggression or coercive control and entrapment), control of sexual and reproductive health, and physical violence by an intimate partner. Details about these measures can be found in Smith et al. (2017).

Impact.—Impact was assessed among participants who experienced any form of violence measured in the survey. Women were asked whether they experienced specific forms of impact by a perpetrator when “this/any of these things happened” with a specific perpetrator (identified through perpetrator initials chosen by participants). More detail about the perpetrator–victim linking and follow-up questions can be found in Black et al. (2011). Two sections of the survey assessed impact. First, for participants who disclosed rape or being made to penetrate, they were reminded about the experiences they disclosed and then asked, (a) “Were you physically injured when {fill: initials} did {fill: this/any of these things}? For example, did you have bruises, vaginal or anal tears, or other internal or external injuries?”

and (b) “Did you ever get a STD or other infection when {fill: initials} did {fill: this/any of these things}? For example, did you get Chlamydia, Gonorrhea, HIV, or some other STD?”

Second, for women who disclosed any form of violence assessed in the survey, another set of questions was asked to assess broader impacts in relation to any forms of violence by the perpetrator: being fearful, concerned for safety, having symptoms of PTSD (i.e., nightmares; tried not to think about or avoided reminders of; felt constantly on guard, watchful, or easily startled; and felt numb or detached), injuries, needed medical care, needed housing services, needed victim advocacy services, needed legal services, contacted a crisis hotline, and missed days of work or school. More details about these measures can be found in Smith et al. (2017).

Health conditions and limitations.—Health conditions were assessed among all survey participants prior to answering questions about victimization. Participants were asked about their experience or diagnosis of asthma, irritable bowel syndrome, diabetes, high blood pressure, frequent headaches, chronic pain, difficulty sleeping, and activity limitations because of physical, mental, or emotional problems. In addition, two questions asked participants to rate their own physical health and mental health (excellent, very good, good, fair, poor), and respondents were asked whether they had health problems that required the use of special equipment such as a cane, wheelchair, special bed, or special telephone. Additional question details can be found in Smith et al. (2017).

Data Analysis

Data collected from 2010 to 2012 were combined and calibrated to be a cross-sectional national survey dataset over the survey period. All data analyses were conducted using SUDAAN (version 11.01) statistical software to account for the complex survey design features that were implemented in NISVS (e.g., dual-sampling design, stratification, and unequal probability of sample selection). The prevalence estimate for a given type of victimization is the weighted percentage of U.S. adult female population that reported the particular type of violence at least once. For every reported violence victimization estimate, two statistical reliability criteria were satisfied: (a) The relative standard error was less than or equal to 30% and (b) the victim count for a type of violence was greater than 20. For lifetime estimates that met the statistical reliability criteria, the association between rape victimization and a given physical or mental health condition was examined using the adjusted Wald F test. A significant statistical association was identified when the adjusted Wald F-test p value was less than alpha of 0.05, and measured by an adjusted odds ratio.

Results

Immediate Impacts of Lifetime Rape Victimization

About 2 in 5 females who reported having been raped at some point in life (39.1%) also reported sustaining an injury (such as having bruises, vaginal tears, or other internal or external injuries) as a result of the rape. In addition, 12.3% reported an STD as a result of rape victimization (Table 1).

Impacts of Violence by a Rape Perpetrator

Approximately 71.3% of female lifetime rape victims (an estimated 16.4 million) reported some form of physical health, mental health, or health-related behavior impact as a result of any violence by a rape perpetrator (Table 2).

The commonly disclosed impacts were fear (65.2%), concern for safety (58.9%), having PTSD symptoms (56.6%), injury (35.7%), missing at least 1 day of work or school (25.9%), and needing medical care (25.4%).

Associations Between Lifetime Rape Victimization and Health Conditions

After controlling for age, race/ethnicity, and education; ever experiencing intimate partner psychological aggression (expressive aggression or coercive control and entrapment); physical violence; stalking by an intimate or non-intimate partner; and SV other than rape by any perpetrator, results indicate that the adjusted odds of reporting being diagnosed with certain health conditions were higher among U.S. women who experienced rape at some point in life compared with female non-rape victims. These health conditions include asthma, irritable bowel syndrome, frequent headaches, chronic pain, difficulty sleeping, activity limitations, poor physical health, poor mental health, and health problems requiring the use of special equipment. A strong association was detected with mental health; victims had higher odds of reporting poor mental health compared to those without a history of rape, with an adjusted odds ratio of 2.2 (Table 3).

Discussion

SV is a serious public health problem affecting millions of women each year. Understanding the link between rape and health issues and impacts may improve the long-term health of victims. The current study is the first to use a nationally representative sample to examine health impacts resulting from women’s rape victimization and other health conditions that are associated with rape victimization. Of the 10 impacts measured, findings indicate that over 70% of victims suffered some type of impact resulting from violence by a rape perpetrator, such as PTSD symptoms, needing medical care, and missing work or school. Regarding rape experiences specifically, about 2 in 5 female victims were physically injured, and over 1 in 10 contracted an STD as a result of the rape. Finally, rape victims had a higher odds of reporting being diagnosed with asthma, irritable bowel syndrome, experiencing frequent headaches, chronic pain, difficulty sleeping, activity limitations, poor physical health, poor mental health, and use of special equipment (e.g., wheelchair), and were more than twice as likely to report their mental health as “poor” compared to women without a rape history.

Consistent with previous literature, this nationally representative study showed significant associations between rape victimization and immediate health concerns such as physical injury and STDs, as well as nine of the 11 health conditions measured. The lack of observing a significant association between a history of rape victimization and high blood pressure is consistent with previous research (Smith & Breiding, 2011) and suggests that high blood pressure may not be directly associated with SV. This study also revealed

no evidence of an association between rape victimization history and diagnosed diabetes, which may only be indirectly associated with SV through obesity or other health risks (Brewerton et al., 2015). In addition, this study showed that rape victims often report that the violence by the rape perpetrator, including rape or other forms of violence, resulted in fear, concerns for safety, PTSD symptoms, and the need for numerous services. It could be that these rape perpetrators are also perpetrating other forms of violence, such as in the case of intimate partner perpetrators; other analyses of the NISVS data revealed that intimate partners were the most commonly reported perpetrator of rape against women (Smith et al., 2017). Given different forms of violence victimization often co-occur (e.g., intimate partner physical, sexual, psychological, and stalking violence), it could be that for some women, the combination of multiple victimization experiences leads to the health impacts, particularly the need for services. However, rape victimization alone could be driving these associations for some women. Our analysis examining chronic health conditions was able to show that those with a history of rape victimization reported numerous poor health indicators even after controlling for other forms of violence victimization.

This study is subject to a few limitations. The sample consists of noninstitutionalized women, and therefore does not include potentially high-risk groups, such as incarcerated and homeless women. This limitation suggests the need for additional research with these populations. Second, due to the cross-sectional nature of the sample, directionality cannot be determined between the health conditions and victimization; however, victims attributed physical injury and STDs to the rape victimization, and the impacts included in Table 2 were assessed in relation to a specific rape perpetrator and any of the victimization experienced from that perpetrator. Third, given the way the data were collected about all victimization experiences by a given perpetrator, we cannot isolate rape victimization when examining the health impacts presented in Table 2. Fourth, our estimates are considered underestimates. Due to the sensitive nature of the survey questions, some women may not have felt comfortable disclosing their victimization. Fifth, in this analysis we did not take into account the difference in health impact between those victims who were raped once compared with those who were raped more than once. Sixth, despite strategies implemented to encourage survey participation, the overall NISVS response rates were less than desirable. It is unclear whether one’s violence victimization experiences might be related to any randomly selected individual’s decision to complete the interview. The fact that the cooperation rate indicates that over eight out of 10 eligible adults chose to participate in the survey suggests that the violence topics might not have systematically influenced a certain group of adults to drop out of the survey, however. While the response rate is a common measure of survey quality, studies have not found a consistent relationship between a survey’s response rate and the accuracy of survey estimates (Choung et al., 2013; Keeter et al., 2006).

Public Health Implications

Primary prevention of rape and other violence is a critical undertaking to improve societal health and reduce long-term health and other costs of victimization. Resources are available that describe approaches with the best available evidence to consider in a comprehensive strategy for preventing SV (Basile et al., 2016a). In addition, screening for violence victimization and trauma informed, integrated health care that incorporates areas such as

STD testing and treatment is also important to reduce negative outcomes when violence occurs (American College of Obstetricians and Gynecologists, 2013). It would be beneficial to conduct future research that longitudinally examines direct and indirect relationships between different forms of SV victimization and later health outcomes as well as the specific circumstances that may protect victims from adverse health and other negative impacts.

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References

American College of Obstetricians and Gynecologists. (2013). ACOG committee opinion no. 554: Reproductive and sexual coercion. Obstetrics & Gynecology, 121(2), 411–415. [PubMed: 23344307]

Amstadter AB, & Vernon LL (2008). Emotional reactions during and after trauma: A comparison of trauma types. Journal of Aggression, Maltreatment & Trauma, 16(4), 391–408.

Amstadter AB, Zinzow HM, McCauley JL, Strachan M, Ruggiero KJ, Resnick HS, & Kilpatrick DG (2010). Prevalence and correlates of service utilization and help seeking in a national college sample of female rape victims. Journal of Anxiety Disorders, 24(8), 900–902. [PubMed: 20620018]

Andersen JP, Hughes TL, Zou C, & Wilsnack SC (2014). Lifetime victimization and physical health outcomes among lesbian and heterosexual women. PLOS ONE, 9(7), Article e101939. 10.1371/journal.pone.0101939 [PubMed: 25068978]

Banyard V, Potter S, & Turner H (2011). The impact of interpersonal violence in adulthood on women's job satisfaction and productivity: The mediating roles of mental and physical health. Psychology of Violence, 1(1), 16–28.

Basile KC, DeGue S, Jones K, Freire K, Dills J, Smith SG, & Raiford JL (2016a). STOP SV: A technical package to prevent sexual violence. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Basile KC, & Smith SG (2011). Sexual violence victimization of women: Prevalence, characteristics, and the role of public health and prevention. American Journal of Lifestyle Medicine, 5(5), 407–417.

Basile KC, Smith SG, Fowler DN, Walters ML, & Hamburger ME (2016b). Sexual violence victimization and associations with health in a community sample of African American women. Journal of Aggression, Maltreatment & Trauma, 25(3), 231–253.

Basile KC, Smith SG, Walters ML, Fowler DN, Hawk K, & Hamburger ME (2015). Sexual violence victimization and associations with health in a community sample of Hispanic women. Journal of Ethnic & Cultural Diversity in Social Work, 24(1), 1–17. [PubMed: 26752978]

Black MC, Basile KC, Breiding MJ, Smith SG, Walters ML, Merrick MT, … Stevens MR (2011). The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 summary report. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Brabant ME, Hebert M, & Chagnon F (2014). Predicting suicidal ideations in sexually abused female adolescents: A 12-month prospective study. Journal of Child Sexual Abuse, 23, 387–397. [PubMed: 24641573]

Brewerton TD, O'Neil PM, Dansky BS, & Kilpatrick DG (2015). Extreme obesity and its associations with victimization, PTSD, major depression and eating disorders in a national sample of women. Journal of Obesity & Eating Disorders, 1(2), 1–9.

Brookmeyer KA, Beltran O, & Abad N (2017). Understanding the effects of forced sex on sexually transmitted disease acquisition and sexually transmitted disease care: Findings from the National Survey of Family Growth (2011–2013). Sexually Transmitted Diseases, 44(10), 613–618. [PubMed: 28876320]

Choudhary E, Smith M, & Bossarte RM (2012). Depression, anxiety, and symptom profiles among female and male victims of sexual violence. American Journal of Men's Health, 6(1), 28–36.

Choung RS, Locke GR, Schleck CD, Ziegenfuss JY, Beebe TJ, Zinsmeister AR, & Talley NJ (2013). A low response rate does not necessarily indicate non-response bias in gastroenterology survey research: A population-based study. The Journal of Public Health: From Theory to Practice, 21(1), 87–95.

Hanson RF, Kievit LW, Saunders BE, Smith DW, Kilpatrick DG, Resnick HS, & Ruggiero KJ (2003). Correlates of adolescent reports of sexual assault: Findings from the national survey of adolescents. Child Maltreatment, 8(4), 261–272. [PubMed: 14604174]

Iverson KM, Dick A, McLaughlin KA, Smith BN, Bell ME, Gerber MR, … Mitchell KS (2013). Exposure to interpersonal violence and its associations with psychiatric morbidity in a U.S. national sample: A gender comparison. Psychology of Violence, 3(3), 273–287. [PubMed: 25232484]

Jones D, Marks G, Villar-Loubet O, Weiss SM, O'Daniels C, Borkowf CB, … McLellan-Lemal E (2015). Experience of forced sex and subsequent sexual, drug, and mental health outcomes: African American and Hispanic women in the southeastern United States. International Journal of Sexual Health, 27(3), 249–263. [PubMed: 26380592]

Kapur N, & Windish D (2012). Health care utilization and unhealthy behaviors among victims of sexual assault in Connecticut: Results from a population-based sample. Journal of General Internal Medicine, 26(5), 524–530.

Keeter S, Kennedy C, Dimock M, Best J, & Craighill P (2006). Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey. Public Opinion Quarterly, 70(5), 759–779.

Kendler KS, & Aggen SH (2014). Clarifying the causal relationship in women between childhood sexual abuse and lifetime major depression. Psychological Medicine, 44, 1213–1222. [PubMed: 23942036]

Lincoln C, Perera R, Jacobs I, & Ward A (2013). Macroscopically detected female genital injury after consensual and non-consensual vaginal penetration: A prospective comparison study. Journal of Forensic and Legal Medicine, 20(7), 884–901. [PubMed: 24112341]

McCauley JL, Kilpatrick DG, Walsh K, & Resnick HS (2013). Substance use among women receiving post-rape medical care, associated post-assault concerns and current substance abuse: Results from a national telephone household probability sample. Addictive Behaviors, 38(4), 1952–1957. [PubMed: 23380490]

McDougall EE, Langille DB, Steenbeek AA, Asbridge M, & Andreou P (2019). The relationship between non-consensual sex and risk of depression in female undergraduates at universities in Maritime Canada. Journal of Interpersonal Violence, 34, 4597–4619. 10.1177/0886260516675468 [PubMed: 27807204]

Polusny MA, & Follette VM (1995). Long-term correlates of child sexual abuse: Theory and a review of the empirical literature. Applied & Preventive Psychology, 4, 143–166.

Sachs-Ericsson N, Kendall-Tacket KA, Sheffler J, Rushing NC, & Corsentino E (2014). The influence of prior rape on the psychological and physical health functioning of older adults. Aging & Mental Health, 18(6), 717–730. [PubMed: 24521090]

Santaularia J, Johnson M, Hart L, Haskett L, Welsh E, & Faseru B (2014). Relationships between sexual violence and chronic disease: A cross-sectional study. BMC Public Health, 14(1), Article 1286. 10.1186/1471-2458-14-1286 [PubMed: 25516229]

Sarkar NN (2010). Childhood sexual abuse and its impact on woman's health. International Medical Journal, 17(2), 107–112.

Shonkoff JP, Boyce WT, & McEwen BS (2009). Neuroscience, molecular biology, and the childhood roots of health disparities. Journal of the American Medical Association, 301(21), 2252–2259. [PubMed: 19491187]

Smith SG, & Breiding MJ (2011). Chronic disease and health behaviors linked to experiences of non-consensual sex among women and men. Public Health, 125(9), 653–659. [PubMed: 21855097]

Smith SG, Chen J, Basile KC, Gilbert LK, Merrick MT, Patel N, … Jain A (2017). The National Intimate Partner and Sexual Violence Survey (NISVS): 2010–2012 state report. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Smith SG, Zhang X, Basile KC, Merrick MT, Wang J, Kresnow M, & Chen J (2018). The National Intimate Partner and Sexual Violence Survey (NISVS): 2015 data brief—Updated release. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Sutherland MA, Fantasia HC, & McClain N (2013). Abuse experiences, substance use, and reproductive health in women seeking care at an emergency department. Journal of Emergency Nursing, 39(4), 326–333. [PubMed: 22088770]

Watson-Johnson L, Townsend J, Basile KC, & Richardson L (2012). Cancer screening and history of sexual violence victimization among U.S. adults. Journal of Women's Health, 21(1), 17–25.

Williams CM, Clear ER, & Coker AL (2013). Sexual coercion and sexual violence at first intercourse associated with sexually transmitted infections. Sexually Transmitted Diseases, 40(10), 771–775. [PubMed: 24275726]

Yamada C, Moriyama K, & Takahashi E (2012). Self-rated health as a comprehensive indicator of lifestyle-related health status. Environmental Health and Preventive Medicine, 17(6), 457–462. [PubMed: 22426707]

Zinzow HM, Resnick HS, Amstadter AB, McCauley JL, Ruggiero KJ, & Kilpatrick DG (2010). Drug- or alcohol-facilitated, incapacitated, and forcible rape in relationship to mental health among a national sample of women. Journal of Interpersonal Violence, 25(12), 2217–2236. [PubMed: 20100896]

Zinzow HM, Resnick HS, McCauley JL, Amstadter AB, Ruggiero KJ, & Kilpatrick DG (2010). The role of rape tactics in risk for posttraumatic stress disorder and major depression: Results from a national sample of college women. Depression and Anxiety, 27(8), 708–715. [PubMed: 20602431]

Zinzow HM, Resnick HS, McCauley JL, Amstadter AB, Ruggiero KJ, & Kilpatrick DG (2012). Prevalence and risk of psychiatric disorders as a function of variant rape histories: Results from a national survey of women. Social Psychiatry and Psychiatric Epidemiology, 47(6), 893–902. [PubMed: 21603967]

Table 1.

Prevalence Estimates of Injury and Sexually Transmitted Disease Resulting From Rape Among Female Lifetime Rape Victims,[a] NISVS 2010–2012 Average Annual Estimates.

Impact	Weighted %	95% CI	Estimated Number of Victims[b]
Physical injury	39.1	[36.8, 41.4]	8,986,000
Contracted sexually transmitted disease	12.3	[10.8, 13.9]	2,820,000

Note. NISVS = National Intimate Partner and Sexual Violence Survey; CI = confidence interval.

[a]In the NISVS 2010–2012 sample, 99 female victims (or 2.4% of female rape victims) reported having experienced both rape and being made to penetrate someone else.

[b]Rounded to the nearest thousand.

Table 2.

Prevalence Estimates of Impacts[a] Resulting From Any Form of Violence by a Rape Perpetrator Among Female Lifetime Rape Victims,[b] NISVS 2010–2012 Average Annual Estimates.

Impact	Weighted %	95% CI	Estimated Number of Victims[c]
Any reported impact[a,d]	71.3	[69.1, 73.5]	16,400,000
Fear	65.2	[62.9, 67.4]	14,984,000
Concern for safety	58.9	[56.6, 61.2]	13,549,000
Any PTSD symptoms[e]	56.6	[54.3, 58.9]	13,019,000
Injury	35.7	[33.5, 38.0]	8,214,000
Needed medical care	25.4	[23.4, 27.5]	5,840,000
Needed housing services	7.1	[5.9, 8.5]	1,636,000
Needed victim's advocate services	10.4	[8.9, 12.0]	2,384,000
Needed legal services	16.5	[14.9, 18.2]	3,788,000
Contacted a crisis hotline	6.9	[5.7, 8.2]	1,580,000
Missed at least 1 day of work or school	25.9	[23.9, 27.9]	5,948,000

Note. NISVS = National Intimate Partner and Sexual Violence Survey; CI = confidence interval; PTSD = post-traumatic stress disorder.

[a] Includes experiencing any of the following: being fearful, concerned for safety, any post-traumatic stress disorder symptoms, injury, need for medical care, need for housing services, need for victim's advocate services, need for legal services, contacting a crisis hotline, and having missed at least 1 day of work or school.

[b] In the NISVS 2010–2012 sample, 99 female victims (or 2.4% of female rape victims) reported having experienced both rape and being made to penetrate someone else.

[c] Rounded to the nearest thousand.

[d] Impact questions were assessed in relation to a specific perpetrator, without regard to the time period in which the impact occurred, and asked in relation to any form of violence: sexual violence, stalking, physical violence, psychological aggression (including expressive aggression and coercive control and entrapment), and control of reproductive/sexual health experienced in that relationship.

[e] Includes nightmares; tried not to think about or avoided reminders of; felt constantly on guard, watchful, or easily startled; and felt numb or detached.

Table 3.

Association With Physical or Mental Health Conditions Among Women With a History of Rape Victimization Versus Women Without Any Lifetime History of Rape Victimization, Controlling for Age, Race/Ethnicity, Education, and All Other Forms of Violence—U.S. Women, NISVS 2010–2012 Average Annual Estimates.

Health Condition	Adjusted Odds Ratio[a]	95% CI of AOR	*p* Value[b]
Asthma	1.4*	[1.2, 1.7]	<.0001
Irritable bowel syndrome	1.4*	[1.2, 1.7]	<.0001
Diabetes	1.2	[1.0, 1.4]	.0686
High blood pressure	1.1	[1.0, 1.3]	.1801
Frequent headaches	1.3*	[1.1, 1.5]	.0007
Chronic pain	1.5*	[1.3, 1.7]	<.0001
Difficulty sleeping	1.4*	[1.2, 1.6]	<.0001
Activity limitations	1.4*	[1.3, 1.6]	<.0001
Poor physical health	1.5*	[1.1, 1.9]	.0072
Poor mental health	2.2*	[1.6, 3.1]	<.0001
Uses special equipment (wheelchair, special bed, cane, etc.)	1.4*	[1.2, 1.8]	.0009

Note. NISVS = National Intimate Partner and Sexual Violence Survey; AOR = adjusted odds ratio; CI = confidence interval.

[a]Adjusted for age, race/ethnicity, education, ever experiencing psychological aggression (expressive aggression or coercive control and entrapment), control of reproductive/sexual health, physical violence, stalking, and sexual violence other than rape. Adult females with no rape victimization history were the reference group.

[b]Adjusted Wald *F* test. Considered statistically significant when $p < .05$.

*Adult females who reported a history of rape victimization were significantly more likely to report the respective health condition.