JOURNAL OF WOMEN'S HEALTH
Volume 12, Number 10, 2003

Review

Sexual Trauma and Pregnancy: A Conceptual Framework

CARIE S. RODGERS, Ph.D.,[1,2] ARIEL J. LANG, Ph.D.,[1,2] ELIZABETH W. TWAMLEY, Ph.D.[2] and MURRAY B. STEIN, M.D.[1,2]

ABSTRACT

In this paper, we propose that a history of sexual traumatization is associated with pregnancy complications and poor pregnancy-related outcomes. We further hypothesize that this relationship is mediated by the sequelae of trauma (psychopathology, health problems, and increased negative health behaviors). We review the literature linking sexual trauma with psychopathology, health, and health behavior and then outline the impact of these variables on pregnancy. Based on this review, we draw conclusions about the potential impact of sexual trauma on pregnancy outcomes. We suggest future directions for this area of research and discuss the clinical implications of this association, including the development of prenatal intervention and prevention programs.

INTRODUCTION

ALTHOUGH ESTIMATES OF SEXUAL TRAUMA vary considerably, epidemiological evidence suggests that it is a major societal problem. Lifetime estimates in women range from 7% to 17% for sexual assault, 3%–15% for rape,[1] and as high as 30%–50% for sexual harassment.[2] A history of sexual trauma (including sexual molestation, sexual assault or rape in either childhood or adulthood, and sexual harassment) is associated with (1) increased rates of psychopathology, (2) more frequent health problems, and (3) negative health behavior (i.e., behavior with a known negative impact on health outcomes).

Given the high prevalence of sexual trauma, it is likely that a substantial proportion of pregnant women have been victims of sexual trauma at some point in their lives. Further, sexual traumatization is associated with a number of behaviors that are known to negatively affect maternal health and the health of the fetus. In spite of this, very little research has examined the impact of psychiatric and physical health consequences of sexual trauma on pregnancy. Therefore, it is important to examine the nature of the relationship between exposure to sexual trauma and pregnancy outcomes. Our primary purpose in this paper is to generate hypotheses about the association between maternal history of sexual trauma and pregnancy outcome.

We first present literature linking sexual trauma to psychopathology, health problems, and negative health behaviors. It is our intent to provide an overview of these topics and present a few specific examples of the literature on these

[1]VA San Diego Healthcare System, San Diego, California.
[2]University of California San Diego, San Diego, California.

topics. We chose to include only quantitative studies in this paper, and studies that employed case studies or very few participants were excluded. Most of the studies cited were published after 1995, and all were indexed either in PsycInfo or MEDLINE databases. Many authors have examined these issues more completely than we do here, and the reader is referred to comprehensive reviews of these topics where appropriate.

Next, we outline the impact of psychopathology, health problems, and negative health behaviors on pregnancy and thereby hypothesize about the associations of maternal sexual trauma experience with pregnancy outcomes. We present a conceptual framework relating sexual trauma and pregnancy outcome mediated by increased psychopathology, poor health behaviors, and health problems. Finally, we discuss the implications of the proposed framework for prenatal care and pregnancy outcomes.

SEXUAL TRAUMA AND PSYCHOPATHOLOGY

Female sexual trauma survivors are at high risk for multiple psychological problems. Many thorough review papers have been published in the last decade examining both the short-term and long-term psychiatric sequelae of sexual trauma.[3–5] It is our intent to highlight some of the more prevalent disorders that follow sexual trauma.

Posttraumatic stress disorder (PTSD) frequently is associated with exposure to sexual trauma. Norris[6] found that sexual assault was associated with a higher rate of current PTSD than other types of criminal victimization, natural or man-made disasters, or accidents. In our own work using a self-report measure of PTSD-related symptoms, we found that 47% of female military veterans with adult sexual assault or rape histories scored in the range associated with diagnosable PTSD, compared with 16% of the women without such a history.[7] In a nationally representative sample of the United States, Molnar et al.[8] reported that women who reported childhood sexual abuse were eight times more likely to be diagnosed with PTSD than women with no history of childhood sexual abuse. Not only are PTSD symptoms distressing and impairing, but also they increase the risk of additional psychopathology.[9–12]

Other anxiety symptoms appear to be prevalent in sexually traumatized women as well.[13,14] Falsetti and Resnick[11] found that 69% of participants seeking treatment for sexual trauma-related symptoms reported having panic attacks. Interestingly, Leskin and Sheikh[15] found higher rates of both adult and childhood sexual assault in a community sample of panic disorder patients without comorbid PTSD than in a community sample of PTSD patients. Stein et al.[16] compared a clinical sample of women with anxiety disorders (panic disorder, social phobia, and obsessive-compulsive disorder) with an age-matched and gender-matched community sample and found that women with anxiety disorders were significantly more likely to report childhood sexual abuse histories. Similarly, patients seeking psychiatric care who meet criteria for multiple anxiety disorders have increased rates of childhood abuse over patients with only one anxiety disorder.[17]

Depression frequently occurs soon after exposure to a traumatic event and is often present for months after the event.[18] Hankin et al.[19] found that outpatient female military veterans who reported being sexually assaulted as adults were three times more likely to screen positive for depression than were those who did not report such a history. Similarly, in a nationally representative sample of the United States, Molnar et al.[8] found that women who reported childhood sexual abuse but reported no other lifetime traumas were 3.8 times more likely to meet criteria for a major depressive disorder (MDD). Sexual abuse during childhood has been linked to chronic or recurrent episodes of major depression in both community and clinical samples,[20,21] and suicide attempts in depressed adults.[22] In a systematic review of the literature on childhood sexual abuse and adult depression, Weiss et al.[23] found that women who were sexually abused in childhood were more likely to develop depression in adulthood. This pattern was consistent across studies and appears to be stronger for women than for men.

Sexual trauma also appears to be associated with personality disorder and dissociative symptoms. In studies of inpatients, Zanarini et al.[24] found sexual trauma to be a risk factor for dissociation. In addition, women with a diagnosis of borderline personality disorder were more likely to have experienced rape in adulthood than were axis II controls.[25] Yen et al.[26] examined the preva-

lence rates of sexual trauma in a community sample of participants diagnosed with personality disorders or MDD. They report a stronger correlation between the diagnosis of borderline personality disorder and physically forced/unwanted sexual contact, rape, and witnessing sexual abuse in either childhood or adulthood than in participants with other disorders.

Although research investigating sexual trauma and psychopathology consistently points to a relationship between these variables, many of the studies in this area are limited by confounders that are difficult to control for outside of randomized experimental designs. Most of this literature relies on retrospective self-report rather than more objective measures of both trauma and psychopathology (i.e., police reports, diagnoses based on structured clinical interviews), leaving unexamined the possibility of either overreporting or underreporting of variables. In addition, variables such as socioeconomic status, race, and other forms of trauma are difficult to control for but likely overlap significantly with sexual trauma.

Two recent studies have addressed some of these confounding variables in the relationship between childhood sexual abuse and psychopathology by examining samples of twins. Dinwiddie et al.[14] and Kendler et al.[27] examined the prevalence of psychiatric disorders among community samples of twins who were discordant for childhood sexual abuse, thus controlling for possible confound such as family environment or genetic vulnerability. Kendler et al.[27] found that women with childhood sexual abuse are at greater risk for developing psychopathology later in life and that this pattern was stable in comparing an exposed twin in a twin pair discordant for childhood sexual abuse with a nonexposed sibling. Similarly, Dinwiddie et al.[14] found nonsignificant trends for increased rates of psychopathology in abused twins when compared with nonabused co-twins.

SEXUAL TRAUMA AND HEALTH

Sexual trauma can have a direct impact on a woman's health. During a traumatic event, a woman may be injured or exposed to a sexually transmitted disease (STD). Both childhood sexual abuse and forced rape have been associated with reported STD-related symptoms and diagnosis as well as more episodes of different STDs.[28–30] Sexual trauma may also indirectly increase the likelihood of injury. For example, past work has shown that a sexual trauma history is associated with injury as a result of involvement in abusive relationships. In one study, college students who had been raped were more likely to have been in a physical fight with a boyfriend or spouse than women who had not been raped.[31] Cohen et al.[32] found that childhood sexual abuse was strongly associated with later domestic violence. When compared with women who have not been sexually abused, women with a history of sexual abuse report that their intimate relationships involve more incidents of severe forms of violence, such as hitting, kicking, and beating.[33] This increased severity of intimate partner abuse has the potential to lead to more serious injury (during pregnancy and at other times).

In community samples as well as samples of medical patients, female victims of rape or sexual assault in adulthood perceive their physical health as poorer and report more somatic symptoms and pain than do nontraumatized women.[34–36] In addition, women who report histories of either adult or childhood sexual assault/molestation or rape report higher rates of chronic illnesses, most commonly gastrointestinal and gynecological, but also including respiratory disorders (e.g., asthma, emphysema, and bronchitis), peptic ulcer disease, heart problems, hypertension, arthritis, and diabetes.[34,36–38] Gynecological complaints associated with sexual trauma include dysmenorrhea, excessive menstrual bleeding, sexual dysfunction,[39] abnormal Pap smears, pain in the lower abdomen other than during menstruation,[7] burning sensation in sexual organs, and pain during intercourse.[37] Golding et al.[40] interviewed women seeking treatment for severe premenstrual syndrome (PMS) and found that at least one attempted or completed sexual abuse event was reported by 95% of the sample and that 81% of these women reported being raped.

Given their higher rates of reported symptoms and illness, it is not surprising that traumatized women show higher rates of physical disability[37] and increased use of medical facilities.[41,42] Although the reasons for the association between sexual trauma and health problems are not well understood, differences in current symptomatology do not appear to be attributable to higher rates of past illness or family history of illness among traumatized women.[34]

SEXUAL TRAUMA AND NEGATIVE HEALTH BEHAVIORS

There is growing evidence that female victims of sexual assault engage in more negative health behaviors than women without sexual trauma histories. One such type of behavior is substance use. Several studies have shown that traumatized women are more likely to smoke, begin smoking earlier, and smoke more heavily than nontraumatized women.[7,31,35,43,44] Increased risk of alcohol use disorders among traumatized women also has been demonstrated.[10,45] Traumatized women have been shown to drink more heavily than women without a trauma history,[31,35] are more likely to screen positive on an alcohol abuse/dependence measure,[7] more frequently engage in risky behaviors in conjunction with drinking, such as driving,[31] and report feeling the need to decrease alcohol use.[43] Traumatization also has been associated with problematic illicit drug use.[43] These studies included clinical as well as community samples and included women with histories of sexual assault and rape during childhood or adulthood or both.

Another negative health behavior that has been associated with trauma is failure to maintain healthy body weight. A number of studies have shown greater rates of obesity in traumatized women.[36,43,46] In one study, criminally victimized women were more likely than women without such history to report overeating.[35] In epidemiological and medical clinic samples, traumatization has been associated with eating disorder symptoms, as well as disturbances in eating patterns and body image.[47,48] Little research to date, however, has examined possible determinants of these outcomes, such as poor diet and lack of regular exercise.

Sexual trauma also appears to be associated with risky sexual behaviors. Victims of childhood sexual abuse report earlier initiation of voluntary sexual intercourse, more total partners, and more pregnancies before age 18 than nonabused women.[7,43] They are more likely to have multiple sexual partners and to have sex without knowing a partner's sexual history.[7] Women who have histories of sexual assault in either childhood or adulthood are more likely than nontraumatized women to use alcohol or drugs in conjunction with sex,[31] engage in prostitution, have sex without contraception, and have sexual intercourse with partners at risk for HIV.[49,50] These behaviors put them at risk for both retraumatization and contraction of STDs.[29,51]

Similar to the literature examining the association between sexual trauma and pathology, this area of study suffers from confounding variables that are difficult to control. The studies reviewed here all assess sexual trauma history using retrospective self-report, and confounders, such as family environment and socioeconomic status, have not been controlled. Thus, it is important to stress that assumptions about causality cannot be made based on the current state of the literature in this area.

TRAUMA-RELATED PROBLEMS AND PREGNANCY

As we have established, sexual trauma is associated with numerous negative health-related outcomes. There is good reason to believe that trauma-related symptoms and behaviors put traumatized women at risk for poorer pregnancy outcomes as well.

Psychopathology

Untreated psychiatric complications during pregnancy put both women and their children at higher risk for many negative outcomes. Maternal anxiety disorders have been linked with low birth weight and irritable neonatal behaviors as well as a doubled risk of hyperactivity in 4-year-old males.[52] Seng et al.[53] found that women with PTSD during pregnancy were at higher risk for ectopic pregnancy, spontaneous abortion, and hyperemesis than were those who did not have PTSD.

Depression during the prenatal and postnatal periods is of concern as well. Prenatal depression puts women at risk for lack of prenatal care, poor nutritional intake, and nicotine and other substance use.[54] In addition, infants of mothers who were depressed during pregnancy show changes in neurobehavioral functioning and are more withdrawn, irritable, and inconsolable than infants of asymptomatic women.[54] Postpartum depression appears to have detrimental consequences for the offspring, such as dysregulation in infant behavior, physiology, and biochemistry.[55] Prenatal and postpartum depression in women also has been associated with temperament difficulties in toddlers[56] and poor adjustment in $4^1/_2$-year-old children.[57]

Kelly et al.[58] examined the prenatal care received by all women giving birth in California in 1994 and 1995. They found that women who had been given a psychiatric or substance use diagnosis had more than three times the risk of inadequate initiation and use of prenatal care services. Women who do not receive prenatal care or who receive poor prenatal care (few visits or late term care) are at high risk for poor pregnancy outcomes, including low birth weight and fetal deaths.[59]

Health

Sexual trauma has been associated with increased rates of a number of health problems. Many of these trauma-related health problems have implications for pregnancy. Pregnancy may alter preexisting medical conditions, and health problems may affect the pregnancy. For example, women with arthritis had offspring who were significantly lower in birth weight than those of women without arthritis.[60] Asthmatic women are at risk for idiopathic preterm labor, preeclampsia, hypertension, chorioamnionitis, and cesarean delivery, and their infants are at risk for preterm birth and low birth weight.[61] Women with heart disease are at risk for cardiac events during pregnancy as well as delivering premature and low birth weight babies.[62] Diabetes, too, puts women and their offspring at risk for poor pregnancy outcomes. Compared with those with gestational diabetes, women with pregestational diabetes were at greater risk for cesarean delivery and gestational hypertension or toxemia, and their offspring were at increased risk for preterm birth and need for neonatal intensive care.[63]

Involvement in a violent relationship during pregnancy places both the mother and offspring at high risk for poor outcomes. Women in abusive relationships are more likely to deliver by cesarean section and to be hospitalized before pregnancy for such complications as kidney infection, premature labor, and trauma due to blows to the abdomen.[64] The delivery of low birth weight infants[65] and infants who require neonatal intensive care[66] also is more common in women who have been subjected to partner violence during pregnancy.

STDs have been linked to adverse pregnancy outcomes, including ectopic pregnancy, premature rupture of membranes, preterm birth, and puerperal sepsis.[67] In addition, children born to women with STDs are at higher risk of having abnormalities of the major organ systems, and some STDs can be transmitted to the offspring.[67]

Negative health behaviors

Many of the negative health behaviors associated with sexual trauma can have serious detrimental effects during pregnancy. Substance use often has far-reaching consequences on pregnant women and their offspring. The effects of nicotine, alcohol, and illicit drug use during pregnancy have been well documented. Smoking puts mothers at risk for having spontaneous abortions and puts infants at considerable risk for thyroid enlargement,[68] low birth weight, and deformities.[69] There is also evidence that maternal prenatal cigarette use predicts lower mental scores on the Bayley Scales of Infant Development (BSID) for infants up to 19 months of age.[70]

Poor outcomes are also related to alcohol use during pregnancy. Research points to an association between chronic maternal alcohol use and serious morphological and developmental abnormalities in the fetus.[71] Although not all alcohol-exposed children suffer from such severe conditions, other adverse neurocognitive outcomes, such as lower reaction times and reduced attention spans, have been linked to intrauterine alcohol exposure.[72]

Use of illicit drugs is problematic during pregnancy. For example, third-trimester marijuana use has been linked to decreased scores on the BSID.[70] Marijuana use during pregnancy has been linked to hyperactivity, impulsivity, inattention, delinquency, and externalizing problems in children as old as 10 years of age.[73] Prenatal cocaine exposure is associated with impaired auditory information processing,[74] increased risk of spontaneous abortion, premature labor, stillbirth, and microcephaly.[75] Use of heroin or other narcotics can cause preterm birth, fetal death, addiction in the fetus, low birth weight, and cognitive and behavioral problems in the offspring. In addition to a multitude of problems for the mother, PCP use can lead to low birth weight and poor motor control in the baby. Finally, use of LSD and inhalants has been associated with birth defects.[76]

Unhealthy eating is another negative health behavior associated with poor pregnancy outcomes. Lower birth weight and length have been linked to maternal disturbances in eating behavior.[77,78]

Prepregnancy obesity has been associated with increased risk for gestational diabetes, preeclampsia, eclampsia, cesarean delivery, delivery of a macrosomic infant,[79] anencephaly, spina bifida,[80] and antepartum death.[81] Baeten et al.[79] found a significant increase in the risk of infant death in the first year after birth for offspring of obese women.

Women with eating disorder symptoms during pregnancy are at higher risk for cesarean section and have more difficulty maintaining breastfeeding than women without eating disorder symptoms.[78,82] They also frequently continue to show eating disorder psychopathology after delivery and are at high risk for postpartum depression.[78,82]

Good nutritional intake and appropriate levels of regular exercise are important to healthy fetal development. For example, folic acid intake has been linked with neural tube closure,[83] and low gestational weight gain appears to be associated with higher risk of neural tube deficits.[84] Excessive gestational weight gain, on the other hand, puts women at risk for hypertension.[85] Regular exercise (three to four times per week) appears to be important for fetal development. Clapp et al.[86] found that the offspring of women who engage in this type of exercise behavior are neurodevelopmentally more advanced than the offspring of nonexercisers. However, both excessive exercise (≥ 5 times per week) and low levels of exercise (≤ 2 times per week) are associated with low birth weights in infants.[87]

SEXUAL TRAUMA AND PREGNANCY OUTCOMES

Based on the information presented, we have developed a conceptual framework relating sexual trauma and pregnancy outcome. We believe that sexual trauma negatively affects pregnancy outcomes and that this relationship is mediated by psychopathology, health, and health behaviors (Fig. 1). Specifically, we hypothesize that women who have been victims of sexual trauma have higher levels of depression and anxiety disorders, including PTSD. They also report more somatic symptoms, pain, and chronic illnesses and are at high risk for obesity, tobacco, alcohol, and illicit drug use, and risky sexual behaviors. We hypothesize that they have poorer nutritional intake and more disordered eating behaviors and engage in significantly less exercise than women who have not been sexually traumatized. Most importantly, we believe that these problems will be present during pregnancy, thus increasing the risk of poor pregnancy outcomes (e.g., pregnancy complications, pain and complications during delivery, and premature births) and negative effects on offspring.

There is a clear need for more work in this area. First, the relationship between sexual trauma and poor pregnancy outcomes should be examined, controlling for potential confound (e.g., low socioeconomic status and ethnicity). Further, if the hypothesized association between sexual trauma

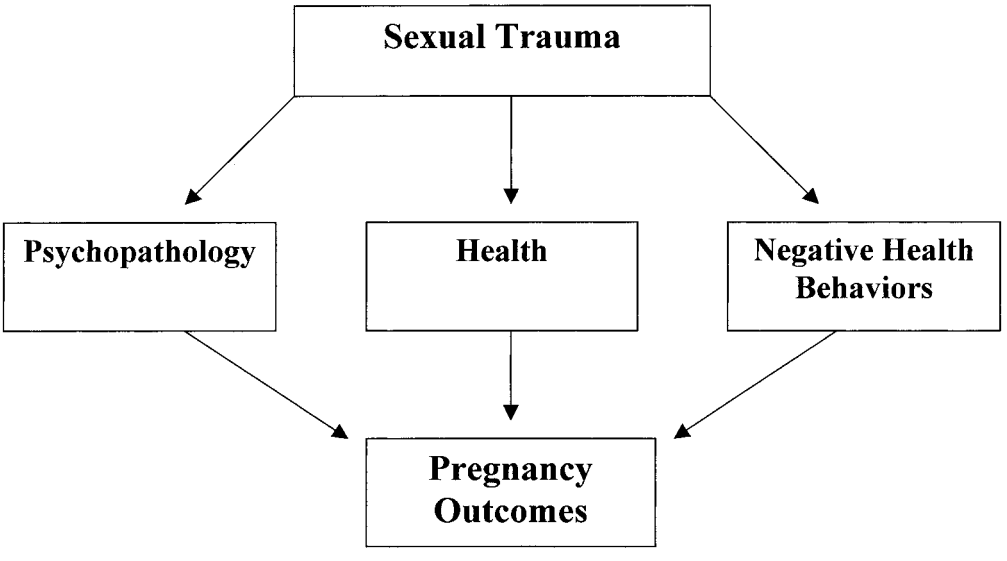

FIG. 1. A conceptual framework relating sexual trauma and pregnancy outcome.

and poor pregnancy outcomes is established, the determinants of this relationship (i.e., mediating variables) should be investigated. We recognize that there are probably relationships among the mediational variables that should be examined. For example, we speculate that poor health leads to increased psychopathology and that psychopathology and poor health (alone or in combination) increase negative health behaviors. In addition, although this paper focuses on sexual trauma, the conceptual model we propose may be relevant to other forms of trauma and violence as well, such as physical abuse, emotional abuse, and other forms of domestic violence.

Establishing such a conceptual model is important because it provides a theoretical framework on which to design effective interventions that target pregnancy outcomes. Women with a trauma history may respond better to prenatal care programs that not only address basic health issues during pregnancy but also target sequelae of sexual trauma, including trauma-related psychopathology, health problems, and negative health behaviors. For example, it may be important to directly address PTSD or depression in a prenatal intervention for sexual trauma victims. An improvement in mental health may indirectly improve physical health and decrease negative health behaviors, eventually resulting in better pregnancy outcomes.

We also believe that women with a history of sexual trauma may be at higher risk for developing problems related to the stress of pregnancy. If this hypothesis is supported, the model we propose may inform the development of preventive services for pregnant women. For example, relapse rates for substance use may increase, and traumatized women may be at higher risk for developing depression during pregnancy. Education about these risks and other impacts of trauma-related symptoms on pregnancy health and outcomes is an essential component of such a program. In addition, increased physician monitoring may significantly reduce pregnancy complications and poor pregnancy outcomes in these patients.

In order to provide optimal care to these patients, identification of women with a history of sexual trauma is important early in pregnancy. We suggest asking routine screening questions as part of a comprehensive medical interview during the first prenatal obstetrics visit. Read et al.[48] piloted such a screening at a veterans' women's health clinic and found that 32% of their sample reported some history of sexual trauma. They reported that this type of screening was both viable and useful and that women were more likely to report a sexual trauma background if asked when they were seeking gender-specific services. The screening questions did not interfere with patient medical care, and many patients reported that they had never been asked about their sexual trauma history and were appreciative that their experiences were being addressed.

A history of sexual trauma could be construed as another factor associated with an at-risk pregnancy. Such women could then be handled accordingly, with more careful monitoring by their healthcare team, specifically for mental health symptoms, exacerbations of physical health problems, and negative health behaviors. Referrals to mental health providers should be offered if follow-up care for mental health issues becomes necessary or appears to underly physical health problems. Empirically validated interventions designed specifically to address sexual trauma may be appropriate to address symptoms in this population.[88] The conceptual framework presented in this paper indicates that special attention to physical and psychological symptoms in victims of sexual trauma may help prevent poor pregnancy outcomes in this at-risk group.

REFERENCES

1. Acierno R, Kilpatrick DG, Resnick HS. Posttraumatic stress disorder in adults relative to criminal victimization: Prevalence, risk factors, and comorbidity. In: Saigh PA, Bremner JD, eds. Posttraumatic stress disorder: A comprehensive text. Boston: Allyn and Bacon, 1999:44.
2. Fitzgerald LF, Shullman SL, Bailey N, et al. The incidence and dimensions of sexual harassment in academia and the workplace. J Vocational Behav 1988; 32:152.
3. Beitchman JH, Zucker KJ, Hood JE, daCosta GA, Akman D, Cassavia E. A review of the long-term effects of child sexual abuse. Child Abuse Negl 1992;16:101.
4. MacMillan HL, Munn C. The sequelae of child maltreatment. Curr Opin Psychiatry 2001;14:325.
5. Tyler KA. Social and emotional outcomes of childhood sexual abuse: A review of recent research. Aggression Violent Behav 2002;7:567.
6. Norris FH. Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. J Consult Clin Psychol 1992;60:409.

7. Lang AJ, Laffaye C, Satz LE, Dresselhaus TR, Stein MB. Use of the PTSD Checklist to identify PTSD in women in primary care. Presented paper, Anxiety Disorders Association of America National Conference, Atlanta, Georgia, 2001.
8. Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: Results form the national comorbidity survey. Am J Public Health 2001;91:753.
9. Breslau N, Davis GC, Andreski P, Peterson, E. Traumatic events and posttraumatic stress disorder in an urban population of young adults. Arch Gen Psychiatry 1991;48:216.
10. Breslau N, Davis GC, Peterson EL, et al. Psychiatric sequelae of posttraumatic stress disorder in women. Arch Gen Psychiatry 1997;54:81.
11. Falsetti SA, Resnick HS. Frequency and severity of panic attack symptoms in a treatment seeking sample of trauma victims. J Trauma Stress 1997;10:683.
12. Stein MB, McQuaid JR, Pedrelli P, et al. Posttraumatic stress disorder in the primary care medical setting. Gen Hosp Psychiatry 2000;22:261.
13. Nelson EC, Heath AC, Madden PAF, et al. Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: Results from a twin study. Arch Gen Psychiatry 2002;59:139.
14. Dinwiddie S, Heath AC, Dunne MP, et al. Early sexual abuse and lifetime psychopathology: A co-twin-control study. Psychol Med 2000;30:41.
15. Leskin GA, Sheikh JI. Lifetime trauma history and panic disorder: Findings from the National Comorbidity Survey. J Anxiety Disord 2002;16:599.
16. Stein MB, Walker JR, Anderson G, et al. Childhood physical and sexual abuse in patients with anxiety disorders and in a community sample. Am J Psychiatry 1996;153:275.
17. Safren SA, Gershuny BS, Marzol P, Otto MW, Pollack MH. History of childhood abuse in panic disorder, social phobia, and generalized anxiety disorder. J Nerv Ment Dis 2002;190:453.
18. Shalev AY, Freedman S, Peri T, et al. Prospective study of posttraumatic stress disorder and depression following trauma. Am J Psychiatry 1998;155:630.
19. Hankin CS, Skinner KM, Sullivan LM, Miller DR, Frayne S, Tripp TJ. Prevalence of depressive and alcohol abuse symptoms among women VA outpatients who report experiencing sexual assault while in the military. J Trauma Stress 1999;12:601.
20. Bifulco A, Bernazzani O, Moran PM, Ball C. Lifetime stressors and recurrent depression: Preliminary findings of the Adult Life Phase Interview (ALPHI). Soc Psychiatry Psychiatr Epidemiol 2000;35:264.
21. Bernet CZ, Stein MB. Relationship of childhood maltreatment to the onset and course of major depression in adulthood. Depression Anxiety 1999;9:169.
22. Brodsky BS, Oquendo M, Ellis SP, Haas GL, Malone KM, Mann JJ. The relationship of childhood abuse to impulsivity and suicidal behavior in adults with major depression. Am J Psychiatry 2001;158:1871.
23. Weiss EL, Longhurst JG, Mazure CM. Childhood sexual abuse as a risk factor for depression in women: Psychosocial and neurobiological correlates. Am J Psychiatry 1999;156:816.
24. Zanarini MC, Ruster TF, Frankenburg FR, Hennen J, Gnuderson JG. Risk factors associated with the dissociative experiences of borderline patients. J Nerv Ment Dis 2000;188:26.
25. Zanarini MC, Frankenburg FR, Reich DB, Marino MF, Haynes MC, Gunderson JG. Violence in the lives of adult borderline patients. J Nerv Ment Dis 1999;187: 65.
26. Yen S, Shea MT, Battle CL, et al. Traumatic exposure and posttraumatic stress disorder in borderline, schizotypal, avoidant and obsessive-compulsive personality disorders: Findings from the collaborative longitudinal personality disorders study. J Nerv Ment Dis 2002;190:510.
27. Kendler KS, Bulik CM, Silberg J, et al. Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. Arch Gen Psychiatry 2000;57:953.
28. Molitor F, Ruiz JD, Klausner JD, McFarland W. History of forced sex in association with drug use and sexual HIV risk behaviors, infection with STDs, and diagnostic medical care: Results from the Young Women Survey. J Interpersonal Violence 2000;15:262.
29. Greenberg J, Hennessy M, Lifshay J, et al. Childhood sexual abuse and its relationship to high-risk behavior in women volunteering for an HIV and STD prevention intervention. AIDS Behav 1999;3:149.
30. Hillis SD, Anda RF, Felitti VJ, Nordenberg D, Marchbanks P. Adverse childhood experiences and sexually transmitted diseases in men and women: A retrospective study. Pediatrics 2000; 106:e11.
31. Brener ND, McMahon PM, Warren CW, Douglas KA. Forced sexual intercourse and associated health-risk behaviors among female college students in the United States. J Consult Clin Psychol 1999;67:252.
32. Cohen M, Deamant C, Barkan S, et al. Domestic violence and childhood sexual abuse in HIV-infected women and women at risk for HIV. Am J Public Health 2000;90:560.
33. DiLillo D, Giuffre D, Tremblay GC, Peterson L. A closer look at the nature of intimate partner violence reported by women with a history of child sexual abuse. J Interpersonal Violence 2001;16:116.
34. Weignadt A, Wallace DL, Phelps L, et al. The impact of sexual assault on physical health status. J Trauma Stress 1990;3:93.
35. Koss MP, Koss PG, Woodruff J. Deleterious effects of criminal victimization on women's health and medical utilization. Arch Intern Med 1991;151:342.
36. Frayne SM, Skinner KM, Sullivan LM, et al. Medical profile of women Veterans Administration outpatients who report a history of sexual assault occurring while in the military. J Wom Health Gender-Based Med 1999:8:835.
37. Golding JM. Sexual assault history and physical health in randomly selected Los Angeles women. Health Psychol 1994;13:130.

38. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences ACE Study. Am J Prev Med 1998;14:245.
39. Golding JM, Wilsnack SC, Learman LA. Prevalence of sexual assault history among women with common gynecologic symptoms. Am J Obstet Gynecol 1998;179:1013.
40. Golding JM, Taylor DL, Menard L, King MJ. Prevalence of sexual abuse history in a sample of women seeking treatment for premenstrual syndrome. J Psychosom Obstet Gynaecol 2000;21:69.
41. Resnick HS, Acierno R, Kilpatrick DG. Health impact of interpersonal violence. 2: Medical and mental health outcomes. Behav Med 1997;23:65.
42. Walker EA, Unutzer J, Rutter C, et al. Costs of health care use by women HMO members with a history of childhood abuse and neglect. Arch Gen Psychiatry 1999;56:609.
43. Springs FE, Fredrich WN. Health risk behaviors and medical sequelae of childhood sexual abuse. Mayo Clin Proc 1992;67:527.
44. Anda RF, Croft JB, Felitti VJ. Adverse childhood experiences and smoking during adolescence and adulthood. JAMA 2002;282:1652.
45. Dube SR, Anda RF, Felitti VJ, Edwards V, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. Addict Behav 2002;27:713.
46. Felitti VJ. Long-term medical consequences of incest, rape and molestation. South Med J 1991;84:328.
47. Laws A, Golding JM. Sexual assault history and eating disorder symptoms among white, Hispanic and African-American women and men. Am J Public Health 1996;86:579.
48. Read JP, Stern AL, Wolfe J, et al. Use of a screening instrument in women's health care: Detecting relationships among victimization history, psychological distress, and medical complaints. Women Health 1997;25:1.
49. Cunningham RM, Stiffman AR, Doré P, Earls F. The association of physical and sexual abuse with HIV risk behaviors in adolescence and young adulthood: Implications for public health. Child Abuse Negl 1994;18:233.
50. Wingood GM, DiClemente RJ. Rape among African American women: Sexual, psychological, and social correlates predisposing survivors to risk of STD/HIV. J Wom Health 1998;7:77.
51. Thompson NJ, Potter JS, Sanderson CA, Maibach EW. The relationship of sexual abuse and HIV risk behaviors among heterosexual adult female STD patients. Child Abuse Negl 1997;21:149.
52. Monk C. Stress and mood disorders during pregnancy: Implications for child development. Psychiatric Q 2001;72:347.
53. Seng JS, Oakley DJ, Sampselle CM, Killon C, Graham-Bermann S, Liberzon I. Posttraumatic stress disorder and pregnancy complications. Obstet Gynecol 2001; 97:17.
54. Spinelli MG. Interpersonal psychotherapy for depressed antepartum women: A pilot study. Am J Psychiatry 1997;157:1028.
55. Field T. Maternal depression effects on infants and early interventions. Prev Med 1998;27:200.
56. Sugawara M, Kitamura T, Toda MA, Shima S. Longitudinal relationship between maternal depression and infant temperament in a Japanese population. J Clin Psychol 1999;55:869.
57. Philipps LH, O'Hara M. Prospective study of postpartum depression: $4^1/_2$-year follow-up of women and children. J Abnorm Psychol 1991;100:151.
58. Kelly RH, Danielsen BH, Golding JM, Anders TF, Gilbert WM, Zatzick DF. Adequacy of prenatal care among women with psychiatric diagnoses giving birth in California in 1994 and 1995. Psychiatr Serv 1999;50:1584.
59. Goldenberg RL, Patterson ET, Freese MP. Maternal demographic, situational and psychosocial factors and their relationship to enrollment in prenatal care: A review of the literature. Women Health 1992;19:133.
60. Bowden AP, Barrett JH, Fallow, W, Silman AJ. Women with inflammatory polyarthritis have babies of lower birth weight. J Rheumatol 2001;28:355.
61. Liu S, Wen SW, Demissie K, Marcoux S, Kramer MS. Maternal asthma and pregnancy outcomes: A retrospective cohort study. Am J Obstet Gynecol 2001;184: 90.
62. Siu SC, Sermer M, Colman JM, et al. Prospective multicenter study of pregnancy outcomes in women with heart disease. Circulation 2001;104:515.
63. Ray JG, Vermeulen MJ, Shapiro JL, Kenshole AB. Maternal and neonatal outcomes in pregestational and gestational diabetes mellitus, and the influence of maternal obesity and weight gain: The DEPOSIT study. Q J Med 2001;94:347.
64. Cokkinides VE, Coker AL, Sanderson M, Addy C, Bethea L. Physical violence during pregnancy: Maternal complications and birth outcomes. Obstet Gynecol 1999;93:661.
65. Renker PR. Physical abuse, social support, self-care, and pregnancy outcomes of older adolescents. J Obstet Gynecol Neonatal Nurs 1999;28:377.
66. Jagoe J, Magann EF, Chauhan SP, Morrison JC. The effects of physical abuse on pregnancy outcomes in a low-risk obstetric population. Am J Obstet Gynecol 2000;182:1067.
67. Moodley P, Sturm AW. Sexually transmitted infections, averse pregnancy outcome and neonatal infection. Semin Neonatol 2000;5:255.
68. Chanonie JP, Toppet V, Bourdoux P, Spehl M, Delange F. Smoking during pregnancy: A significant cause of neonatal thyroid enlargement. Br J Obstet Gynaecol 1991;98:65.
69. Haustein KO. Cigarette smoking, nicotine and pregnancy. Int J Clin Pharmacol Ther 1999;37:417.
70. Richardson GA, Day NL, Goldschmidt L. Prenatal alcohol, marijuana, and tobacco use: Infant mental and motor development. Neurotoxicol Teratol 1995;17: 479.

71. Hanson JW. Alcohol and the fetus. Br J Hosp Med 1977;18:126.
72. Streissguth AP, et al. Intrauterine alcohol and nicotine exposure: Attention and reaction time in 4-year-old children. Dev Psychol 1984;20:533.
73. Goldschmidt L, Day NL, Richardson GA. Effects of prenatal marijuana exposure on child behavior problems at age 10. Neurotoxicol Teratol 2000;22:225.
74. Potter SM, Zelazo PR, Stack DM, Papageorgiou AN. Adverse effects of fetal cocaine exposure on neonatal auditory information processing. Pediatrics 2000;105: 629.
75. Loebstein R, Koren G. Pregnancy outcome and neurodevelopment of children exposed *in utero* to psychoactive drugs: The Motherisk experience. J Psychiatry Neurosci 1997;22:192.
76. American College of Obstetricians and Gynecologists. Planning for pregnancy, birth and beyond, 2nd ed. New York: Signet, 1995.
77. Conti J, Abraham S, Taylor A. Eating behavior and pregnancy outcome. J Psychosom Res 1998;44:465.
78. Waugh E, Bulik CM. Offspring of women with eating disorders. Int J Eat Disord 1999;25:123.
79. Baeten JM, Bukusi EA, Lambe, M. Pregnancy complications and outcomes among overweight and obese nulliparous women. Am J Public Health 2001;91:436.
80. Watkins ML, Scanlon KS, Mulinare J, Khoury MJ. Is maternal obesity a risk factor for anencephaly and spina bifida? Epidemiology 1996;7:507.
81. Stephansson O, Dickman PW, Johansson A, Cnattingius S. Maternal weight, pregnancy weight gain, and the risk of antepartum stillbirth. Am J Obstet Gynecol 2001;184:463.
82. Franko DL, Blais MA, Becker AE, et al. Pregnancy complications and neonatal outcomes in women with eating disorders. Am J Psychiatry 2001;158:1461.
83. Kalter H. Folic acid and human malformations: A summary and evaluation. Reprod Toxicol 2000;14: 463.
84. Shaw GM, Todoroff K, Carmichael SL, Schaffer DM, Selvin S. Lowered weight gain during pregnancy and risk of neural tube defects among offspring. Int J Epidemiol 2001;30:60.
85. Saftlas A, Wang W, Risch H, Wollson R, Hsu C, Bracken M. Prepregnancy body mass index and gestational weight gain as risk factors for preeclampsia and transient hypertension. Ann Epidemiol 2000;10:475.
86. Clapp JF III, Lopez V, Harcar-Sevcik R. Neonatal behavioral profile of the offspring of women who continued to exercise regularly thoughout pregnancy. Am J Obstet Gynecol 1999;180:91.
87. Campbell KM, Mottola MF. Recreational exercise and occupational activity during pregnancy and birth weight: A case-control study. Am J Obstet Gynecol 2001;184:403.
88. Foa EB, Rothbaum BO. Treating the trauma of rape: Cognitive behavioral therapy for PTSD. New York: Guilford, 1998:286.

Address reprint requests to:
Carie S. Rodgers, Ph.D.
VA Outpatient Clinic (MC116A4Z)
8810 Rio San Diego Drive
San Diego, CA 92108

E-mail: crodgers@hubris.net