

Master's Paper

**Post-Traumatic Stress Disorder (PTSD):
Prevalence and Diagnosis in Outpatient Gynecology**

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Abstract:

Post-traumatic stress disorder (PTSD) is an often debilitating form of anxiety disorder triggered by personal experience of a serious trauma. Women are more than twice as likely as men to develop PTSD. Though one in four women exposed to a traumatic event develops PTSD, no brief tools are available to facilitate identification of PTSD in primary care settings. Our objectives were: 1) to document the prevalence of a history of serious trauma among women seeking routine annual gynecologic care in an academic continuity care setting, and; 2) to evaluate a brief 4-item instrument assessing PTSD symptoms, called the SPAN, as a potential tool for triaging women with a history of trauma for further evaluation. We conducted a cross-sectional survey of English-speaking women scheduled for annual care visits over a 9-month period; and conducted structured clinical interviews as a gold-standard for PTSD diagnosis among a sample of women who reported a history of trauma. The interviewer was blind to SPAN scores.

Seventy-six percent of annual care patients (n=292) completed the written survey while waiting for their visit. Ninety women (31%) reported a history of one or more traumatic events including rape, sexual assault, physical assault, and severe motor vehicle accidents. Average age was 34 years, 49% were African American, and 46% were unmarried. Among the 90 women with a history of trauma, 63 agreed to be contacted and we were able to complete the psychiatric assessment for 32. In this convenience sample of 32 women, 25 (78%) met criteria for current PTSD, and 31 of 32 met criteria for other psychiatric comorbidity. Additionally, 68% were not receiving any psychiatric care. Compared to the gold standard for PTSD, SPAN had a sensitivity of 72%, specificity of 74%, positive predictive value of 90% and likelihood ratio of 2.52.

Trauma was common in this population. Including a trauma screening question and the SPAN items on written clinic intake surveys has promise for use as a triage tool. Use could meaningfully increase detection of PTSD and other psychiatric morbidity among women receiving routine preventive care.

Introduction:

Post-traumatic stress disorder (PTSD) is a debilitating form of an anxiety disorder triggered by personal experience of serious trauma (e.g., rape or sexual assault, victim of violent crime or severe motor vehicle accident). The course of untreated disease averages more than five years and may lead to additional psychiatric comorbidity. Early diagnosis of PTSD is critical, because prompt initiation of treatment does improve the long-term outcome of PTSD and prevent needless and ongoing suffering.

Population-based studies suggest that 40 to 60 percent of individuals will experience traumas in their lifetimes (Kessler et al., 1995). Though men are somewhat more likely to experience serious trauma, women are twice as likely to develop PTSD after traumatic events. Conservatively estimated, one in four women who experience trauma will meet criteria for a diagnosis of PTSD. Most will not receive evaluation or treatment, though the majority will be in contact with the health care system for medical care during the period in which they have symptomatic PTSD. Of serious concern is that rates of suicide attempt are also greatly increased in individuals that suffer with PTSD. Studies demonstrate that even after controlling for rates of lifetime depression, those individuals with PTSD still have a 8.2 times risk of attempting suicide (Davidson et al., 1991).

Effective treatment options for PTSD have greatly expanded over the last decade and include both pharmacotherapy and psychotherapy. PTSD is an illness that can be adequately diagnosed and treated and earlier detection and treatment lead to better outcomes (Davidson, 1997). Because of the increased prevalence rate of PTSD in women, accurate screening and prompt diagnosis of women presenting for primary care is important, so that treatment can be initiated to prevent needless and ongoing suffering.

Formal evaluation for PTSD requires a skilled assessment with a psychiatrist or psychologist. The gold-standard diagnosis is a structured clinical interview based on DSM-IV diagnostic criteria. As a result, it is not likely to be feasible or efficient for providers in other

disciplines to make the diagnosis or to refer all women with a history of trauma. We sought to evaluate the prevalence of trauma among women in a primary care setting and to evaluate a potential tool to refine the process of referral for further psychiatric evaluation among women with trauma. Specifically, our aims were: 1) to document the prevalence of a history of serious trauma among women seeking routine annual gynecologic care in an academic continuity care setting, and; 2) to evaluate a brief 4-item instrument assessing PTSD symptoms, called the SPAN, as a potential tool for triaging women with a history of trauma for further evaluation.

Defining Trauma and PTSD Diagnostic Criteria

The diagnosis of PTSD requires the necessary occurrence of a traumatic event and the individual's intense emotional reaction to it. The DSM-IV definition of trauma requires two elements: 1) experiencing, witnessing or learning of an event that involved actual or threatened death, serious injury, or threat of harm to self or others; 2) having the trauma followed by intense feelings of fear, helplessness, or horror that are associated with persistent re-experiencing of the event (American Psychiatric Association, 1994).

Traumatic events can include but are not limited to the following: sexual abuse, rape, physical abuse, severe motor vehicle accidents, victim of robbery /mugging, combat veteran, survivors of natural disasters, being diagnosed with a life threatening illness, the sudden unexpected death of a family member or friend, witnessing violence (including domestic violence), and learning that one's child has a life threatening illness.

Post-traumatic stress disorder is diagnosed by the presence of multiple symptoms for a month or longer and include: Persistent *re-experiencing symptoms* such as nightmares or flashbacks, *avoidance symptoms*, such as avoiding thoughts or places associated with the trauma, *emotional numbing symptoms* described as feeling unable to have sad or loving feelings, and *hyperarousal symptoms*, such as sleep and concentration difficulties or hypervigilance.

Epidemiology

Prevalence of Trauma and PTSD

The National Comorbidity Survey (NCS), obtained a nationally representative, face-to-face survey of 6000 adults in 48 states in the U.S. (Kessler et al., 1995). The NCS found cumulative rates of exposure to one or more traumatic events to be 51.2% in women and 60.6% in men.

Breslau et al., found a lower lifetime prevalence of traumatic exposure in a sample of young adults (aged 21-30) from a health maintenance organization in Detroit, Michigan ; 39.1% of the sample had one or more traumatic experiences (Breslau et al, 1991). The trauma distribution was similar across gender except for rape, which was reported only by women. The most common traumatic experiences were sudden injury or serious accident, news of sudden death of a close relative or friend, physical assault, and seeing someone seriously injured or killed.

Resnick et al., conducted a large population study of adult women, (mean age 44.9 years), to assess the prevalence of civilian trauma and PTSD. The overall lifetime exposure to trauma was found to be 69%. Exposure to specific types of trauma was categorized non-exclusively as follows: 12.6% suffered rape trauma, 14.3% molestation or attempted sexual assaults, 10.3% physical assault, 13.4% death of close friend or relative by homicide, 35.6% by crime victimization, 33.3% by other non-crime trauma (Resnick et al, 1993). Note that greater than 25% of these women experienced rape or sexual assault.

Thus, exposure to trauma is common in the population and ranges in general from 39% - 90% (Kessler et al., 1995, Breslau et al., 1993, Breslau et al., 1991). However, not everyone exposed to a traumatic event will develop PTSD. Approximately, one in four individuals who have experienced traumas will develop PTSD (Green, 1994).

Women and PTSD

Women are more likely to develop PTSD than are men. In the NCS, women were twice as likely as men to have lifetime PTSD (10.4% vs. 5%, $p > 0.05$) (Kessler, 1995). In the community sample study described earlier by Breslau et al, even when other sociodemographic factors were controlled, women had a 2 fold increase in rates of PTSD compared to men (Breslau, 1998). This finding can be partially explained by the following: sexual assault and/or rape have consistently been shown to cause the highest rates of PTSD (Kessler, 1991; Resnick, 1993; Breslau, 1991; Norris, 1992).

However, in a recent large prospective epidemiologic study designed to examine multiple outcomes after major trauma, (severe motor vehicle or other acute traumatic assault), including quality of life, women were found to be at significantly higher risk of PTSD than men (odds ratio = 2.4, $p = 0.001$). This association of gender with PTSD was independent of specific mechanism and injury event-related factors such as perceived threat to life. (Holbrook et al., 2002).

Furthermore, women who experience trauma are users of the health care system. Women who are victims of rape or sexual assault, are twice as likely to seek medical services and/or mental health care than nonvictims. (Golding, 1994, Waigandt et al, 1990). Kimerling and Calhoun compared 115 victimized women (ages 15-71 years) to a matched control group never having been sexually assaulted ($n=87$) regarding physical health. They found that victimized women had increased utilization of health care for at least one year. Additionally, victims sought medical services more than psychological services in the year after being assaulted (72.6% vs. 19%) (Kimerling and Calhoun, 1994). Thus, suggesting that identification of patients with a history of trauma in medical care settings may be most effective .

Diagnosing PTSD in Primary Care

Despite the high prevalence of trauma and PTSD, post-traumatic stress disorder is underdiagnosed or misdiagnosed in primary care settings. Samson and colleagues studied the detection and treatment of depression and anxiety disorders in patients receiving care in a large

group model HMO of primary care physicians. The primary care physicians and nurse practitioners administered a computerized psychiatric screening questionnaire to patients whom they suspected had depression or anxiety. Patients with positive results were referred for immediate consultation with a mental health provider. Of 7444 patients visiting the HMO over a 10 month period, 296 (3.9%) had positive results on computerized psychiatric screening questionnaire and were referred to mental health. Of the 296 patients interviewed for a formal history of psychiatric illness by a mental health provider, 114 (38.5%) met criteria for a current episode of PTSD (Samson et al., 1999).

This study suggests that given the lack of efficient and accurate tools in routine clinical practice, screening is not easily accomplished. Lack of familiarity with PTSD leads to discomfort in screening for and diagnosing the disorder and there is a high degree of overlap between PTSD and other anxiety disorders or depression. (Samson et al., 1999). For example, the NCS found a lifetime history of at least one other psychiatric disorder in 88.3% of men and 79% of women with PTSD (Kessler et al., 1995).

Moreover, patients with PTSD who present to primary care, often seek treatment for specific physical complaints and fail to recognize the connection between their past trauma and present symptoms (McFarlane, 1994). Unfortunately, if PTSD is not recognized and specific medication and psychotherapy is not initiated, optimal response is not likely to be achieved (Samson et al., 1999).

Diagnosing PTSD

The structured clinical interview has been regarded as the gold-standard of PTSD measurement. These interviews have all demonstrated good psychometric validity and reliability. However, a major drawback of the structured clinical interview is that they are very time consuming, usually requiring more than an hour interview, and also requiring specialized training/skills to administer. Thus, the development of briefer scales may be viewed as desirable and having great clinical utility. Such case-finding instruments have received scant attention.

We developed the SPAN, a four item, patient rated, case-finding, written instrument for PTSD in an outpatient psychiatry clinic (Meltzer-Brody, et al, 1999). The SPAN is named for its four items, which have patients rate symptoms of startle, physiological arousal, anger and emotional numbness. Each item is rated on a 0–4 scale from being “not all distressing” to “extremely distressing” and can be administered in about one minute. The rating of each item is summed for the total SPAN score. A score of ≥ 5 is considered a positive score. Although other cutoff scores were evaluated, it was found that a total score of 5 or more on the SPAN gave the greatest likelihood of having PTSD.

The SPAN is derived from the Davidson Trauma Scale (DTS), (Davidson et al, 1997), a validated, 17-item self-rating scale that reflects the symptoms diagnostic of PTSD as defined in DSM-IV (American Psychiatric Association, 1994). It was found that this short four-item version of the DTS closely corresponded to the diagnosis of PTSD by structured clinical interview. The outpatient psychiatry patient population had a prevalence rate of PTSD of 50%. In the psychiatry clinic in which the SPAN was developed, it performed with a sensitivity of 84% and a specificity of 91%.

Although the SPAN was developed and intended for use as a screening instrument in high risk psychiatric populations, we felt that it showed promise as an instrument to help triage patients with a history of trauma in a primary care setting where the presentation of PTSD is less severe and prevalence rates are lower than in the original population used to develop the test. The prevalence of trauma in women presenting to a gynecology clinic for routine care has not been previously studied, and we wondered whether trauma rates in this population would be greater or less than those previously reported.

Specific Aims

Thus, specifically our aims were: 1) to document the prevalence of a history of serious trauma among women seeking routine annual gynecologic care in an academic continuity care setting, and; 2) to evaluate a brief 4-item instrument assessing PTSD symptoms, called the SPAN,

as a potential tool for triaging women with a history of trauma for further evaluation. We chose outpatient gynecology as our primary care setting because as described earlier, women are more likely to develop and suffer from PTSD and thus would be at risk of having inadequate diagnosis and treatment for the disorder in a primary care setting. Furthermore, multiple studies have demonstrated that Obstetrician-Gynecologists (Ob-GYNs) provide more office based general medical evaluations for women of reproductive age than either family practice physicians or internists (Leader et al., 1995) and that increasingly, Ob-GYNs have expanded training and expertise in overall women's primary health care (Brown, 1999).

Methods:

Subjects

Study participants were all women who presented to the University of North Carolina outpatient gynecology clinic for a routine annual exam between June 2001 and March 2002. This clinic is a gynecologic continuity clinic, located in an academic medical center that provides care to a diverse population of women, including a large uninsured and Medicaid patient population. Only patients presenting for a routine annual care exam were eligible for our study.

Survey

Participants completed a voluntary research survey called the "UNC Women's Health Survey", that contained questions about medical history, traumatic experiences, and overall health status. The first question on the survey specifically inquired about whether this medical visit was for routine annual care, or a problem-focused visit. Only participants reporting their medical visit as a routine annual care visit were asked to complete the survey. Participants were asked to indicate whether or not they had a history of a traumatic event and to describe the trauma. Those women who reported a traumatic event were asked to also complete the SPAN questions. At the end of the survey, we requested permission to contact patients about further research participation. The SPAN questions and permission to contact question used in our survey are presented below in Figure 1.

Figure 1 Trauma Screening Question and SPAN

Have you had a severe trauma or stressor in which you thought you or another person might die or experience serious harm?

Examples include: physical attack, mugging, rape, severe motor vehicle accident, natural or manmade disasters, being diagnosed with a life threatening illness, or sexual abuse?

_____ YES (please continue with this survey)

_____ NO (please stop)

Please list the type of trauma(s) that have been most disturbing to you.

In the past week, how upset have you been by the following symptoms?

	Not at all Upsetting/ Distressing	Minimally Upsetting/ Distressing	Moderately Upsetting/ Distressing	Markedly Upsetting/ Distressing	Extremely Upsetting/ Distressing
Feeling jumpy or easily startled	0	1	2	3	4
Feeling physically upset by reminders of the event (This includes sweating, trembling, racing heart, shortness of breath, nausea or diarrhea)	0	1	2	3	4
Feeling irritable or having outbursts of anger	0	1	2	3	4
Feeling unable to have sad or loving feelings or feeling numb	0	1	2	3	4

Your thoughts and concerns are important to us. We plan to contact selected women to follow-up on this research survey. Would it be okay for a staff member to contact you for more information?

_____ Yes, in clinic or by phone is fine.

_____ Maybe, check with me while I'm in clinic.

_____ No

Psychiatric Assessment

Informed consent was obtained prior to beginning the psychiatric assessment. This 60 minute face-to-face assessment included The Mini-International Neuropsychiatric Interview (Sheehan et al, 1998) as the gold standard, structured clinical interview and was conducted by a psychiatrist who was blinded to the SPAN scores from the survey.

Statistical Analyses

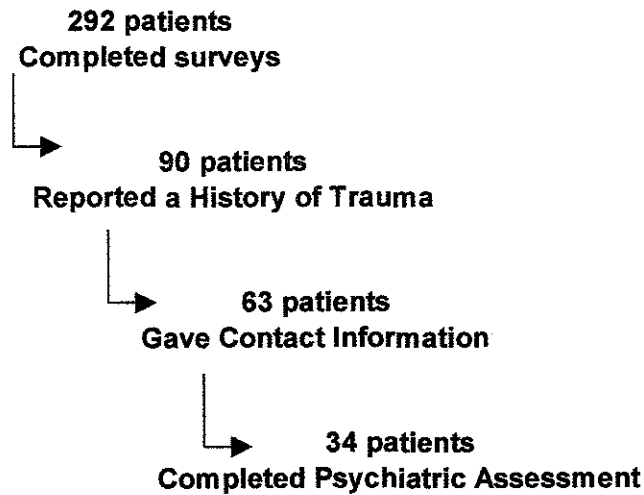
All data were entered into a computerized database and analyzed using STATA software (version 6.0, StatCorp, 1999). Exploratory univariate analysis of demographic variables was assessed. To examine how the SPAN compared to a structured clinical interview for a diagnosis of PTSD, bivariate comparisons were performed, which included estimation of sensitivity, specificity, positive predictive value, negative predictive value and likelihood ratios. A diagnosis of PTSD on the structured clinical interview served as the gold standard comparison.

Results:

Study Participants

Figure 2 summarizes the identification status of study participants. Among women presenting to outpatient gynecology for a routine care exam, 292 patients completed surveys and were enrolled in the study and 90/292 patients or 31% of the sample reported a history of a traumatic event. In the group of women who reported trauma, 63 patients who gave permission for further contact, and 34 patients who were contacted completed the full psychiatric assessment.

Figure 2 Identification of Study Participants



Full Cohort:

Of the 292 participants who completed surveys in our study, the mean age of our sample was 34 years, 49% were African American and 46% were single. As indicated above in Figure 2, 90 patients who completed a survey reported a history of a traumatic event. Types of traumatic events reported by our study population included: sexual abuse or rape, physical abuse, motor vehicle accidents, being diagnosed with a life threatening illness, sudden unexpected death or diagnosis with a life threatening illness of a family member, victim of natural disaster, and victim of war.

Psychiatric Interview:

Note, that of the 34 patients interviewed, 2 patients were not included in the analysis because the event they reported as traumatic did not meet DSM-IV criteria to be included. Thus, the following describes the results of the 32 patients included in the analysis. In those 32 patients with a history of a trauma, and who completed the full psychiatric interview, 25/32 (78%) of these patients met criteria for a diagnosis of PTSD. However, 22/32 (68%) of the patients with a diagnosis of PTSD were not receiving any kind of psychiatric treatment either PTSD or any other

psychiatric disorder. Additionally, among the 32 patients interviewed, 31/32 met criteria for one or more DSM-IV psychiatric diagnoses (Table 1). These included 62% of the patients with major depression, 28% with panic disorder, 19% with generalized anxiety disorder and 28% with social phobia, and 15% with other substance abuse disorders. When the SPAN was compared to the structured clinical interview for a diagnosis of PTSD, the SPAN performed with a sensitivity of 72%, specificity of 71%, Positive Predictive Value of 90% and Likelihood ratio of 2.52.

Table 1 Comorbid Psychiatric Diagnoses in Interviewed Patients

Co-morbid Diagnosis	#/ 32 (%)
Major Depression	20/32 (62%)
Panic Disorder	9/32 (28%)
Generalized Anxiety Disorder	6/32 (19%)
Social Phobia	9/32 (28%)
Substance Abuse	5/32 (15%)

The following contingency table (Table 2) demonstrates how the SPAN relates compared to the Structured Clinical Interview for identification of PTSD. Of the 32 patients interviewed with a history of trauma and included in the analysis, 18 patients were positive for a diagnosis of PTSD on both the SPAN and Structured Clinical Interview. Although other cutoff scores were evaluated, it was found that a total score of 5 or more on the SPAN gave the greatest likelihood of having PTSD. Increasing the cutoff score resulted in poorer sensitivity, and decreasing the cutoff score resulted in poorer specificity.

The SPAN would not have appropriately triaged 7 patients who were diagnosed with PTSD by interview and would have resulted in the additional referral of 2 patients who did not have PTSD by interview. However, of note, the two patients who had “false positive” results on

the SPAN, did have another anxiety disorder (panic or generalized anxiety disorder) and major depression.

Table 2 Performance of the SPAN for Case Identification

	PTSD Positive (≥ 5)	PTSD Negative (< 5)
SPAN Positive	18	2
SPAN Negative	7	5

Discussion:

One in three women presenting for routine annual care in our academic continuity gynecology clinic have a history of a traumatic event. The prevalence of trauma we observed is comparable to national samples; however, the proportion of those with trauma who have PTSD is much higher than might have been anticipated.

Our goal is to develop a quick, efficient and low cost tool to determine which patients in a primary care setting require further evaluation. We believe that the SPAN may offer clinicians a useful way of triaging those patients who are in need of psychiatric referral. For example, after asking the relatively rough screening question of “have you ever had a traumatic experience”, this 4 item case-finding instrument may be a valuable tool for the busy primary care clinician. Once again, prompt initiation of treatment does improve the long-term outcome of PTSD and prevent needless and ongoing suffering.

There are several limitations of this study that should be discussed. Firstly, when compared to the full group of 90 women who reported a history of trauma, a relatively small number were willing to be contacted and completed the psychiatric interview. This means there is likely sampling bias from non-response to the trauma items on the survey and from those who reported trauma but were unwilling or unavailable to come in for a psychiatric interview.

Second, the survey used an open-ended question format to ask patients about a history of trauma.

We can speculate that asking patients to specifically check off each individual type of trauma sustained may have yielded an increased number of women endorsing a trauma history.

Given the limitations, it is difficult to assert with confidence whether over or underestimating prevalence of trauma and proportion of women with PTSD occurred. Nonetheless, it is still possible to compare potential strategies for identifying women with PTSD. Consider the example in Table 3 that looks at the number of women evaluated, referred, and correctly diagnosed if the SPAN was used as an instrument for triage. We will assume an average practice size of 5000 patients/year seen for routine annual care exams. As our data demonstrates, 31% of these women have a history of a traumatic event, and we will compare this value to both higher (40%) and lower (20%) prevalence rates. In our study, 15.5% of women with a history of trauma had a positive SPAN score. When we examine the number of women that would be referred for formal psychiatric evaluation using the SPAN compared to simply referring all women with a trauma history, we find that using the SPAN as an instrument for triage results in referring 62 per 1000 women for psychiatric referral versus 400 per 1000 women. This is a meaningful reduction, because the current structure of the mental health system is not equipped to accommodate psychiatric referrals for all women with trauma histories.

Table 3 Hypothetical Performance of Case Identification Strategies

Strategy	Prevalence of Trauma*								
	High (40%) (N=2000)			Observed (31%) (N=1550)			Low (20%) (N=1000)		
	# referred (N)	# Dx (N)	# missed (N)	# referred (N)	# Dx (N)	# missed (N)	# referred (N)	# Dx (N)	# missed (N)
None†	0	0	242	0	0	187	0	0	121
Refer SPAN Positive (≥ 5) **	310	174	68	240	135	52	155	87	34
Refer All with Trauma	2000	242	—	1550	187	—	1000	121	—

* Assume practice size of 5000 patients annually.

† There could be some sporadic referral, but the number is not known.

** 15.5% of patients in our study had a positive SPAN score.

Currently, routine evaluation for a history of trauma and PTSD does not occur in primary care settings. Many women with histories of trauma and PTSD are not receiving appropriate care for their psychiatric symptoms. Busy primary care physicians need efficient and easy to use instruments to help them triage patients who require further evaluation. The SPAN is a readily useable tool, which can enable primary care providers to have a mechanism for triage; greatly improving the numbers of patients with PTSD detected compared to the status quo.

Thus, the findings of this study suggest that asking women about a history of a traumatic event is extremely important, as this question alone is quite predictive in detecting psychiatric illness that is often untreated. Although, the SPAN appears to be a valuable instrument for triaging patients in need of more formal psychiatric evaluation in primary care settings, its performance in this gynecology setting was not optimal. The next step is to clarify and further improve this tool, which is likely best accomplished by adding an additional question(s) about PTSD symptomatology, that would capture a more gender-specific presentation of PTSD in women.

References:

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Washington, DC: American Psychiatric Association; 1994.

Breslau N, Davis GC, Andreski P, et al. Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Arch Gen Psychiatry* 1991;48:216-222.

Breslau N, Kessler R, Chilcoat HD, et al. Trauma and posttraumatic stress disorder in the community. The 1996 Detroit Area Survey of Trauma. *Arch Gen Psychiatry* 1998;55:626-632.1

Bromet E, Sonnega A, Kessler RC. Risk factors for DSM-III-R PTSD: findings from the National Comorbidity Survey. *Am J Epidemiol* 1998;147(4):343-361.

Brown CV. Primary care for women: the role of the obstetrician-gynecologist. *Clin Obstet Gynecol* 1999 42(2):306-13.

Davidson JRT, Hughes D, Blazer DG, et al. Posttraumatic stress disorder in the community: an epidemiological study. *Psychol Med* 1991;21:713-72.

Davidson JRT, Tupler LA, Wilson WH, Connor KM. A family study of chronic posttraumatic stress disorder. *Journal of Psychiatric Research* 1998;32:301-309.

Davidson, JRT. Biological Therapies for Posttraumatic Stress Disorder: An Overview. *J Clin Psychiatry* 1997;58(suppl 9):29-32.

Davidson JRT, Book SW, Colket JT, Tupler LA et al, Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine* 1997;27:143-160

Golding JM. Sexual assault history and physical health in randomly selected Los Angeles women. *Health Psychology* 1994;13(2):130-138.

Green BL. Psychological research in traumatic stress: an update. *J of Traumatic Stress* 1994;7(3):341-362.

Greenberg PE, Sisitsky T, Kessler RC et al. The economic burden of anxiety disorders in the 1990's. *J Clinical Psychiatry* 1999;60(9):427-435.

Helzer JE, Robins LN, McEvoy L. Posttraumatic stress disorder in the general population: findings of the Epidemiologic Catchment Area Survey. *N Engl J Med* 1987;317:1630-1634.

Holbrook TL, Hoyt DB, Stein MB, Sieber WJ. Gender differences in long-term posttraumatic stress disorder outcomes after major trauma: women are at higher risk of adverse outcomes than men. *Journal of Trauma* 2002 53(5):882-888.

Kessler R, Sonnega A, Bromet E, et al. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995;52:1048-1060.

Kessler RC, Frank RG. The impact of psychiatric disorders of work loss days. *Psychological Medicine* 1997; 27(4):861-873.

Kimerling R, and Calhoun K. Somatic symptoms, social support, and treatment seeking among sexual assault victims. *Journal of Consulting and Clinical Psychology*

1994;62(2):333-340.

Leader S, Perales PJ. Provision of primary preventive health care services by obstetrician-gynecologist. *Obstetrics and Gynecology* 1995;85(3);391-395.

March JS, "What constitutes a stressor? The "criterion A" issue. In *Posttraumatic Stress Disorder: DSM-IV and Beyond*. Editors Davidson JRT & Foa EB. American Psychiatric Press 1993;37-54.

McFarlane AC, Atchison M, RafalowiczE, Papay P. Physical symptoms in post-traumatic stress disorder. *J Psychosomatic Research* 1994;38:715-726.

Meltzer-Brody SE, Churchill E, Davidson JRT. Derivation of the SPAN, a brief diagnostic screening test for post-traumatic stress disorder. *Psychiatry Research* 1999;88; 63-70.

Miller TR, Cohen MA, Rossman SB. Victim costs and consequences: a new look. Washington DC: United States Department of Justice, National Institute of Justice. Research Report;1996

Norris FH. Epidemiology of trauma:frequency and impact of different potentially traumatic events on different demographic groups. *J Consult Clin Psychology* 1992;60:409-418.

Resnick H, Kilpatrick DG, Dansky B, et al. Prevalence of civilian trauma and posttraumatic stress disorder in a representative sample of women. *J Consult Clin Psychology* 1993;61:984-991.

Robins LN, Smith EM. Diagnostic Interview Schedule/Disaster Supplement. St. Louis: Washington University School of Medicine. Department of Psychiatry; 1983.

Samson AY, Bensen S, Beck A, Price D, Nummer C. Post-traumatic Stress Disorder in Primary Care, *Journal of Family Practice*, 1999;48;222-227.

Sheehan DV, Lecrubier Y, Sheehan KH, et al. The Mini-International Neuropsychiatric Interview MINI: The development and validation of a short diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998;59;Suppl 20;22-33.

StataCorp. 1999. *Stata Statistical Software: Release 6.0*. College Station, TX: Stata Corporation.

Waigandt A, Wallace DL, Phelps L, et al. The impact of sexual assault on physical health status. *Journal of Traumatic Stress* 1990;3(1):93-102.