

Development of a Brief Mental Health Screen for Intimate Partner Violence Victims in the Emergency Department

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Abstract

Background: Emergency physicians routinely treat victims of intimate partner violence (IPV) and patients with mental health symptoms, although these issues may be missed without routine screening. In addition, research has demonstrated a strong association between IPV victimization and mental health symptoms.

Objectives: To develop a brief mental health screen that could be used feasibly in an emergency department to screen IPV victims for depressive symptoms, posttraumatic stress disorder (PTSD) symptoms, and suicidal ideation.

Methods: The authors conducted a pretest/posttest validation study of female IPV victims to determine what questions from the Beck Depression Inventory II, Posttraumatic Stress Diagnostic Scale, and Beck Scale for Suicide Ideation would predict moderate to severe levels of depressive symptoms, PTSD symptoms, and suicidal ideation. A principal components factor analysis was conducted to determine which questions would be used in the brief mental health screen. Scatter plots were then created to determine a cut point.

Results: Scores on the brief mental health screen ranged from 0 to 8. A cutoff score of 4 was used, which resulted in positive predictive values of 96% for the brief mental health screen for depression, 84% for PTSD symptoms, and 54% for suicidal ideation. In particular, four questions about sadness, experiencing a traumatic event, the desire to live, and the desire to commit suicide were associated with moderate to severe mental health symptoms in IPV victims.

Conclusions: The brief mental health screen provides a tool that could be used in an emergency department setting and predicted those IPV victims with moderate to severe mental health symptoms. Using this tool can assist emergency physicians in recognizing at-risk patients and referring these IPV victims to mental health services.

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The Centers for Disease Control and Prevention estimates that the total cost of intimate partner violence (IPV) for women in the United States is \$5.8 billion annually,¹ with \$4 billion in direct health care costs.² In addition, Arias and Corso reported that the average cost per woman victimized by a male intimate partner is \$948, including \$207 in mental health services.³ Previous research has demonstrated that IPV victims

have a 1.6- to 2.3-fold higher rate of medical care use than females who did not disclose victimization.⁴ Thus, abused women seek treatment for physical injuries, chronic medical illnesses, or mental health sequelae of abuse in emergency departments (EDs) at higher rates than other women. A recent study by Houry et al. found a one-year prevalence rate of 36% for IPV victimization among African American females presenting to an inner-city ED.⁵ Abbott et al. reported a lifetime prevalence rate of 54% for IPV victimization among female ED patients, as well as an acute incidence rate of 12%.⁶

Mental health problems also are associated with severe economic burden in the United States. Depression costs \$83.1 billion annually, with \$26.1 billion in direct costs and \$5.4 billion for suicide-related costs.⁷ Affective disorders average \$30.4 billion annually and represent 21% of the cost of all mental illnesses in the United States.⁸ Individuals with mental health problems often present to the

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ED, rather than to mental health professionals, and many times their psychiatric symptoms go undetected or undiagnosed in the ED setting.⁹ In a multicenter study, Kumar et al. found that 30% of ED patients endorsed depressive symptoms.¹⁰ Meldon et al. reported that in a sample of 295 ED patients aged 65 years and older, 27% were depressed and emergency physicians failed to recognize depression in all of them.¹¹ Classen and Larkin found that 12% of ED patients acknowledged suicidal ideations, and 25 of the 31 patients planning suicide were undetected during their index visit.¹²

Previous research also has demonstrated a strong association between IPV victimization and mental health symptoms. In a group of women diagnosed with depression, 61% reported experiencing IPV in their lifetime.¹³ Caetano and Cunradi reported that, among women who had experienced IPV in the past year, 20%–38% disclosed depressive symptoms.¹⁴ IPV victimization also has been associated with posttraumatic stress disorder (PTSD). Estimates of the prevalence of PTSD among women who have experienced IPV in the past year range from 33% to 84%.^{15–17} In a nationally representative sample of women, physical abuse, sexual abuse, psychological abuse, and stalking were all found to be significantly associated with PTSD.¹⁸ Perhaps the most severe mental health problem associated with IPV is suicidal behavior. Kaslow et al. reported that physical (odds ratio [OR], 2.5) and nonphysical (OR, 2.8) partner abuse were risk factors for suicide attempts in low-income, African American women.¹⁹ Houry et al. found that women who had experienced three types of IPV (emotional, physical, and sexual) were at increased risk for suicidality (OR, 17.5 for 3) compared with women who did not disclose any IPV.⁵ In another study, Bergman and Brismar stated that 22 of 117 battered women had made 82 suicide attempts over a period of 16 years.²⁰ Thus, the link between IPV and mental health symptoms should be strongly considered in all IPV victims.

The high level of health care utilization by both IPV victims and patients with mental health symptoms provides many opportunities for screening and diagnosis. Many professional organizations have suggested required screening for IPV in hospital EDs, and the Joint Commission on Accreditation of Healthcare Organizations requires all EDs to have policies and procedures in place for screening patients for IPV.²¹ Because of the strong association between IPV victimization and mental health symptoms, all women who disclose IPV victimization should receive targeted screening for mental health symptoms. Identifying these IPV victims who are at increased risk for moderate to severe mental health symptoms and providing referrals to mental health services should lessen the mental health sequelae associated with their abuse. Targeted treatment and referrals should also improve the health outcomes of these patients, thereby reducing the impact of IPV victimization on their health and daily functioning. However, emergency physicians work in a chaotic and busy environment; any screen must be brief and practical to use in the ED.

The objective of this study was to develop a brief mental health screen that could be used feasibly in an ED to screen IPV victims for depressive symptoms, PTSD

symptoms, and suicidal ideation. More specifically, our objective was to use validated scales of mental health problems, the Beck Depression Inventory II (BDI-II), the Posttraumatic Stress Diagnostic Scale (PDS), and the Beck Scale for Suicide Ideation (BSS), and from these scales develop a group of questions that would predict moderate to severe mental health symptoms among female IPV victims in the ED.

METHODS

Study Design and Population

We conducted a pretest/posttest validation study of female IPV victims to determine what questions from three psychometrically sound mental health scales would predict moderate to severe levels of depressive symptoms, PTSD symptoms, and suicidal ideation. Both the university institutional review board and the hospital research oversight committee approved this study.

The only Level 1 trauma center and public health care system of a southeastern city served as the setting for this investigation. This hospital is also university affiliated and funded by two local counties and serves as a teaching hospital for two medical schools in the area. The racial background of the majority of the patients is African American, and most of the people who seek services at the health care system are medically indigent. The approximate patient volume in the ED is 105,000 patients per year.

Survey Content and Administration

We initially focused our analysis on IPV-positive female patients in the pretest or derivation group. The questions that contributed to the most variation in scores for the BDI-II, PDS, and BSS for the IPV victims in the derivation group were used to determine the questions that would make up the brief mental health screen. We then enrolled a second group of patients, our posttest or validation set, and developed a second set of questions that contributed to the brief mental health screen. Finally, we compared the questions from both groups of patients, and the common questions that contributed to variance were used to finalize the brief mental health screen.

All female patients between the ages of 18 and 55 years were approached in the ED waiting room three days a week for eight hours a day over a two-year period. These times were selected because they represented peak, high-volume hours. Potential participants were identified by reviewing the ED patient registration log. Trained research assistants approached potential participants to ask if they would be interested in taking a "general health survey." Participants had to be able to speak and read English at a fifth-grade level, not be intoxicated or acutely psychotic, not have participated in the study before, and stand for 20 minutes to complete the survey. All participants were then taken to a semiprivate booth located near the security guard station, but away from the seating area in the waiting room, to give informed consent. Once written consent was given, the participants completed the measurement tools on a computer kiosk in the semiprivate area.

Patients responded to survey questions regarding IPV, depressive symptoms, PTSD symptoms, and suicidality

on the touch-screen computer kiosk. The measurement tools were selected because of their strong psychometric properties and prior use with individuals from a similar demographic background to the potential participants. Participants also were asked about their personal demographics, illness history, substance abuse, and current living situation. Patients stopped the survey during the computer survey process if they were called to see the physician, if they became too sick, or if they chose to stop. Data were entered in SPSS 13.0 (SPSS Inc., Chicago, IL) for analysis. Upon completion of the survey, all women who disclosed moderate to severe depressive symptoms or PTSD symptoms were provided with local mental health referrals. In addition, all women who disclosed suicidal ideation were immediately evaluated in the ED for medical clearance and then transferred to psychiatric emergency services.

IPV. IPV victimization was assessed using the five-item George Washington University Universal Violence Prevention Screening Protocol (UVPSP),²² which assesses a patient for physical violence, threat of violence, sexual violence, and emotional violence. A positive response to any of the questions yields a positive screen for IPV victimization. The UVPSP has shown a positive predictive value of 71%–89% for each UVPSP item and a sensitivity of 78%–95% for the physical and emotional abuse screening questions in a similar ED sample.²³

Mental Health Symptoms

Depression. The 21-item BDI-II was used to screen for the presence and severity of depressive symptoms.²⁴ Each BDI-II item is given a score from 0 to 3, and a cumulative score is tabulated for each participant. The total score is then compared with established cut points. A score of ≥ 20 was a positive screen for moderate to severe depressive symptoms. The BDI-II has good reliability, with studies demonstrating an internal consistency of 0.86, a split-half reliability coefficient of 0.93, and validity tests showing a classification rate of 88% (sensitivity, 71%; specificity, 88%).²⁴ In the current sample, Cronbach's α was 0.94.

PTSD. The women's level of posttraumatic stress was assessed using part 3 of the PDS,²⁵ a 17-item questionnaire that taps three categories of symptoms associated with PTSD: re-experience, avoidance, and hyperarousal. Responses on the PDS are measured on a four-point scale ranging from 0 to 3. A total score is calculated for each participant and compared with an established cut point. A score of ≥ 21 resulted in a positive screen for moderate to severe PTSD symptoms. The PDS has good reliability, with an internal consistency of 0.92 (in our sample, Cronbach's α was 0.94), and validity tests have demonstrated a classification rate of 74% (sensitivity, 89%; specificity, 65%).²⁴

Suicidal Ideation. Suicidality was assessed using the BSS, a 21-item questionnaire.²⁶ The measure includes five initial screening questions. The screening items assess a participant's wish to live or die and the strength of the desire to commit suicide. If participants state that they have any desire to commit suicide, they then answer

the remainder of the scale. Responses are scored on a three-point scale, and a total score is calculated. The total score is then compared with established cut points. A score of ≥ 11 yielded a positive screen for suicidal ideation.²⁷ It has high internal consistency of 0.89 (Cronbach's α of 0.81 in our current sample) and an interrater reliability of 0.83,²⁶ as well as strong concurrent validity with correlations ranging from 0.9 to 0.94.²⁸

Data Analysis

The sample size calculation was based on reported prevalence rates of IPV, depressive symptoms, PTSD symptoms, and suicidality in ED populations. It was expected that one third of our patients would be IPV positive; thus, we based our enrollment on a ratio of 2:1 for IPV-negative vs. IPV-positive female patients. α and β were set at 0.05 and 0.2 (80% power), respectively. A minimum of 333 women was targeted for enrollment in the derivation group, which would result in approximately 111 IPV victims being enrolled. For the validation group, a minimum of 336 female patients was needed to obtain the 112 IPV-positive female patients for the validation group.

General prevalence rates were conducted for demographic variables and mental health symptoms for both the derivation and the validation groups. We conducted chi-square analyses and 95% confidence intervals (CIs) on all IPV-positive female patients to detect any differences in demographic variables and mental health symptoms between both the derivation and the validation test groups. We also conducted t-tests and 95% CIs for mean age and mean scores on the mental health scales to detect any differences between the IPV-positive female patients in the two groups.

A principal components factor analysis was first conducted with the derivation group to determine which questions were significantly associated with the most variance of the larger scales and could be used in the brief mental health screen. A principal components factor analysis was then conducted with the validation group to determine if the same questions determined by the factor analysis of the derivation group contributed to a significant amount of the variance in scores on the mental health screens. The questions that were found in both groups to contribute significantly to the variances of each scale were chosen to make up the brief mental health screen.

Next, to establish an appropriate cut point for the brief mental health screen, scatter plots were created for each of the questions from which the brief mental health screen was created. The distribution of answers for each of the four questions was plotted against the total score for the participant on the brief mental health screen and was stratified by whether the participant scored positive or negative for each of the larger mental health measures. The cut point was determined by comparing participants who screened negative on the larger mental health scales with those who screened positive and determining where the majority of each group scored on the brief mental health screen. The score on the brief mental health screen that significantly separated participants who screened negative and those who screened positive on the larger mental health scales was then used as the cut point. A positive predictive

Table 1
Demographics for Intimate Partner Violence Victims in Derivation and Validation Groups

	Derivation Group (n = 171)	Validation Group (n = 118)	p-value
Mean age (yr)	30	32	0.115
Race			0.254
White	7.4% (12)	4.2% (5)	
African American	88.9% (144)	94.9% (112)	
Hispanic	1.9% (3)	0.8% (1)	
Other	1.9% (3)	0% (0)	
Marital status			0.800
Single	74.8% (122)	71.2% (84)	
Separated or divorced	17.8% (29)	22.1% (26)	
Widowed	1.2% (2)	0.8% (1)	
Now married	6.1% (10)	5.9% (7)	
Education			0.962
Less than ninth grade	4.3% (7)	3.4% (4)	
Some or completed high school	55% (89)	58.4% (69)	
Some or completed college	40.7% (66)	38.2% (45)	
All values are expressed as % (n), unless otherwise noted.			

value was also calculated for the brief mental health screen, using moderate to severe symptoms on the full mental health scale as the standard criterion.

RESULTS

A total of 1,574 female patients were eligible for participation in the study; of these, 1,138 (72%) consented to participate. There were no significant differences between participants and nonparticipants in respect to age ($p = 0.956$), race ($p = 0.414$), or chief complaint ($p = 0.393$).

For the derivation group, there were 598 female patients, and 587 (98%) of these completed all mental health screens. Of the 587 complete female records in the derivation group, 463 had been in a relationship in the past year and 171 were positive for IPV victimization. All subsequent analyses for the derivation group were conducted with the 171 female patients positive for IPV victimization. Table 1 shows demographic data for this group. Demographics and associations with mental health symptoms in the derivation IPV group are further detailed in another published study.⁵

For the validation group, 540 female patients participated and 509 (94%) completed the mental health

screens. Of the 509 complete female records in the validation group, 379 had been in a relationship in the past year and 118 were positive for IPV victimization. All subsequent analyses for the validation group were conducted for the 118 female patients positive for IPV victimization. Basic demographics are shown in Table 1. We did not find any significant differences between the 171 IPV-positive female patients in the derivation group and the 118 IPV-positive female patients in the validation group with regard to demographics or substance abuse behaviors (Table 1). There were no differences between groups in regard to mental health symptoms; Table 2 summarizes these findings.

On the factor analysis in the derivation group, the first two questions of the BDI-II, the first three questions of the PDS, and the first seven questions of the BSS contributed significantly to the variance for each of their respective scales. Specifically, for the BDI-II, the questions assessing sadness and pessimism each had eigenvalues >1 and contributed significantly to 55% of the variance. On the PDS, the questions pertaining to having experienced a traumatic event in the past year, having upsetting thoughts about the event, and having bad dreams or nightmares about the event all had eigenvalues >1 and contributed to 60% of the variance. On the BSS, the questions that contributed to 77% of the variance of the larger scale and had eigenvalues >1 were regarding a wish to live, a wish to die, reasons for living or dying, desire to commit suicide, saving their own life, periods of thinking about committing suicide, and frequency of thoughts of committing suicide (see Table 3).

For the validation group, the questions on the BDI-II that were significant were the first three questions assessing sadness, pessimism, and past failure. These contributed to 57% of the variance and had eigenvalues >1 . For the PDS scale, the first five questions assessing having experienced a traumatic event, having upsetting thoughts about the event, having bad dreams or nightmares, reliving the event, and feeling emotionally upset when being reminded about the event all contributed to 70% of the variance and had eigenvalues >1 . On the BSS, the questions contributing to a significant amount of the variance (92%) and with eigenvalues >1 were the first four questions regarding a wish to live, a wish to die, reasons for living or dying, and the desire to commit suicide (Table 3).

The questions used to develop the final brief mental health screen were drawn from the questions that were identified as being significant, as indicated by having an eigenvalue >1 by the derivation group factor analysis,

Table 2
Mental Health Symptoms in Derivation and Validation Groups

	Derivation Group (n = 171)	Validation Group (n = 118)	p-value
Mental health symptom, % (95% CI)			
Moderate to severe depressive symptoms	44% (37.0, 51.9)	36.4% (27.8, 45.1)	0.183
Moderate to severe posttraumatic stress disorder symptoms	28.6% (21.9, 35.4)	18.6% (11.6, 25.7)	0.070
Positive for suicidal ideations	13.5% (8.3, 18.6)	9.3% (4.1, 14.6)	0.354
Mental health scales, mean (95% CI)			
Beck Depression Inventory II	20.9 (18.6, 23.2)	18.04 (15.5, 20.6)	0.103
Posttraumatic Stress Diagnostic Scale	12.5 (11.3, 13.9)	9.51 (7.1, 11.9)	0.078
Beck Scale for Suicide Ideation	3.8 (2.8, 4.8)	2.70 (1.7, 3.7)	0.144

Table 3
Factor Analysis in Derivation and Validation Groups

	Derivation		Validation	
	Eigenvalue	% Variance	Eigenvalue	% Variance
Beck Depression Inventory II				
Sadness	10.305	49%	9.970	47%
Pessimism	1.270	6%	1.366	6%
Past failure	—	—	1.035	4%
Posttraumatic Stress Diagnostic Scale				
Experienced traumatic event	8.841	44%	8.844	44%
Upsetting thoughts	1.940	9%	1.721	8%
Bad dreams or nightmares	1.422	7%	1.426	7%
Reliving the traumatic event	—	—	1.260	6%
Feeling emotionally upset	—	—	1.048	5%
Beck Scale for Suicide Ideation				
Wish to live	6.102	29%	10.806	51%
Wish to die	2.504	11%	4.753	22%
Reasons for living or dying	2.437	11%	2.710	12%
Desire to commit suicide	1.869	8%	1.618	7%
Saving their own life	1.642	8%	—	—
Periods of thinking about suicide	1.181	5%	—	—
Frequency of thought of suicide	1.067	5%	—	—

and were found to also have eigenvalues >1 in the validation group. The positive predictive values for these nine questions were calculated (93% [95% CI = 86.9% to 100.6%] for depressive symptoms, 81.3% [95% CI = 70.2% to 92.3%] for PTSD symptoms, and 52.1% [95% CI = 30% to 66.2%] for suicidal ideation) and were found to be similar to the positive predictive values for the four questions, with a variance of >20%. The four questions that contributed most to the variance then comprised the final brief mental health screen. The final version of the brief mental health screen is shown in Figure 1.

Scores on the brief, newly crafted mental health screen can range from 0 to 8. Based on the scatter plot analysis, it was determined that 96.5% of participants who had minimal to mild depressive symptoms, 88.6% who had minimal to mild PTSD symptoms, and 81% who screened negative for suicidal ideations scored ≤ 3 on the brief mental health screen. We used a cutoff score of 4, meaning that those patients with scores ≤ 3 do not need further screening or referrals for mental health issues. This resulted in a positive predictive value for the brief mental health screen of 96% for depressive symp-

toms (95% CI = 90.6% to 101.4%), 84% for PTSD symptoms (95% CI = 73.8% to 94.2%), and 54% for suicidal ideation (95% CI = 40.2% to 67.8%).

DISCUSSION

Using validated mental health scales, we developed a four-item screen that was highly predictive for depressive and PTSD symptoms and moderately predictive for suicidal ideation in IPV victims. This screen takes very little time to administer and is feasible to use in busy clinical settings such as an ED. Currently, many abuse victims use the ED as their primary source of care, but despite recommendations by medical governing agencies, many of these women are not screened for IPV. A study in California reported that only 54% of EDs had existing written policies for treating suspected IPV victims, despite the Joint Commission on Accreditation of Healthcare Organizations mandate.²⁹ In addition, most IPV victims are not asked about any mental health symptoms they may be having, leaving many of these patients with unrecognized and untreated depression, PTSD, or suicidal ideation.

Several obstacles exist for screening patients in the ED for IPV. These include lack of effective interventions, fear of offending the patient, patient nondisclosure,³⁰ victim-blaming attitudes held by the physician, lack of resources,³¹ lack of education of physicians and nurses, lack of specific treatment protocols, time constraints, and lack of support staff such as social workers.³² Several obstacles also exist to screening for mental health issues in the ED. These include the fact that emergency physicians are not trained to conduct psychiatric interviews,³³ the busy and chaotic environment of the ED, and the lack of interest on the part of the physician.

Despite the barriers to screening in the ED, previous research has shown that screening in the ED is not only possible but also beneficial for patients. Rhodes et al. found that 85% of patients were willing to disclose risky behaviors on a computer screening tool

1. 0 I do not feel sad.
1 I feel sad.
2 I am sad all the time and can't snap out of it.
3 I am so sad or unhappy that I can't stand it.
2. Have you experienced a traumatic event (rape, car accident, domestic violence, death in family, etc.) in the past year?
0 No
1 Yes
3. 0 I have a moderate (medium) to strong wish to live.
1 I have a weak wish to live.
2 I have no wish to live.
4. 0 I have no wish to die.
1 I have a weak wish to die.
2 I have a moderate (medium) to strong wish to die.

Figure 1. Final version of brief mental health screen.

administered in an ED setting,³⁴ and 33% of screened patients reported abuse by a current partner.³⁵ Despite the lack of standardized screening across EDs, many patients would like screening to take place. Glass et al. found that 80%–89% of female ED patients would like physicians to ask them about abuse.³⁶

In addition, IPV victims with unrecognized mental health symptoms are at risk for experiencing severe symptoms of depression, PTSD, and suicide; thus, it is important to identify those at greatest risk. Houry et al. found that of IPV-positive female patients who had made a suicide attempt in the past year, all scored higher on BDI-II items than IPV-positive female patients who had not made a suicide attempt.³⁷ In a sample of female patients who had experienced IPV in the past two years, Stein and Kennedy found that major depressive disorder and PTSD were comorbid in 43% of the cases.³⁸ If left untreated, depression and PTSD can lead to suicidal behavior. In a sample of 230 patients with a lifetime history of major depressive disorder, 59 also had a lifetime prevalence of PTSD. Patients with PTSD were more likely to have made a suicide attempt at an early age than persons without PTSD. In addition, onset of PTSD symptoms preceded the first suicide attempt in 72% of people.³⁹ Last, in a sample of 200 abused African American women, Thompson et al. found that abused women who attempted suicide were more likely to report higher levels of depressive symptoms and hopelessness than abused women who had not attempted suicide.⁴⁰

Because of the strong association between IPV victimization and mental health symptoms, it is important to screen all IPV victims for mental health issues. However, the hectic and public nature of the ED makes this a difficult task. Our results demonstrate that patients are willing to disclose IPV as well as mental health symptoms on a computer kiosk. Also, it is possible to screen IPV victims for depression, PTSD, and suicidal ideation using validated tools in an ED setting. The length of the validated tools makes them difficult to use in an ED setting, and therefore shorter ones are needed if universal screening for mental health symptoms in IPV victims is going to be conducted. Our results show that all three validated scales have questions in common that can be used to screen IPV-positive patients for the most common mental health problems associated with IPV. We did not test the derived questions separately in the second group of patients; instead we derived the questions from the entire scale in the validation set. Thus, it is possible that answering the key questions in the context of other questions may affect answers to those questions. Of note, our brief screen had an excellent positive predictive value for moderate to severe depressive and PTSD symptoms but was only moderately predictive of suicidality. Emergency physicians should clinically correlate the mental health screen results and refer any patients about whom they have concerns. However, by using the brief mental health screen, emergency physicians should be able to assess the majority of IPV victims for any mental health issues and give the patient the proper care and referrals.

In particular, sadness, experiencing a traumatic event, the desire to live, and the desire to commit suicide were associated with moderate to severe depressive symptoms, moderate to severe PTSD symptoms, and suicidal

ideation in IPV victims in our study. Houry et al. found that IPV victims who were suicidal were more likely to have symptoms of sadness, self-dislike, suicidal thoughts, and feelings of worthlessness compared with IPV victims who did not have suicidal ideation.³⁷ This is similar to our study, with sadness and suicidal thoughts predicting moderate to severe mental health symptoms in IPV victims. Griffing et al. reported that of women in a domestic violence shelter, those with a past history of witnessing maternal IPV predicted intrusion symptoms, such as upsetting thoughts and bad dreams, compared with not witnessing IPV as a child.⁴¹ Therefore, health care providers should consider asking about these symptoms and feelings in IPV victims.

LIMITATIONS

Our study was a convenience sample, and we did not enroll patients who were severely injured or those patients with obvious psychiatric complaints. Therefore, the most severely injured people with IPV and those with the most severe mental health disorders may not have been screened. Our results are based solely on self-report. Recall bias or unwillingness to report may have affected our results. However, we did use validated tools for each measure of mental health symptoms. In addition, the survey was kiosk based. The results may be different in a busy ED when a clinician has to ask these questions or the participant must fill out a survey and give it to a health care provider. Finally, we conducted this study with female patients in an inner-city ED in a large southern city, and therefore our results may not be generalizable to other patient populations, other settings, or other parts of the country.

CONCLUSIONS

The brief mental health screen provides a tool that could be used in an ED setting. The length of the tool does not make it prohibitive to administer in the ED. The brief mental health screen is based on questions taken from validated tools that were shown to effectively screen ED victims of IPV. It provides emergency clinicians with a way of gaining more information about patients who are IPV positive, so that the patient can receive the proper care and referrals. Further research is needed to determine if the tool accurately predicts mental health symptoms not only in IPV-positive patients, but also in all ED patients.

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References

1. Centers for Disease Control and Prevention. Costs of intimate partner violence against women in the United States. Atlanta, GA: U.S. Department of Health and Human Services, 2003.
2. Max W, Rice DP, Finkelstein E, Bardwell RA, Leadbetter S. The economic toll of intimate partner violence against women in the United States. *Violence Vict.* 2004; 19:259–72.

3. Arias I, Corso P. Average cost per person victimized by an intimate partner of the opposite gender: a comparison of men and women. *Violence Vict.* 2005; 20: 379–91.
4. Ulrich YC, Cain KC, Sugg N, Rivara FP, Rubanowice DM, Thompson RS. Medical care utilization patterns in women with diagnosed domestic violence. *Am J Prev Med.* 2003; 24:9–15.
5. Houry D, Kemball R, Rhodes K, Kaslow N. Intimate partner violence and mental health symptoms in African American female emergency department patients. *Am J Emerg Med.* 2006; 24:444–50.
6. Abbott J, Johnson R, Koziol-McLain J, Lowenstein SR. Domestic violence against women: incidence and prevalence in an emergency department population. *JAMA.* 1995; 273:1763–7.
7. Greenberg PE, Kessler RC, Birnbaum HG, et al. The economic burden of depression in the United States: how did it change between 1990 and 2000? *J Clin Psychiatry.* 2003; 64:1465–75.
8. Rice DP, Miller LS. The economic burden of anxiety disorders. *Br J Psychiatry Suppl.* 1995; 27:34–42.
9. Schriger DL, Gibbons PS, Langone CA, Lee S, Altshuler LL. Enabling the diagnosis of occult psychiatric illness in the emergency department: a randomized, controlled trial of the computerized, self-administered Prime-MD Diagnostic system. *Ann Emerg Med.* 2001; 37:132–40.
10. Kumar A, Clark S, Boudreaux E, Camargo CA Jr. A multicenter study of depression among emergency department patients. *Acad Emerg Med.* 2004; 11:1284–9.
11. Meldon SW, Emerman CL, Schubert DE, Moffa DA, Ethert RG. Depression in geriatric ED patients: prevalence and recognition. *Ann Emerg Med.* 1997; 30:141–5.
12. Classen C, Larkin G. Occult suicidality in an emergency department. *Br J Psychiatry.* 2005; 186:352–3.
13. Dienemann J, Boyle E, Baker D, Resnick W, Wiederhorn N, Campbell J. Intimate partner abuse among women diagnosed with depression. *Issues Ment Health Nurs.* 2000; 21:499–513.
14. Caetano R, Cunradi C. Intimate partner violence and depression among whites, blacks, and Hispanics. *Ann Epidemiol.* 2003; 13:661–5.
15. Astin M, Lawrence K, Foy D. Posttraumatic stress disorder among battered women: risk and resiliency factors. *Violence Vict.* 1993; 8:17–28.
16. Cascardi M, O'Leary K, Lawrence E, Schlee K. Characteristics of women physically assaulted by their spouses and who seek treatment regarding marital conflict. *J Consult Clin Psychol.* 1995; 63:616–23.
17. Kemp A, Rawlings E, Green B. Posttraumatic stress disorder in battered women. *J Trauma Stress.* 1991; 4:137–48.
18. Baslie K, Arias I, Desai S, Thompson M. The differential association of intimate partner physical, sexual, psychological, and stalking violence and post-traumatic stress syndrome in a nationally representative sample of women. *J Trauma Stress.* 2004; 17: 413–21.
19. Kaslow NJ, Thompson M, Meadows L, et al. Risk factors for suicide attempts among African American women. *Depress Anxiety.* 2000; 12:13–20.
20. Bergman B, Brismar B. Suicide attempts by battered wives. *Acta Psychiatr Scand.* 1991; 83:380–4.
21. Joint Commission for the Accreditation of Healthcare Organizations (JCAHO). *Comprehensive Accreditation Manual for Hospitals.* Oakbrook Terrace, IL: JCAHO, 2001.
22. Dutton MA, Mitchell B, Haywood Y. The emergency department as a violence prevention center. *J Am Med Womens Assoc.* 1996; 51:92–5.
23. Heron SL, Thompson MP, Jackson E, Kaslow NJ. Do responses to an intimate partner violence screen predict scores on a comprehensive measure of intimate partner violence in low-income black women? *Ann Emerg Med.* 2003; 42:483–91.
24. Beck AT, Steer RA, Brown GK. *Manual for the Beck Depression Inventory-II.* San Antonio, TX: Psychological Corp., 1996.
25. Foa EB, Riggs DS, Cancu CV, Rothbaum BO. Reliability and validity of a brief instrument for assessing post traumatic stress disorder. *J Trauma Stress.* 1993; 6:459–73.
26. Beck AT, Kovacs M, Weissman A. Assessment of suicidal intention: the Scale for Suicide Ideation. *J Consult Clin Psychol.* 1979; 47:343–52.
27. Beck AT, Brown GK, Steer RA. Psychometric characteristics of the scale for suicide ideation with psychiatric outpatients. *Behav Res Ther.* 1997; 35:1039–46.
28. Beck AT, Steer RA, Ranieri WF. Scale for Suicide Ideation: psychometric properties of a self-report mechanism. *J Clin Psychol.* 1988; 44:499–505.
29. Centers for Disease Control and Prevention. Emergency department response to domestic violence—California, 1992. *MMWR Morb Mortal Weekly Rept.* 1993; 42:617–20.
30. Waalen J, Goodwin M, Sptiz M, Peterson R, Saltzman L. Screening for intimate partner violence by health care providers. *Am J Prev Med.* 2000; 19:230–7.
31. Garimella R, Plichta S, Houseman C, Garcon L. Physician beliefs about victims of spouse abuse and about the physician role. *J Women Health.* 2000; 9:405–11.
32. Erickson MJ, Hill TD, Seigel RM. Barriers to domestic violence screening in the pediatric setting. *Pediatrics.* 2001; 108:98–102.
33. Gold L, Baraff LJ. Psychiatric screening in the emergency department: its effect on physician behavior. *Ann Emerg Med.* 1989; 18:875–80.
34. Rhodes K, Lauderdale D, Stocking C, Howes D, Roizen M, Levinson W. Better health while you wait: a controlled trial of a computer-based intervention for screening and health promotion in the emergency department. *Ann Emerg Med.* 2001; 37:284–91.
35. Rhodes K, Lauderdale D, He T, Howes D, Levinson W. Between me and the computer: increased detection of intimate partner violence using a computer questionnaire. *Ann Emerg Med.* 2002; 40:476–84.
36. Glass N, Dearwater S, Campbell J. Intimate partner violence screening and intervention: data from eleven Pennsylvania and California community hospital emergency departments. *J Emerg Nurs.* 2001; 27: 141–9.
37. Houry D, Kaslow N, Thompson M. Depressive symptoms in women experiencing domestic violence. *J Interpers Violence.* 2005; 20:1466–77.

38. Stein M, Kennedy C. Major depressive and post-traumatic stress disorder comorbidity in female victims of intimate partner violence. *J Affect Disord.* 2001; 66: 133–8.
39. Oquendo M, Brent D, Birmaher B, et al. Posttraumatic stress disorder comorbid with major depression: factors mediating the association with suicidal behavior. *Am J Psychiatry.* 2005; 162:560–6.
40. Thompson M, Kaslow N, Kingree J. Risk factors for suicide attempts among African American women experiencing recent intimate partner violence. *Violence Vict.* 2002; 17:283–95.
41. Griffing S, Lewis CS, Chu M, Sage RE, Madry L, Primm BJ. Exposure to interpersonal violence as a predictor of PTSD symptomatology in domestic violence survivors. *J Interpers Viol.* 2006; 21:936–54.

DYNAMIC EMERGENCY MEDICINE

Please see accompanying video Data Supplement available at www.aemj.org.

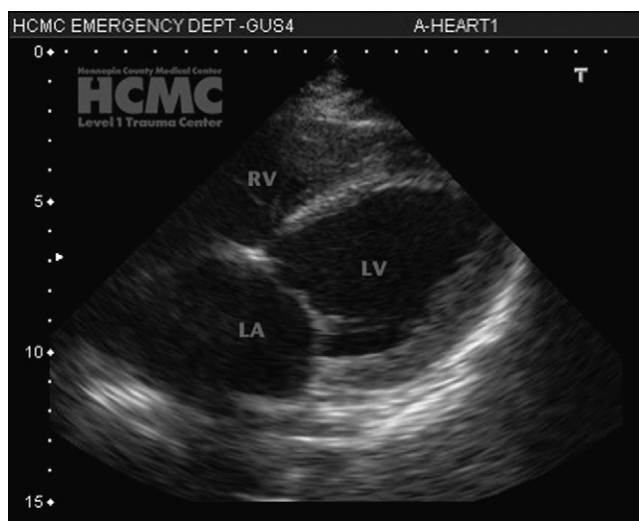


Figure 1. Subcostal cardiac ultrasound showing relatively small right ventricle. Video (available as a Data Supplement at <http://www.aemj.org/cgi/content/full/j.aem.2006.11.034/DC1>) demonstrates poor left ventricular function.

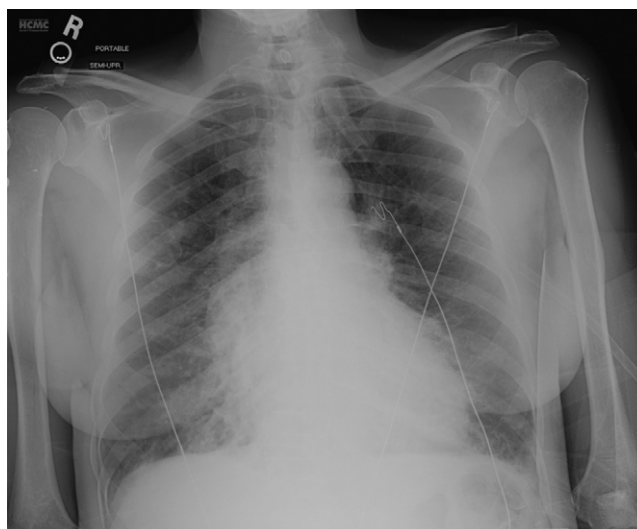


Figure 2. Chest radiograph confirms acute pulmonary edema.

Cardiac Wheezing Diagnosed with Bedside Echocardiogram

A 64-year-old female in respiratory distress arrived via ambulance with an albuterol nebulization treatment in progress. She indicated that her shortness of breath had become progressively worse over the last several hours. She denied chest pain and any history of cardiac or pulmonary disease.

On physical examination, her respiratory rate was 50–60 breaths per minute, and she was using all accessory muscles. She could only speak in two- or three-word sentences because of her shortness of breath. Her blood pressure was 161/101 mm Hg, her heart rate was 136 beats per minute, and her oxygen saturation was 94%, despite 100% supplemental oxygen given with a non-rebreather mask. Her temperature was normal. Auscultation of her chest revealed diffuse expiratory wheezes, decreased aeration, and a prolonged expiratory phase. There were no crackles appreciated. Cardiovascular examination revealed tachycardia without murmurs and strong, equal peripheral pulses. Her neck exam was without any noticeable jugular venous distention. Lower extremity edema was absent. The remainder of her examination was unremarkable.

Two minutes after arrival, a bedside echocardiogram (ECG) was performed and interpreted by an emergency physician.

Notable findings included obvious severe left ventricular failure and a relatively small right ventricle (Figure 1 and video; video is available as a Data Supplement at <http://www.aemj.org/cgi/content/full/j.aem.2006.11.034/DC1>). Initial plans for orotracheal intubation were made, and she was immediately given sublingual nitroglycerine. Intravenous nitroglycerine infusion was started as well as intravenous furosemide. The albuterol nebulization was stopped, and she was started on high-flow oxygen by non-rebreather mask. By the time that the patient's portable chest radiograph was available for viewing (Figure 2), about 15 minutes after arrival, the patient was markedly improved. ECG showed a sinus tachycardia with nonspecific changes. The chest radiograph confirmed the diagnoses of acute pulmonary edema. She was admitted to the cardiac intensive care unit and eventually diagnosed with severe diffuse ischemic cardiomyopathy.

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