HITS: A short domestic violence screening tool for use in a family practice setting

Article *in* Family Medicine · July 1998

Source: PubMed

Clinical Research and Methods

HITS: A Short Domestic Violence Screening Tool for Use in a Family Practice Setting

Kevin M. Sherin, MD, MPH; James M. Sinacore, PhD; Xiao-Qiang Li, MD; Robert E. Zitter, PhD; Amer Shakil, MD

Background and Objectives: *Domestic violence is an important problem that is often not recognized by physicians. We designed a short instrument for domestic violence screening that could be easily remembered and administered by family physicians.* Methods: *In phase one of the study, 160 adult female family practice office patients living with a partner for at least 12 months completed two questionnaires. One questionnaire was the verbal and physical aggression items of the Conflict Tactics Scale (CTS). The other was a new four-item questionnaire that asked respondents how often their partner physically Hurt, Insulted, Threatened with harm, and Screamed at them. These four items make the acronym HITS. In phase two, 99 women, who were self-identified victims of domestic violence, completed the HITS.* Results: *For phase one, Cronbach's alpha was .80 for the HITS scale. The correlation of HITS and CTS scores was .85. For phase two, the mean HITS scores for office patients and abuse victims were 6.13 and 15.15, respectively. Optimal data analysis revealed that a cut score of 10.5 on the HITS reliably differentiated respondents in the two groups. Using this cut score, 91% of patients and 96% of abuse victims were accurately classified.* Conclusions: *The HITS scale showed good internal consistency and concurrent validity with the CTS verbal and physical aggression items. The HITS scale also showed good construct validity in its ability to differentiate family practice patients from abuse victims. The HITS scale is promising as a domestic violence screening mnemonic for family practice physicians and residents.*

(Fam Med 1998;30(7):508-12.)

In the United States, 8–12 million women are victims of domestic violence from current or former partners.[1] Domestic violence is related to serious morbidity and is a major public health problem in our society.[1] Recent research has found, however, that only a small percentage of victims of domestic violence are identified in medical practice.[2,3]

Screening for domestic violence by physicians is done infrequently for a variety of reasons.[2-4] We believe that one of the main reasons is that existing instruments are time-consuming to administer and complete. For example, the Wife Abuse Inventory[5] has 40 items, and the Conflict Tactics Scale (CTS)[6] has multiple scoring protocols and requires the purchase of a scoring manual. Hence, physicians may be deterred from using these instruments in busy clinical settings. In the present study, we developed and tested a short domestic violence screening tool that could be suitable for use in office practice.

From the Department of Family Medicine, University of Illinois at Chicago.

Methods

Overview

Instrument development began by assembling a focus group of family physicians[7] to discuss the type and wording of items that would comprise a useful screening instrument. The group decided that the items should be few in number and focused on verbal abuse and physical violence. The group ultimately decided on four items that would ask a patient to indicate how often her partner physically Hurts, Insults, Threatens, and Screams at her. Collectively, these items can be remembered by the acronym "HITS."

The research was conducted in two phases. In phase one, the reliability (ie, internal consistency) and the concurrent validity of the HITS instrument were as-

sessed with a group of female patients who were visiting their family physician. The CTS was chosen to establish concurrent validity because it is the instrument most widely used to measure marital violence.[8] In addition, the CTS assesses both the severity and chronicity of that violence. Moreover, the CTS has been used in three nationally normed studies[9-11] and has a high level of internal consistency, concurrent validity,[12-14] and content and construct validity.[8] The CTS also has been found to correlate well with spouse reports of domestic violence.[13]

In phase two, the construct validity of the HITS was tested by comparing the responses of the participants in phase one (general patients visiting their physician) with the responses of self-identified victims of domestic violence. If the HITS is a useful screening tool, victims of violence should score higher than the general population of patients. Moreover, it should be possible to find a cut score that reliably differentiates victims of violence from patients in general.

Instruments

The CTS. The CTS contains 15 items that measure perception of verbal and physical violence; all 15 of these items were used in this study. The CTS's four remaining "reasoning" items were not included because they are not directly related to domestic violence.

Using the response format of the original instrument, patients were asked to estimate how often within the previous year their partner committed acts toward them such as: sulked and/or refused to talk, stomped out of the house or room; threatened to hit or throw something; slapped; kicked, bit, or hit with a fist; and threatened with a knife or gun. Respondents made their estimates using a 7-point frequency scale of never, once, twice, 3–5 times, 6–10 times, 11–20 times, and more than 20 times. Score values could range from a minimum of 15 to a maximum of 105. To ensure that the verbal and physical violence items from the CTS continued to be a meaningful scale without the reasoning items, we conducted an internal consistency analysis; the data was collected from the patients in the study. Cronbach's alpha was .87 for the 15 items.

The HITS Scale. The HITS scale is a paper-and-pencil instrument that was comprised of the following four items: "How often does your partner: physically hurt you, insult you or talk down to you, threaten you with harm, and scream or curse at you?" Patients responded to each of these items with a 5-point frequency format: never, rarely, sometimes, fairly often, and frequently. Score values could range from a minimum of 4 to a maximum of 20.

Participants

For phase one of the study (reliability and concurrent validity testing), 160 female patients visiting a family practice clinic during April, May, and June 1996 participated in this study. For inclusion, participants had to be over age 21 and had to have lived with the same partner for at least 12 months. All participants were patients in the Family Practice Center of Christ Hospital Medical Center (Advocate), which serves a population of urban/suburban patients in the southwest Chicago area of Oak Lawn.

For phase two of the study (measuring construct validity), 99 women, who were self-identified as victims of domestic violence, participated. Some participants were residents of domestic violence crisis shelters (n=54), and others presented to an emergency room (n=45).

Instrument Administration

In phase one, the CTS and HITS were each printed on a separate page and stapled together. To control for presentation effects, the sequencing of the scales was counterbalanced so that half of the participants completed the CTS followed by the HITS, and the other half completed the instruments in the reverse order.

Following approval from our institution's Medical Investigations Committee, female patients in the family practice population were asked by nursing staff to participate in the present study during a normal office visit. Volunteers completed forms privately in exam rooms, and forms were collected before leaving the office. To maintain confidentiality, no identifying information was recorded.

In phase two, copies of the HITS were sent to each of the crisis shelters and the agency that attended women who presented in the emergency room. Staff coordinators at each site were asked to solicit participation by clients and to distribute and collect the forms at a time that did not disrupt counseling sessions or other important therapeutic events.

Data Analysis

Phase One: Reliability and Concurrent Validity. For this part of the study, frequency distributions were constructed for total scores on the CTS and HITS. Descriptive statistics for the HITS also were computed. The internal consistency (ie, reliability) of the HITS was determined with Cronbach's coefficient alpha. A scatter plot of the total scores for the CTS and HITS was constructed, and the scores were then correlated to establish the concurrent validity of the HITS. In addition, subscores for items that assessed verbal abuse and physical abuse were computed separately and correlated across instruments.

Tests for presentation effects were conducted by comparing the total score for participants who completed an instrument first in the set with those who completed it second. The Mann-Whitney U test was used for this comparison because the distribution of scores for both instruments was clearly not normal.

None of the participants had any missing data on the HITS. However, 10 participants (6% of 160) did not provide complete data on the CTS. Nine participants had one missing item, and one participant had two missing items. To use all subjects in the analysis, missing values were imputed with the mean value of the existing CTS items.

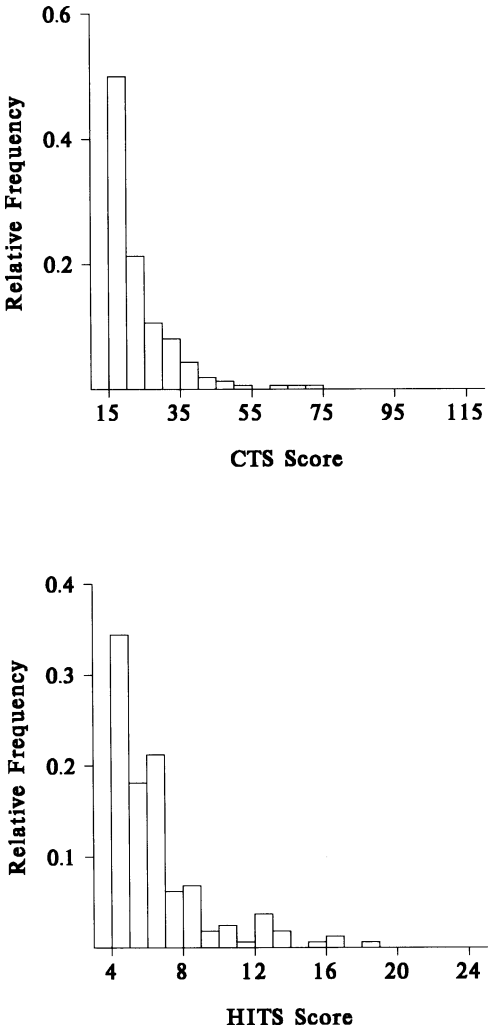
Phase Two: Construct Validity. To measure the construct validity of the HITS, scores for the respondents at the shelters and emergency room were compared with scores of the 160 female patients in phase one. If the screening tool is efficacious, HITS scores of self-identified victims of domestic violence should be significantly higher than those of general patients who are visiting their physician. HITS scores were therefore compared using Student's *t* test for independent samples.

In addition, the Optimal Data Analysis® program (ODA 1.0, Optimal Data Analysis for DOS, Chicago, Optimal Data Analysis, Inc) was used to find a cut score that reliably differentiated the two groups of participants. The intent of this was to find a score above which domestic violence probably has occurred.

In evaluating the cut score to distinguish victimized and non-victimized respondents, a leave-one-out validation method was used. To do this, one score was held out while the other 258 (ie, 160 subjects in phase one plus 99 subjects in phase two, minus one) were used to find the cut score. This cut score was then used to classify the holdout score in terms of it belonging to the office or victimized group. After this was done for all 259 scores, the results were merged to examine the overall percentage accuracy classification. The leave-one-out methodology allows one to classify HITS scores that are not used to derive the cut score, thus rendering an unbiased account of classification accuracy.

Figure 1

Frequency Distributions of CTS and HITS Scores



CTS—Conflict Tactics Scale
HITS—acronym for Hurts, Insults, Threatens, and Screams

Results

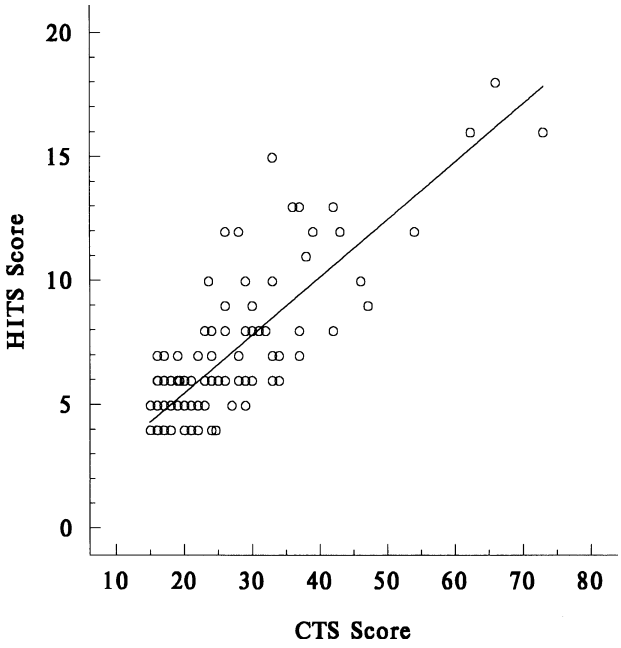
Phase One: Reliability and Concurrent Validity

The frequency distributions for the CTS and HITS scores from phase one are shown in Figure 1. As can be seen, both distributions are L-shaped, indicating that the majority of respondents scored in the low (non-victim) range of the scale. The lowest and highest HITS scores were 4 and 18, respectively. The mean was 6.13, the median was 5, and the standard deviation was 2.75. Cronbach's alpha was .80 for the four-item scale. The analysis further showed that deleting the item about being physically hurt would leave alpha unchanged. However, alpha would notably decrease if any of the other items were dropped from the scale.

Figure 2 shows the scatterplot of HITS and CTS scores. The lower left portion shows a higher density of points due to the L-shaped nature of the score distributions. However, the relationship is positive and linear. A correlation of .85 was found between HITS and CTS total scores. Subscores on both instruments that measured respondents' experience of physical violence showed a correlation of $r = .82$. The same was true for items that measured verbal violence, $r = .81$.

Figure 2

Scatter Plot of HITS and CTS Scores



CTS—Conflict Tactics Scale
HITS—acronym for Hurts, Insults, Threatens, and Screams

Presentation Effects. Presentation effects were not found. The median total HITS score was 5 for those who completed the instrument first, as well as for those who completed it second, z=.23, P=.815. The median CTS scores were 19.64 and 20 for those completing the instrument first and second, respectively, z=.26, P=.794.

Phase Two: Construct Validity

The mean HITS scores for the victimized and office groups were 15.12 and 6.13, respectively. This difference was statistically significant, t=24.12, P< .0005. Computations showed that 69% of the variance in HITS scores was attributable to group membership.

ODA® analysis revealed that the score of 10.5 reliably discriminated the two study groups (P<.05).Table 1 shows the cut score classification performance summary. In terms of actual group membership, 96% (95/99) of the victimized participants and 91% (146/160) of the office participants were classified correctly using this cut score. This is analogous to sensitivity and specificity, respectively. In terms of making predictions, 87% (95/109) of those predicted to be victimized by domestic violence and 97% (146/150) of those predicted to be office patients were accurate. This is analogous to the positive and negative predictive values, respectively.

Discussion

The HITS scale is not the first short domestic violence screening tool to be developed for outpatient clinical settings. Other short instruments, such as the Abuse Assessment Screen,[15] have been developed for the same purpose, but the HITS instrument is shorter than others.[15-17] HITS has only four items, two each that address verbal and physical aggression. The brevity of the HITS is rivaled only by the three-item Partner Violence Screen developed by Feldhaus et al.[18] However, the latter was designed for use in an emergency room, and the items do not form an easily remembered acronym.

The results from phase one indicate that the HITS has good internal consistency and concurrent validity with the CTS. Although the four reasoning items were not used in the CTS, there is no reason to believe that this affected the ability of the scale to measure perception of physical and verbal violence. An internal consistency analysis of the 15-item CTS with our office sample revealed an alpha of .87.

The results from phase two of the study provide two important findings to demonstrate the construct validity of the HITS. First, the group of self-identified victims of abuse scored significantly higher than family practice patients. Second, ODA® revealed that the score of 10.5 reliably differentiated the two groups of respondents. These findings are consistent with an effective screening tool.

Table 1

Cut Score Classification Performance Summary

		Predicted Group Membership			
		Victimized	Office	Total	Accuracy
Actual Group Membership	Victimized	95	4	99	96%
	Office	14	146	160	91%
	Total	109	150		
	Accuracy	87%	97%		

Note: A HITS score of >10.5 classified someone as a victimized respondent.

HITS—acronym for Hurts, Insults, Threatens, and Screams

In practice, the cut score of 10.5 is not directly usable because the HITS scoring procedure does not allow for fractions of points. We, therefore, suggest that clinicians suspect domestic violence when their patients have a HITS score greater than 10.

Despite the statistical findings of the HITS cutoff, physicians should investigate domestic violence whenever they believe such a problem might exist. The HITS is not used, nor should it be used, in lieu of good clinical judgment. One must keep in mind that our sample of office patients was compared with a group of women for whom the experience of domestic violence led them to seek professional help. We suspect that there are many more women who cope with a violent home life, yet, for whatever reason, do not want to bring up the issue with a health care professional. As always, clinical acumen should outweigh test scores if there appears to be a discrepancy between the two.

Hopefully, a verbal form of the HITS with a yes-no response format would have similar accuracy as the written instrument used in this study. If so, physicians could screen for domestic violence during a conversation with a patient, thus obviating the need for a paper-and-pencil instrument (albeit a short one).

Given the positive results from this study, additional work should be done to explore the characteristics of the HITS. For example, concurrent validity with other normed instruments, such as the Index of Spouse Abuse,[19] should be examined. HITS scores also could be correlated with the incidence of violence that is reported in medical records.[20] In addition, the utility of the HITS should be studied with other women who are known to be at high risk of violence.

Acknowledgments: This research was supported by a grant from the Med Fund of Christ Hospital Medical Center (Advocate). The Med Fund has sole rights for the reprint or use of the HITS questionnaire herein described. The authors extend their appreciation to the following individuals and organizations that participated in this study: Sr. Cathleen Moore and Pat Meneghini from Good Shepherd, Jenny Miller from Crisis Center Advocates, Sharon Harold from South Suburban Family Shelter, and Theresa DuBoise from Family Rescue. A portion of this work was presented at the 1997 Society of Teachers of Family Medicine (STFM) Annual Spring Conference in Boston and the 1998 STFM Annual Spring Conference in Chicago. The work also was presented at the 1997 American Academy of Family Physicians Scientific Assembly in Chicago.

Corresponding Author: Address correspondence to Dr Sherin, University of Illinois at Chicago, Christ Family Medicine Residency Program, 4400 W 95 Street, Suite 207, Oak Lawn, IL 60453. 708-346-5324. Fax: 708-346-2003. E-mail: ksherin@uic.edu.

References

1. American Medical Association. Diagnostic and treatment guidelines on domestic violence. Chicago: American Medical Association, 1994.
2. Hamberger LK, Saunders DG, Hovey M. Prevalence of domestic violence in community practice and rate of physician inquiry. Fam Med 1992;24(4):283-7.
3. Tilden VP, Schmidt TA, Limandri BJ, Chiodo GT, Garland MJ, Loveless PA. Factors that influence clinicians' assessment and management of family violence. Am J Public Health 1994;84(4):628-33.
4. Parsons LH, Zaccaro D, Wells B, Stovall TG. Methods of and attitudes toward screening obstetrics and gynecology patients for domestic violence. Am J Obstet Gynecol 1995;173(2):381-6.
5. Lewis BY. The wife abuse inventory: a screening device for the identification of abused women. Soc Work 1985;Jan-Feb:32-5.
6. Straus MA. Physical violence in American families. New Brunswick, NJ: Transaction Publishers, 1990.
7. Brown JR, Sas C. Focus groups in family practice research: an example study of family physicians' approach to wife abuse. Fam Pract Res J 1994;14(1):19-28.
8. Straus MA. Measuring intrafamily conflict and violence: the conflict tactics scales. Journal of Marriage and the Family 1979;4:75-88.
9. Aldorondo E, Straus MA. Screening for physical violence in couple therapy: methodological, practical, and ethical considerations. Fam Process 1994;33(4):425-39.
10. Straus MA, Gelles R. Societal change and change in family violence from 1975 to 1985 as revealed by national survey. Journal of Marriage and the Family 1986;48:465-79.
11. O'Leary KD, Barling J, Arias I, Rosenbaum A, Malone J, Tyree A. Prevalence and stability of physical aggression between spouses: a longitudinal analysis. J Consult Clin Psych 1989;57:263-8.
12. Cronbach LJ. Essentials of psychological testing, third edition. New York: Harper and Row, 1970.
13. Bullcroft RA, Straus MA. Validity of husband, wife, and child reports of intrafamily violence and power. Durham, NH: Family Research Lab, University of New Hampshire, 1975:16.
14. Kramer JJ, Conoley JC. The 11th mental measurement yearbook. Lincoln, Neb: University of Nebraska Press, 1992.
15. Norton L, Peipert J, Zierler S, Lima B, Hume L. Battering in pregnancy: an assessment of two screening methods. Obstet Gynecol 1995;85(3):321-25.
16. Gendron C. The development of a questionnaire for identification of women who are victims of violence in the conjugal milieu. Can J Nurs Res 1991;23(3):21-32.
17. Attala JM. Risk identification of abused women participating in a women, infants, and children program. Health Care Women Int 1994;15(6):587-97.
18. Feldhaus KM, Koziol-McLain JK, Amsbury HL, Norton IM, Lowenstein SR, Abbott JT. Accuracy of three brief screening questions for detecting partner violence in the emergency department. JAMA 1997;277(17):1357-61.
19. McFarlane J, Parker B, Soeken K, Bullock L. Assessing for abuse during pregnancy: severity and frequency of injuries and associated entry into prenatal care. JAMA 1992;267(23):3176-8.
20. Sanders DG, Hamberger LK, Hovey M. Indicators of woman abuse based on a chart review at a family practice center. Arch Fam Med 1993;2:537-43.