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Identifying Intimate Partner Violence during Pregnancy in Prenatal Care Settings

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Screening for Intimate Partner Violence (IPV) is promoted by major medical organizations including the American College of Obstetrics and Gynecology (ACOG) and the American Medical Association (AMA). In 2004, the United States Preventative Service Task Force (USPSTF) was unable to recommend, for or against, routine screening due to limited empirical data on the accuracy of the IPV measurement tools, the effectiveness of interventions, and the potential for harm from screening (Nelson, Bougatsos, & Blazina, 2012a). Since 2004, additional information on IPV screening has been published (Kiely, El-Mohandes, El-Khorazaty, Blake, & Gantz, 2010; Rabin, Jennings, Campbell, & Bair-Merritt, 2009). The USPSTF is currently updating recommendations regarding IPV screening and has recently determined that there is adequate evidence that available screening instruments can identify current and past abuse, or increased risk for abuse (Nelson, Bougatsos, & Blazina, 2012b).

Pregnancy provides an important window of opportunity for identifying women experiencing IPV (ACOG, 2012; Devries et al., 2010). For women who are pregnant, the USPSTF recommends that screening should occur over the course of the pregnancy, including at the first prenatal visit, at least once per trimester, and at the postpartum checkup (Nelson et al., 2012a); however, both clinical practice and research are still hindered by the lack of a comprehensive evaluation of the psychometric properties of existing IPV screens for a pregnant population. Correctly identifying women experiencing, or at risk of experiencing various types of IPV, is necessary to advise the development and implementation of interventions to prevent and treat IPV, but this requires data from accurate screening instruments. The purposes of this review are to (1) briefly define and describe IPV that occurs during pregnancy, (2) briefly describe and discuss the psychometric characteristics of empirically evaluated IPV screens that can be used in health care settings, and (3) evaluate IPV screens for use in prenatal care settings.

Intimate Partner Violence and Pregnancy

The majority of violence against women is perpetrated by current or former intimate partners (Centers for Disease Control [CDC], n.d.). The CDC defines IPV as “physical, sexual, or psychological harm by a current, or former, partner or spouse” and recognizes four categories of violence: physical violence, sexual violence, threat of physical or sexual violence, and psychological or emotional abuse (CDC). The cost of IPV in the United States is immense with the CDC estimating that \$5.8 billion dollars are paid annually in medical and mental health care treatment, lost productivity, and lost earnings (National Center for Injury Prevention and Control [NCIPC], 2003). Compared to never-abused women, the total adjusted annual health care costs are 42% higher for women with ongoing physical abuse and 33% higher for women with non-physical abuse (Bonomi, Anderson, Rivara, & Thompson, 2009). These numbers are evidence of the enormous personal and societal burden of IPV that warrants significant attention for researchers and policy makers.

Estimates of the prevalence of IPV vary. The ACOG (2012) indicates that IPV is most prevalent among reproductive age women, and that more than 30% of women in the United States have experienced IPV during their lifetimes. The United States Department of Justice indicates that over a lifetime more than 50% of women will experience IPV (Bachman & Saltzman, 1995). Gazmararian et al. (1996, 2000) estimated that between 0.9% and 20% of women experience physical violence during pregnancy, translating into as many as 324,000 women affected in the United States (CDC, n.d.). One prenatal care-based study reported that 4% to 26% of women

experience violence before pregnancy and 1% to 17% during pregnancy (Martin et al., 2006). When actual or threatened psychological or emotional abuse are included in IPV screening and reporting, numbers rise as high as 80% of pregnant women in some regions (Bailey & Daugherty, 2007). Differences in IPV prevalence rates are likely because studies vary greatly in respect to the survey methods and measurements employed (Martin, Mackie, Kupper, Buescher, & Moracco, 2001). True IPV prevalence rates are thought to be higher than documented because many victims are afraid or ashamed to disclose their IPV experiences (ACOG).

Unwanted pregnancies are a strong predictor of IPV (Martin & Garcia, 2011), and utilizing contraceptive methods is often more difficult for women who are experiencing IPV, leading to a higher incidence of unintended pregnancies (Gee, Mitra, Wan, Chavkin, & Long, 2009). IPV is associated with partner control over contraception, and with the number of pregnancies, and number of abortions. Whether intended or not, pregnancy may increase vulnerability to IPV due to heightened physical, social, emotional, and economic needs during pregnancy (Noel & Yam, 1992). Abuse can begin, continue, or even escalate as pregnancy progresses. Studies have documented that 40% to 80% of women who have experienced a history of violence continue to have IPV experiences throughout pregnancy (Martin et al., 2006; Martin et al., 2001; Stewart & Cecutti, 1993). It has been suggested that a pregnant woman has a 35% greater risk of experiencing IPV than a non-pregnant woman (Gelles, 1988).

Violence during pregnancy may be more common than other routinely screened maternal ailments, such as preeclampsia and gestational diabetes (Devries et al., 2010). IPV during pregnancy is a special concern, because there are potentially negative consequences to both the mother and her unborn child (McFarlane, Parker, & Soeken, 1995; Taillieu & Brownridge, 2010). The most drastic consequence of IPV is death of the mother and/or child. For example, in Massachusetts and Maryland, the leading cause of maternal mortality during pregnancy and the first year of a baby's life is homicide, with the majority of perpetrators being current or former intimate partners (Cheng & Horon, 2010; Horon & Cheng, 2001). IPV during pregnancy is implicated in many adverse maternal and fetal health complications, such as late entry into prenatal care, inadequate gestational weight gain, preterm birth, low birth weight, increased hospitalization and use of medications, increased substance abuse including tobacco, and maternal depression (Beydoun, Tamim, Lincoln, Dooley, & Beydoun, 2011; Brown, McDonald, & Krastev, 2008; Coker, Sanderson, & Dong, 2004).

The majority of IPV research examining adverse maternal and fetal complications has been focused on physical abuse. However, research using IPV measures that include multiple forms of IPV such as psychological or emotional abuse, has shown that non-physical abuse also predict negative outcomes for mother and child (Taillieu & Brownridge, 2010). This emphasizes the need to include non-physical abuse, such as psychological, emotional, or threat of abuse, in assessments.

In prenatal care settings, there are multiple opportunities to address the concerns of women and their unborn babies (D'Avolio et al., 2001), as prenatal care is obtained by a vast majority of women in the United States, even those who do not routinely have access to care at other times (Ventura, Martin, Curtin, & Mathews, 1999). Prenatal care may be the only opportunity for abused women to have contact with health care workers who can facilitate breaking the cycle of violence (Kearney, Haggerty, Munro, & Hawkins, 2003). After becoming pregnant, many

women become motivated to protect their unborn child and attempt to reduce exposure to or remove themselves from violent relationships (Mercer, 2004). Obstetricians and gynecologists and their staffs are in a unique position to assess and provide support for women who experience IPV because of the nature of the patient relationship, and the many opportunities for intervention that occur during the course of pregnancy or as part of other women's health visits (ACOG, 2012). While several recent reviews discuss screening measures for IPV (Bailey, 2010; Haggerty, Hawkins, Fontenot, & Lewis-O'Connor, 2011; Nelson et al., 2012a; Phelan, 2007; Rabin et al., 2009; Waltermaurer, 2005), this is the first review of which the authors are aware, that focuses on IPV screening measure evaluation for use in prenatal care settings.

Reference Standards for Intimate Partner Violence Screens

In order for IPV screens to be developed, reference standards used as criteria for determining accuracy measures for the reviewed screens include other, more established IPV measures, or interview questions, some of which were derived from IPV measures themselves. The reference standard, also known as the gold standard, is the measurement tool(s) or diagnostic criteria considered most accurate for diagnosing a condition, in this case IPV. Foremost among these comparative tools are the Conflict Tactics Scale (CTS) (Straus, 1979), the Index of Spouse Abuse (ISA) (Hudson & McIntosh, 1981), and the Composite Abuse Scale (CAS) (Hegarty, Sheehan, & Schonfeld, 1999).

Conflict Tactics Scale [CTS]. The CTS is the earliest and arguably the most utilized instrument to measure IPV. The CTS was revised in 1996 (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), and a short form of that revision was created in 2004 (CTS2S; Straus & Douglas, 2004). Compared to the original CTS, the CTS2 has improved content validity and reliability, revised wording to increase clarity, additional scales that measure sexual coercion and physical injury, and reported reliability ranging from an alpha of .79 to .95 (Straus et al.). The entire CTS2 contains 72 questions, half of which involve the frequency of occurrence of behaviors that pertain to the respondent, and half of which refer to the respondent's partner. Scales of the CTS2 include physical assault, psychological aggression, and sexual coercion and injury, with each of these scales containing minor and severe subscales. The majority of studies that have employed the CTS2 utilized the female responses to the questionnaire, 36 questions instead of the full 72. There are several different ways to score the CTS2, including overall prevalence and chronicity, and prevalence and chronicity in each of the scales and subscales. The majority of research does not use a cutoff score, but instead uses prevalence scoring by dichotomizing each of the questions to indicate either violence has or has not occurred for each of the scales (see Straus et al., 1996 for details on CTS2 scoring).

Index of Spouse Abuse [ISA]. The ISA is a 30-item scale that was designed for use in clinical settings to measure the presence and severity of both physical and non-physical abuse by a woman's spouse or partner (Hudson & McIntosh, 1981). Presence ratings range from 1 (never) to 5 (very frequently) on both physical abuse and non-physical abuse subscales. Items are weighted according to severity. As with the CTS2, there are no designed cutoff scores, however any item scored 2 or above indicates that abuse is present. High coefficient alpha reliabilities have been reported in diverse populations (Campbell, Campbell, King, Parker, & Ryan, 1994; Plazaola-Castaño, Ruiz-Pérez, Escribà-Agüir, Montero-Piñar, & Vives-Cases, 2011).

Composite Abuse Scale [CAS]. The CAS was designed to measure frequency and severity of physical, emotional, and sexual abuse (Hegarty et al., 1999). Selected items from the CTS (Straus, 1979), Psychological Maltreatment of Women Index (Tolman, 1989), ISA (Hudson & McIntosh, 1981), and Measure Wife Abuse (Rodenburg & Fantuzzo, 1993) were included in the CAS. Preliminary analysis of the 51-item CAS demonstrated high reliability and high content and criterion validity (Hegarty et al.). The CAS was reassessed in 2005 and the final scale included 30 items (Hegarty, Fracgp, Bush, & Sheehan, 2005). The 30-item CAS has a possible range of scores from 0 – 150, with individual items rated from 0 (never) to 5 (daily). The four subscales of “severe combined abuse,” “emotional abuse,” “physical abuse,” and “harassment,” demonstrated good internal reliability with Cronbach’s alphas $\geq .85$ (Wathen, Jamieson, & MacMillan 2008).

Although the CTS, ISA, CAS, and their modifications have well established validity and are useful as IPV research tools, they are impractical in many health care settings due to their length and administrative burden. As will be discussed, these instruments are often used as the reference standard when examining accuracy measures of IPV screens. The current review evaluated each of the IPV screens under consideration in terms of accuracy as reported in empirical literature.

Psychometric Characteristics of Intimate Partner Violence Screens

Many instruments have surfaced in the last 20 years designed to screen for various aspects of IPV in various populations (Haggerty et al., 2011; Waltermaurer, 2005). The focus of this analysis is to review tools that are useful for IPV screening in health care settings, specifically for pregnant women; therefore, in-depth IPV assessments, or those primarily used as research instruments, are not included.

There is currently no consensus on which screen is most useful for health care workers to identify IPV in a pregnant population. In 2004, the USPSTF rated six IPV screening instruments as *good* or *fair* in quality; in their 2012 systematic review update, 15 studies that evaluated the diagnostic accuracy of 13 screening instruments met their inclusion criteria as *good* or *fair* (see study for inclusion criteria) (Nelson et al., 2012b). While the increased number of adequate screening instruments is evidence that there have been advancements in the field of IPV research, there is a concern in having multiple assessments, as it is unknown which assessment is best for the purposes of screening in different populations. A decision must be made as to which instrument to employ. To assist with this decision, empirical evidence regarding the screening instruments from studies the USPSTF (Nelson et al.) recently identified as *good* or *fair* that would be appropriate to use in a prenatal care setting will be presented in this review. The screening instruments/questions discussed below are listed in Table 1 in chronological order.

Table 1. Brief Description of IPV Screen Characteristics

Screen	Sensitivity	Specificity	Reference Standards(s)	#Items	Setting Studied
Abuse Assessment Screen (AAS)	32% - 94%	55% - 97%	CTS, ISA, DA	5	prenatal care clinics ,maternity wards, family practices
Women Abuse Screening Tool (WAST)	47% - 88%	89% - 96%	CAS	8	family practices, community health centers, battered women's shelters
Women Abuse Screening Tool (WAST) short form	92%	100%	WAST	2	family practices/primary care, community health centers, battered women's shelters
Partner Violence Screen (PVS)	49% - 71%	80% - 95%	CTS, ISA	3	primary care clinics, emergency departments
Hurt, Insult, Threaten, Scream (HITS)	30% - 88%	88 - 99%	CTS, ISA	5	family practices/primary care, emergency departments (women & men)
Slapped, Threatened and Throw (STaT)	95% - 96%	37% - 75%	Interview; ISA	3	urgent care clinics, emergency departments
Ongoing Abuse Screen (OAS)	60%	90%	ISA	5	emergency departments (women & men)
Ongoing Violence Assessment Tool (OVAT)	86%	83%	ISA	4	emergency departments (women & men)
One personal safety question	9%	96%	CTS	1	family practice

Five questions with nongraphic language	40%	91%	CTS2	5	family practices
Humiliation, Afraid, Rape, Kick (HARK)	81%	95%	CAS	4	general practices
Secure, Accepted, Family, Even, Talk (SAFE-T)	54% - 85%	81% - 87%	PVS	3	emergency departments
Partner Screening Questionnaire (PSQ)	19 - 29%	91 - 93%	CTS2	3/20*	pediatric community clinic

* The full PSQ has 20 questions, with 3 questions specific to IPV

Note: Full screen name and reference information are listed below: Abuse Assessment Screen (AAS; McFarlane, Parker, Soeken, & Bullock, 1992)

Women Abuse Screening Tool (WAST; Brown, Lent, Brett, , Sas & Penderson, 1996)

Partner Violence Screen (PVS; Feldhaus, Koziol-McLain, Amsbury, Norton, Lowenstein, & Abbot, 1997)

HITS which is an acronym for Hurt, Insult, Threaten Scream (HITS; Sherin, Sinacore, Li, Zitter, & Shakil, 1998)

Slapped, Threatened and Throw (STaT; Paranjape & Liebschutz, 2003)

Ongoing Abuse Screen (OAS; Weiss, Ernst, Cham, & Nick, 2003)

Ongoing Violence Assessment Tool (OVAT; Weiss, Ernst, Cham, & Nick, 2003; Ernst, Weiss, Cham, Hall, Nick, 2004)

1 personal safety question (Peralta & Fleming, 2003)

5 questions using nongraphic language (Zink, Levin, Putnam, & Beckstrom, 2007)

Humiliation, Afraid, Rape, Kick (HARK; Sohal, Eldridge, & Feder, 2007)

Secure Accepted, Family, Even, Talk (SAFE-T; Fulfer, et al., 2007)

Partner Screening Questionnaire (PSQ; Dubowitz, Prescott, Feigelman, Lane, & Kim, 2008)

Definition and Calculation of Accuracy Measures

To be useful, a screening tool must be able to accurately and reliably identify the outcome of interest, in this case whether IPV has occurred or is occurring in the population of interest, pregnant women. In addition, screening instruments should be able to accurately rule out IPV in individuals who have not experienced IPV. The two most commonly used metrics of measure accuracy are sensitivity and specificity (Mandrekar, 2010). A *sensitive* measure identifies women who have actually experienced IPV. This is calculated by dividing the number of true positives (TP; those that experience IPV) by the sum of the number of true positives and false negatives (FN; those that did experience IPV, but were not correctly identified by the screen). A test with high specificity accurately identifies women who have *not* experienced IPV. Specificity is calculated by dividing the number of true negatives (TN; those who have not experienced IPV) by the sum of the number of false positives (FP; those that did not experience IPV, but were incorrectly identified as having experienced IPV by the screen) and true negatives.

Other measures of accuracy include positive and negative predictive values. For an IPV screen, the positive predictive value (PPV) is the percentage of women who screen positive (identified by the screen as having experienced IPV) among those who have actually experienced IPV. The negative predictive value (NPV) for an IPV screen is the percentage of women who screen negative (identified by the screen as *not* experiencing IPV) among those who have actually not experienced IPV.

Descriptions and Accuracy Measures of IPV Screens

Abuse Assessment Screen [AAS]. The five-item AAS was specifically developed for use during pregnancy (McFarlane et al., 1992). It is the oldest brief screening tool for IPV in use today. Questions assess the frequency of and perpetrator of physical, sexual, and emotional abuse, determining the presence or absence of abuse within a stated period of time (yes/no format), and the body sites of injury. It is considered positive for abuse if any of the questions are answered in the affirmative. There is a shortened version of three questions that can be used for non-pregnant women (McFarlane et al.). Content validity was established by a panel of 12 nurse researchers with extensive background in the field of IPV. Significant criterion related validity was established for the AAS when responses to the three questions were compared with the scores from the CTS, ISA, and Danger Assessment (DA) screen (McFarlane, Parker, Soeken, Silva, & Reel, 1998). Reported sensitivity of the AAS ranged from 93 to 94%, and specificity ranged from 55 to 99% using the CTS, CTS2, ISA, and interviews as reference standards in prenatal clinics (Rabin et al., 2009). Reichenheim and Moraes (2004) found the AAS to perform well when examining prevalence of severe IPV events with the AAS detecting 6.7% of severe cases and the CTS2 detecting 7.6% of severe cases. When using the CTS2 subscales as standards, sensitivity was 32% for minor violence, and 61% for severe violence, with all specificity greater than 97%.

Women Abuse Screening Tool [WAST]. The WAST was developed for use by family physicians and consists of eight questions that address emotional, physical, and sexual abuse (Brown et al., 1996). Each question has three possible responses that are scored as a 2 (a lot of tension, great difficulty, or often), a 1 (some tension, some difficulty, sometimes) or a 0 (no tension, no difficult, never) for a possible range of scores from 0 to 16. A score of ≥ 4 is

suggested to indicate exposure to IPV (MacMillan et al., 2006; Wathen et al., 2008). High reliability was demonstrated with a coefficient alpha estimated at .95 (Brown et al.). The WAST was moderately correlated ($r=.69$) with scores on the Abuse Risk Inventory, which is a 25-item self-report used to identify abused women, and a significant difference was found between abused versus non-abused women for each item (Brown, Lent, Schmidt, & Sas, 2000). Comparison to the CAS has yielded sensitivity from 47% to 88% and specificity of 89% to 96% in emergency departments, family practices, and women health clinics (MacMillan et al. 2006).

The WAST has been studied in a variety of populations including Hispanic (Fogarty & Brown, 2002), French (Brown, Schmidt, Lent, Sas, & Lemelin, 2001), and Malaysian (Yut-Lin & Othman, 2008), and has been found to have high reliability with a coefficient alphas between .91 and .95. Using a subset of items, questions number 5 and number 7 compared to the full 8-item WAST as the reference standard, the Spanish version of the WAST had a reported sensitivity of 89% and specificity of 94% (Fogarty & Brown, 2002).

The WAST short-form was created to have a more concise IPV screen, and it consists of the first two WAST questions that assess tension in the relationship, and how the respondent and her partner work out arguments for a possible range of scores from 0 to 4 (Brown et al., 2000). These two questions were chosen because women reported being most comfortable answering them (Brown et al., 1996). If there is an answer of “a lot of tension” or “great difficulty” to either of the two questions, the screen is considered to be positive for IPV (Chen et al., 2007). In the original 1996 study, the WAST-short correctly classified 100% of non-abused women (specificity) and 91.7% (sensitivity) of the abused women using the full WAST screen as the comparison standard. The WAST-short form was validated through comparison with the longer WAST tool in an urban family medicine practice, and had a Cronbach’s alpha of .8 (Chen et al.). The French version of the WAST-short form did not perform quite as well as the English version, but results supported further evaluation of using the WAST in this population (Brown et al., 2001).

Partner Violence Screen [PVS]. The PVS (Feldhaus et al., 1997) has three questions that measure past year physical violence (one question) and current perceived personal safety (two questions). A “yes” response to any of the questions constitutes a positive screen for IPV. Feldhaus et al. used the CTS and ISA as validation criteria for the PVS in two emergency departments, resulting in sensitivity ranging from 65% to 71%, specificity ranging from 80% to 84%, PPV ranging from 51% to 63%, and NPV ranging from 88% to 89%. The PVS detected 71.4% of women identified as experiencing abuse by the CTS and 64% of women identified as experiencing abuse on the ISA. The simple physical abuse question detected almost as many of the abused women as the entire 3-question screen with better specificity. Using the PVS, Houry et al. (2004) examined the relative risk of domestic violence during a four month follow up using the CTS as a reference standard. Relative risk for verbal aggression was 7%, and 11% for violence on both the entire PVS and the single physical violence question. More recently, using the CAS as a reference standard, sensitivity of 49%, specificity of 95%, PPV of 47%, and NPV of 94% were found for the PVS (MacMillan et al., 2006).

Hurt, Insult, Threaten, Scream [HITS]. The HITS is a 4-item self-report or clinician administered survey with Likert-type scale items ranging from 1 (never) to 5 (frequently) for possible scores from 4 to 20 (Sherin et al., 1998). The items ask how often their partner:

physically hurts them, insults or talks down to them, threatens them with harm, or screams or curses at them. Suggested cut off values for being classified as victimized are 10 or higher for women (Shakil, Donald, Sinacore, & Krepcho, 2005). Criterion-related validity has been shown using the HITS with women in family practices ($r=.85$), and adequate internal consistency with $\alpha=.80$ (Sherin et al.). The HITS correctly classified 96% of self-identified abused women and 91% of non-abused women with PPV of 87% and NPV of 97%. Similar to the WAST, the HITS was initially developed and tested for use in family practice offices, but has since been evaluated in more diverse settings. In 2005, Chen, Rovi, Vega, Jacobs and Johnson reported an internal consistency of the English and Spanish versions of the HITS with Cronbach's alphas of .76 and .61, respectively. When using the ISA as a reference standard, the sensitivity was 86% and specificity of 99% (Chen et al.).

Slapped, Threatened and Throw [STaT]. The STaT is a 3-item assessment used for IPV evaluation in emergency departments and urgent care clinics that asks if the respondent has even been in a relationship where: “your partner has pushed or slapped you,” “your partner threatened you with violence,” or “your partner has thrown, broken or punched things” (Paranjape & Liebschutz, 2003; Paranjape, Rask, & Liebschutz, 2006). One point is given for each “yes” response, and score of ≥ 1 on the completed screen is considered positive for IPV. Using a reference standard of lifetime IPV as determined by a semi-structured interview, the three-question screen had a sensitivity of 96% and specificity of 75%, indicating that these three questions, when used together, can assist clinicians in effectively identifying abused women. In 2006 the STaT was reassessed using the ISA as the comparison standard and found sensitivity of 94.9% and specificity of 36.6% for scores of ≥ 1 with PPV of 42.3% and NPV of 96.3% (Paranjape et al.).

Ongoing Abuse Screen [OAS]. The OAS was developed to evaluate ongoing IPV using five questions that address currently ongoing emotional, physical, and sexual abuse (Weiss et al., 2003). The OAS is designed to be a forced yes/no answer with the option of identifying the perpetrator as either husband/wife, ex-husband/ex-wife, boyfriend/girlfriend, stranger. The last question pertains to physical violence specifically during pregnancy. If any of the questions are answered as “yes” it is considered positive for ongoing abuse. Using the ISA as a reference standard, sensitivity of 60%, specificity of 90%, PPV 58%, and NPV of 91% were found. The OAS was three times more likely to detect ongoing violence (true positives) than the AAS in an emergency department sample (Weiss et al.)

Ongoing Violence Assessment Tool [OVAT]. Weiss et al. (2003) developed the OVAT in response to determining that the OAS screen was not psychometrically sound (Ernst, Weiss, Cham, Hall, & Nick, 2004). The OVAT contains four items assessing current abuse (in the last month), for both physical and nonphysical IPV, based on the questions chosen from the ISA with highest predictive values. Three questions utilize a true or false response set, and one question is a 5-point Likert-type question with responses from 1 (never) to 5 (very frequently). A score of *true* for any question, and/or answering *occasionally*, *frequently*, *very frequently* are considered a positive response for ongoing abuse. Using the ISA as a reference standard for the OVAT resulted in a sensitivity of 86%, specificity of 83%, PPV of 56%, and NPV of 96% in an emergency department sample (Ernst et al.).

One personal safety question. One personal safety question, “In the past 3 months did you feel safe at home?” was examined in a family medical clinic using a modified version of the CTS as the reference standard (Peralta & Fleming, 2003). Six CTS questions were used in an attempt to decrease intrusiveness of questions, and improve response rate by using a shorter questionnaire. The one personal safety question had low sensitivity (9%) and specificity of 96% with the modified CTS as reference standard. The modified CTS indicated that 44% of women in the sample experienced some form of violence (physical and/or psychological) in the previous 90 days, and of particular interest, despite experiencing violence, the majority of women (80%) reported feeling safe at home (Peralta & Fleming).

Five items with non-graphic language. Zink, Levin, Putnam, and Beckstrom (2007) developed five general domestic violence items with non-graphic language so that they could be administered with children present in a family practice setting. The questions were chosen and compiled using items from four other questionnaires; the two questions on the WAST short form (Brown et al., 2000), a question on how the partner treats the respondent and her children, which was suggested for inclusions by qualitative work (Zink & Jacobson, 2003), the current relationship safety question from the PVS (Feldhaus et al., 1997), and a more general safety question from Koziol-McLain’s screen for partner violence against women (Peralta & Fleming, 2003). Using the CTS2 as the standard, sensitivity was 40%, specificity was 91%, PPV was 38%, and NPV was 92% (Zink et al.).

Humiliation, Afraid, Rape, Kick [HARK]. The HARK is a 4-item self-report (yes/no) IPV screen adapted from the AAS (Sohal, Eldridge, & Feder, 2007). It differs from the AAS in that the HARK is entirely focused on IPV. In other words, it does not include violence committed by a non-intimate partner. Emotional and physical violence are separated into two questions instead of being contained one, as is presented on the AAS. The pregnancy-specific item was removed from the AAS, so that it could be used for all women, and the word “humiliation” was used, because it was thought to be in plainer English and more encompassing than “emotional abuse” (Sohal et al.). One point is given for every “yes” answer, and a score of ≥ 1 is considered positive for IPV. Using the CAS (Hegarty et al., 1999) as a reference standard, sensitivity and specificity of 81% and 95%, respectively were reported, with a PPV of 83% and a NPV of 94%.

Secure, Accepted, Family, Even, Talk [SAFE-T]. The SAFE-T screening instrument was designed to detect IPV by using indirect questions in an attempt to increase disclosure rates (Fulfer et al., 2007). The authors identified five out of 18 items studied that clearly distinguished victims of IPV from a random group of health conference attendees with a sensitivity of 85% and a specificity of 87%. The five questions ask about the relationship with the partner using the terms: “secure at home”, “accepted by partner”, “family likes partner”, “even disposition of partner”, and “talks with partner to resolve differences” on a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). A screen was considered positive for IPV if one or more of the five items had a response of *strongly disagree* or *disagree*. The five items were then tested on 435 women presenting to three emergency departments, and the results were compared to one direct question regarding current abuse on the PVS (Fulfer et al.). Using the PVS as the reference standard, sensitivity and specificity of the SAFE-T questions were 54% and 81%, respectively.

Partner Screening Questionnaire [PSQ]. The PSQ is a 20-item yes/no questionnaire that asks three questions specifically about partner violence: physical violence, afraid of partner, and

thought about getting a court order for protection (Dubowitz, Prescott, Feigilman, Lane, & Kim., 2008). Using CTS2 as the reference standard, sensitivity and specificity for physical assault were 19% and 93%, for injury 29% and 91%, and for psychological aggression 27% and 92%, respectively (Dubowitz et al.). Positive and negative predictive values for physical assault were 63% and 63%, for injury 38% and 87%, and for psychological aggression 46% and 83%, respectively.

Intimate Partner Violence Screens in Prenatal Health Care Settings

The main goal of an IPV screen in a prenatal care setting is to quickly and effectively identify all women who have recently experienced, or are at risk of experiencing violence. To accomplish this goal, four main IPV screening characteristics are presented for consideration: psychometrics, efficiency, comprehensiveness, and validation in the population/setting of interest. See Table 1 for an overview of characteristics of the reviewed IPV screens.

As mentioned, a primary consideration when choosing an IPV screen is the accuracy of the screen. Data on sensitivity, specificity, and predictive value of IPV screening measures are very limited; especially in pregnant populations. Maximum sensitivity is paramount to ensure cases of IPV are not missed. It is acceptable to have a higher potential for over identification than under identification, because interventions can only happen if women are positively identified. An issue of concern for all screens is whether the comparison measures used in the studies are appropriate, because none of these measures are free from error (Haggerty et al., 2011). For example, even the more highly regarded reference standards, such as the CTS and ISA, are based on self-reports, and they may fail in distinguishing actual abuse, suspected abuse, or risk factors for abuse (Haggerty et al.). As seen in Table 1, sensitivity of the IPV screens are considerably varied (9% to 96%) overall, and within the same screen, when using different reference standards.

A second consideration when choosing a screen is efficiency of administration. Health care workers state that the most common barrier to screening for IPV is a lack of time available to screen (Bailey, 2010), therefore an IPV screen should be capable of being administered quickly and efficiently. Not only does an IPV screen need to be brief, it should be easy to administer and interpret (Phelan, 2007). Consequently, a screen that has many questions, is time consuming to score, or has ambiguous wording, is undesirable for use in prenatal care settings. All of the reviewed screens excluding the full 30-item PSQ were relatively brief, with the 8-item WAST being the longest and the one-question safety inquiry being the shortest. A screen cannot identify IPV if it is not administered, and although routine screening is recommended, many physicians and other health care workers fail to consistently screen women for IPV (Rabin et al., 2009). A further element that contributes to the utility of a screen is its title. Having a violence-suggestive acronym such as “HITS” as a title may assist in prompting more widespread routine screening.

A third consideration for IPV screen choice is the ability to measure different types of IPV, not just physical violence. Physical, psychological, sexual, and threat of abuse have immediate and long term negative consequences during pregnancy, and beyond, for both mother and child (Taillieu & Brownridge, 2010), and therefore an IPV screen should be comprehensive in addressing the different forms of IPV. Several of the screens (e.g., the WAST, the HARK)

specifically address the different types of IPV, while other screens (e.g., the PVS, the SAFE-T) allude to IPV by discussing feelings of safety.

A final consideration for IPV screen choice for use with pregnant populations is that an IPV screen should ideally be well-validated in that population and setting, and include women from diverse backgrounds. The AAS is the only screen designed specifically for use in a pregnant population and in prenatal care settings; however other screens have been tested in similar settings, such as family practice facilities and/or primary care settings that would likely be comparable to prenatal care clinics, although differences in settings should be examined.

The four characteristics described above are general encompassing guidelines for IPV screen consideration, and are not suggested to be an exhaustive list of criteria. Each screen previously described will be evaluated for use in prenatal care clinics based on their psychometric properties, efficiency, comprehensiveness, and population/setting studied.

Abuse Assessment Screen. Reichenheim and Moraes (2004) recommended that the AAS not be used as a standalone assessment because of its failure to identify two thirds of women who experienced minor violence, and one third of women who experienced severe forms of violence during pregnancy. The AAS is most sensitive to major forms of physical violence; although, it has been suggested that minor additions to the wording, such as “push,” “shove”, and “choking” would capture more minor violent events and increase diagnostic accuracy of the AAS (McFarlane et al., 1998). If answering “yes” to any of the questions on the AAS is considered as positive for IPV, the AAS identified 54% women as positive for IPV, while the reference standard ISA identified 19% of women positive for IPV, showing that in some instances of having high sensitivity, many false positives were yielded (Weiss et al., 2003).

Using five questions, the AAS failed to clearly distinguish between the different types of violence that may be experienced during pregnancy, and the wording of the questions can be confusing for some women (Weiss et al., 2003). Sohal et al. (2007) concluded that it was not sensible to use the AAS as a screening tool until more evidence was gathered about its effectiveness in identifying abused women. Although the main advantage of using the AAS is that it is the only screen validated in pregnant women, its wide range of reported accuracy metrics currently do not warrant recommendation for use.

Women Abuse Screening Tool. The WAST is the longest screen discussed, at eight questions. The length of the WAST, along with Likert-type scoring, may be too burdensome to administer in some health care facilities. The WAST does specifically cover all four recognized types of IPV. The WAST-short form was found to identify a higher proportion of IPV positive women than the HITS, perhaps because of the more descriptive wording and answer choices of the WAST-short form (Chen et al., 2007). The best evidence for accuracy comes from comparison between the long and brief versions of the WAST, but, there is a methodological concern with using the WAST as the reference standard for the WAST-short form without more information on the effectiveness of the original WAST tool. The WAST-short form does not directly address specific types of IPV. The WAST and WAST-short form have been examined in diverse settings with a wide range of psychometrics found. The WAST-short form is not recommended for use in prenatal care clinics because there is not substantial information regarding its effectiveness in

pregnant populations, though, the full-length WAST is tentatively recommended because it covers all forms of IPV and has been utilized in diverse settings.

Partner Violence Screen. The PVS was not a particularly sensitive screening tool when compared to the psychological and physical subscales of the CTS2 (Mills, Avegno, & Haydel, 2006) or the CAS (MacMillan et al., 2006). Comprised of three questions, it is a very brief screening tool. On the PVS, the single-item physical violence question performed almost as well at detecting physical violence as the entire three-question screen, indicating perhaps all three questions were not necessary, at least for physical violence only detection (Feldhaus et al., 1997). The PVS specifically evaluates physical violence, but the other two questions relate to feelings of personal safety, and do not clearly encompass the other forms of IPV. The PVS has been evaluated in primary care clinics and emergency departments. The disadvantages of this screen, such as low sensitivity and exclusion of all forms of IPV, outweigh the advantage of conciseness; thus the PVS is not recommended for use in prenatal care settings.

Hurt, Insult, Threaten, Scream. Similar to the PVS, the HITS did not have high sensitivity when compared to the psychological and physical subscales of the CTS2 (Mills et al., 2006). Much higher sensitivity was found examining women's responses in family practice settings. The HITS screen is brief at four questions, and gives more detail about the severity of abuse using a Likert-type response. This slightly increases the amount of time it takes to score the assessment, although there are established cut off points for classification of abuse. Any response other than *never* on any question could trigger a more in-depth IPV inquiry. The HITS examines physical and non-physical forms of IPV, although sexual abuse is not specifically included on the screen. An advantage of the HITS as the screen name is a useful acronym to assist prenatal care providers in its administration. In 2003, Punkollu recommended the HITS as a good IPV screen for women, but suggested that it needed testing in more diverse populations. Since then, the HITS has been examined in women from more diverse populations, and was found to perform well in identifying women who had experienced IPV (Chen et al., 2005). There is a balance between advantages and disadvantages to using the HITS in prenatal care setting, and at this time it is tentatively recommended for use. Its primary limitations are the time it takes to score and interpret, and the lack of a specific sexual abuse question.

Slapped, Threatened and Throw. The STaT had the highest sensitivity compared to the other described screens. STaT was tested in urban clinical sites with largely African American populations (Paranjape et al., 2006). Results on STaT differ depending on the reference standard used (Paranjape & Liebschutz, 2003; Paranjape et al.; Peralta & Fleming, 2003). The use of an unstructured interview as an untested reference standard was initially a concern (Paranjape & Liebschutz, 2003); however, a reassessment in 2006 using the ISA had a similar sensitivity but much lower specificity (Paranjape et al.). Its high sensitivity, brevity (three yes/no questions), and usability to detect both lifetime and recent IPV, make the STaT appealing to use as prenatal screen. Specificity and PPV were modest, and by using a stringent cutoff point of ≥ 1 risks including women who had not experienced IPV. The STaT specifically covers physical violence and threat of violence, but does not clearly address psychological, emotional, or sexual abuse. STaT is a good tool to use for physical violence screening, but is not recommended for use in prenatal care clinics, because it does not cover all recognized forms of IPV, and would likely not perform well at identifying non-physical and sexual abuse victims.

Ongoing Abuse Screen and Ongoing Violence Assessment Tool. Because the OVAT was created and found to be a better performing screen than the OAS, the OAS is not recommended as an IPV screen. The OVAT performed better at accurately identifying IPV than OAS or AAS with sensitivity as high as 93%, although the PPV was not high (Ernst et al., 2004; Weiss et al., 2003). It is a brief screen at four questions, though not all of the questions are dichotomous responses, slightly increasing the scoring complexity. The OVAT's primary purpose is to identify currently ongoing violence, by strictly defined violence that has occurred within the past month. Using only the past month as an indicator of violence may not be the ideal time frame to use in a prenatal care population as violence at any time during pregnancy has potential harmful consequences. The OVAT does specifically address threat of violence, severe physical abuse, and psychological abuse, but not sexual abuse. Using a Likert-type question, a score of ≥ 3 qualifies as psychological abuse and may have contributed to the high number of false positives (Ernst et al., 2004). Another disadvantage is the OVAT has only been examined in a single emergency department, which could have led to biased screening. Until further evaluation of the OVAT's usability in diverse settings and populations, it is not recommended for use in prenatal care settings.

One personal safety question. Using one personal safety item had the lowest sensitivity, 9%, and many false negatives, which are of significant clinical concern (Peralta & Fleming, 2003). Although using a single question seems appealing in a setting in which patient contact time can be brief, research suggests that a single question does not facilitate accurate disclosure (Rabin et al., 2009). Peralta and Fleming (2003) suggested that a screen using two to three questions including at least one question specific to physical violence, such as that recommended by Feldhaus et al. (1997), would yield much better accuracy. Peralta and Fleming also point out that there is little utility in using a safety question to determine the presence of IPV and their results suggested that many women currently in abusive relationships did not consider their home environments as *unsafe*. However ethnic and racial differences were discovered in identifying IPV, which highlights the need for verification of accuracy of IPV screens in diverse populations (Peralta & Fleming). Using a single personal safety question to identify IPV is not recommended for use in prenatal care settings.

Five items with non-graphic language. While Zink et al. (2003; 2007) acknowledged that non-graphic questions yielded low sensitivity, the researchers pointed out that physicians may be more likely to ask these questions instead of more direct questions in order to minimize discomfort of the clinician and patient, especially if children are present. With the use of written self-reported screens and computer inquiries, this may only add benefit in cases where women are unable to read or understand the wording of the questionnaire. Instead of using indirect questioning about feelings of safety, the majority of women are supportive of direct questions regarding IPV by health care professionals, as long as they are completed in a compassionate and confidential manner (Feder, Hutson, Ramsay, & Taket, 2006). Using the questions as presented by Zink et al. (2007) is not recommended as an IPV screen in prenatal care settings.

Humiliation, Afraid, Rape, Kick. The HARK screen, which was adapted from the AAS, had moderately high sensitivity and high specificity using the CAS as reference standard (Sohal et al., 2007). The HARK had the highest PPV of all the reviewed screens at 86%, and can be quickly scored. Like the HITS, the HARK acronym may aid in increasing the likelihood of health care professional to screen for IPV. "HARK" is a mnemonic acronym meaning "to listen

attentively” and stands for *Humiliation, Afraid, Rape, and Kick*, which encompasses all four of the recognized types of IPV. The HARK has comparatively better external validity than many of the reviewed screens, because it was conducted in a range of practices with a study population of varied ethnicity. The HARK is recommended for use as an IPV screen in prenatal care settings because of its overall performance on the four described characteristics.

Secure Accepted, Family, Even, Talk. The SAFE-T questionnaire, which uses indirect questions, is most useful for ruling out IPV, particularly in emergency departments (Fulfer et al., 2007). Sensitivity was low or modest and was tested using questionable reference standards. While SAFE-T is an appropriate and a memorable acronym, the questions used do not directly address any specific type of IPV, but instead focus on feelings of safety. It is not likely useful in detecting abuse early in a relationships, especially in a prenatal care clinic. As with other IPV screens that use safety-oriented questions, instead of direct physical or non-physical IPV questions, the SAFE-T is not recommended for use in prenatal care settings.

Parent Screening Questionnaire. Like the SAFE-T, the PSQ had low sensitivity and did not perform well in identifying more minor forms of violence. The PSQ is a long measurement at 20 questions, and although 3 questions are specific to IPV, the utility of the 3 questions alone as an IPV screen was not assessed. The PSQ fails to address sexual or psychological abuse, and has only been examined as IPV identification in a pediatric care clinic. Many mothers who were experiencing IPV were not identified by the PSQ (Dubowitz et al., 2008), consequently the PSQ is not recommended for use in a prenatal care setting.

Limitations

A few limitations should be kept in mind when interpreting the results from this review. First, research and data were abstracted by one reviewer which may have introduced reviewer bias. Additionally, not all possible sources of information were searched, such as internet-based or unpublished sources. Because the current scope of the study was constrained to the USPSTF recommendations (Nelson et al., 2012b), other IPV screens not discussed in the current review may be useful in prenatal care settings, and should be examined in future research. This review also does not examine the empirical evidence evaluating different methods of, and barriers to, implementing IPV screens in prenatal care settings, which may influence which IPV screen(s) should be utilized (Waalén, Goodwin, Spitz, Petersen, & Saltzman, 2000).

Recommendations

Screening for IPV involves the use of imperfect instruments for identifying those likely to be current, former, or potential victims of IPV. The HITS and the WAST with their higher sensitivity, coverage of physical and non-physical forms of IPV, and previous use with diverse populations/settings show promise for use in a pregnant population and prenatal care setting. While the AAS is currently the most commonly used IPV measure during pregnancy, it is not currently recommended primarily because of wide variations in sensitivity and word choice. More information on newer forms of the AAS with updated wording/format needs to be examined before reconsidering it for recommended use. Screens that use indirect or safety-oriented questioning had the lowest sensitivity, and, in agreement with previous literature, are

not recommended as being useful in identifying IPV in a prenatal care setting. These include the one personal safety question, SAFE-T, and the PSQ.

Although no single screen stood out as exemplary, the HARK (Sohal et al., 2007), balances efficacy, ease and quickness of scoring, clarity in covering the four recognized types of IPV, and is based on a screen that has been frequently used to assess IPV in a prenatal care setting and pregnant populations, the AAS. The major disadvantage of using the HARK is that only a single study has examined its psychometric properties and found a sensitivity of 81%, indicating some women who had experienced IPV, as identified by the CAS, were not identified by the HARK screen. We suggest that more research is needed on the specificity, sensitivity, PPV, and NPV of the discussed and recommended IPV screens is needed in diverse pregnant populations to confirm whether screens such as these are appropriate for clinical screening purposes in prenatal settings.

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