Does Physical Intimate Partner Violence Affect Sexual Health?: A Systematic Review

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DOES PHYSICAL INTIMATE PARTNER VIOLENCE AFFECT SEXUAL HEALTH?

A Systematic Review

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Forty years of published research (1966-2006) addressing physical intimate partner violence (IPV) and sexual health was reviewed (51 manuscripts) and synthesized to determine (a) those sexual health indicators for which sufficient evidence is available to suggest a causal association and (b) gaps in the literature for which additional careful research is needed to establish causality and explain mechanisms for these associations. Sexual health was defined as a continuum of indicators of gynecology and reproductive health. IPV was consistently associated with sexual risk taking, inconsistent condom use, or partner nonmonogamy (23 of 27 studies), having an unplanned pregnancy or induced abortion (13 of 16 studies), having a sexually transmitted infection (17 of 24 studies), and sexual dysfunction (17 of 18 studies). A conceptual model was presented to guide further needed research addressing direct and indirect mechanisms by which physical, sexual, and psychological IPV affects sexual health.

Key words: *spouse abuse; partner violence; unsafe sex; contraception; sexually transmitted infections; urinary tract infections; sexual health; cervical neoplasms; infertility; pelvic pain; hysterectomy; review*

INTIMATE PARTNER VIOLENCE (IPV) is widely recognized as one of the leading causes of poor health, disability, and death among reproductive-age women. Studies indicate that two thirds of women killed by their intimate partner sought medical care in the year prior to their murder (Sharps, Koziol-McLain, Campbell, McFarlane, & Sachs, 2001). IPV rates are high among women seeking medical care (lifetime prevalence of 44%; 15% currently experiencing IPV; Thompson et al., 2006); both physical and psychological IPV have significant mental, physical, sexual, and social consequences (Campbell, 2002; Campbell & Lewandowski, 1997; Coker et al., 2002; Coker, Smith, Bethea, King, & McKeown, 2000; McNutt, Carlson, Persaud, & Postmus, 2002); and as duration of IPV increases, so too does symptom severity (Bonomi et al., 2006).

The World Health Organization (WHO, 1946) defines *well-being* to include physical, mental, and social health and not merely the

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KEY POINTS OF THE RESEARCH REVIEW

Sexual Health Indicator	*Summarized Evidence for an Association With Physical IPV*	*Interpretation*
Sexual risk-taking behaviors (i.e., inconsistent condom use, sexual risk taking of women and partners, and partner nonmonogamy)	Twenty-three of 27 studies found a significant association. Women experienced physical IPV were more likely to report sexual risk-taking behaviors for themselves or their partners.	Strong consistent evidence that physical IPV affects sexual risk-taking behaviors.
Sexually transmitted infections (STIs)	Thirteen of 16 studies found a significant association. Sexual IPV was more strongly associated with STI risk than was physical IPV.	Strong consistent evidence that physical IPV affects risk of ever having an STI; limited evidence for current IPV and current STI risk.
Unwanted pregnancy/induced abortions	Seventeen of 24 studies found a significant association.	Strong consistent evidence that physical IPV affects risk of unwanted pregnancy/ induced abortion.
Sexual dysfunction (pain disorders)	Seventeen of 18 studies found a significant association.	Strong consistent evidence that physical IPV affects sexual dysfunction, particularly chronic pelvic pain.
Other gynecologic conditions (infertility, endometriosis, cervical neoplasia, menstrual irregularities, hysterectomy)	Mixed evidence for these associations.	Additional etiologic research is needed to better understand the role of physical and sexual IPV on these gynecologic health outcomes.

absence of disease. In this review, I borrowed this definition of health and applied it specifically to sexual health as the absence of specific diseases such as sexually transmitted infections (STIs), unwanted pregnancy, pain during menses or intercourse, menstrual irregularity, endometriosis, or vaginal bleeding. I further expanded the definition of sexual well-being by including the role of sexual expression to enhance life and personal relations through mutually pleasurable sexual relationships and reproductive choices. Indicators of sexual well-being included sexual satisfaction or pleasure as well as indicators of sexual risk-taking behaviors of the women or her partner, such as inconsistent condom use, partner nonmonogamy, and multiple sex partners.

A growing literature includes studies addressing the role of IPV in affecting poor sexual health. The purpose of this systematic review is to summarize reports from recent analytic or experimental research that addressed the potential role of IPV in sexual health. Although IPV has been characterized by physical, sexual, and psychological abuse, the focus of this review will be on physical IPV and its effect on sexual health and well-being. The justification for this approach is that a literature does exist that describes the sexual health effects of sexual abuse, which may or may not be in the context of an intimate relationship. No systematic review has focused on the sexual health effects of violence or abuse in an intimate relationship. The focus on physical violence in intimate relationship as the primary inclusion criteria is based on the practical matter that, historically, IPV has been defined primarily based on physical violence. Thus, focusing on physical violence is useful to have a body of research to review in addressing the sexual health effect of IPV. This restriction is not meant to minimize the potential health effects of psychological abuse or other forms of IPV.

Biopsychosocially, how might IPV affect sexual health? Figure 1 is a simplified model depicting proposed routes by which IPV (sexual, physical, or psychological) may affect sexual health, either directly or indirectly, depending on the specific indicator of sexual health. Although the focus will be on physical IPV, the direct and indirect route by which other forms of IPV may influence sexual health are presented as many IPV victims experience more than one form of IPV. This model ignores

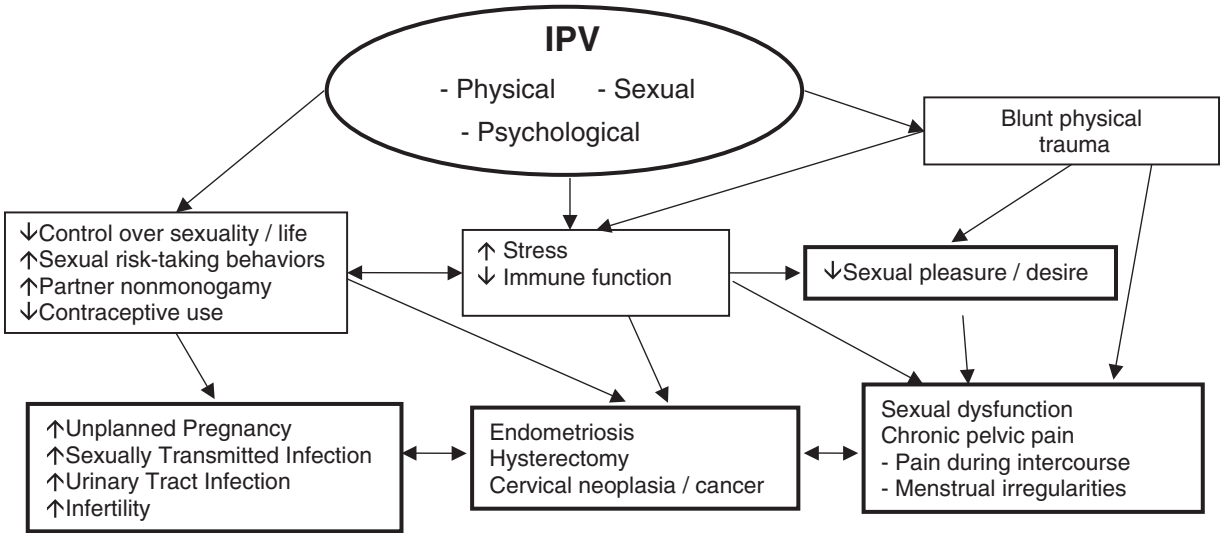

Figure 1: Mechanism for the Role of IPV Affecting Sexual Health

those risk factors that may increase risk of IPV and may also increase risk of poor sexual health (e.g., child sexual abuse, violence or abuse between parents, cultural practices influencing marital age, genital cutting, or gender equality).

IPV may influence sexual health directly through blunt physical trauma. This may be particularly true for physical or sexual IPV. Physical IPV may reduce sexual pleasure or desire, which may in turn influence sexual dysfunction. For this review, two indicators of sexual dysfunction were included: (a) sexual desire, pleasure, or satisfaction; and (b) sexual pain disorders, including pelvic pain, independent of the cause. Physical trauma from chronic sexual or physical assaults may directly result in unexplained chronic pelvic pain, pain during intercourse or menstrual bleeding or other menstrual irregularities, infertility, or, eventually, hysterectomy. The American Foundation of Urologic Disease (AFUD) classifies the American Psychological Association's criteria for female sexual dysfunction into four categories: hypoactive sexual desire disorder, sexual arousal disorder, orgasmic disorder, and sexual pain disorders, including vaginismus and dyspareunia. Sexual pain disorders can be caused by abdominal disorders including chronic pelvic inflammatory disease, endometriosis, and gastrointestinal disorders including irritable bowel syndrome, that have been linked with IPV (Coker, Smith, et al., 2000; Drossman et al., 1990; Leserman, Li, Drossman, & Hu, 1998). Pain during intercourse or with menses may be caused by arousal disorders characterized by lack of sexual desire, anxiety, depression, or psychological or physical trauma. Other physiological causes of sexual pain include urologic, uterine, ovarian, vaginal, or vulvar disorders.

Chronic IPV is characterized by loss of power or control in one's life (Smith, Tessaro, & Earp, 1995). IPV can influence women's ability to control their own lives and to make informed decisions regarding when and how to express themselves sexually, whether and when to use contraception, and whether to become pregnant. Abusive partners may have multiple sex partners outside the relationship, which may include both commercial or other consensual relationships. With limited control over when to have sexual intercourse, how to ensure safe sex, and little knowledge or control over partner monogamy, women's sexual pleasure may be attenuated. In addition, limited control over sexuality or contraception and partner nonmonogamy may influence rates of unplanned pregnancy and STIs or urinary tract infections (UTIs). Repeated STIs may result in infertility. Access to barrier methods of contraception

may also be influenced by violent or abusive partners, particularly if male barrier methods are the only forms available. High-risk human papillomavirus infection (sexually transmitted) is an etiologic agent for cervical neoplasia and cancer (Franco, Rohan, & Villa, 1999); thus, IPV may be associated with cervical neoplasia and cancer because of persistent HPV infection resulting from risk behaviors that characterize many abusive partners (e.g., partner nonmonogamy, control over partner's sexual safety behaviors).

IPV is well known to influence psychological stress and result in depression, anxiety, and posttraumatic stress disorder. IPV may indirectly affect these same outcomes through increasing stress, which in turn may affect immune function. Psychological health can influence immune function (Cohen, 1988; Cohen, Doyle, & Skoner, 1999; Hilakivi-Clarke & Dickson, 1995; Kiecolt-Glaser, 1999; Leserman, Petitto, Perkins, & al., 1997). Physical, sexual, and psychological IPV are known to influence perceived stress, anxiety, and depression rates (Bonomi et al., 2006; Campbell, 2002; Campbell & Lewandowski, 1997; Coker et al., 2002). Increased stress may also influence sexual dysfunction, cervical neoplasia risk, endometriosis, or infertility rates.

METHOD

A systematic approach to all literature was used to identify original research addressing IPV as the exposure and sexual health as the outcome. This review included academic, peer-reviewed sources from the following databases: Medline, Pubmed, Science Direct, Medline-Ovid, and PsychInfo from 1966 to 2006. The following search terms used were to define IPV: "spouse abuse" or "partner violence." Searches were performed in the titles, subject, abstract, and as keywords or subject-word headings of all manuscripts in these databases.

The WHO definition of well-being and health was used to guide an operational definition of sexual health (WHO, 1946). Sexual health indicators may include the following outcomes: genital injury, control over sexuality and contraception, lack of sexual pleasure, partner nonmonogamy, menstrual irregularity, chronic pelvic pain, STIs, UTIs, infertility, cervical neoplasia or cancer, unplanned or unwanted pregnancy, induced abortion, negative pregnancy outcomes (e.g. low birth weight, preterm births, fetal death), fibroids or leiomyomas, or hysterectomy. The following search terms were used to define sexual health: "sex or unsafe sex," "carcinoma, squamous cell or cervical intraepithelial neoplasia or carcinoma in situ or uterine cervical neoplasms or papillomavirus infections or papillomavirus, human," "chlamydia infections or sexually transmitted diseases or gonorrhea or Hepatitis B," "infertility, female or infertility," "female circumcision," "pregnancy complications or female genital diseases," "hysterectomy," "pelvic pain or endometriosis," "leiomyoma," "amenorrhea or menstrual cycle or menstruation disturbances or polycystic ovary syndrome or anovulation," "postcoital contraception, barrier contraception, or immunologic contraception, or contraception behavior," "abortion," or "urinary tract infections." In addition, reference lists from articles identified were also reviewed for inclusion of additional articles.

To develop a comprehensive review, I included articles published from the year January 1966 to August 2006 regardless of whether they had been included in past reviews. The outcome of interest for all articles reviewed was sexual health. In addition, all articles included in the review had to address physical IPV as the exposure with sexual health as the outcome.

IPV, defined as chronic physical violence of a female by a male partner, was the exposure for this review. Other forms of IPV may co-occur with physical IPV. Because other reviews in this issue will address IPV and human immunodeficiency virus (HIV) risk and recent reviews have addressed abuse during pregnancy and pregnancy outcomes, I have excluded these specific sets of indicators of sexual or reproductive health outcomes in this review.

A total of 135 manuscripts were identified in the electronic search. Because the focus of this review was IPV and sexual health, I excluded 18 manuscripts that did not address IPV as the exposure of interest, 17 that did not include sexual health as the exposure, and 7 in which

HIV was the outcome. Also excluded were 17 review papers and 14 case reports, commentaries, letters, news reports, or studies with fewer than 50 subjects. Articles that used qualitative methodologies were excluded (n = 11) because this review seeks to quantitatively determine whether IPV affects sexual health. Fifty-one articles remained.[1] Tables 1 through 7 summarize the study setting, sample size, study design, results, and potential biases of the 51 quantitative articles defined as a study analyzing data using statistics that reported a p value for evaluating associations between IPV and sexual health by specific outcome. The studies are arranged alphabetically by the first author's last name and presented in groups by the sexual health outcome.

RESULTS

IPV and Sexual Risk-Taking Behaviors

Of 10 studies (Bauer et al., 2002; Champion et al., 2001; Coker, McKeown, et al., 2000; Collins et al., 2005; El-Bassel et al., 1998; Silverman et al., 2001; Sormanti et al., 2004; Tucker et al., 2004; Weinreb et al., 1999; Wu et al., 2003) addressing IPV victimization and sexual risk-taking behaviors of the woman or her partner, 8 noted a statistically significant increase in risk behaviors in women (Champion et al., 2001; Coker, McKeown, et al., 2000; Collins et al., 2005; Silverman et al., 2001; Weinreb et al., 1999) or their male partners (El-Bassel et al., 1998; Sormanti et al., 2004; Wu et al., 2003) relative to nonvictims. Although Tucker et al. (2004) did not find that abuse was associated with greater sexual risk taking, abused women were less able to refuse sex. In the prospective analysis for this same study, IPV status was associated with a reduced risk of having unprotected intercourse. The author notes, however, that this finding may be explained by the increasing likelihood that abused women relative to nonabused women changed partners during follow-up.

IPV and Condom Use

Inconsistent condom use can also be viewed as a marker of sexual risk taking. Of nine studies addressing IPV and condom use (Bauer et al., 2002; Bogart et al., 2005; Collins et al., 2005; Garcia-Moreno et al., 2006; Hamburger et al., 2004; Raj et al., 2004; Rickert et al., 2002; Wingood et al., 2001; Wu et al., 2003), seven found than IPV victimization was associated with inconsistent condom use (Bogart et al., 2005; Collins et al., 2005; Hamburger et al., 2004; Rickert et al., 2002; Wingood et al., 2001; Wu et al., 2003) or partner refusing to use condoms (Garcia-Moreno et al., 2006). All three prospective studies found IPV status to be associated with inconsistent condom use (Bogart et al., 2005; Collins et al., 2005; Hamburger et al., 2004). Rickert et al. (2002) also found that IPV was associated with reduced use of hormonal contraceptives. Two studies reported that IPV victimization was associated with fear of partner response when negotiating condom (safe sex) use (Raj et al., 2004; Wingood et al., 2001) and greater male control over sexuality (Raj et al., 2004).

IPV and Partner Nonmonogamy

Another indicator of sexual risk taking is partner nonmonogamy. Abused women may be more likely to have partners who are not monogamous and to be nonmonogamous themselves. All eight studies that addressed IPV and partner nonmonogamy (Bauer et al., 2002; Coker, McKeown, et al., 2000; Collins et al., 2005; Martin, Kilgallen, et al., 1999; Parish et al., 2004; Raj et al., 2004; Wingood et al., 2001; Wu et al., 2003) found an association. Furthermore, Parish et al. (2004) noted that women and men who were "hit hard" were most likely to report nonmonogamy. In the only prospective study to address this association, Collins et al. (2005) found that physical IPV victims were more likely to have more sex partners.

IPV and Sexually Transmitted Infections

Of 23 studies addressing IPV and STIs,[2] 17 found that either lifetime IPV (Aubenbraun et al., 2001; Campbell et al., 2002; Champion et al., 2004; Coker et al., 2004; Coker, Smith, et al., 2000; El-Bassel et al., 1998; King, Britt, McFarlane, & Hawkins, 2000; Martin, Kilgallen,

(text continues on p. 169)

TABLE 1: Descriptions and Findings of Original Research Addressing IPV and Sexual Risk-Taking Behaviors

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Bauer et al., 2002	409 women; sampled from STI clinics; cross-sectional design; United States (USA)	96%	25% physically abused; 11% abused in past 12 months	Neither past nor recent IPV associated with increasing number of partners in past 3 months.	Small ss (–) Cross-sectional (–) Excellent response rate (+) Clinic based (–) STI confirmed (+) Multivariate analysis (+)
Champion et al., 2001	617 Mex Am/Afr Am women; recruited from public health clinics; all with current nonviral STI; cross-sectional design within ongoing RCT; USA	65%	32% lifetime sexual abuse (not clear whether physical IPV occurred)	Sexual abuse assoc with earlier age at first sex ($p < .01$); > 2 partners ($p < .01$).	Cross-sectional (–) Clinical exam confirms STI (+) Cannot determine sexual abuse by partner versus childhood or adult sexual assault (–)
Coker, McKeown, et al., 2000	5,414 adolescent males and females; YRBS sample; cross-sectional design; USA	63%	12% SDV in past year (beaten by a dating partner)	SDV (vict or perp) were more likely to be sexually active ($p < .01$) and have an earlier age at first intercourse ($p < .01$).	Large ss (+) Population based (+) Cross-sectional (–) Included men and women (+) Addressed IPV frequency (+) Multivariate analysis (+)
Collins et al., 2005	RAND Adolescent/ Young Adult Panel study; sampled from 30 middle schools; 2,901 individuals followed 10 years after first interview; Prospective design; USA	53% follow-up	Vict and perp of physical/sexual violence	Physical IPV vict was assoc with high-risk sex among single ($p < .01$) and partnered adults ($p < .01$).	Large ss (+) Prospective design (+) Population based (+) Low follow-up rate (–) Included men and women (+) Not multivariate (–)
El-Bassel et al., 1998	143 Latina or Afr Am women; aged 18-55 and sexually active; sampled from an urban hospital ED but triaged to nonemergency care; cross-sectional design; USA	Not reported	46% lifetime physical or sexual abuse; 17.5% in past year	After controlling for confounding variables, abused women were 4.2 times more likely to engage in sex with a risk-taking partner ($p < .01$).	Small ss (–) Cross-sectional (–) Understudied population (+) No response rate reported (–) Timing of IPV evaluated (+) Multivariate analyses (+)
Sormanti et al.	139 women, aged 50+; sampled from 10 health clinics; cross-sectional design; USA	Not reported	8% current IPV; 13% lifetime (CTS use to define moderate to severe violence)	Lifetime (OR = 3.9; 95% CI = 1.3-11.9) and current IPV (OR = 8.6; 95% CI = 2.4-31.3) assoc with having a primary partner with known HIV risk. IPV also assoc with women having > 1 partner in the past year.	Small ss (–) Cross-sectional (–) Understudied population (+) No response rate reported (–) Timing of IPV evaluated (+) Multivariate analyses (+)

Tucker et al., 2004	810 women living in shelters or low-income housing; cross-sectional design with follow-up; USA	Among sheltered women, RR = 86%; Retention = 87%; among housed women, RR = 76%; retention = 93%	Unknown % physical PV (CTS); sexual PV	Cross-sectional analysis: abuse assoc with less ability to refuse sex (< .05). Abuse not assoc with unprotected sex. Prospective analysis: Abuse at baseline was assoc with a reduced risk of unprotected sex at follow-up, yet abused women were more likely than nonabused to change partners.	Prospective design (+) Multivariate analysis (+) Good response rate (+) Exclusively low-income women (–) Used IPV scales (+) Multivariate analysis (+)
Weinreb et al., 1999	220 homeless women; 216 low-income housed women; cross-sectional design; USA	62.5%	63% (CTS to define abuse)	Female victims of partner violence were 2.3 times more likely to report high-risk HIV behaviors when compared with nonvictims ($p < .001$). High-risk behaviors defined High-risk behaviors defined as multiple sex partners, no condom use in the past 6 months, and a history of IV drug use.	Small ss (–) Exclusively low-income women (–) Cross-sectional (–) Used IPV scales (+)
Wu et al., 2003	1,590 women, Afr Am or Latina; sampled from hospital-based health care clinics; cross-sectional design; USA	33%	25% IPV current primary heterosexual relationship; about 13% in past 6 months	IPV was assoc with having a primary partner with known HIV risk ($p < .001$).	Large ss (+) Cross-sectional (–) Low response rate (–) Timing of IPV evaluated (+) Multivariate analysis (+)

NOTE: AAS = Abuse Assessment Screen; ABI = Abusive Behavior Inventory; Afr Am = African American; assoc = associated; BV = bacterial vaginosis; CI = Confidence Interval; CT = chlamydia trachomatis; CTS = Conflict Tactic Scale; GC = gonorrhea; GYN = gynecologic; Hx = history of; Mex Am = Mexican American; aOR = Adjusted Odds Ratio; aRR = Adjusted Risk Ratio; Perp = Perpetrator (of IPV); PRAMS = Pregnancy Risk Assessment Monitoring Surveillance; RCT = randomized clinical trial; SDV = severe dating violence; STI = sexually transmitted infection; Ss = sample size; Vict = Victim (of IPV); YRBS = Youth Risk Behavior Survey; ED = emergency department.

TABLE 2: Descriptions and Findings of Original Research Addressing IPV and Condom Use

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Bauer et al., 2002	409 women; sampled from STI clinics; cross-sectional design; USA	96%	25% physically abused; 11% abused in past 12 months	Neither past nor recent IPV assoc with recent condom use.	Small ss (–) Cross-sectional (–) Excellent response rate (+) Clinic based (–) Good response rate (+) STI confirmed (+) Multivariate analysis (+)
Bogart et al., 2005	All subjects HIV+; 286 women, 148 men, 292 bisexual men; prospective (1 year) design; USA	71%	Physical IPV in close relationship (moderate – severe violence) 20% vict & 25% perp	Abuse vict ($p < .01$) assoc with an increased risk of unprotected sex (= inconsistent condom use). Heterosexual substance users who were perps were more likely than nonperps to report unprotected sex.	Prospective design (+) Included men and women (+) Addressed IPV frequency (+) Used IPV scales (+) Vict and perp status (+) Multivariate analysis (+) Limited generalizability all have HIV (–)
Collins et al., 2005	RAND Adolescent/Young Adult Panel study; sampled from 30 middle schools; 2,901 individuals followed 10 years after first interview; prospective design; USA	53% follow-up	Vict and perp of physical/ sexual violence	Physical IPV perpetration was associated with inconsistent condom use among single ($p < .05$) and partnered adults ($p < .01$).	Large ss (+) Prospective design (+) Population based (+) Low follow-up rate (–) Included men and women (+) Not multivariate (–)
Garcia-Moreno et al., 2006	> 24,000 women ages 18-49; population based; cross-sectional design;10 countries	91%-99%	25%-50% physical abuse by partner	Current IPV assoc with current partner refusing to use a condom in 5 of 10 countries.	Large ss (+) Excellent response rates (++) Multivariate analysis (+) Population based (+) Good generalizability (+) Multiple sex health outcomes (+)
Hamburger et al., 2004	214 HIV+ and 189 noninfected women; HERS: prospective design with 1 yr follow-up; USA	Not reported	67% physical abuse as adult (ever beaten, physically attacked or sexually assaulted; not exclusively by a partner)	Ever physically abused women were 5 times less likely to be a consistent condom user.	Prospective design (+) Small ss (–) Cannot distinguish IPV from other assaults (–) No response rate reported (–) Multivariate analysis (+)
Raj et al., 2004	170 Spanish-speaking low-income women aged 18-36; cross-sectional design; USA	89%	21% in past 3 months (ABI used to define abuse)	IPV assoc with low sexual assertiveness scores ($p = .03$), women's fear of partner response to condom negotiation ($p < .01$). IPV not assoc with low condom self-efficacy scores.	Small ss (–) Cross-sectional design (–) Good response rate (+) Understudied population (+) Multiple sex health outcomes (+) Use IPV scales (+)

Rickert et al., 2002	727 women sampled from family planning clinics; ethnically mixed; 50% < age 18; cross-sectional design; USA	89%	43% physical abuse; 73% verbal abuse by current partner	Verbal and physical abuse assoc with reduce condom and hormonal contraceptive use ($p < .05$).	Relatively large heterogeneous and at risk sample (+) Good response rate (+) Multivariate analysis (+)
Wingood et al., 2001	522 Afr Am women; aged 14-18; sampled from clinics and schools;cross -sectional design; USA	86%	18% ever had a physically abusive boyfriend	IPV assoc with reporting fear of the consequences of negotiating condom use ($p < .005$). Abused women were less likely to use condoms consistently ($p = .03$) and to perceive less control over sexuality ($p < .003$).	Cross-sectional (–) Good response rate (+) Understudied population (+) Multivariate analysis (+)
Wu et al., 2003	1,590 women, Afr Am or Latina; recruited from hospital-based health care clinics; cross-sectional design; USA	33%	25% IPV current primary heterosexual relationship; 13% in past 6 months	PV (past or current) assoc with inconsistent condom use ($p < .01$).	Large ss (+) Cross-sectional (–) Low response rate (–) Timing of IPV evaluated (+) Multivariate analysis (+)

NOTE: See note to Table 1.

TABLE 3: Descriptions and Findings of Original Research Addressing IPV and Partner Nonmonogamy

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Bauer et al., 2002	409 women; sampled from STI clinics; cross-sectional design; USA	96%	25% physically abused; 11% abused past 12 months	Recent abuse assoc with partner nonmonogamy ($p < .001$). No assoc with past only IPV and partner monogamy.	Small ss (–) Cross-sectional (–) Clinic based (–) STI confirmed (+) Multivariate analysis (+)
Coker, McKeown, et al., 2000	5,414; boys and girls, YRBS; cross-sectional; USA	63%	12% SDV in past year (beaten by or beat a dating partner) vict and perp	Among nonvirgins, SDV were more likely to have more sex partners ($p < .01$), to have older sex partner ($p < .05$).	Large ss (+) Population based (+) Cross-sectional (–) Includes men and women (+) Addressed IPV frequency (+) Multivariate analysis (+)
Collins et al., 2005	RAND Adolescent/Young Adult Panel study; sampled from 30 middle schools; 2,901 individuals followed 10 years after first interview; prospective design; USA	53% follow-up	Vict and perp of physical/ sexual violence	Physical IPV vict assoc with having more sex partners among single adults ($p < .01$).	Large ss (+) Prospective design (+) Population based (+) Low follow-up rate (–) Includes men and women (+) Not multivariate (–)
Martin, Kilgallen et al., 1999	6,632 men; population-based; cross-sectional; India	83%	46% physical or sexual wife abuse (modified AAS)	Both physical and sexual wife abuse assoc with husband's report of having premarital and extramarital sex ($p < .01$); assoc stronger for sexual than physical abuse.	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+) Multivariate (+) Used IPV scale (+) Men's health as outcome (+) Addressed IPV types (+) Multivariate analysis(+)
Parish et al., 2004	3,323 men and women; population-based probability sample; cross-sectional design; China	76%	34% physical abuse in women; 18% in men	Men and women who were hit hard were more likely to report that a partner had extramarital sex partners ($p < .01$).	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+) Included men and women (+) Lab test of current STI (+) Multivariate analysis(+) Multiple sex health outcomes (+)
Raj et al., 2004	170 Spanish-speaking low-income women aged 18-36; cross-sectional design; USA	89%	21% in past 3 months; ABI used to define abuse	IPV assoc with not having monogamous partner ($p < .0007$) and greater male control over sexual relations (< .01).	Small ss (–) Cross-sectional design (–) Understudied population (+) Multiple sex health outcomes (+) Use IPV scales (+)
Wingood et al., 2001	522 Black females age 14-18 yrs; sampled from clinics and schools; cross-sectional; USA	86%	18% ever having a physically abusive boyfriend (dating violence)	Abused girls were more likely to have nonmonogamous partner ($p = .001$).	Cross-sectional (–) Good response rate (+) Under studied population (+) Multivariate analysis (+)
Wu et al., 2003	1,590 women, mainly Afr American and Latina, attending hospital-based health care clinics; cross-sectional, USA	33%	25% IPV current primary heterosexual relationship; 13% in past 6 months	IPV (past or current) associated with having > 1 partner last year ($p < .01$).	Large ss (+) Cross-sectional (–) Low response rate (–) Timing of IPV evaluated (+) Multivariate analysis (+)

NOTE: See note to Table 1.

TABLE 4: Descriptions and Findings of Original Research Addressing IPV and Sexually Transmitted Infection

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) / Limitations (–)*
Aubenbraun et al., 2001	375 female STI clinic patients; cross-sectional; USA	96%	16% recent and 37% lifetime physical and verbal threats of partner abuse	Lifetime abuse assoc with hx of STI ($p < .05$). Recent abuse not assoc with recent STI.	Small ss (–) Cross-sectional (–) Excellent response rate (+) Timing of IPV evaluated (+) Multivariate analysis (+)
Bauer et al., 2002	409 women; sampled from STI clinics; cross-sectional design; USA	96%	25% physically abused; 11% abused in past year	Recent IPV assoc with hx of STI ($p < .006$); no assoc with past only IPV and STI hx.	Small ss (–) Cross-sectional (–) Clinic based (–) STI confirmed (+) Multivariate analysis (+)
Campbell et al., 2002	2,005 HMO cohort; 201 abused cases; 240 nonabused controls; nested "case – control" design; USA	12%	Ever physically or sexually abused 12% in population (AAS measure)	Abuse assoc with STIs in past yr ($p < .01$), vaginal bleeding/infections ($p < .01$); sexual more sign than physical abuse	Low response rate (–) IPV scales use (+) Evaluates physical and sexual IPV (+) Multivariate analysis (+) Multiple sex health outcomes (+)
Champion et al., 2001	617 Mex Am or Afr Am women; recruited from public health clinics; all with current nonviral STI; cross-sectional design within ongoing RCT; USA	65%	32% lifetime sexual abuse (not clear whether physical IPV occurred)	Sexual abuse assoc with STI hx ($p < .01$) and more episodes of trichomonas, CT, GC.	Cross-sectional (–) Clinical exam confirms STI (+) Cannot determine sexual abuse by partner vs. childhood or adult sexual assault (–)
Champion et al., 2004	827 Mex Am or Afr Am women with current nonviral STI; clinic based; cross-sectional design; USA	Not reported	83% any form of abuse; 52% sexual; 46% physical (CTS used)	Abuse assoc with current PID symptoms ($p < .05$) and hx of PID ($p = .005$) and genital warts ($p = .03$).	No response rate reported (–) Clinical exam confirms STI (+) Used IPV scales (+) Limited generalizability as all have an STI Multivariate analysis (+)
Coker, Smith, et al., 2000	1,152 women recruited from primary care clinics; cross-sectional design; USA	75%	51% ever physical, sexual or psychological IPV	Ever IPV assoc with ever having an STI ($p < .001$) and bladder/kidney infections ($p < .01$)	Cross-sectional (–) Large ss (+) Good response rate (+) Evaluated IPV types (+) Used IPV scales (+) Multiple sex health outcomes (+)
Coker et al., 2004	755 ever-pregnant women; 1862 pregnancies GEE analysis; cross sectional design; USA	75%	15% abused during pregnancy	Abused women were twice as likely to report having an STI before or during PG (aRR = 2.1).	Cross-sectional (–) Large ss (+) Good response rate (+)

(continued)

TABLE 4: (continued)

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) / Limitations (–)*
					Multiple sex health outcomes (+) Multivariate analysis (+)
El-Bassel et al., 1998	143 Latina or Afr Am women; aged 18-55 and sexually active; sampled from an urban hospital ED but triaged to nonemergency care; cross-sectional design; USA	Not reported	46% lifetime physical or sexual abuse; 17.5% within past year.	Lifetime IPV assoc with reporting an STI (OR = 4.7, $p < .001$).	Small ss (–) Cross-sectional (–) Understudied population (+) No response rate reported (–) Timing of IPV evaluated (+) Multivariate analyses (+)
Garcia-Moreno et al., 2006	>24,000 women ages 18-49; population based; cross-sectional design; 10 countries	91%-99%	25%-50% physically abused by partner	Ever IPV assoc with vaginal discharge (aOR = 1.8; $p < .01$) in all countries.	Large ss (+) Excellent response rates (+) Multivariate analysis (+) Population based (+) Good generalizability (+) Multiple sex health outcomes (+)
Johnson & Hellerstedt, 2002	744 women recruited from prenatal care clinics; sampled by abuse status using medical record; retrospective cohort design; USA	82%	33% physical or sexual abuse (based on cohort sampling); 8.5% current abuse	Hx of abuse assoc with hx of STI (aOR = 1.9, $p < .001$) and incident STI (aOR=1.7; $p < .05$); current abuse assoc with hx of STI (2.0; $p < .05$) yet not with incident STI.	Misclassification of abuse based on medical record review (–) STI hx confirmed by record review (+) Incident STI confirmed by lab (+) Multivariate analysis (+)
King et al., 2000	Women samples from cohort of those receiving prenatal care; medical record review; 233 abused; 468 nonabused; retrospective cohort; USA	71%	Sampled on exposure; AAS used in prior study to screen all women	IPV in past year assoc with BV ($p < .05$) yet not stat sign for CT.	Good response rate (+) Medical record defined outcome (+) Lab confirmed of CT and BV Only pregnant and Hispanic
Martin, Kilgallen, et al., 1999	6,632 men; population-based; cross-sectional; India	83%	46% physical or sexual wife abuse (modified AAS)	Both physical and sexual wife abuse assoc with men's STI symptoms ($p < .01$)	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+) Multivariate analysis (+) Used IPV scale (+) Men's health as outcome (+) Addressed IPV types (+) Multivariate analysis(+)

(continued)

Martin, Matza, et al., 1999	774 women attending prenatal health dept. clinics; cross-sectional design; USA	92%	28% lifetime IPV; 12% physical and sexual abuse	Physical and sexual abuse assoc with men's STI symptoms ($p < .01$) Physical and sexual abuse were associated with STIs (Adjusted OR = 2.25; 95% CI 1.37, 3.69)	Excellent response rate (+) Cross-sectional (–) Addressed sexual and physical IPV (+) Multivariate analysis (+) Small ss (–)
McFarlane et al., 2005	148 IPV+ women seeking protective order; "service based"; USA	96%	All PV (using AAS); 68% sexual abuse	Repeat sexual assaults by intimate partner assoc with increase risk of STI ($p < .05$).	Excellent response rate (+) All women IPV+; addressed sexual assault as exposure Used IPV scale (+) Part of ongoing RCT
Muelleman et al., 1998	4,501 women seen in an ED; cross-sectional design; USA	73%	37% lifetime IPV	IPV assoc with UTI and vaginitis ($p < .05$).	Large ss (+) Cross-sectional (–) Good response rate (+)
Parish et al., 2004	3,323 men and women; population-based probability sample; cross-sectional design; China	76%	34% physical abuse in women; 18% in men	Men who were hit or hit hard were more likely to report ever having an STI ($p < .001$) Abuse not associated with STI among women.	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+) Included men and women (+) Lab test of current STI (+) Multivariate analysis(+) Multiple sex health outcomes (+)
Plichta & Abraham, 1996	1,599 women; population-based; random-digit-dial survey; cross-sectional design; USA	56%	20% abused as children; 10% IPV by current partner	IPV assoc with STI ($p < .01$), UTI ($p < .01$).	Large ss (+) Cross-sectional (–) Population based (+) Multivariate analysis(+) Multiple sex health outcomes (+)
Raj et al., 2005	208 highly educated South Asian immigrants sampled from clinics; cross-sectional design; USA	Not reported	21% lifetime physical or sexual abuse by current partner; 15% past only	Abused women were more likely to report a history of vaginal discharge ($p < .01$) and painful urination ($p < .01$)	Small ss (–) No response rate reported (–) Cannot distinguish sexual from physical IPV (–) Evaluate IPV timing (+) Understudied population (+)

(continued)

TABLE 4: (continued)

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) / Limitations (–)*
Schei, 1991	180 women; sampled on abuse; 66 abuse; 114 nonabused; retrospective cohort; Norway	73%	36.7% physical abuse (based on sampling)	Abuse associated with PID Adjusted OR = 8.4 (95% CI = 3.8, 18.4); Physical abuse more important than sexual abuse for PID.	Small ss (–) Good response rate (+) Exposed and nonexposed had similar access to health care (+); Multivariate analysis (+)
Sormanti et al.	139 women, aged 50+; sampled from 10 health clinics; cross-sectional design; USA	Not reported	8% current IPV; 13% lifetime CTS use to define moderate to severe violence	Neither current nor lifetime IPV assoc with ever having an STI.	Small ss (–) Cross-sectional (–) Understudied population (+) No response rate reported (–) Timing of IPV evaluated (+) Multivariate analyses (+)
Tubman et al., 2004	1,803 young women and men; community sample; cross-sectional design; USA	71%	Sexual, physical, verbal abuse independent of perpetrator. Lifetime physical IPV: 14.6% in women; 4% in men. Lifetime forced sex: 12.2% in women; 2.5% in men.	Increasing number of abuse experience assoc with lifetime STI prevalence in males ($p < .001$) and females ($p < .001$); no assoc with abuse and recent STI (past 12 months).	Large ss (+) Good response rate (+) Includes men and women (+) Cannot distinguish partner from other forms of abuse (–) Addressed violence type, timing, and frequency on STI outcome (+)
Wingood et al., 2000	203 battered women shelter residents; cross-sectional design; USA	99%	99% physically abused; 55% sexually abused; 43% raped	Frequency, severity, or chronicity of physical or sexual abuse not assoc with STI hx; Partner rape was assoc with STI prevalence ($p < .0003$) and with multiple STIs. Sexual abuse more strongly associated with STI than physical abuse.	Small ss (–) Excellent response rate (+) All IPV victims (–) Addressed IPV types, frequency, and severity (+) STI confirmed by health care provider (+)
Winn et al., 2003	205 women recruited from prenatal care clinics; chart review; cross-sectional design; USA	NA	38% lifetime physical or sexual abuse (from medical record; self-disclosed)	Lifetime abuse assoc with CT ($p < .0001$) and Group B Strep ($p < .01$).	Small ss (–) IPV based on medical record (–) STI confirmation on medical record (+)

NOTE: NA = not applicable. See note to Table 1.

TABLE 5: Descriptions and Findings of Original Research Addressing IPV and Pregnancy Among Adolescents or Unwanted Pregnancy Among Adults

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Coker, McKeown, et al., 2000	5,414; boys and girls YRBS; cross-sectional; USA	63%	12% severe dating violence (beaten by a dating partner) past year	Nonvirgin SDVs (vict or perp) were more likely to have been or caused a pregnancy ($p < .01$).	Large ss (+) Population based (+) Cross-sectional (–) Includes men and women (+) Addressed IPV frequency (+) Multivariate analysis (+)
D'Angelo, et al., 2004	25,027 women with recent live birth; PRAMS; cross-sectional; 15 states; USA	70%-86% depending on state	5.2% physical abuse by male partner	Physical abuse during pregnancy associated with unwanted pregnancy resulting in live birth (OR = 3.2; 95% CI = 2.8, 3.7).[a]	Large ss (+) Population based (+) Good response rate (+) Not multivariate analysis (–)
Garcia-Moreno et al., 2006	> 24,000 women aged 18-49; population based; cross-sectional design; 10 countries	91%-99%	25-50% physical abuse by partner	Ever IPV assoc with having 5+ live births in 7 of 10 countries.	Large ss (+) Excellent response rates (++) Multivariate analysis (+) Population based (+) Good generalizability (+) Multiple sex health outcomes (+)
John et al., 2004	920 women attending outpatient clinics; cross-sectional; England	90%	21% physical abuse by male partner; 4% current abuse	Abuse not assoc with unwanted pregnancy.	Cross-sectional (–) Excellent response rate (–) Used IPV measure (+)
Martin, Kilgallen et al., 1999	6,632 men; population-based; cross-sectional; India	83%	46% physical or sexual wife abuse (modified AAS)	Both physical and sexual wife abuse associated with having an unplanned pregnancy ($p < .01$).	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+) Multivariate (+) Used IPV scale (+) Men's health as outcome (+) Addressed IPV types (+) Multivariate analysis(+)
Raj et al., 2005	208 highly educated South Asian immigrants sampled from clinics; cross-sectional design; USA	Not reported	21% physical or sexual abuse by current partner	Abused women were more likely to report ever having an unwanted pregnancy ($p < .01$).	Small ss (–) No response rate reported (–) Cannot distinguish sexual from physical IPV (–) Evaluate IPV timing (+) Under studied population (+)
Silverman et al., 2001	4,163 girls; YRBS; cross-sectional design; USA	77%	19% lifetime physical or sexual abuse by a dating partner	Physical and sexual dating more strongly assoc ever being pregnant ($p < .001$).	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+)

(continued)

TABLE 5: (continued)

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
					Multivariate (+) Multivariate analysis (+)
Taft et al., 2004	14,784 women; population based sample; mailed survey; cross-sectional design; Australia	41%	24% of women reported any abuse; 6.4% reported ever partner abuse; 5% recent partner violence	Recent IPV assoc with pregnancy ($p < .001$) and among those with pregnancies IPV assoc with miscarriage ($p < .001$).	Large ss (+) Cross-sectional (–) Population based (+) Low response rates (–) Addressed IPV timing (+)
Wingood et al., 2001	522 Black females aged 14-18; sampled from clinics and schools; cross-sectional; USA	86%	18% ever having a physically abusive boyfriend (dating violence)	Abused girls were more likely to have ever had been pregnant ($p = .009$).	Cross-sectional (–) Good response rate (+) Understudied population (+) Multivariate analysis (+)

NOTE: See note to Table 1.
a. Calculated from data presented.

TABLE 6: Descriptions and Findings of Original Research Addressing IPV and Induced Abortion

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Fisher et al., 2005	1,145 women representing for abortion; cross-sectional; Canada	94%	19.3% history of physical abuse by male partner	History of physical abuse by male partner assoc with repeat abortion (adjusted OR 2.6; 95% CI = 1.5, 4.5 for 3 or subsequent abortions compared with first abortion).	Large sample (+) Good response rate (+) Risk of abortion not outcome (–) Multivariate analysis (+)
Garcia-Moreno et al., 2006	> 24,000 women aged 18-49; population based; cross-sectional design; 10 countries	91%-99%	25%-50% physical abuse by partner	Ever IPV assoc with increased induced abortion ($p < .01$) in all countries except Samoa and miscarriage in 3 of 10 countries.	Large ss (+) Excellent response rates (++) Multivariate analysis (+) Population based (+) Good generalizability (+) Multiple sex health outcomes (+)
Greenberg et al., 1997	261 pregnant women seen in ED for vaginal bleeding; cross-sectional design; USA	62.7%	33% history of abuse (AAS)	Abuse was not associated with threatened abortion (35%), actual abortion (29%), or pregnancy complications (35%).	Cross-sectional (–) Small ss (–) Used IPV scale (+) Sample at risk for outcome (+)
Janssen et al., 2003	4750 postpartum women; cross-sectional; Canada	48.5%	1.9% abuse by or fear of partner during pregnancy (modified AAS)	Abused women more likely to have multiple induced abortions ($p < .03$); abuse not associated with prior spontaneous abortion hx.	Cross-sectional (–) Large ss (+) Low response rate (–) Use IPV measure (+) Low IPV rate (? validity) Multivariate analysis (+)
Letourneau et al., 1999	191 women sampled from GYN clinic; chart review; cross-sectional design; USA	Not applicable	21% IPV or 9% forced sex by anyone	Abused more likely to have an abortion ($p < .05$).	Small ss (–) Cross-sectional (–) Not multivariate (–)
Leung et al., 2002	245 seeking abortions; 256 other GYN patients; retrospective cohort; China	96.5%	18% lifetime IPV (AAS)	Abortion cases were more likely to have ever been abused $p < .001$) and to have been physically abused in the past year ($p < .01$) or sexually abused in the past year ($p < .001$).	Excellent response rate (+) Used IPV scale (+) Addressed IPV timing and types (+) Not multivariate (–)
Winn et al., 2003	205 women recruited from prenatal care clinics; chart review; cross-sectional design; USA	Not applicable	38% lifetime physical or sexual abuse (from medical record; self-disclosed)	Abuse assoc with induced abortion ($p < .0001$).	Small ss (–) IPV based on medical record (–) STI confirmation on medical record (+)

NOTE: See note to Table 1.

TABLE 7: Descriptions and Findings of Original Research Addressing IPV and GYN Outcomes

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Campbell et al., 2002	2,005 HMO cohort; 201 abused cases; 240 nonabused controls; nested case-control design; USA	12%	Ever 12% physical or sexual abuse in population (AAS)	Abuse assoc with vaginal bleeding / infections ($p < .01$), pelvic pain ($p < .05$), UTI ($p < .05$) painful intercourse ($p < .01$); abuse not associated with fibroids; sexual abuse more sign than physical abuse.	Low response rate (–) IPV scales used (+) Evaluates physical and sexual IPV (+) Multivariate analysis (+) Multiple sex health outcomes (+)
Campbell & Soeken, 1999	159 women sampled from battered women's shelter; majority Afr Am; cross-sectional design; USA	Not reported	All abused; 46% forced sex	Sexually assaulted women were more likely to gynecologic problems ($p < .03$) including abdominal pain, urinary problems, decreased sexual desire. Adjusted OR for sexual assaults and gyn problems = 2.7; 95% CI = 1.1, 6.3.	Small ss (–) IPV scales used (+) All IPV+; sexual assault is exposure (–) Multivariate analysis (+)
Champion et al., 2001	617 Mex Am / Afr Am women; recruited from public health clinics; all with current nonviral STI; cross-sectional design within ongoing RCT; USA	65%	32% lifetime sexual abuse (not clear if physical IPV occurred)	Sex abuse assoc with GYN symptoms (discharge, pain, painful menses, dyspareunia); sexual abuse assoc with physician exams for vulvar discharge, cervical and uterine tenderness ($p < .05$).	Cross-sectional (–) Clinical exam confirms STI (+) Cannot determine sexual abuse by partner vs. childhood or adult sexual assault (–)
Champion et al., 2004	827 Mex Am or Afr Am women with current nonviral STI; USA	Not reported	83% any form of abuse; 52% sexual; 46% physical; 10 item measure based on CTS	Abuse assoc with current abdominal pain; dyspareunia; menstrual abnormality and urinary symptoms.	No response rate reported (–) Clinical exam confirms STI (+) Used IPV scales (+) ? Generalizability (all have an STI) Multivariate analysis (+)
Chapman, 1989	30 rape victims, 35 abuse victims, and 30 case-matched controls; GYN evaluations every 6 months for 4 years; USA	45% of rape victims; 25% of abuse victims; 71% of GYN "controls"	35% abused (from shelter sample; sampled on exposure)	Abused women were twice as likely to have symptoms of sexual dysfunctions ($p < .05$) and GYN problems ($p < .05$) over follow-up compared with nonabused controls. Abused groups reported a threefold increased risk of pelvic pain and gynecologic surgery including hysterectomy ($p < .05$).	Small study (–) Follow-up data (+)
Coker, Smith, et al., 2000	1,152 women sampled from primary care clinics; cross-sectional design; USA	75%	51% ever IPV	Physical (and sexually) abuse women more likely to have hysterectomy ($p < .01$); chronic pelvic pain ($p < .01$); invasive cervical cancer (aRR = 4.3) and dysplasia (aRR = 1.5).	Cross-sectional; IPV event appropriately time framed (+) Large ss (+) Good response rate (+)

				Risk of CxCa increased with IPV severity scores and length of time in violent relationship.	Evaluated IPV types (+) Used IPV scales (+) Multiple sex health outcomes (+) Self-report of neoplasia outcome (–) Multivariate analysis (+)
Coker et al., 2003	222 cervical dysplasia cases; 160 controls; nested in cohort receiving care; USA	89%	17% severe physical IPV in past 2 years	Severe physical abuse (aOR = 5.4; $p < .01$) most strongly assoc with SIL; only in White not Afr Am women	Small ss (–) Good response rate (+) Multivariate analysis (+) Outcomes confirmed with medical records and lab findings (+)
Coker & Richter, 1998	144 women; convenience sample of clinic and street populations; Cross-sectional design; Sierra Leone	90%	76% of women report forced sex or physical abuse	Ever IPV assoc with circumcision (aOR = 8.0; $p < .01$).	Small ss (–) Cross-sectional (–) Good response rate (+) Understudied population (+) Addressed IPV types (+)
Dalton et al., 2002	243 vulvar pain cases; 113 controls; clinic based; case-control design; USA	89%	9% physical IPV	No assoc between physical abuse (or sexual abuse/assaults) and vulvar pain	Small ss (–) Good response rate (+) Addressed IPV types (+) Selection bias with controls? (–)
Eby et al., 1995	110 women sampled for shelters; Afr Am and White population; cross-sectional design	Not reported	All physically abused; 43% sexually assaulted by a partner	Compared with women experiencing physical abuse but no sexual assault, women experiencing sexual and physical abuse were more likely to report GYN symptoms such as pelvic pain.	Small ss (–) IPV scales used (+) All IPV+; sexual assault is exposure (–)
Golding, 1996	3,419 women; Epidemiologic Catchment Area Study (1983-1984); population-based; cross-sectional design; USA	Not reported ECA response rate is acceptable	11.5% sexual assault	Sexually assaulted women were more likely to report painful menstruation ($p < .01$), irregular periods ($p < .001$); pain during intercourse ($p < .01$), and lack of sexual pleasure ($p < .001$).	Large ss (+) Cross-sectional (–) Unknown proportion of sexual abuse that is also physical IPV (–) Multiple sex health outcomes (+)
John et al., 2004	920 women attending outpatient clinics; cross-sectional; England	90%	21% physical abuse by male partner; 4% current abuse; 50% of physically abused women also sexually assaulted by a partner	Abuse assoc with increased in painful menses ($p < .05$), pelvic pain ($p < .001$), and abnormal Pap smear ($p < .01$) as presenting condition. No assoc with vaginal bleeding; fertility problems.	Cross-sectional (–) Excellent response rate (–) Used IPV measure (+)

(continued)

TABLE 7: (continued)

First Author & Year	*Sample Size/Setting*	*Response Rate*	*% IPV Positive*	*Summarized Findings about IPV and Sexual Health Indicator*	*Strengths (+) or Limitations (–)*
Kovac et al., 2003	2,918 women recruited from OB/GYN clinics; cross-sectional design; USA	80%	4% physical or sexual assault/abuse in past year	Abuse associated with menstrual cramps/problems ($p < .05$) and little or no pleasure during sex ($p < .05$).	Large ss (+) Good response rate (+) Limited multivariate analysis (–) Address recent IPV (+)
Letourneau et al., 1999	191 women sampled from GYN clinic; chart review; cross-sectional design; USA	NA	21% IPV or 9% forced sex by anyone	Abused women were more likely to report pain during menstruation ($p < .001$) and pain during intercourse ($p < .01$). No assoc with cervical dysplasia or menstrual flow.	Small ss (–) Cross-sectional (–) Not multivariate (–)
Parish et al., 2004	3323; population-based probability sample; China	76%	34% physical abuse in women, 18% in men	Women who were "hit hard" were more likely to report sexual dysfunction ($p < .01$) and sexual dissatisfaction ($p < .01$); Men who were hit or hit hard were more likely to report emotional dissatisfaction with sex ($p < .01$).	Large ss (+) Cross-sectional (–) Population based (+) Good response rate (+) Included men and women (+) Lab test of current STI (+) Multivariate analysis(+) Multiple sex health outcomes (+)
Plichta & Abraham, 1996	1,599 women; population based; random-digit-dial survey; cross-sectional design; USA	56%	20% abused as children; 10% IPV by current partner	IPV assoc with severe menstrual problems, including endometriosis ($p < .001$).	Large ss (+) Cross-sectional (–) Population based (+) Multivariate analysis(+) Multiple sex health outcomes (+)
Schei & Bakketeig, 1989	150 women; population-based; cross-sectional design; Norway	90%	18% physical abuse; 17% sexual abuse	Spouse abuse assoc with a 3.6-fold increase in current GYN symptoms[a]; spouse abuse was assoc with a tenfold increase in sexual problems (e.g. lack libido, difficulty in achieving orgasm, problems cause by conflicts over sexual frequency).	Small ss (–) Cross-sectional (–) Population based (+) Gynecologist-assessed outcome (+) Multiple sex health outcomes (+)

NOTE: Gynecological outcomes include pain, change in menstrual irregularity or flow, or endometriosis, pain with intercourse, vaginal bleeding. See note to Table 1.

et al., 1999; Martin, Matza, et al., 1999; Schei, 1991), current IPV (Champion et al., 2004; Johnson & Hellerstedt, 2002; Muelleman et al., 1998; Plichta & Abraham, 1996; Raj et al., 2005), or recent IPV (Bauer et al., 2002; Martin, Kilgallen, et al., 1999; Wu et al., 2003) were associated with having some type of vaginal infection or UTI. The majority of studies used a cross-sectional design; however, in the three studies to use a retrospective cohort design in which IPV-exposed and nonexposed women were sampled (Johnson & Hellerstedt, 2002; King et al., 2000; Schei, 1991), all found IPV status to be associated with having an STI. Furthermore, Johnson and Hellerstedt (2002) concluded determined that although having a history of IPV was associated with incident STI, current IPV was not.

Of the seven cross-sectional studies with more than 1,000 subjects indicating greater study power (Coker, Smith, et al., 2000; Garcia-Moreno et al., 2006; Martin, Kilgallen, et al., 1999; Muelleman et al., 1998; Parish et al., 2004; Plichta & Abraham, 1996; Tubman et al., 2004), all but one (Parish et al., 2004) found an association with IPV and having an STI. Martin, Kilgallen, et al. (1999) noted that lifetime physical and sexual IPV victimization were associated with the partner's STI symptoms. In contrast, Parish et al. (2004) found that although IPV was not associated with STI among female victims, IPV was associated with STI risk among male victims. Tubman et al. (2004) found that increasing number of abuse experiences (including sexual, physical, or verbal abuse) was associated with STI prevalence in both men and women but not with recent STI symptoms. Partner sexual abuse or rape was more strongly associated with STI risk than was physical abuse in those studies able to address different types of IPV (Campbell et al., 2002; Champion et al., 2001; Coker, Smith, et al., 2000; Johnson & Hellerstedt, 2002; Martin et al., 1999; McFarlane et al., 2005; Schei, 1991; Wingood et al., 2000). Although the majority of studies did not identify specific STIs associated with IPV, those who did found IPV to be associated with pelvic inflammatory disease (Champion et al., 2004; Schei, 1991), chlamydia (Champion et al., 2001; Winn et al., 2003), bacterial vaginosis (King et al., 2000), gonorrhea (Champion et al., 2001), trichomonas (Champion et al., 2001), and genital warts (Champion et al., 2004). All four studies addressing the association between IPV and having a UTI (Coker, Smith, et al., 2000; Muelleman et al., 1998; Plichta & Abraham, 1996; Raj et al., 2005) found a significant association. Although UTIs are not necessarily sexually transmitted, they can be a consequence of sexual trauma or specific infectious agents.

IPV and Adolescent Pregnancy, Unwanted Pregnancies, or Induced Abortion

IPV was associated with adolescent pregnancy in all three studies (Coker et al., 2000; Silverman et al., 2001; Wingood et al., 2001) and with unwanted pregnancy in three of four studies (D'Angelo et al., 2004; Martin et al., 1999; Raj et al., 2005; but not in John et al., 2004). In a large population-based study, Taft et al. (2004) reported that recent IPV was associated with being pregnant and among pregnant women with a miscarriage. In the only multinational population-based study, IPV was associated with having five or more live births in 7 of 10 countries studied (Garcia-Moreno et al., 2006). IPV was associated with an increased probability of having an induced abortion (Garcia-Moreno et al., 2006; Letourneau et al., 1999; Leung et al., 2002; Winn et al., 2003) or repeat abortions (Fisher et al., 2005; Janssen et al., 2003) in six of eight (Fisher et al., 2005; Garcia-Moreno et al., 2006; Greenberg et al., 1997; Janssen et al., 2003; John et al., 2004; Letourneau et al., 1999; Leung et al., 2002; Winn et al., 2003) studies to address this association. Two studies noted an associated with abortion and both physical and sexual abuse (Letourneau et al., 1999; Leung et al., 2002). All studies reviewed for this association were cross-sectional, with the exception of the small retrospective cohort study conducted in China (Leung et al., 2002).

IPV and Pelvic Pain or Bleeding

Of 10 studies addressing IPV and chronic pelvic or abdominal pain, 9 noted a positive association (Campbell et al., 2002; Campbell &

Soeken, 1999; Champion et al., 2001; Champion et al., 2004; Chapman, 1989; Coker, Smith, et al., 2000; Eby et al., 1995; John et al., 2004; Schei & Bakketeig, 1989; but Dalton et al., 2002 did not). Pain during intercourse or dyspareunia was associated with IPV in all eight studies to address this association (Campbell et al., 2002; Champion et al., 2004; Champion et al., 2001; Chapman, 1989; Golding, 1996; Letourneau et al., 1999; Parish et al., 2004; Schei & Bakketeig, 1989). All five (Champion et al., 2001; Golding, 1996; John et al., 2004; Kovac et al., 2003; Letourneau et al., 1999) studies to address IPV and painful menses found a positive association. Vaginal bleeding was associated with IPV in two of four studies (in Campbell et al., 2002, and Schei & Bakketeig, 1989; but not in John et al., 2004, and Letourneau et al., 1999). Again, the majority of studies were cross-sectional; however, because several had sample sizes of more than 1,000 subjects, the potential for a Type II error was minimized for these studies (Coker, Smith, et al., 2000; Golding, 1996; Kovac et al., 2003; Parish et al., 2004; Plichta & Abraham, 1996).

IPV and Sexual Satisfaction or Pleasure

All studies exploring IPV and sexual dissatisfaction or lack of sexual pleasure found a positive association for female (Campbell & Soeken, 1999; Garcia-Moreno et al., 2006; Golding, 1996; Kovac et al., 2003; Parish et al., 2004) and male victims (Parish et al., 2004); all but one of these studies had more than 1,000 subjects, indicating greater study power. Four studies explored an association between cervical neoplasia (Coker et al., 2003; Coker, Sanderson, et al., 2000; John et al., 2004; Letourneau et al., 1999); two found an association with preinvasive or invasive cancer (Coker et al., 2003; Coker et al., 2000), although two found no association with an abnormal Pap smears (John et al., 2004; Letourneau et al., 1999). Both studies (Chapman, 1989; Coker, Smith, et al., 2000) to address IPV and hysterectomy found a positive association. The only study (Campbell, 2002) to address IPV and fibroids found no association, nor did the only study to address risk of infertility associated with IPV (John et al., 2004). Although female circumcision or cutting is not a health outcome, this practice does have sexual health consequences (Obermeyer, 2005); one study (Coker & Richter, 1998) found that both physical and sexual IPV were significantly correlated with female circumcision.

DISCUSSION

In summary (see Key Points of the Research Review), physical IPV, which may be accompanied by both sexual and psychological abuse, was consistently associated with most of the sexual health indicators included in Figure 1. All studies that explored IPV and sexual pleasure found that victims were significantly more likely to report a lack of sexual desire or pleasure in their intimate relationships. The majority (23 out of 27) of studies addressing sexual risk taking, inconsistent condom use, or partner nonmonogamy (8 out of 8) found that IPV victimization was associated with sexual risk taking of the woman or her partner. IPV was associated with either having an unplanned pregnancy or an induced abortion in the majority (13 out of 16) of studies addressing this sexual health outcome. Almost 80% of those studies addressing IPV and having an STI or UTI found evidence of an association. Seventeen of 18 studies addressing IPV and sexual pain found a significant association, and all studies exploring a link between IPV and painful menses found an association. Both studies to address IPV and hysterectomy found a positive association. Evidence for an association between IPV and cervical neoplasia remains mixed.

To address the possibility that bias may explain findings from the 51 studies reviewed, a column summarizing study strengths and limitations is presented in the tables. The largest study to date (Garcia-Moreno et al., 2006) to address IPV and sexual health included more than 24,000 women from 10 countries. Several large cross-sectional (N > 4,000) or panel studies (N > 2,000) have addressed IPV and adolescent sexual or reproductive health outcomes (Coker, McKeown, et al., 2000; Collins et al., 2005; Silverman et al., 2001) or the association between IPV and sexual health in large clinic

populations (N > 1,000; see Champion et al., 2004; Coker, Smith, et al., 2000; Janssen et al., 2003; John et al., 2004; Johnson & Hellerstedt, 2002; Martin et al., 1999; Muelleman et al., 1998; Rickert et al., 2002; Wu et al., 2003) or community samples (D'Angelo et al., 2004; Golding, 1996; Kovac et al., 2003; Martin et al., 1999; Parish et al., 2004; Plichta & Abraham, 1996; Taft et al., 2004; Tubman et al., 2004). It is unlikely that random error could explain study findings from these studies. However, limited study power may affect the ability to detect modest associations in studies with fewer than 200 subjects.[3]

Systematic error or bias is the more problematic threat to validity (Rothman & Greenland, 1998). With the noted exceptions of cohort studies (Bogart et al., 2005; Collins et al., 2005; Hamburger et al., 2004; Tucker et al., 2004), the majority of reviewed studies used either a cross-sectional or case-control design that can only provide evidence of correlations. Prospective designs provide superior evidence of causality because the correct temporal sequence can be evaluated; several studies[4] attempted to address temporal sequence by asking about current or recent IPV and current symptoms or time framing IPV prior to symptom development (Coker, Smith, et al., 2000). Selection bias may be introduced in studies if the response rates are low (< 70%; see Kelsey, Whittemore, & Evans, 1996). With the noted exceptions,[5] the remaining half of studies reviewed had response rates of less than 70%, or rates were not reported in the article.

A minority of studies attempted to address the issue of a dose-response association between IPV frequency, duration, or severity and sexual health outcomes (Coker, Sanderson, et al., 2000; McFarlane et al., 2005; Parish et al., 2004; Tubman et al., 2004; Wingood et al., 2000). Because physical, sexual, and psychological IPV frequently co-occur (Tjaden, Thoennes, & Allison, 1999), evaluating the mechanism by which physical IPV affects sexual health can be challenging. This review attempted to address this potential misclassification error by restricting those articles reviewed to those in which physical IPV was the primary exposure. However, a minority of included studies addressed sexual IPV or sexual assault by intimate or nonintimate partners; thus, the effect of the intimate nature of the relationship on sexual health cannot be distinguished (Champion et al., 2001; Golding, 1996; Raj et al., 2005). Furthermore, three small but rich studies explored the role of sexual assaults by intimate partners on sexual health among women experiencing physical IPV (Campbell & Soeken, 1999; Eby et al., 1995; McFarlane et al., 2005). In these studies, the effect of physical abuse alone on sexual health cannot be determined.

Sexual health outcomes were self-reported in the majority of studies reviewed. To the extent that women know of and accurately report these outcomes, information bias will be minimized. Several studies[6] were able to confirm the sexual health indicator with either medical records, laboratory results, or physician examinations, thus providing a more accurate outcome classification.

Multiple factors may confound or modify the potential associations between IPV and the range of sexual health indicators. Several studies[7] reviewed used multivariate analyses to address the potential for confounding bias to explain study findings.

Because women are the best informants of their own experiences, using self-reports of IPV experienced should not be viewed as a limitation unless the interview setting or the assessment tool used resulted in incomplete or inaccurate disclosure. Comparing study findings within groupings of sexual health indicators can be challenging given the number of different measures of IPV included in the conflict tactic scale (Campbell & Soeken, 1999; Eby et al., 1995; Sormanti et al., 2004; Tubman et al., 2004; Tucker et al., 2004; Weinreb et al., 1999), the Abuse Assessment Screen, (Campbell et al., 2002; Coker, Sanderson, et al., 2000; Coker, Smith, et al., 2000; Coker et al., 2004; Greenberg et al., 1997; Janssen et al., 2003; King et al., 2000; Leung et al., 2002; McFarlane et al., 2005), the Abuse Behavior Inventory (Raj et al., 2004), and other brief questions by which to categorize physical IPV in certain studies[8] or selection based on receipt of service (e.g., from shelter samples; see Chapman, 1989; Schei, 1991; Wingood et al., 2000).

Although the majority of studies were not able to explore how the types of IPV (e.g., physical,

sexual, and psychological abuse) may act together to influence sexual health, several[9] were able to compare and contrast sexual IPV with physical IPV; these findings may aid our understanding of the mechanisms by which IPV affects sexual health.

Where are the gaps in the literature exploring the sexual health effects of IPV? With the exception of the literature addressing IPV and (a) STIs and (b) sexual risk-taking behaviors (including inconsistent condom use and partner monogamy), there have been few large studies with sufficient replication to provide evidence of a causal association. This deficit is particularly noted for studies of sexual satisfaction and/or dysfunction, cervical neoplasia, and other gynecologic disorders. With the exception of three large population-based studies (Garcia-Moreno et al., 2006; Martin, Killgallen, et al., 1999; Parish et al., 2004), few studies have been conducted in less developed nations where the impact of IPV on sexual and reproductive health may be greater than that in more developed nations. Few studies (Bogart et al., 2005; Garcia-Moreno et al., 2006; Martin et al., 1999; Parish et al., 2004; Tubman et al., 2004) have assessed the effect of IPV on men as victims or as perpetrators. With the noted exceptions (Campbell et al., 2002; Chapman, 1989; Coker, Smith, et al., 2000; Garcia-Moreno et al., 2006; Martin et al., 1999; Parish et al., 2004), there have been few studies of sufficient power to explore the role of IPV and multiple sexual health outcomes in women, and none have addressed IPV and sexual health during women's or men's life spans.

What more do we need to know to identify and address the sexual health effects of IPV? Although a model is presented in this article, it is provided as a hypothetical map of how IPV may affect sexual health; this model needs to be tested and, in the true application of scientific refutation, revised based on further study. We know little of the biologic mechanisms by which physical, sexual, or psychological partner violence may directly or indirectly affect the range of sexual health indicators included in this review. Additional studies to address the interactive role of IPV types and possible dose-response association with IPV severity, duration, and sexual health are needed. Efforts to evaluate the impact of IPV on both a physiologic and psychologic basis would aid our understanding of specific mechanisms and presumably our efforts to address the effect of IPV on sexual health. Careful use of structural equation modeling can be an important tool to address mechanisms by which IPV types may influence sexual health. Other questions to address include: What is the combined and individual role of multiple forms of violence on sexual health endpoints? What is the role of psychological or physiologic stress induced by IPV on sexual health? What is the role of immune function? What influence does culture have on IPV and sexual health? In general from this review, current IPV was not consistently associated with current sexual health status. Why might this be so? What is the short-term and longer-term effect of IPV on sexual health?

A brief summary statement is presented below along with implications of these findings for practice, research, and policy. Practice-based implications of this review include the need for clinic-based IPV screening, a form of secondary prevention, to identify victims and lead to care to reduce the impact of IPV on health. The research and health care provider communities advocate abuse screening to reduce the impact of IPV. Based on this review and recommendations by others (Campbell, Moracco, & Saltzman, 2000; Koss, 2005), such brief screening should include questions to address physical, sexual, and psychological abuse experiences. However, the 2004 U.S. Preventive Services Task Force (2004) presents a significant challenge to this screening recommendation with its "I" recommendation for family and IPV screening because little experimental evidence exists to determine whether abuse screening results in improved health and quality of life outcomes for women who experience IPV and are screened relative to those not randomized to screening. Sufficient federal funding is needed to conduct such large controlled trials. In addition, continued efforts are needed to prevent partner violence, and these efforts might have greatest long-term efficacy with the focus on younger populations of both genders.

The research implications of this review include the recommendations for future research to estimate the short- and long-term cost of IPV

on poorer sexual health for women and men. Based on this review, cost estimates can be made for the association between IPV and sexual risk-taking behaviors of victims and perpetrators that influence risks of (a) developing a sexually transmitted infection and (b) having an unplanned or mistimed pregnancy, which may or may not result in an induced abortion. Furthermore, IPV negatively influences sexual satisfaction for both men and women (Parish et al., 2004) and likely affects quality of life and family stability. Economic approaches to estimating these attributes of IPV effect on sexual health and quality of life are encouraged. IPV clearly has negative health impact for men, women, and children (Bonomi et al., 2006; Campbell & Lewandowski, 1997; Coker et al., 2002; Thompson et al., 2006). Continued primary and secondary prevention efforts to stop IPV before health effects occur must be our focus. Additional questions to address when conducting intervention research to address IPV and sexual health include: When IPV stops, does sexual health improve? If so, in what time period does improvement occur? How can we effectively intervene with perpetrators to reduce the effect of their behavior on women's sexual health as well as their own health?

Tapping the knowledge base of the experts, those who experience IPV, is crucial to shaping future research addressing IPV and sexual health. IPV survivors should be included as partners in research at all stages from hypotheses development to conclusions and future directions (Campbell, Dienemann, Kub, Wurmser, & Loy, 1999). Their voices are particularly important in developing and evaluating effective and feasible interventions.

Finally, the policy implications of this review include the need for national commitment and sufficient federal funding to rigorously evaluate whether screening for partner and family violence improves health outcomes for women and their families. Several large, clinic-based, randomized clinical trials would be needed with sufficient follow-up time to determine the short- as well as the long-term risk and benefit of screening as well as the most effective method of intervention to reduce risk of injury and improve health and well-being for victims and their families. In addition, federal resources are needed to fund research to identify the potentially interactive role of physical, sexual, and psychological IPV on other sexual health indicators as well as to the prevention these outcomes. Last, and most ambitiously, concerted efforts are needed to recognize and change our culture, which supports the abuse of power and violence to control others.

IMPLICATIONS FOR PRACTICE, POLICY, AND RESEARCH

Practice

- Clinic-based screening for physical and sexual IPV could identify those who choose to disclose this violence and could assist victims and their families to receive existing services to address IPV before these sexual health problems occur (secondary prevention and intervention).
- Continued primary prevention efforts are needed to prevent sexual and physical violence by dating and intimate partners.
- Efforts to address younger youth of both genders are encouraged. Continued education of both the public and the health care providers of the strong evidence for an association between both physical and sexual IPV and sexual health are encouraged to increase awareness and improve treatment.

Research

- Further research is needed to estimate the short- and longer-term costs of physical IPV on those sexual health indicators for which there is evidence of a strong and consistent association.
- Further research is needed to better understand the mechanism(s) by which physical, sexual, and psychological IPV affect sexual health; this research should address sexual health in men and women, address health at all ages, and include multiple endpoints in the sexual health continuum.
- Continued and federally supported efforts to involve IPV survivors in the research on the health effect of IPV and interventions to improve health outcomes are encouraged. The Department of Defense's inclusion of cancer survivors in grant reviews is one model.

Policy

- A national commitment to provide federal funding to (a) rigorously evaluate whether screening for partner and family violence improves health outcomes for women and their families and (b) investigate the potentially interactive role of physical, sexual, and psychological IPV on other sexual health indicators.
- Continued efforts are needed to recognize and change our culture, which supports the abuse of power and violence to control others.

Summary

- Based on this review there is strong evidence that physical and sexual IPV are associated with (a) sexual risk taking behaviors, (b) risk of sexually transmitted infection, (c) risk of an unwanted pregnancy that may result in an induced abortion, and (d) sexual dysfunction in the primary form of chronic pelvic pain.

NOTES

1. The following are the 51 articles: Aubenbraun, Wilson, and Allister (2001); Bauer et al. (2002); Bogart et al. (2005); Campbell et al. (2002); Campbell and Soeken (1999); Champion, Piper, Holden, Korte, and Shain (2004); Champion, Piper, Shain, Perdue, and Newton (2001); Chapman (1989); Coker, Bond, Madeleine, Luchok, and Pirisi (2003); Coker et al. (2000); Coker and Richter (1998); Coker, Sanderson, and Dong (2004); Coker, Sanderson, Fadden, and Pirisi (2000); Collins, Ellickson, Orlando, and Klein (2005); D'Angelo, Gilbert, Rochat, Santelli, and Herold (2004); Dalton, Haifner, Reed, Senapati, and Cook (2002); Eby, Campbell, Sullivan, and Davidson (1995); El-Bassel et al. (1998); Fisher et al. (2005); Garcia-Moreno, Jansen, Ellsberg, Heise, and Watts (2006); Golding (1996); Greenberg, McFarlane, and Watson (1997); Hamburger et al. (2004); Janssen et al. (2003); John, Johnson, Kukreja, Found, and Lindow (2004); Johnson and Hellerstedt (2002); King, Britt, McFarlane, and Hawkins (2000); Kovac, Klapow, Kroenke, Spitzer, and Williams (2003); Letourneau, Holmes, and Chasedunn-Roark (1999); Leung, Leung, Chan, and Ho (2002); Martin, Kilgallen, et al. (1999); Martin, Matza, et al. (1999); McFarlane et al. (2005); Muelleman, Lenaghan, and Pakieser (1998); Parish, Wang, Laumann, Pan, and Luo (2004); Plichta and Abraham (1996); Raj, Liu, McCleary-Sills, and Silverman (2005); Raj, Silverman, and Amaro (2004); Rickert, Wiemann, Harrykissoon, Berenson, and Kolb (2002); Schei (1991); Schei and Bakketeig (1989); Silverman, Raj, Mucci, and Hathaway (2001); Sormanti, Wu, and El-Bassel (2004); Taft, Watson, and Lee (2004); Tubman, Montgomery, Gil, and Wagner (2004); Tucker, Wenzel, Elliott, Marshall, and Williamson (2004); Weinreb, Goldberg, Lessard, Perloff, and Bassuk (1999); Wingood, DiClemente, McCree, Harrington, and Davies (2001); Wingood, DiClemente, and Raj (2000); Winn, Records, and Rice (2003); and Wu, El-Bassel, Witte, Gilbert, and Chang (2003).

2. Following are the 23 studies: Aubenbraun et al. (2001); Bauer et al. (2002); Campbell et al. (2002); Champion et al. (2001); Champion et al. (2004); Coker, Smith, et al. (2000); Coker et al. (2004); El-Bassel et al. (1998); Garcia-Moreno et al. (2006); Johnson and Hellerstedt (2002); King et al. (2000); Martin, Kilgallen, et al. (1999); Martin, Matza, et al. (1999); McFarlane et al. (2005); Muelleman et al. (1998); Parish et al. (2004); Plichta and Abraham (1996); Raj et al. (2005); Schei (1991); Sormanti et al. (2004); Tubman et al. (2004); Wingood et al. (2000); Winn (2003); and Wu et al. (2003).

3. These studies include Campbell and Soeken (1999), Chapman (1989), Coker and Richter (1998), Eby et al. (1995), El-Bassel et al. (1998), Letourneau et al. (1999), McFarlane et al. (2005), Raj et al. (2004), Raj et al. (2005), Schei (1991), Schei and Bakketeig (1989), Sormanti et al. (2004), Wingood et al. (2000), and Winn et al. (2003).

4. These studies include Aubenbraun et al. (2001), Bauer et al. (2002), Coker, Smith, et al. (2000), El-Bassel et al. (1998), Janssen et al. (2003), John et al. (2004), Johnson & Hellerstedt (2002), King et al. (2000), Kovac et al. (2003), Leung et al. (2002), Martin, Matza et al. (1999), Plichta & Abraham (1996), Raj et al. (2004), Rickert et al. (2002), Sormanti et al. (2004), Taft et al. (2004), and Wu et al. (2003).

5. Exceptions include Aubenbraun et al. (2001); Bauer et al. (2002); Bogart et al. (2005); Coker et al. (2003); Coker Smith, et al. (2000); D'Angelo et al. (2004); Dalton et al. (2002); Fisher et al. (2005); Garcia-Moreno et al. (2006); John et al. (2004); Johnson & Hellerstedt (2002); King et al. (2000); Kovac et al. (2003); Leung et al. (2002); Martin, Kilgallen, et al. (1999); Martin, Matza, et al. (1999); Muelleman et al. (1998); Parish et al. (2004); Raj et al. (2004); Rickert et al. (2002); Schei (1991); Schei & Bakketeig (1989); Silverman et al. (2001); Tubman et al. (2004); Wingood et al. (2000); and Wingood et al. (2001).

6. These studies include Bauer et al. (2002), Campbell et al. (2002), Champion et al. (2001), Champion et al. (2004), Chapman (1989), Coker et al. (2003), Dalton et al. (2002), Greenberg et al. (1997), Johnson & Hellerstedt (2002), King et al. (2000), Kovac et al. (2003), Letourneau et al. (1999), Parish et al. (2004), Schei & Bakketeig (1989), Winn et al. (2003), and Wu et al. (2003).

7. These studies include Aubenbraun et al. (2001); Bauer et al. (2002); Bogart et al. (2005); Campbell (2002); Campbell & Soeken (1999); Champion et al. (2004); Coker, McKeown, et al. (2000); Coker, Sanderson et al. (2000); Coker, Smith et al. (2000); Coker et al. (2004); El-Bassel et al. (1998); Garcia-Moreno et al. (2006); Golding (1996); Hamburger et al. (2004); Janssen et al. (2003); Johnson & Hellerstedt (2002); Martin, Matza et al. (1999); Martin, Kilgallen et al. (1999); Muelleman et al. (1998); Parish et al. (2004); Plichta & Abraham (1996); Rickert et al. (2002); Schei (1991); Silverman et al. (2001); Tucker et al. (2004); and Wu et al. (2003).

8. Studies include Aubenbraun et al. (2001); Bauer et al. (2002); Bogart et al. (2005); Champion et al. (2001); Champion et al. (2004); Coker, Smith, et al. (2000); Coker et al. (2003); Coker & Richter (1998); Collins et al. (2005); D'Angelo et al. (2004); Dalton et al. (2002); El-Bassel et al. (1998); Fisher et al. (2005); Garcia-Moreno et al. (2006); Golding (1996); Hamburger et al. (2004); John et al. (2004); Johnson & Hellerstedt (2002); Kovac et al. (2003); Letourneau et al. (1999); Martin, Kilgallen, et al. (1999); Martin, Matza, et al. (1999); Muelleman et al. (1998); Parish et al. (2004); Plichta & Abraham (1996); Raj et al. (2005); Rickert et al. (2002); Schei & Bakketeig (1989); Silverman et al. (2001); Taft et al. (2004); Wingood et al. (2001); Winn et al. (2003); and Wu et al. (2003).

9. Studies include Campbell et al. (2002); Campbell & Soeken (1999); Chapman (1989); Coker, Sanderson, et al. (2000); Coker, Smith, et al. (2000); Collins et al. (2005); Eby et al. (1995); Golding (1996); John et al. (2004); Kovac et al. (2003); Letourneau et al. (1999); Martin, Kilgallen, et al. (1999); Martin, Matza, et al. (1999); McFarlane et al. (2005); Raj et al. (2005); Rickert et al. (2002); Schei & Bakketeig (1989); Silverman et al. (2001); and Winn et al. (2003).

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