

Prevalence of Violence Against Pregnant Women

Julie A. Gazmararian, MPH, PhD; Suzanne Lazorick, MD, MPH; Alison M. Spitz, MS, MPH;
Terri J. Ballard, MPH, DrPH; Linda E. Saltzman, PhD; James S. Marks, MD, MPH

Objectives.—To summarize the methods and findings of studies examining the prevalence of violence against pregnant women and to synthesize these findings by comparing study characteristics for studies with similar and dissimilar results.

Data Sources.—MEDLINE, POPLINE, Psychological Abstracts, and Sociological Abstracts databases were searched for all articles pertaining to violence during pregnancy for the period 1963 through August 1995.

Study Selection.—Thirteen studies were selected on the basis of specific criteria: a sample with initially unknown violence status; a clear statement of research question(s), with focus on measuring the prevalence of violence; descriptions of the sample, data source, and data collection methods; and data from the United States or another developed country.

Data Extraction.—Relevant data were extracted to compare studies by study description, methods, and results.

Data Synthesis.—Evidence from the studies we reviewed indicates that the prevalence of violence during pregnancy ranges from 0.9% to 20.1%. Measures of violence, populations sampled, and study methods varied considerably across studies, and these factors may affect prevalence estimates. Studies that asked about violence more than once during detailed in-person interviews or asked later in pregnancy (during the third trimester) reported higher prevalence rates (7.4%–20.1%). The lowest estimate was reported by women who attended a private clinic and responded to a self-administered questionnaire provided to them by a person who was not a health care provider.

Conclusions.—Violence may be a more common problem for pregnant women than some conditions for which they are routinely screened and evaluated. Future research that more accurately measures physical violence during pregnancy would contribute to more effective design and implementation of prevention and intervention strategies.

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From The Prudential Center for Health Care Research, Atlanta, Ga (Dr Gazmararian); Departments of Internal Medicine and Pediatrics, School of Medicine, and Department of Maternal and Child Health, School of Public Health, University of North Carolina at Chapel Hill (Dr Lazorick); and Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion (Ms Spitz), Division of Violence Prevention, National Center for Injury Prevention and Control (Drs Ballard and Saltzman), and National Center for Chronic Disease Prevention and Health Promotion (Dr Marks), Centers for Disease Control and Prevention, Atlanta, Ga.

Reprints: Julie A. Gazmararian, MPH, PhD, The Prudential Center for Health Care Research, 2859 Paces Ferry Rd, Suite 820, Atlanta, GA 30339.

VIOLENCE AGAINST WOMEN has become increasingly recognized as an issue of clinical and public health importance.¹ An estimated 1.8 million women (3% of all women) are severely assaulted by male partners or cohabitants in the United States annually.² Initial studies in the 1970s and early 1980s suggested that 23% to 56% of battered women experienced violence while pregnant.^{3,4} These studies offer limited information about violence during pregnancy because they included only women

with known histories of battering who had moved to shelters. In the past decade, advances have been made in research in this area through the use of clinic-based⁵⁻¹⁵ and population-based^{16,17} samples of women whose histories of abuse are initially unknown and survey instruments designed specifically to assess violence during pregnancy. Despite the increased research examining violence against pregnant women, there has not been a systematic examination of the literature that describes the range of estimates measuring violence against women during pregnancy.

See also pp 1903 and 1937.

Comparison of studies measuring the prevalence of violence against pregnant women is difficult because there are differences in measures of violence, populations sampled, and study methods. Therefore, it is difficult to draw conclusions and generalize results. It has been shown that estimates of the prevalence of child abuse vary considerably due to the use of different definitions and methods,^{18,19} but the effects of these differences in measures have not been examined for violence during pregnancy.

Development of standardized methods of estimating the prevalence of violence against pregnant women would be important for the development, implementation, and evaluation of prevention and intervention strategies. Not only is the pregnant woman's emotional and physical health at risk, but there may also be consequences for the infant, including adverse birth outcomes.

We summarize herein the methods and findings of existing studies examining the prevalence of violence against

pregnant women, and we synthesize these findings by comparing study characteristics for studies with similar and dissimilar results.

METHODS

MEDLINE, POPLINE, Psychological Abstracts, and Sociological Abstracts databases were searched for reports on the topic of violence during pregnancy for the years 1963 through August 1995, using the following search terms appearing anywhere in the article: "pregnancy," "pregnancy complications," or "postpartum" and "violence," "domestic violence," "battered women," "spouse abuse," "partner abuse," "abuse of women," "abuse," or "physical abuse." Reviewing all available literature (more than 300 articles) identified by these search terms identified 13 studies⁵⁻¹⁷ that met the criteria selected for this review: (1) a sample that included women with initially unknown abuse status, (2) a clear statement of research question(s) with a focus on measuring the prevalence of violence, (3) descriptions of the sample, data source, and data collection methods, and (4) data from the United States or another developed country.

When more than 1 published article reported data from the same study sample,^{7,12,20-22} the article with the most complete data and the greatest focus on prevalence estimates was chosen to represent each study.^{7,12} The additional publications²⁰⁻²² were used only when needed to complete information on study methods or population characteristics. For 1 study published in a peer-reviewed journal,¹⁷ 2 books provided details of study methods, which assisted this review.^{2,23} In 2 cases, researchers had published reports of violence both during pregnancy^{11,14} and during the 3 months after delivery.^{24,25} The results of the follow-up studies after delivery are mentioned briefly because they are the only available data measuring violence in the postpartum period. The authors of all studies included reviewed the summaries of their work herein.

This review focuses on physical violence against pregnant women. However, several studies combined types of violence (eg, physical, emotional, and sexual violence) and did not isolate physical violence. For ease of comparison, data abstracted from studies meeting the selection criteria were summarized in tables of relevant characteristics. The categories for comparison across studies were study description (objectives, sample size, setting, and population characteristics), study methods (violence measure, perpetrator's relationship to the abused woman, data collection method, and period of observation), and

study results (types of violence included in estimate, prevalence of violence at any time, prevalence of violence during the past year, and prevalence of violence during pregnancy).

We recalculated prevalence estimates for 6 of the studies to enable direct comparison. Specifically, Amaro et al⁵ and Stewart and Cecutti¹⁴ reported prevalences of violence separately for women experiencing violence prior to and during pregnancy, so these 2 time periods were combined to recalculate a prevalence of violence in the year before delivery⁵ or ever¹⁴; Parker et al¹² had reported estimates separately for teens and adults, so these groups were combined to report a prevalence for the entire sample; Berenson et al^{6,7} had reported the prevalence during pregnancy as a proportion of women ever abused, so this was recalculated using the whole cohort as the denominator to yield an estimate of prevalence during pregnancy; and Gazmararian et al¹⁶ had reported the statistics for individual states, so these were combined for calculation of a summary estimate.

RESULTS

Comparison of Study Description

Most studies had similar primary objectives. In 11 of the 13 studies, the stated objective was to determine the prevalence of violence during pregnancy.^{5-7,9-15,17} The primary objectives of the remaining 2 were to determine whether there was a relationship between violence and either pregnancy intendedness specifically¹⁶ or correlates of violence during pregnancy.⁸ Examination of risk factors associated with the experience of violence was a secondary objective for nearly half of the studies.^{5-7,13,14,16} Other secondary objectives were to determine the characteristics of the perpetrator of abuse,^{7,11} the association between violence and adequacy of prenatal care,⁸ and the association between violence and pregnancy outcomes (eg, preterm birth¹¹ and birth weight^{11,12}). Two studies^{7,12} focused on the relationship between age and experience of violence: Berenson et al⁷ measured the prevalence of violence in adolescents, and Parker et al¹² compared the experience of violence in adolescents and adults.

Eleven of the 13 studies used clinic-based, retrospective designs in which women were asked about their past experience with violence. In the 11 clinic-based studies, women were recruited consecutively from prenatal clinics or hospital delivery wards for periods of 4 weeks¹⁵ to 3 years,^{5,12} during the years 1982 to 1993 (Table 1). Two of these 11 studies did not define recruitment periods in the description of study meth-

ods.^{13,14} Among clinic-based studies, 7 were set in public clinics,^{5-7,10-12,15} 3 included both public and private settings,^{8,9,14} and 1 was set in a private clinic.¹³ In addition, the clinic-based studies were in geographically diverse areas. All but 1 of the clinic settings were exclusively urban.¹⁴

Two population-based studies investigated the association between violence and pregnancy. Gazmararian et al¹⁶ examined data from an ongoing state surveillance system that randomly sampled approximately 12 600 mothers from birth certificates over a period of 2 years. Gelles¹⁷ used data from a national random-digit dialing survey of 6002 households with selective oversampling of black and Hispanic households and 25 lower-population states (the data were weighted to be nationally representative). This was the only study that included both pregnant and nonpregnant women, thus allowing comparison of violence prevalence between the 2 groups.

Among the 13 studies, only 6 included in the description of the study population some type of information for all of the following categories: age, race/ethnicity, socioeconomic status, and marital status.^{5,7,9,11,12,16} Although Gelles¹⁷ sample was nationally representative, no specific demographic information was provided in the article or supporting books. For the remaining studies, the mean ages were 23 to 26 years for public clinic participants^{6,8,9,12,15} and 28 or 29 years for women from private clinics.^{9,14} Three studies did not report age,^{10,13,17} and 4 did not report the participants' mean age.^{5,7,11,16} The racial/ethnic composition of the study samples varied. One sample¹² had equivalent numbers of black, white, and Hispanic subjects, while most were disproportionately black,^{5,8,11} white,^{6,7,16} or Hispanic.⁹

The type of data on socioeconomic status differed across studies, which used 1 or more of the following measures: monthly⁵ or annual^{11,13} income, percentage of women employed⁹ or unemployed,^{7,14} Medicaid eligibility,⁸ receipt of social assistance,¹⁴ income below the poverty level,¹² years of education,^{8,11,13,16} and percentage of women who graduated from high school^{9,13-15} or from college.^{9,15}

The terminology used to describe marital status was inconsistent across studies. Although some of these studies defined a "single" category,^{5,7,10,14} others^{6,9,11,12,16} used an "unmarried" category, which may have included divorced and widowed women who did not consider themselves single. Furthermore, the distribution of marital status varied considerably between public and private clinics. Between 54% and 89% of women

Table 1.—Description of Studies on Violence Against Pregnant Women*

First Author (Year)	No. of Subjects Surveyed/ No. Eligible (Response Rate)	Setting	Age, y	Race/Ethnicity†	Socioeconomic Status‡	Marital Status
Amaro (1990) ⁵	1243/1932 (64%)	Public clinics, Boston, Mass, 1984-1987	16% <18, 66% 19-29	74% black, 8% white, 18% Hispanic	48% With income <\$500/mo	62% Single
Berenson (1991) ⁹	501/532 (94%)	Public clinic, Galveston, Tex, 5/89-2/90	Mean 23.5, range 18-43	28% black, 48% white, 24% Hispanic	...	54% Single§
Berenson (1992) ⁷	342/360 (95%)	Public clinic, Galveston, Tex, new patients, 5/89-12/90	100% ≤17	34% black, 45% white, 21% Hispanic	84% Unemployed	83% Single
Campbell (1992) ⁸	488/814 (60%)	Postpartum wards of 5 hospitals, midwestern metropolitan area, 5/88-2/89	Mean 23.3, range 14-45	67% black, 33% white	Mean 11.3 y of education, 86% Medicaid recipients	...
Helton (1987) ⁹	290/292 (99%)	6 Public, 2 private clinics, large metropolitan area, 2/85-9/85	Mean 25 at public clinics, 28 at private	22% black, 32% white, 43% Hispanic, 3% other	58% With high school education, 26% some college education, 22% employed	29% Single§
Hillard (1985) ¹⁰	742/987 (81%)	Public clinic, Charlottesville, Va, 5/82-4/83	...	...	...	65% Single§
O'Campo (1994) ¹¹	358/600 (58%)	Public clinic, Baltimore, Md, 12/89-9/90	28% 18-19, 41% 20-24	90% black, 9% white, 1% other	Mean 11.4 y of education, 62% with income <\$20 000/y	89% Single
Parker (1994) ¹²	1203/<1213 (>99%)	Public clinics, Baltimore, Md, and Houston, Tex, 1990-1993	Mean 17.5 teens, 25.4 adults	35% black, 31% white, 34% Hispanic	95% Eligible for WIC	64% Single teens, 59% single adults§
Sampsel (1992) ¹³	934/940 (99%)	Private clinic, University of Michigan, first 940 women recruited for larger study	...	...	15 y of education, 97% ≥12 y of education, 35% with income >\$50 000/y	...
Stewart (1993) ¹⁴	548/561 (98%)	Public clinic and private obstetric and family physician offices, metropolitan Toronto, Ontario	Mean 29, range 14-46	...	12.6% With <12 y of education, 30% unemployed/ social assistance	19% Single
Webster (1994) ¹⁵	1014/1127 (90%)	Inner-city prenatal clinic, Brisbane, Queensland, Australia, 4-wk period, 1992	Mean 26, range 16-44	...	1% ≤7 y of education, 79% some high school, 20% any formal education after high school	...
Gazmararian (1995) ¹⁶	12 612 (approximately 90%)	Population-based mail survey, Alaska, Maine, Oklahoma, and West Virginia, 1990-1991	11%-18% <20, 26%-33% 20-24, 46%-63% >24	0.6%-10.1% black, 69%-98% white, 0.3%-28% other	14%-27% <12 y of education, 39%-45% 12 y, 27%-43% >12 y	24%-27% Single§
Gelles (1988) ¹⁷	6002/7145 (84%)	Population-based random-digit telephone interview in 50 states, 6/85-8/85 ²⁰]]	...	...	...	...

*Ellipses indicate data were not available.

†The studies used various terms for racial/ethnic groups: For this summary table, "black" includes black and African American (American or African born); "white" includes Caucasian, white non-Hispanic, and European American; and "Hispanic" includes Hispanic, Latino, and white Hispanic. In all studies, the numbers of "other," "Native American," or "Asian" participants were small, and thus are not included in this summary.

‡The studies reported various characteristics that could be used as measures of socioeconomic status. WIC indicates the Special Supplemental Food Program for Women, Infants, and Children.

§This study used "unmarried" in the original data; we have used "single" for consistency in the table. Since the original group may have included divorced and widowed women who do not consider themselves single, the number here may be higher than in the true group of single women.

]]Age, race/ethnicity, socioeconomic status, and marital status were not reported in the article, but the population was nationally representative.²³

from public clinics were single or unmarried,^{5-7,10-12} compared with 19% to 29% of those from private clinics.^{9,14}

Comparison of Study Methods

Four studies⁶⁻⁹ collected data on violence using items similar to or based on those in a screening instrument recommended by the March of Dimes (1987) for use in the care of pregnant women²⁷ (Table 2). The March of Dimes instrument²⁷ focuses first on lifetime physical violence, then on whether the violence occurred in the current pregnancy, whether it has increased during pregnancy, and whether medical care has been sought for injuries. This instru-

ment also includes the Abuse Assessment Screen, which asks the respondent to identify the site(s) of abuse on a body map. Several other studies^{11,12,17} used other established instruments, including the Conflict Tactics Scale,^{28,29} the Abuse Assessment Screen,²⁷ the Index of Spouse Abuse,³⁰ and the Danger Assessment Screen.³¹

The remaining 6 studies^{5,10,13-16} used a variety of other measures. Ascertaining violence through self-administered yes or no questionnaires, Sampsel et al¹³ used 2 questions about "physical, emotional or sexual mistreatment or abuse" ever and currently, and Gazmararian et al¹⁶ asked a single question about being "physically

hurt" by a husband or partner during the 12 months prior to delivery. In the other studies, Amaro et al⁵ and Hillard¹⁰ each asked 1 general question about violence and conducted follow-up questioning with subjects who responded positively; Stewart and Cecutti¹⁴ and Webster et al¹⁵ used a series of questions about several types of violence.

The studies varied as to whether or how they specified the perpetrator of violence. Five studies questioned participants about their experience of violence without defining the perpetrator(s),^{5-7,13,14} and 1 asked about and distinguished between violence by the "man you are with" and violence by "anyone

Table 2.—Study Methods in Studies on Violence Against Pregnant Women

First Author (Year)	Violence Measure	Perpetrator's Relationship to the Abused Woman	Data Collection Method	Period of Observation
Amaro (1990) ⁵	"Physically threatened or abused, or involved in fights/beatings"	"Was the assailant known to you?"	2 Interviews, 1 during the first prenatal visit and 1 immediately postpartum	Entire pregnancy
Berenson (1991) ⁶	"Hit, slapped, kicked, or physically hurt"	"Anyone"	1 Interview during the second prenatal visit	Up to second visit
Berenson (1992) ⁷	"Hit, slapped, kicked, or physically hurt"	Not specified	1 Interview during the first prenatal visit	Up to first visit
Campbell (1992) ⁸	"Hit, slapped, kicked, or physically hurt"	"The man you are with" and "anyone else"	1 Interview 2-5 d postpartum	Entire pregnancy
Helton (1987) ⁹	"Hit, slapped, kicked, or physically hurt"	"Male partner"	1 Interview at any point in pregnancy	Variable
Hillard (1985) ¹⁰	"Hit or tried to hurt"	"Anyone at home"	1 Interview during the first prenatal visit	Up to first visit
O'Campo (1994) ¹¹	Conflicts Tactics Scale ^{28,29}	"Someone else close to you"	1 Interview during the third trimester	Up to third trimester
Parker (1994) ¹²	Abuse Assessment Screen, ²⁷ Index of Spouse Abuse, ³⁰ and Danger Assessment Screen ³¹	"Your partner or someone important to you"	3 Interviews during the first prenatal visit and during the second and third trimesters	Up to third trimester
Sampsel (1992) ¹³	"Physically, emotionally, or sexually abused or mistreated"	Not collected	Self-administered questionnaire at any point in pregnancy	Up to first visit
Stewart (1993) ¹⁴	"Physically abused"	Not specified	Self-administered questionnaire during pregnancy	Up to first visit
Webster (1994) ¹⁵	"Ever suffered domestic violence" (gives examples)	Specified as family member or close friend	1 Interview at any point in pregnancy	Variable
Gazmararian (1995) ¹⁶	"Physically hurt"	"Husband or partner"	Mailed questionnaire and telephone follow-up, 3-6 mo postpartum	Entire pregnancy, plus 3 mo preconception
Gelles (1988) ¹⁷	Conflict Tactics Scale ^{28,29}	"Spouse/partner" ²³	Telephone survey of random sample, regardless of pregnancy status	Variable

else.¹⁸ The remaining studies limited categories of whom they were asking about to 1 or more of the following: husband,¹⁶ partner,^{12,16,17} male partner,^{9,17} family member,¹⁵ someone close or important,^{11,12,15} or "anyone at home."¹⁰

Nine studies collected violence data in either a single interview^{6-11,14} or multiple in-person interviews.^{5,12} The other investigators collected violence data by telephone,¹⁷ a mailed survey with telephone follow-up of nonresponders,¹⁶ or self-administered questionnaires.^{13,14} The time when data were collected varied considerably, ranging from the first prenatal care visit^{7,10} to 3 to 6 months after delivery.¹⁶

The period of observation also varied considerably between studies. Several included the entire pregnancy period,^{5,8} and 1 also included the 3 months before conception.¹⁶ Two studies included reports of violence through the third trimester.^{11,12} Since several studies collected data only at the first prenatal care visit, the reports of violence were limited to the period between conception and the first prenatal care visit.^{7,10,13,14} Several studies did not limit the period of observation to a specific point in the pregnancy.^{9,15,17}

Comparison of Study Results

Of the 13 studies, 9 reported the prevalence of physical violence separately,^{6-11,14,16,17} whereas the others included

sexual,^{5,12} sexual and emotional,¹³ and sexual, social, emotional, and psychological abuse¹⁵ (Table 3). The prevalence of women experiencing violence at any time in the past (including pregnancy) ranged from 9.7% to 29.7%. Four studies^{5,12,16,17} that queried about violence occurring during the past year reported rates between 5.6% and 24.4%.

The prevalence of women experiencing violence during pregnancy ranged from 0.9% to 20.1%. Eight^{5-10,14,15} of the 11 studies that examined the pregnancy period found the prevalence to be between 3.9% and 8.3%. The percentage of women experiencing violence during pregnancy could not be calculated for the population-based studies^{16,17} because neither study used a time period that clearly defined violence during the pregnancy period. Gazmararian et al¹⁶ asked about violence "in the 12 months prior to delivery" without delineating between the preconception and pregnancy periods. Gelles¹⁷ asked about violence in the past 12 months and then asked about pregnancy status at the time of the telephone interview but made no adjustment for the duration of pregnancy or nonpregnancy included in that 12-month period.

Examination of the prevalence estimates in conjunction with the study characteristics and methods (Tables 1 and 2) shows that several possible characteristics may be associated with similarity

of results. The majority of the 8 studies that had similar prevalence rates of violence during pregnancy obtained data from 1 in-person interview and used similar measures of violence. In addition, all but 1⁵ of the 8 studies included less than the entire period of pregnancy.

Moreover, the 2 studies with the highest estimates^{11,12} were similar to each other: Both used detailed in-person interviews (eg, the Abuse Assessment Screen or the Conflict Tactic Scale) that included several questions related to violence, and both included all 3 trimesters of the pregnancy.

The study that found the lowest prevalence, 0.9%,¹³ was unique in population, setting, and data collection methods. This study was the only one that included a population who attended a private clinic. The respondents were mostly married, older women of higher socioeconomic status (97% had at least 12 years of education, and 35% had annual incomes of at least \$50 000). Violence was assessed from 1 broad question ("physically, emotionally or sexually abused or mistreated") on a self-administered questionnaire provided to the woman by a person who was not a clinician. Furthermore, the perpetrator was not specified.

COMMENT

Evidence from the studies reviewed herein indicates that the prevalence of

Table 3.—Results of 13 Studies on Prevalence of Violence Against Pregnant Women*

First Author (Year)	Types of Violence Included in the Estimate	Prevalence at Any Time, %	Prevalence During the Past Year, %	Prevalence During Pregnancy, %
Amaro (1990) ⁵	Physical, sexual	...	10.4†‡	7.4
Berenson (1991) ⁶	Physical	19.6	...	5.6†
Berenson (1992) ⁷	Physical	17.0	...	6.7†
Campbell (1992) ⁸	Physical	11.5§	...	7.2§
Helton (1987) ⁹	Physical	23.4	...	8.3
Hillard (1985) ¹⁰	Physical	10.9	...	3.9
O'Campo (1994) ¹¹	Physical	...	...	20.1||
Parker (1994) ¹²	Physical, sexual	...	24.4†||	16.0†
Sampsel (1992) ¹³	Physical, sexual, emotional	9.7	...	0.9
Stewart (1993) ¹⁴	Physical	11.9†	...	6.6
Webster (1994) ¹⁵	Physical, sexual, social, emotional, psychological	29.7	...	5.8
Gazmararian (1995) ¹⁶	Physical	...	5.6†‡	...
Gelles (1988) ¹⁷	Physical	...	16.7#	...

*Ellipses indicate data were not available.

†Estimate of prevalence calculated with the published data but not reported as such in the original article.

‡The past year was the year prior to delivery of the baby.

§Prevalence reports violence by "the man you are with."

||The study asked about violence "in the past 6 months"; the interview was conducted during the third prenatal visit.

††The past year was the year prior to the time of the first interview.

#Reported by women respondents; the past year was the year prior to the time of the interview.

violence during pregnancy is in the order of 0.9% to 20.1%, although the majority of the studies reported the prevalences to be between 3.9% and 8.3%. If the latter range is reasonably accurate and the estimates are applied to the 4 million women who deliver liveborn infants each year in the United States, one would expect approximately 156 000 to 332 000 of these women to experience violence during pregnancy. Clearly, violence during pregnancy is a serious public health problem.

Although the wide variation in estimates may reflect true differences based on the populations sampled, we suspect that many of the differences reflect factors related to study methods. These methodologic factors are likely to have influenced prevalence estimates, and we will briefly discuss 4 of the possible methodologic explanations.

First, estimates may vary by whether the information is collected from self-administered questionnaires or from multiple in-person interviews. Sampsel et al¹³ speculate that their low estimate (0.9%) compared with other studies is due to their collection of data by a self-administered questionnaire. Several studies have shown that disclosure of the experience of violence is greater with in-person interviews than with self-administered questionnaires.^{19,29,32} Second, training of the interviewer may also influence results. Sampsel et al¹³ suggest that their rates might have been higher if the respondents had received the questionnaire from a "skilled and trained" clinician. In support of this suggestion, 1 study reported that the 2 in-person interviews per subject that were conducted by highly trained, sensitive

interviewers identified higher prevalences of child abuse.¹⁹ Third, repeated questioning throughout the pregnancy or asking respondents later in pregnancy is likely to elicit higher prevalence estimates. Parker et al¹² asked women about violence at several points during their pregnancy and found an additional 5% of the nonabused women reporting abuse beginning during the second or third trimester. The 2 studies that asked during the third trimester reported the highest prevalence rates.^{11,12} Furthermore, Smith³³ reported that supplementary questions within the same interview resulted in higher prevalence estimates of woman abuse in Toronto, Ontario. Finally, the actual wording of the question(s) may affect estimates.^{19,34} Wyatt,¹⁹ in reviewing studies of child abuse, found that the studies that reported lower estimates of child abuse asked broad questions about the abuse, followed by more specific questions. On the other hand, studies that reported higher estimates used a number of very specific questions about the types of child abuse. While this was true for the lowest and 2 highest estimates in our study, it was difficult to draw conclusions from the estimates in the middle range (4%-8%).

In the field of research on violence against pregnant women, investigators should make an effort to develop and use standard measures of violence, including measures of severity and chronicity. Use of standard measures in different populations will allow comparability of estimates between studies. These measures should also specify the perpetrator's relationship to the respondent. The articles reviewed herein in-

dicating that intimate partners,^{6,11,12,14,15} former partners,^{14,15} or parents or other family members^{6,7,10,14} are commonly the assailants. Campbell et al⁸ asked 2 separate questions to distinguish violence by a partner or by anyone else and found differences in reported prevalences (7.2% vs 1.2%, respectively). Intervention strategies may also differ depending on the relationship of the perpetrator to the pregnant woman.

Additional research is needed that examines the role of risk factors associated with the experience of violence during pregnancy. Most of the articles reviewed herein stated that they investigated risk factors associated with the experience of violence. However, to achieve adequate sample sizes for statistical analysis, most investigators combined women ever experiencing violence with those who only or first experienced it during pregnancy. Therefore, in effect, risk factors for lifetime violence rather than violence specifically during pregnancy were investigated.

Most researchers have conducted clinic-based studies, which are valuable in describing violence in specific populations, but population-based studies are needed to determine the extent of violence against pregnant women in the general population. Obtaining a high response rate is critical so that the results can accurately reflect the population from whom they are drawn.³⁵ Studies should also be extended longitudinally to follow women throughout the child-bearing years, to evaluate the effect of violence on pregnancy outcome and the occurrence of postpartum violence. Results from 2 recent studies^{24,25} that examined violence during the postpartum period suggest that violence may be more prevalent in the postpartum period than during pregnancy.

Research must also address whether the pattern of violence changes during pregnancy—a basic research question that we cannot accurately determine from existing studies. Despite some indication that there is an increase during pregnancy,^{6-9,14,15} all of these studies asked only women who indicated they experienced violence during pregnancy whether the frequency had changed during pregnancy. To determine whether the pattern of violence changes during pregnancy, future studies should use methods that explicitly compare the prevalence of violence during nonpregnant periods with violence during pregnancy.

The patterns of violence may be important to assess, since the subsequent intervention(s) may differ depending on the type of pattern identified. It is likely that 2 patterns of violence occur. In 1

pattern, violence is a chronic problem for women who experience violence periodically or regularly; in the other pattern, violence is acute among women who had not experienced violence previously. For women who are chronically abused, the pattern of violence may increase or decrease in severity or frequency during pregnancy. We currently do not know the relative contributions of chronic, repeated episodes and acute, single episodes, and we suspect that chronic patterns of violence may be more difficult to alter than acute episodes.

Despite the limitations of the studies described, there is reason to believe that violence may be a more common prob-

lem for pregnant women than pre-eclampsia, gestational diabetes, and placenta previa,³⁶ conditions for which pregnant women are routinely screened and evaluated. Physicians, nurse practitioners, nurses, and others involved in the care of pregnant women should incorporate screening for violence into their routine care and should establish and follow protocols for referral of abused women to appropriate community resources.³⁷ The period of pregnancy presents a unique opportunity when clinicians have regular contact with women. Evidence from the studies with the highest rates suggests that the regular contact associated with prenatal care

visits allows for the development of a relationship that may facilitate the disclosure of the experience of violence. Additional training about the problem of violence against women should be included in the education of all health care professionals who will work with pregnant women.^{37,38}

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References

1. Stark E, Flitcraft AH. Spouse abuse. In: Rosenberg ML, Fenley MA, eds. *Violence in America: A Public Health Approach*. New York, NY: Oxford University Press; 1991:138-139.
2. Straus MA, Gelles RJ. *Physical Violence in American Families: Risk Factors and Adaptations to Violence in 8,145 Families*. New Brunswick, NJ: Transaction Publishers; 1990.
3. Gelles RJ. Violence and pregnancy: a note on the extent of the problem and needed resources. *Fam Coordinat*. 1975;14:40-47.
4. Bowker LH. *Beating Wife Beating*. Lexington, Ky: Lexington Books; 1983.
5. Amaro H, Fried LE, Cabral H, Zuckerman B. Violence during pregnancy and substance abuse. *Am J Public Health*. 1990;80:575-579.
6. Berenson AB, Stiglich NJ, Wilkinson GS, Anderson GD. Drug abuse and other risk factors for physical abuse in pregnancy among white non-Hispanic, black, and Hispanic women. *Am J Obstet Gynecol*. 1991;164:1491-1499.
7. Berenson AB, San Miguel VV, Wilkinson GS. Prevalence of physical and sexual assault in pregnant adolescents. *J Adolesc Health*. 1992;13:466-469.
8. Campbell JC, Poland ML, Waller JB, Ager J. Correlates of battering during pregnancy. *Res Nurs Health*. 1992;15:219-226.
9. Helton AS, McFarlane J, Anderson ET. Battered and pregnant: a prevalence study. *Am J Public Health*. 1987;77:1337-1339.
10. Hillard PJA. Physical abuse in pregnancy. *Obstet Gynecol*. 1985;66:185-190.
11. O'Campo P, Gielen AC, Faden RR, Kass N. Verbal abuse and physical violence among a cohort of low-income pregnant women. *Wom Health Issues*. 1994;4:29-36.
12. Parker B, McFarlane J, Soeken K. Abuse during pregnancy: effects on maternal complications and birth weight in adult and teenage women. *Obstet Gynecol*. 1994;84:323-328.
13. Sampsel CM, Petersen BA, Murtland TL, Oakley DJ. Prevalence of abuse among pregnant women choosing certified nurse-midwife or physician providers. *J Nurse-Midwifery*. 1992;37:269-273.
14. Stewart DE, Cecutti A. Physical abuse in pregnancy. *Can Med Assoc J*. 1993;149:1257-1263.
15. Webster J, Sweett S, Stolz TA. Domestic violence in pregnancy: a prevalence study. *Med J Aust*. 1994;161:466-470.
16. Gazmararian JA, Adams MM, Saltzman LE, et al. The relationship between pregnancy intendedness and physical violence in mothers of newborns. *Obstet Gynecol*. 1995;85:1031-1038.
17. Gelles RJ. Violence and pregnancy: are pregnant women at greater risk of abuse? *J Marriage Fam*. 1988;50:841-847.
18. Wyatt GE, Peters SD. Issues in the definition of child abuse in prevalence research. *Child Abuse Negl*. 1986;10:231-240.
19. Wyatt GE, Peters SD. Methodologic considerations in research on the prevalence of child sexual abuse. *Child Abuse Negl*. 1986;10:241-251.
20. Berenson AB, San Miguel VV, Wilkinson GS. Violence and its relationship to substance use in adolescent pregnancy. *Soc Adolesc Med*. 1992;13:470-474.
21. McFarlane J, Parker B, Soeken K, Bullock L. Assessing for abuse during pregnancy: severity and frequency of injuries and associated entry into prenatal care. *JAMA*. 1992;267:3176-3178.
22. Parker B, McFarlane J, Soeken K, Torres S, Campbell D. Physical and emotional abuse in pregnancy: a comparison of adult and teenage women. *Nurs Res*. 1993;42:173-178.
23. Gelles RJ, Straus MA. *Intimate Violence*. New York, NY: Simon & Schuster; 1988.
24. Gielen AC, O'Campo P, Faden RR, Kass NE, Xue X. Interpersonal conflict and physical violence during the childbearing year. *Soc Sci Med*. 1994;39:781-787.
25. Stewart DE. Incidence of postpartum abuse in women with a history of abuse during pregnancy. *Can Med Assoc J*. 1994;151:1602-1604.
26. Louis Harris & Associates. *Second National Family Violence Survey*. New York, NY: Louis Harris & Associates; 1985.
27. Helton AS. *March of Dimes Protocol of Care for the Battered Woman*. White Plains, NY: March of Dimes; 1987.
28. Straus MA. Measuring intrafamily conflict and violence: the Conflict Tactics (CT) Scale. *J Marriage Fam*. 1979;41:75-88.
29. Straus MA, Gelles RJ, Steinmetz SK. *Behind Closed Doors: Violence in the American Family*. New York, NY: Doubleday/Anchor; 1980.
30. Hudson WW, McIntosh SR. The assessment of spouse abuse: two quantifiable dimensions. *J Marriage Fam*. 1981;43:873-888.
31. Campbell JC. Nursing assessment for risk of homicide with battered women. *Adv Nurs Sci*. 1986;8:36-51.
32. Bradburn NM, Sudman S. *Improving Interview Method and Questionnaire Design*. San Francisco, Calif: Jossey-Bass Inc; 1981.
33. Smith MD. The incidence and prevalence of woman abuse in Toronto. *Violence Vict*. 1987;2:173-187.
34. Koss MP. Detecting the scope of rape: a review of prevalence research methods. *J Interpersonal Violence*. 1993;8:198-222.
35. Sorenson SB, Saftlas AF. Violence and women's health. *Ann Epidemiol*. 1994;140-145.
36. Cunningham FG, MacDonald PD, Gant NF, et al. *Williams Obstetrics*. 19th ed. East Norwalk, Conn: Appleton & Lange; 1993.
37. Council on Ethical and Judicial Affairs, American Medical Association. Physicians and domestic violence: ethical considerations. *JAMA*. 1992;267:3190-3193.
38. Scott CJ, Matricciani RM. Joint Commission on Accreditation of Healthcare Organizations standards to improve care for victims of abuse. *Md Med J*. 1994;43:891-898.