

## Changes in Intimate Partner Violence During Pregnancy

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Women's experiences of partner violence, both before and during pregnancy, are described using a convenience sample of women recruited from prenatal clinics. Included were an "index group" of women who told their clinicians that they had been physically abused during pregnancy, and a "comparison group" of women who told their clinicians that they had *not* been physically abused during pregnancy (even though later more detailed assessment found that some of these comparison women *had* experienced such violence). The women averaged 27 years of age, with 83% being high school graduates, 26% being married, and 66% having had previous children. The Conflict Tactics Scales 2 assessed rates of partner violence victimization of the women and their male partners, including psychological aggression, physical assault, and sexual coercion. Injuries also were assessed. Results showed that comparison men were physically assaulted at significantly higher rates than were their female partners, both before and during pregnancy (even though these victimization rates were much lower than those seen among the index couples). Index women experienced higher rates of psychological aggression, physical assault, and sexual coercion than did their male partners, and these women were significantly more likely than their male partners to be injured. Pregnancy onset was associated with significant increases in the rates of psychological aggression among both the index and comparison couples. In addition, the index women experienced a significantly increased rate of sexual violence victimization during pregnancy. However, pregnancy was not associated with significant increases in the rates of physical assault or violence-related injuries among the index or comparison couples.

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Research conducted over the past two decades has demonstrated that many women, including those who are pregnant, are victims of physical and sexual abuse perpetrated by intimate partners (Bureau of Justice Statistics, 2000; Gelles, 1974; Rennison & Welchans, 2000;

Straus & Gelles, 1990; Tjaden & Thoennes, 1998, 2000). Recent population-based studies estimate that approximately 1.5 million women are physically and/or sexually assaulted by their intimate partners in the United States every year (Rennison & Welchans, 2000; Tjaden & Thoennes, 2000). Rates of such victimization are highest among women of reproductive age, especially those between the ages of 18 and 24 years (Bureau of Justice Statistics, 2000; Tjaden & Thoennes, 2000).

Most research that has assessed women's abusive experiences both before and during pregnancy has found that somewhat greater proportions of women have been abused before pregnancy than during pregnancy and that the majority of women abused during pregnancy also were abused before pregnancy. For example, studies in prenatal care settings have found that between 4 and 26% of patients report experiencing violence before their current

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pregnancies, and that 1–17% report having been violence victims during the current pregnancy (Amaro *et al.*, 1990; Bayatpour *et al.*, 1992; Berenson *et al.*, 1991, 1992, 1994; Campbell *et al.*, 1992, 1999; Cokkinides & Coker, 1998; Curry *et al.*, 1998; Dye *et al.*, 1995; Fernandez & Krueger, 1999; Gielen *et al.*, 1994; Helton *et al.*, 1987; Helton & Snodgrass, 1987; Martin *et al.*, 1996; McFarlane *et al.*, 1992; McFarlane & Parker, 1996; Parker *et al.*, 1994; Sampsel *et al.*, 1992; Stewart & Cecutti, 1993; Webster *et al.*, 1994). A statewide survey of a representative sample of recently postpartum North Carolina women estimated that approximately 7% had been victims of physical abuse during the year before pregnancy and that 6% had been physical abuse victims during pregnancy (Martin *et al.*, 2001a,b). Differences in the relatively wide range of prevalence estimates of abuse before and/or during pregnancy are probably due both to real differences in the distribution of violence across populations, as well as to the use of different study methods (e.g., various definitions of abuse).

Violence at any time in a woman's life can result in a myriad of devastating health problems (Drossman *et al.*, 1995; Sutherland *et al.*, 1998); however, violence during pregnancy is of special concern for a number of reasons. First, violence during pregnancy poses health risks not only for the woman but also for her fetus. Second, although the research findings have been equivocal in this area, there has been some evidence to suggest that violence occurring during pregnancy may be more severe in its nature, or more frequent in its occurrence, than violence occurring at other times, at least for some women. For example, some studies have found that women who have been violence victims both before and during pregnancy often report that the intensity and frequency of the violence increased when they became pregnant (Helton & Snodgrass, 1987; Stewart & Cecutti, 1993). Another study found that pregnant abused women had more severe injuries than did nonpregnant abused women (Fagan *et al.*, 1983), and other research found that pregnant abuse victims had a greater number of risk factors for becoming a homicide victim than did nonpregnant abuse victims (Campbell *et al.*, 1998). In contrast, a study from an obstetrics clinic found that, among women abused before pregnancy, 36% reported a decrease in the frequency and/or severity of abuse when they became pregnant, 43% reported that the frequency/severity of abuse stayed about the same when they became pregnant, and only 21% reported that the frequency/severity of the abuse increased during pregnancy (Hillard, 1985). Similarly, a study of a random sample of healthy pregnant women from public and private prenatal clinics found that only a minority of the women who were physically abused before and during

their pregnancies (29%) reported that the abuse increased when they became pregnant (Helton *et al.*, 1987).

Taken together, this past research has shed much light on the problem of abuse before and during pregnancy; however, questions remain concerning whether and how intimate partner violence may change when a woman becomes pregnant. For example, most past studies in this area have focused on only one form of violence, most typically physical assault; thus, less is known concerning whether the onset of pregnancy is associated with changes in other types of violent behavior such as psychological aggression and sexual violence. Further, more research is needed concerning the extent and frequency of injuries resulting from violence, both before and during pregnancy. In addition, most investigations of intimate partner violence during pregnancy have focused solely on the victimization of the woman by her partner, without a simultaneous examination of the partner's victimization by the woman.

This paper extends our knowledge in these areas by examining a convenience sample of 65 pregnant women who were clinically screened for partner violence victimization as part of their routine prenatal care (i.e., clinicians asked the women if they had been "hit, slapped, kicked, or otherwise physically hurt" by their male partners during pregnancy). Thirty-five of the women told their prenatal care providers that they had been physically abused by their partners during pregnancy, whereas the other 30 women told their clinicians that they did *not* experience such physical abuse. For ease of discussion throughout the remainder of this paper, the first group of women and their male partners will be referred to as the "index couples," whereas the second group of women and their partners will be referred to as the "comparison couples." This research

1. compares the male and female couple members in terms of their rates of various types of partner violence victimization and violence-related injuries, both before and during pregnancy, and
2. examines whether the rates of violence victimization and violence-related injuries change when the couples become pregnant.

## METHOD

### Sample Recruitment

Study participants were recruited from two North Carolina prenatal care clinics that serve predominately low-income women. After the clinical history taking (including the clinical screening for violence) and the

provision of clinical care, the health care providers described the research study to eligible study participants and invited them to participate in the research. Patients were eligible to enter the study if they were at least 18 years of age, spoke English, and began prenatal care some time before their 6th month of pregnancy. In addition, because we planned to have somewhat similar numbers of women who had experienced violence during pregnancy (the index women) and those who had not experienced violence during pregnancy (the comparison women), the clinicians were asked to recruit a nonvictimized comparison woman for study after they had recruited each violence victim for study. This report presents information from 65 women, including 35 index women who screened positive for partner violence during pregnancy and 30 comparison women who screened negative for partner violence during pregnancy.

### Assessment

Well-trained female research staff administered a structured research interview to the study participants when the women were approximately 6–7 months pregnant. These interviews were conducted in a private room in the health care clinic. Great care was taken to establish rapport with the study participants prior to interview administration. The study was described to the participants, and it was stressed that truthful answers were needed to potentially sensitive questions to gain accurate insight into women's health and how women's lives may change throughout pregnancy. An informed consent form was administered to the participants to assure them of the confidentiality of their responses, and that their participation (or nonparticipation) in the study would not in any way affect their health care or that of their family. At the end of the study interview, all respondents were provided with a brochure describing several types of health-related services that they could access free of charge (including domestic violence services), and they were given a modest monetary "thank-you gift" for their involvement in the study.

The study interview collected a wide range of information. Women were asked about their own sociodemographic characteristics, as well as those of their partners, including age, education level, employment status, and race/ethnicity. Data also were collected concerning aspects of the women's relationships with their partners, including their marital status and their relationship duration (i.e., each woman was asked about when her relationship had started, whether the relationship was still ongoing, and [if relevant] when her relationship had ended). Other

questions asked about the paternity of the women's current pregnancy (i.e., whether or not the partner fathered the pregnancy), and about whether or not the women had any previous children.

Even though some information concerning the women's experiences of partner violence was available on the basis of the clinical screening procedures performed by the prenatal care providers during the recruitment phase of the study (i.e., each woman told her prenatal care clinician that she had, or had not, been physically abused by her partner during pregnancy), we wanted to supplement this information with a much more comprehensive research assessment of partner violence and resultant injuries. Therefore, the Conflict Tactics Scales 2 (CTS2; Straus *et al.*, 1996), a revision and expansion of the original Conflict Tactics Scales (CTS; Straus, 1979), was administered to the women to assess several aspects of partner violence. The CTS2 is a listing of behaviors that may have occurred during the couple's relationship, either within the context of a disagreement or at some other time. Items are presented in pairs, with each item-pair asking about a particular behavior. One item of each pair assesses the respondent's behavior toward her partner (e.g., "I pushed or shoved my partner"), whereas the other item of the pair assesses the partner's behavior toward the respondent (e.g., "My partner pushed or shoved me"). Thus, information is available concerning both partners' behaviors. For each item, the respondent indicates how frequently this behavior has occurred within a specified period of time. This study gathered information concerning behaviors that occurred in the course of each couple's relationship during two time frames: during the current pregnancy and during the 12 months before the woman became pregnant. The seven frequency response categories included "never"; "once"; "twice"; "3 to 5 times"; "6 to 10 times"; "11 to 20 times"; and "more than 20 times." The approximate midpoints of the frequency response categories are used for scale scoring purposes (i.e., "never" is scored as 0, "once" as 1; "twice" as 2; "3 to 5 times" as 4; "6 to 10 times" as 8; "11 to 20 times" as 15; and "more than 20 times" as 25; Straus, 1995). Responses to particular items are summed to create the following CTS2 scales: Psychological Aggression (composed of 8 items including behaviors such as being insulted/swore at by one's partner, being shouted at/yelled at by one's partner, etc.); Physical Assault (composed of 12 items including behaviors such as being pushed/shoved by one's partner, being beaten by one's partner, etc.); Sexual Coercion (composed of 7 items including behaviors, such as being made to have sex with one's partner without a condom, being physically forced by one's partner to have sex, etc.); and Injury (composed of 5 items describing various injuries received as a result of

partner violence, such as acquiring a sprain/bruise/small cut, passing out due to a head injury, etc.). For each scale, higher scores suggest more frequent violence victimization, or more frequent violence-related injuries. The first three scales were computed for both male and female violence victimization, whereas the fourth scale was computed for injuries experienced by the men and women. To adjust these frequency scale scores for differences in the duration of the two time periods under consideration (specifically, the duration of each couple's relationship during the 12 months prior to pregnancy onset, and the duration of the couple's relationship while the woman was pregnant), each frequency scale score was divided by the number of months that the couple had been in union during the relevant time period. Thus, an "average monthly frequency" score was created for each particular type of violence victimization, as well as for injuries received both during pregnancy and during the year before pregnancy.

### Analysis

Descriptive statistics and bivariate analyses (specifically, *Z* tests and chi-square [ $\chi^2$ ] tests) were used to contrast the comparison and index couples in terms of their sociodemographic characteristics, relationship variables, and issues concerning children. Descriptive statistics and Wilcoxon-signed rank tests for paired data (Rosner, 2000) were used to compare the male and female members of the couples in terms of their victimization rates for each type of violent behavior (psychological aggression, physical assault, and sexual coercion) and their rates of violence-related injuries. Wilcoxon-signed rank tests for paired data also were used to examine potential changes in the men's and women's rates of violence victimization once pregnancy began (i.e., the mean monthly frequency of violence victimization experienced during the year before pregnancy was compared to that experienced during pregnancy). Similar procedures were used to examine potential changes in the men's and women's rates of violence-related injuries associated with the onset of pregnancy.

### Institutional Review Board for Human Subjects Approval

All procedures used in this study were approved by the Institutional Review Board for Human Subjects Research of the University of North Carolina at Chapel Hill.

## RESULTS

### Description of the Women and Their Male Partners

At the time of the study interview, the mean gestational ages of the two groups of women were not significantly different ( $Z = -1.10$ ,  $p = .28$ ). More specifically, the comparison women were a mean of 27.9 weeks pregnant ( $SD = 4.5$ ), and the index women were a mean of 31.3 weeks pregnant ( $SD = 17.6$ ).

Examination of the sociodemographic characteristics of the two groups of women found that they differed significantly in terms of their education levels, but were fairly similar in other respects. In particular, 93% of the comparison women had at least a high school graduate level of education, compared to only 74% of the index women,  $\chi^2(1 \text{ df}, N = 65) = 4.17$ ,  $p = .04$ . This difference in education levels was not due to the women being significantly different in terms of their ages ( $Z = -0.71$ ,  $p = .48$ ), with the mean age of the comparison women being 26.9 years ( $SD = 6.7$ ) and the mean age of the index women being 28.0 years ( $SD = 6.9$ ). The majority of both groups of women were employed at the time of the study interview, 73% of the comparison women and 63% of the index women,  $\chi^2(1 \text{ df}, N = 65) = 0.81$ ,  $p = .30$ . Fifty-seven percent of the comparison women were African American, as were 53% of the index women,  $\chi^2(1 \text{ df}, N = 65) = 0.09$ ,  $p = .77$ .

The sociodemographic characteristics of the male partners of the comparison and index women differed significantly in terms of their employment status, but were similar in other ways. In particular, the comparison men were significantly more likely than the index men to be employed (100% vs. 86%),  $\chi^2(1 \text{ df}, N = 65) = 4.64$ ,  $p = .03$ . The two groups of men did not differ significantly in terms of their ages ( $Z = -1.15$ ,  $p = .25$ ), with the comparison men having a mean age of 28.0 years ( $SD = 5.3$ ), and the index men having a mean age of 30.6 years ( $SD = 7.9$ ). The majority of both groups of men had at least a high school graduate level of education, 76% of the comparison men and 69% of the index men,  $\chi^2(1 \text{ df}, N = 65) = 0.42$ ,  $p = .52$ . Somewhat more than half of each group of men was African American, 53% of the comparison men and 60% of the index men,  $\chi^2(1 \text{ df}, N = 65) = 0.29$ ,  $p = .59$ .

The comparison and index women differed significantly by marital status, but were similar in terms of other aspects of their relationships with their partners. In particular, 40% of the comparison women were married at the time of the study interview, in contrast to only 14% of the index women,  $\chi^2(1 \text{ df}, N = 65) = 5.53$ ,  $p = .02$ . However, the mean duration of the couples' relationships, regardless of their marital status, did not differ significantly

between the groups ( $Z = 1.17, p = .25$ ), with the comparison couples being together for an average of 16.8 months ( $SD = 3.6$ ) and the index couples being together for an average of 15.8 months ( $SD = 3.4$ ). Although all of the couples in the study had been in their relationships for at least some time before and during pregnancy, by the time of the study interview, 10% of the comparison women were no longer in the relationship (i.e., the women reported that the relationship had ended), compared to 20% of the index women,  $\chi^2(1 df, N = 65) = 1.24, p = .27$ .

The two groups of women were quite similar in terms of having previous children. In particular, 67% of the comparison women already had at least one child, compared to 66% of the index women,  $\chi^2(1 df, N = 65) = 0.01, p = .94$ . When asked about the paternity of the current pregnancy, 3% of the comparison women reported that the biological father was someone other than their partner, compared to 11% of the index women,  $\chi^2(1 df, N = 65) = 1.49, p = .22$ .

**Male and Female Rates of Violence Victimization and Violence-Related Injuries**

Table I reveals that the comparison men experienced psychological aggression and physical assault at somewhat higher rates than did their female partners, but experienced sexual coercion at somewhat lower rates than did their female partners, with some of these differences reaching traditional levels of statistical significance ( $p < .05$ ). More specifically, the comparison men did not differ significantly from their female partners in terms of

their rates of experiencing psychological aggression, either before pregnancy (men experienced a mean of 2.22 behaviors per month, whereas women experienced 1.33,  $p = .08$ ) or during pregnancy (men experienced a mean of 11.23 behaviors per month, whereas women experienced 3.45,  $p = .25$ ). Even though the victimization rates of physical assault were extremely low for both the comparison men and women, the men experienced significantly higher rates of physical assault than did their female partners, both before pregnancy (men experienced a mean of 0.58 behaviors per month, whereas women experienced 0.09,  $p = .01$ ) and during pregnancy (men experienced a mean of 1.17 behaviors per month, whereas women experienced 0.21,  $p = .01$ ). Although the comparison men experienced sexual coercion at a lower rate than did their female partners, both before pregnancy (men experienced a mean of 0.03 behaviors per month, whereas women experienced 0.30) and during pregnancy (men experienced a mean of 0.04 behaviors per month, whereas women experienced 0.46), these differences did not quite reach statistical significance ( $p = .05$  and  $p = .08$ , respectively). Given the low rates of physical assault and sexual coercion among the comparison couples, it is understandable why violence-related injuries were virtually nonexistent among these couples (see Table I). Further, the comparison men and their female partners did not differ significantly in terms of their rates of these injuries, either before pregnancy (men experienced a mean of less than 0.01 injuries per month, whereas women did not experience any injuries,  $p = 1.00$ ) or during pregnancy (men experienced a mean of 0.02 injuries per month, whereas women did not experience any injuries,  $p = .25$ ).

**Table I.** Mean (*M*) Monthly Frequencies of Violence Victimization and Violence-Related Injuries

	Comparison couples		<i>p</i>	Index couples		<i>p</i>
	Males	Females		Males	Females	
<i>Violence victimization</i>						
<i>Psychological aggression</i>						
Before pregnancy	2.22	1.33	.08	3.64	5.02	.01
During pregnancy	11.23	3.45	.25	7.31	8.97	.12
<i>Physical assault</i>						
Before pregnancy	0.58	0.09	.01	1.89	2.79	.02
During pregnancy	1.17	0.21	.01	3.07	5.06	.36
<i>Sexual coercion</i>						
Before pregnancy	0.03	0.30	.05	0.59	1.68	<.01
During pregnancy	0.04	0.46	.08	0.35	2.51	<.01
<i>Injuries received</i>						
Before pregnancy	<0.01	0	1.00	0.35	0.79	.01
During pregnancy	0.02	0	.25	0.36	1.10	.04

*Note.* The *p* values are based on Wilcoxon-signed rank tests for paired data that compare the male and female members of each couple.

In contrast to the patterns seen among the comparison couples, Table I shows that, among index couples, the victimization rates for each of the three types of violent behaviors were higher among the women than among their male partners, with most of these differences being statistically significant. More specifically, before pregnancy, index women experienced a significantly higher rate of psychological aggression than did their male partners (men experienced a mean of 3.64 behaviors per month, whereas women experienced 5.02,  $p = .01$ ). Index women also experienced psychological aggression at a higher rate than did their male partners during pregnancy, although this difference did not quite reach statistical significance (men experienced a mean of 7.31 behaviors per month, whereas women experienced 8.97,  $p = .12$ ). The index women experienced significantly higher rates of physical assault before pregnancy than did their male partners (men experienced a mean of 1.89 behaviors per month, whereas women experienced 2.79,  $p = .02$ ). Although the index women's victimization rate of physical assault also was higher than that of their male partners during pregnancy, this difference was not statistically significant (men experienced a mean of 3.07 behaviors per month, whereas women experienced 5.06,  $p = .36$ ). In addition, index women experienced sexual coercion at significantly higher rates than did their male partners, both before pregnancy (men experienced a mean of 0.59 behaviors per month, whereas women experienced 1.68,  $p < .01$ ) and during pregnancy (men experienced a mean of 0.35 behaviors per month, whereas women experienced 2.51,  $p < .01$ ). Finally, Table I shows that the rate of violence-related injuries was significantly higher among the index women compared to their male partners, for both the time periods before pregnancy (the index men were injured an average of 0.35 times per month, whereas the index women were injured an average of 0.79 times per month,  $p = .01$ ), and during pregnancy (the index men were injured an average

of 0.36 times per month, whereas the index women were injured an average of 1.10 times per month,  $p = .04$ ).

**Changes in Rates of Violence Victimization and Violence-Related Injuries With Pregnancy Onset**

Table II shows that the comparison men experienced a significant increase in their rate of psychological aggression victimization when their partners became pregnant; however, the men's rates of physical assault and sexual coercion victimization did not change significantly with pregnancy, nor did their rate of receiving violence-related injuries. In particular, when the comparison couples became pregnant, the men experienced a mean increase of 9.01 psychologically aggressive acts per month ( $p < .01$ ). On the other hand, the comparison men's mean monthly frequency of physical assault victimization did not change significantly with pregnancy ( $p = .15$ ), increasing by an average of only 0.59 behaviors per month. Nor did the comparison men's mean monthly frequency of sexual coercion victimization change significantly with pregnancy, increasing by an average of only 0.01 behaviors per month ( $p = 1.00$ ). Finally, although the comparison men's rate of violence-related injuries increased with the onset of pregnancy by an average of 0.02 injuries per month, this increase was not statistically significant ( $p = .25$ ).

The comparison women experienced changes in their rates of victimization somewhat similar to those experienced by their male partners when the couples became pregnant. More specifically, Table II shows that the comparison women experienced a significant increase in psychological aggression with the onset of pregnancy ( $p < .01$ ), increasing by an average of 2.12 behaviors per month. However, the comparison women's rate of being physically assaulted increased by only 0.12 behaviors per month during pregnancy ( $p = .50$ ), and their rate of being

**Table II.** Mean (*M*) Changes in the Monthly Frequencies of Violence Victimization and Violence-Related Injuries With the Onset of Pregnancy

	Comparison couples				Index couples			
	Males		Females		Males		Females	
	<i>M</i>	<i>p</i>	<i>M</i>	<i>p</i>	<i>M</i>	<i>p</i>	<i>M</i>	<i>p</i>
Violence victimization								
Psychological aggression	9.01	<.01	2.12	<.01	3.67	<.01	3.95	<.01
Physical assault	0.59	.15	0.12	.50	1.18	.06	2.27	.81
Sexual coercion	0.01	1.00	0.16	.20	-0.24	.50	0.83	.04
Injuries received	0.02	.25	0	(No test)	0.01	.62	0.31	.83

*Note.* The *p* values are based on Wilcoxon-signed rank tests for paired data that assess the within-person change in monthly frequency with pregnancy onset.

sexually coerced increased by only 0.16 behaviors per month ( $p = .20$ ). Finally, the comparison women did not experience violence-related injuries either before or during pregnancy, so their rate of injuries did not change when they became pregnant.

Examination of the changes in the index men's experiences of violence victimization with pregnancy onset showed a pattern somewhat similar to that of the comparison couples. More specifically, Table II shows that with the onset of pregnancy, index men experienced a significant increase in their rate of psychological aggression victimization, increasing by an average of 3.67 behaviors per month ( $p < .01$ ). Although the index men's rate of experiencing physical assault increased by an average of 1.18 behaviors per month with the onset of pregnancy, this change did not quite reach statistical significance ( $p = .06$ ). In addition, index men's victimization rate of sexual coercion decreased by an average of 0.24 behaviors per month during pregnancy ( $p = .50$ ), while their rate of being injured increased by an average of 0.01 injuries per month ( $p = .62$ ).

In contrast, index women experienced statistically significant increases in their rates of two types of violence victimization when they became pregnant, namely, psychological aggression and sexual coercion (see Table II). In particular, index women experienced a significant increase in their rate of psychological aggression victimization at pregnancy onset, increasing by an average of 3.95 behaviors per month ( $p < .01$ ). Although the index women also experienced an increased rate of physical assault during pregnancy (increasing by an average of 2.27 behaviors per month), this change was not statistically significant ( $p = .81$ ). However, there was a significant change in the index women's rate of being sexually coerced during pregnancy, increasing by an average of 0.83 behaviors per month ( $p = .04$ ). Finally, although the index women's rate of injury changed when they became pregnant, increasing by an average of 0.31 injuries per month, this change was not statistically significant ( $p = .83$ ).

## DISCUSSION

This research is unique in being the first investigation of which we are aware to examine both male and female victimization rates for multiple types of intimate partner violence (including psychological aggression, physical assault, and sexual coercion), both during the year before pregnancy and during pregnancy. The observed patterns of domestic violence paint a somewhat complex picture. First, although psychological aggression was somewhat common among the comparison couples, their rates of

physical assault and sexual coercion were relatively low (ranging from a mean of 0.03 behaviors per month to 1.17 per month). This being the case, it is understandable why violence-related injuries were extremely uncommon among these couples, especially among the comparison women who did not experience any violence-related injuries either before or during pregnancy.

It is noteworthy that all of the comparison women had "screened negative" for physical partner violence during pregnancy at a prenatal care visit (i.e., they told their clinicians that they had *not* been "hit, slapped, kicked, or otherwise physically hurt" by their male partners during the current pregnancy). However, during the more intensive research interview, some of these women reported having been victims of some type of partner physical assault and/or sexual coercion during pregnancy. It may be that some of these women were assaulted for the first time during the period between the prenatal screening visit and the in-depth research interview. It is also possible that the nature of the research questions concerning violence, or the setting of the study interview, elicited more complete victimization disclosure than did the brief clinical screening procedure, a finding in line with research that suggests that women make conscious choices concerning disclosing information about the violence in their lives (Gielen *et al.*, 2000). Therefore, to maximize the identification of abuse victims, clinicians should ideally ask women about violence at multiple health care visits and should ask about violence using various types of questions.

Routine universal screening of female patients for intimate partner violence has been recommended by the American Medical Association, the American College of Emergency Physicians, the American College of Obstetricians and Gynecologists, the American Nurses Association, the American College of Nurse Midwives, and other professional health organizations (American College of Emergency Physicians, 1994; Council on Ethical and Judicial Affairs of the American Medical Association, 1992; Jones & Horan, 1997). Although both violence victimization and contact with health care providers occur most frequently during women's reproductive years, violence screening in reproductive health care settings is not universal (Clark *et al.*, 2001). Nearly three quarters of U.S. women between the ages of 15 and 44 receive at least one reproductive health care service annually (Abma *et al.*, 1997), yet researchers estimate that less than half of all reproductive health care providers routinely screen for physical violence, with a smaller proportion screening for sexual assault (Horan *et al.*, 1998; Parsons *et al.*, 1995).

This study also found that, unlike the behavior patterns seen among the comparison couples (in which the men were victims of psychological aggression and

physical assault at somewhat higher rates than were their female partners), all three types of violence victimization were more frequently experienced by index women compared to their male partners, with statistically significant differences found for psychological aggression before pregnancy, physical assault before pregnancy, and sexual coercion before and during pregnancy. Further, the rates of violence-related injuries, both before and during pregnancy, were significantly higher among index women than among their male partners, with the women being injured an average of 0.79 times per month before pregnancy and 1.10 times per month during pregnancy. These injuries among index women are understandable in light of the relatively high rates of physical assault victimization experienced by the index women (averaging 2.79 behaviors per month before pregnancy and 5.06 behaviors per month during pregnancy), as well as the relatively high rates of sexual coercion victimization of the index women (averaging 1.68 behaviors per month before pregnancy and 2.51 behaviors per month during pregnancy), results in line with past research showing that many female victims of intimate partner violence suffer high levels of both physical and sexual abuse (Campbell & Soeken, 1999).

When potential changes in the rates of violence victimization associated with the onset of pregnancy were examined, statistically significant increases in the rates of psychological aggression were identified for the men and women in both groups. This finding is consistent with past research that has found that arguing with partners often increases when a couple becomes pregnant (Martin *et al.*, 2001a). Thus, it appears that the stresses and life changes brought about by pregnancy may lead to increased verbal arguing by the couple; however, this may not necessarily translate into increased physical and/or sexual violence.

Sadly, the onset of pregnancy was associated with a significant increase in the rate of sexual violence victimization experienced by the index women, increasing by an average of 0.83 behaviors per month. However, no such significant changes in sexual victimization rates were detected among the index men, comparison women, or comparison men. Furthermore, pregnancy was not associated with significant increases in the rate of physical assault or injuries experienced by the members of the index or comparison couples. While these findings suggest that abused women may not be at *increased* risk of injury during pregnancy, the fact that the index women reported an average of one injury per month during pregnancy indicates that their risk of injury was substantial both before and during pregnancy.

In addition to adding to the literature concerning the frequency of domestic violence and resultant injuries before and during pregnancy, this study echoes the findings

of past research in showing that the index couples differed significantly from the comparison couples in terms of several sociodemographic and relationship variables. The index women tended to have lower education levels than the comparison women, a finding consistent with past research on both violence during pregnancy and population-based studies of intimate partner violence (Campbell *et al.*, 1999; Centers for Disease Control and Prevention, 1999a,b; Dietz *et al.*, 1997; Gazmararian *et al.*, 1995; Goodwin *et al.*, 2000; Tjaden & Thoennes, 2000). In addition, the index men were less likely than the comparison men to be employed, results in line with other research findings (Weimann *et al.*, 2000). Further, the index couples were less likely than the comparison couples to be married, a finding that has often been reported in the domestic violence literature (Fagan & Brown, 1994; Rennison & Welchans, 2000; Tjaden & Thoennes, 2000).

Results of this study must be viewed in light of the various methodological constraints of the investigation. For example, CTS2, while more expansive than the original CTS, is limited to measuring certain types of violence as discrete behaviors, and does not include detailed information regarding the context of these behaviors. Because intimate partner violence may best be conceptualized as an often chronic condition encompassing interrelated ongoing events, examining violent behaviors out of context may miss important dimensions of the entire situation (e.g., that the pushing was done in self-defense, that the shouting was part of a larger pattern of coercive controlling behavior; Smith *et al.*, 1999).

Another potential study limitation is that this research was based on women's interview responses that are prone to various forms of recall and response bias that may underestimate the true extent of socially stigmatized behaviors such as intimate partner violence. In addition, we are unsure whether the women's ability to recall violent events was similar for the two time periods under investigation in this study, namely, during pregnancy and during the year before pregnancy. Although CTS2 was designed to assess partner violence both within the past year and during the respondent's lifetime, the reliability and validity research on CTS2 has generally focused on the past year assessment, rather than the lifetime assessment (Straus, 1995). For all of these reasons, this study could have benefited from additional information sources concerning partner violence, such as partner's reports of violence or police reports concerning calls for domestic assaults. Finally, it should be noted that this investigation used information collected when the women were approximately 6–7 months pregnant; therefore, violence that occurred only later in pregnancy would have not been detected.

Caution should be used in extrapolating these study findings to other groups of pregnant women because the study participants were a convenience sample drawn from two North Carolina prenatal care clinics that served predominately low-income women. In fact, several of the sociodemographic characteristics of our study sample varied from those of the general population of pregnant women in the state of North Carolina. For example, a relatively small proportion of the women in this sample were married (26% of all of the study participants), while estimates from the state of North Carolina suggest that approximately 67% of the women who deliver babies each year in North Carolina are married (Martin *et al.*, 2001a).

Despite these limitations, the results of this study add important information to our knowledge concerning intimate partner violence both before and during pregnancy. They suggest that women who are physically abused during pregnancy often have experienced high levels of psychological aggression and physical assault before the pregnancy began. Furthermore, the onset of pregnancy may result in an increase in the frequency of sexual victimization of the woman by her male partner. These findings underscore the importance of assuring that all women's health care providers, including prenatal care providers, screen women for multiple types of violence in their lives, and offer identified violence victims pertinent health, social, and domestic violence services. Further, a priority should be placed on developing, implementing, and evaluating interventions that address various forms of intimate partner violence. Finally, we join with others (Petersen *et al.*, 1998) in encouraging longitudinal research in this area to further examine the patterns, contexts, and outcomes of intimate partner violence before, during, and after pregnancy.

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