Physical Intimate Partner Violence and Contraceptive Behaviors Among Young Women

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Abstract

Background: Understanding the link between physical intimate partner violence (IPV) and contraception is key to preventing unintended pregnancy and sexually transmitted infections.

Materials and Methods: Data from the Relationship Dynamics and Social Life study, a longitudinal study of a racially and socioeconomically diverse population-representative random sample of 18- to 19-year-old women residing in a Michigan county in 2008–2009 and followed weekly through 2011–2012, were used. Logistic regression models of contraceptive behaviors on temporally specific measures of physical violence victimization: recent, history in the current relationship, and history in prior relationships were conducted among 711 women.

Results: Women who experienced physical IPV in their current relationship had lower odds of using contraception (odds ratio [OR], 0.47; 95% confidence interval [CI], 0.28, 0.76 for recent; OR, 0.53; 95% CI, 0.33, 0.83 for past). Condom use was lower among women who experienced past physical IPV in their current relationship (OR, 0.44; 95% CI, 0.26, 0.73), while withdrawal use was higher (OR, 1.99; 95% CI, 1.24, 3.19). Women who experienced physical IPV used condoms less consistently (OR, 0.34; 95% CI, 0.13, 0.85 for recent; OR, 0.27; 95% CI, 0.14, 0.52 for prior relationships).

Conclusions: Physical IPV victimization is a dynamic and strong predictor of contraceptive use, method type, and consistency of condom use.

Keywords: intimate partner violence, contraception, Relationship Dynamics and Social Life study

Introduction

INTIMATE PARTNER VIOLENCE (IPV) is a significant public health problem and an important social issue among adolescents and young adults. Approximately one-third of women experienced some form of violence by an intimate partner in their lifetime, with over 70% of women's violent experiences first occurring before age 25.¹ The formation of intimate relationships is a central feature of adolescence and emerging adulthood,² and these key developmental periods shape subsequent experiences in adulthood.³ The high prevalence of IPV during this time period highlights the importance of viewing relationships as potential contexts of risk, where violence begins and subsequently permeates adult relationships. Furthermore, the risk of unintended pregnancy and sexually transmitted infections is higher due to the difficulties negotiating contraception within the context of violent relationships.^{4,5}

IPV has been linked to a lack of or inconsistent use of contraception,^{4,6} and to differential method choice.^{7,8} Past research proposes several explanations for why violence may influence contraceptive behaviors. Women may not use contraception because they fear violence that may occur as a result of their use or negotiation of use.⁹ Violent partners may attempt to control or sabotage contraceptive efforts.^{8,10} Women may switch to methods that are more easily hidden from their violent partners, such as injections versus pills.^{7,8} However, the majority of these studies are cross-sectional, leaving the field with limited information about the temporality of the association between violence and contraception.

Contraceptive behaviors also vary by individual, partner, and relationship characteristics. Young women from disadvantaged backgrounds (*e.g.*, who have teen or single mothers, or who live in poverty) are less likely to use any contraception and if they do, they are more likely to use condoms (although

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not consistently) and less likely to use hormonal methods compared with their more advantaged counterparts.^{11,12} In addition, although higher religiosity is associated with delayed sexual activity,¹³ when religious young people do engage in sex, they do not use contraception consistently.¹⁴

Partner and relationship characteristics also play an important role. Young women who are involved with an older partner are less likely to report using any contraception^{15–17} and less likely to use condoms specifically.^{18,19} As relationships become more serious and sex becomes more frequent, condom use decreases and the use of hormonal contraception increases.^{16,20–23} In addition, consistent contraception may be particularly problematic in unstable relationships.^{24,25} For instance, breaking up and getting back together with a prior partner^{26,27} may decrease contraceptive vigilance, particularly if contraceptive use seems less important in a rekindled relationship than it would in a new relationship, or if a rekindled relationship picks up where it left off in terms of seriousness. Given these differences, we control for these important individual, partner, and relationship characteristics.

We drew on innovative data from the Relationship Dynamics and Social Life (RDSL) study, which has unprecedented longitudinal detail on both violence and contraceptive use. Although the past research discussed earlier has demonstrated a negative association between violence and contraception, questions remain regarding the timing and ordering of violence and contraception. For instance, it is not clear whether the link between violence and contraception is a consequence of: (1) the current experience of violence at a specific point in time within the relationship, (2) the historical experiences of violence within the relationship, or (3) something about the women themselves that leads to violent relationships and makes them poor contraceptors.

In this study, we address these three questions. While there are other critical questions to ask and potential mechanisms by which violence relates to contraception, such as gender norms and attitudes toward violence, we pay attention here to mechanisms that would suggest that it is either something about the characteristics of the relationship itself or about the individual characteristics of the woman, or both. To design effective interventions that focus on the appropriate level (*i.e.*, the individual, the relationship, or both), it is essential that we have a better understanding of these mechanisms.

Methods

Data

The RDSL study began with a population-representative random sample of 1,003 young women, aged 18–19, residing in a single Michigan county.^{a,b} The sampling frame was the Michigan Department of State driver's license and Personal Identification Card database.^c

The first component of data collection was a baseline face-to-face survey interview conducted between March 2008 and July 2009, assessing sociodemographic characteristics, attitudes, relationship characteristics and history, contraceptive use, and pregnancy history. At the conclusion of the baseline interview, respondents were invited to participate in the weekly survey component of the study, which covered a two-and-a-half year follow-up period. The weekly surveys collected measures of pregnancy desires and pregnancy, as well as re-

lationship characteristics such as commitment, violence, sex, and contraceptive use, by 5-minute phone or web surveys.^d Respondents were paid \$1 per weekly survey with \$5 bonuses for on-time completion of five weekly surveys in a row.

Of the 1,003 women who completed the baseline interview, 95% ($n=953$ women) participated in the weekly surveys. The follow-up component concluded in January 2012. To minimize bias from attrition,²⁸ we use data for the 947 women who completed 18 months of weekly surveys. (We refer to the period between surveys as a week, as shorthand, even though it may vary from 5 to 13 days. The mode was 7 days; the median was 8 days.^e)

The focus of this study is on physical violence within relationships, specifically female victimization by a male perpetrator. Only respondents who were in a relationship were asked questions about IPV, and only respondents who had sex with their partner were asked about coital-specific contraceptive methods. Therefore, we restrict analyses to weeks in which the respondent was in a relationship, had sex with her partner, was not pregnant, and did not report a strong desire to become pregnant ($n=711$ women and $n=12,008$ weeks).

Measures

Individual characteristics. We control for several socio-demographic measures measured at baseline. Age was taken from the state driver's license and personal ID database used to choose the sample. Race was measured with the following question: "Which of the following groups describe your racial background? Please select one or more groups: American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Black or African American, or White." If a respondent reported more than one race, she was asked which race best describes her; that response is used to code race. (We conducted a sensitivity analysis that excluded non-White or African American and a sensitivity analysis that excluded Hispanics; the results were comparable.) The RDSL sample is predominantly White or African American, therefore race was dichotomized into African American versus not African American.

A single measure of childhood disadvantage was created based on the sum of the following four dichotomous indicators. For the first, respondents were asked, "While you were growing up, which of the following people did you live with?" followed by, "Which of these people did you live with for the majority of the time when you were growing up?" They chose from the following list: mother, father, adoptive mother, adoptive father, step-mother, step-father, grandmother, grandfather, other relative(s), foster mother, foster father, institution. Using answers to the "majority of the time" question, we collapsed this into two categories: grew up with two parents (either two biological or one biological and one step-parent), or did not grow up with two parents (grew up with one biological parent only or in another arrangement [*e.g.*, with grandparents, an aunt, etc.]). For the second, respondents were asked the question, "How old was your biological mother when she had her first child?" Respondents were coded 1 if their biological mother was a teenager when she had her first child and 0 otherwise. For the third, respondents were asked "What is the highest level of education your mother completed?" Mother's highest level of education less than high school was coded 1 and 0

otherwise. For the fourth, we created a dichotomous indicator for an affirmative response to the question, "While you were growing up, did your family ever receive public assistance?"

For the question, "How important if at all is your religious faith to you?" response choices ranged from 1 (not at all important) to 4 (more important than anything else), which were reduced to two categories: not at all or somewhat important versus very important or more important than anything else.

Because respondents were sampled at age 18 or 19, few had completed any postsecondary education. Therefore, education indicators include high school grade point average (GPA) and a dichotomous indicator for enrollment in a postsecondary school. (Preliminary analyses included separate categories for 2-year college, vocational, technical, or other school, versus 4-year college, but the results did not differ for the two categories. They are combined for parsimony.) Respondents were asked, "Are you currently receiving public assistance from any of the following sources? WIC (Women, Infants, and Children Program), FIP (Family Independence Program), Cash welfare, or Food stamps." Respondents were dichotomized into either receiving at least one category of public assistance or none. Employment is coded as either "currently working for pay" or not.

We also control for four baseline measures of past adolescent experiences related to sex and pregnancy: age at first sexual intercourse (dichotomized as 15 or younger relative to older than 15 or had not yet had sexual intercourse combined), number of sexual partners (dichotomized as one or no partner, or two or more partners), sexual intercourse "without using some method of birth control such as condoms, pills, or another method" (dichotomized as no, including those who had never had sex, or yes), and past pregnancies (dichotomized as none, or one or more).

Partner and relationship characteristics. We control for several partner and relationship characteristics. In every weekly survey, respondents were asked to identify their most important partner during the prior week, defined as someone the respondent considered "special" or "romantic," and/or had physical and/or emotional contact ("such as kissing, dating, spending time together, sex, or other activities"). Respondents who had more than one partner during the prior week were asked to identify the most important or most serious.

Partner characteristics were collected at the first report of each new partner or, in the case of the partner identified at the baseline interview, as of the baseline interview. These include the age difference between the respondent and her partner, partner's education, and whether the partner has children that are not the respondent's. Age difference between the respondent and her partner includes the following categories: (0) partner is the same age or younger, (1) partner is 1–2 years older, (2) partner is 3–5 years older, or (3) partner is 6 or more years older. Partner's education is coded as (1) less than high school, (2) high school, or (3) more than high school. A dichotomous measure indicating that the partner has other children that are not the respondent's is also included.

Relationship characteristics include seriousness and instability. Seriousness of the current relationship varies weekly, and is operationalized as the relationship type and length. Relationship type is measured using several

questions about marriage and engagement, cohabitation, commitment, and time spent together. Marriage or engagement with the current partner is coded dichotomously. Cohabitation is established with a question asking the respondent whether she lives in a place "that is separate from where your partner lives." Commitment is ascertained with a question about whether the respondent and her current partner "agreed to only have a special romantic relationship with each other, and no one else." Time spent together is ascertained dichotomously on whether or not the respondent reported having "spent a lot of time" with her current partner.

Current relationship types were then identified using the following mutually exclusive hierarchical categories of seriousness: (a) casual—uncommitted and less time-intensive, (b) nonexclusive dating—uncommitted, but more time-intensive, (c) long distance—committed, but less time-intensive (*e.g.*, partner deployed in the military, lives far away, and so on), (d) exclusive dating—committed and more time-intensive, (e) cohabiting, and (f) married or engaged. The reference category for current relationship type is the least serious type, that is, casual. Length is a measure of the total duration, which is the total of all stretches of time—including, in the case of breaking up and reunification, any time spent together before and after breakups—with the current partner, coded in months.

Instability within the current relationship also varies weekly, and is operationalized as churning and sexual non-exclusivity. As with past research,^{26,27} churning is a measure of whether the respondent and her current partner had experienced a prior breakup and reconciliation. A prior breakup and reconciliation was determined by whether the current partner was reported previously, but was not reported continuously during every week since first reported. We use two separate variables. The first is a dichotomous indicator for whether the respondent and her current partner had a breakup in the past month (*i.e.*, recent breakup). The second is a dichotomous indicator for whether the respondent and her current partner had one or more breakups before the past month (*i.e.*, history of breakups). Sexual nonexclusivity is measured as a dichotomous indicator of whether the respondent had a sexual partner other than the current partner (during the current week).

We control for one additional time-varying relationship characteristic: a time-varying dichotomous indicator of whether the respondent ever had any prior pregnancy and/or birth with the current partner. These experiences could potentially influence contraceptive behaviors, regardless of the seriousness or instability in the relationship. For instance, a pregnancy history within a relationship may represent an underlying propensity to use (or not use) contraception; those who have such a history may be poor contraceptors, have higher pregnancy intentions, or are more ambivalent about becoming pregnant.^{29,30}

Intimate partner violence. In this study, we conceptualize IPV as a measure of physical violence victimization, which is being physically hurt by a male partner who perpetrates the violence. Respondents were asked, "Did you and [Partner Name] fight or have any arguments?" in the prior week. Respondents who answered affirmatively were then asked about specific types of fighting, including whether the partner "pushed, hit, or threw something" at her "that could hurt."

Recent physical violence is a dichotomous variable that equals 1 if the respondent was physically hurt by her partner in the current week and 0 otherwise. History of physical violence in the current relationship is a dichotomous variable that equals 1 if the respondent was physically hurt by her partner in the current relationship before the current week and 0 otherwise. History of physical violence in prior relationship(s) is a dichotomous variable that equals 1 if the respondent was physically hurt by prior partner(s) and 0 otherwise.

Contraception. We measure contraceptive behaviors in a hierarchical manner. That is, we first examine the ways in which physical violence is associated with use of any contraceptive method. Second, among those who are using a contraceptive method, we examine the ways in which physical violence is associated with the type of contraceptive method used. And third, among those using a particular type of contraceptive method, we examine the ways in which physical violence is associated with the consistency by which that method is used. This allows us to investigate whether there are differential factors that are associated with each of these decisions, that is, to use or not, which method to use, and whether to use that method consistently. Knowing which factors are associated with which behaviors may help us understand how young people make decisions, and in terms of prevention, which behaviors should be targeted.

Use of any contraceptive method indicates whether the respondent “used or did anything that can help people avoid becoming pregnant, even if you did not use it to keep from getting pregnant.”

Specific contraceptive method used was based on several questions about noncoital and coital-specific methods. Respondents who reported any contraceptive use in the prior week were then asked to identify the specific contraceptive method used, including noncoital types (birth control pills, birth control patch, NuvaRing, Depo-Provera or any other type of contraceptive shot, Implanon or another contraceptive implant, intrauterine device [IUD], or rhythm) and coital types (condom, diaphragm or cervical cap, spermicide, female condom, or withdrawal).

For analyses, the contraceptive methods were grouped into the following mutually exclusive categories: (a) IUD, implant, or Depo-Provera (referred to as LARC/Injectable hereafter), (b) birth control pills, birth control patch, or NuvaRing (referred to as Pill/Other Hormonal hereafter), (c) dual (condom with LARC/Injectable or Pill/Other hormonal method), (d) condom only, and (e) withdrawal only. (Preliminary analyses included separate categories for each method type, but the results did not differ among the methods included in LARC/Injectable or among those included in Pill/Other Hormonal; therefore, they were combined for the sake of parsimony.) For weeks in which multiple methods were used, priority was given to the more effective method for pregnancy prevention.

Consistency of contraceptive method used was measured in three ways: (1) whether, in weeks of dual use, the respondent or her partner used a condom every time they had sexual intercourse; (2) whether, in weeks of condom-only use, the respondent or her partner used a condom every time they had sexual intercourse; and (3) whether, in weeks of

withdrawal only, the respondent used that method of birth control every time they had sexual intercourse.

We exclude 82 weeks when the specific contraceptive method was missing or was another method (*e.g.*, rhythm only) for analyses of specific contraceptive method used. When we analyze consistency of contraceptive method used, we only include weeks when women used each specific contraceptive method: dual ($n=361$ women and $n=2,279$ weeks), condom only ($n=447$ women and $n=2,767$ weeks), and withdrawal only ($n=306$ women and $n=1,863$ weeks).

Analytic strategy

Descriptive statistics were calculated for all of the measures included in the multivariable analyses. A series of multiple logistic regression models was estimated for whether the woman used any contraceptive method, the specific contraceptive method used, and the consistency of contraceptive method use on all three dynamic measures of IPV: recent physical violence, history of physical violence in the current relationship, and history of physical violence in prior relationships.

The unit of analysis for these models is the person-week—in other words, the models estimate the log-odds of, for example, any contraceptive use in each of the 12,008 weeks in which respondents had sex, were not pregnant, and were not “strongly pronatal” (*i.e.*, reported a strong desire to become pregnant and no desire to avoid pregnancy). Because person-weeks are the unit of analysis, and they are nested within women, all analyses were conducted using Stata/SE 14.2 with the cluster option, which adjusted the standard errors to account for this multilevel structure. Thus, the coefficients for physical violence as well as partner and relationship characteristics reflect comparisons across different weeks within an individual woman combined with comparisons across different women (in different relationships). The effects of sociodemographic characteristics (and other variables that do not vary over time) reflect comparisons across different women.

All regression models include the individual and relationship control measures presented in Table 1, but for parsimony, these results are not presented in Tables 2–4, but are available from the authors.

Results

The average age in the sample at the time of the baseline interview was 19.18 years (range 18.12–20.31, standard deviation [SD] 0.57). In all, 33.6% of women reported their race as African American. Average childhood disadvantage was 1.33 (range 0–4, SD 1.10). Slightly more than half (54.1%) of women said that religion was very important or more important than anything else (high religious importance). The average high school GPA was 3.09 (range 0–4.17, SD 0.63). 27.6% of women reported receiving at least one category of public assistance. Over half (54.6%) of women were enrolled in postsecondary school. About half (51.5%) of women were employed.

Over one-third (36.3%) of women reported they were 15 or younger at first sexual intercourse.^f 70.2% reported two or more sexual partners by the baseline interview. Over half (56.0%) of women reported that as of the baseline interview, they had ever sexual intercourse without some method of

TABLE 1. DESCRIPTIVE STATISTICS ($N=711$ INDIVIDUALS, 1,277 RELATIONSHIPS, AND 12,008 WEEKS; EXCEPT WHERE NOTED)

	Percentage/ mean (SD)
Individual characteristics ($n=711$ individuals)	
Sociodemographic background	
Age (range 18.12–20.31)	19.18 (0.57)
African American (0/1)	33.6
Childhood disadvantage (range 0–4)	1.33 (1.10)
High religious importance (0/1)	54.1
High school GPA (range 0–4.17)	3.09 (0.63)
Receiving public assistance (0/1)	27.6
Enrolled in postsecondary school (0/1)	54.6
Employed (0/1)	51.5
Adolescent experiences related to pregnancy	
Age at first sex, 15 years or younger (0/1)	36.3
Two or more sex partners (0/1)	70.2
Ever had sex without birth control (0/1)	56.0
Any pregnancies (0/1)	28.4
Partner characteristics ($n=1,277$ relationships)	
Age difference between partner and respondent	
Partner same age or younger (1)	20.8
Partner 1–2 years older (2)	38.4
Partner 3–5 years older (3)	26.3
Partner 6+ years older (4)	14.5
Partner education	
Less than high school (1)	13.5
High school (2)	40.7
More than high school (3)	45.8
Partner has prior children (0/1)	15.6
Relationship characteristics ($n=12,008$ weeks)	
Seriousness	
Relationship type	
Casual (1)	5.0
Nonexclusive dating (2)	5.4
Long distance (3)	10.3
Exclusive dating (4)	40.7
Cohabiting (5)	20.0
Married/engaged (6)	18.6
Duration (months) (range 0.08–121.24)	17.87 (18.03)
Instability	
Recent breakup (0/1)	8.1
History of breakups (0/1)	8.9
Sexual nonexclusivity (0/1)	2.2
Other	
Prior pregnancy or birth with current partner (0/1)	8.4
Intimate partner violence ($n=12,008$ weeks)	
Recent physical violence (0/1)	2.1
History of physical violence in current relationship (0/1)	11.7
History of physical violence in prior relationship(s) (0/1)	3.7

(continued)

TABLE 1. (CONTINUED)

	Percentage/ mean (SD)
Contraception ($n=12,008$ weeks)	
Any contraceptive method used (0/1)	90.1
Specific contraceptive method used ^a	
LARC/injectable (0/1)	6.1
Pill/other hormonal (0/1)	29.6
Dual (condom plus LARC/injectable or pill/other hormonal) (0/1)	21.2
Condom only (0/1)	25.8
Withdrawal only (0/1)	17.3
Consistency of contraceptive method used	
Condom use among dual ^b (0/1)	65.6
Condom use among condom only ^c (0/1)	66.1
Withdrawal among withdrawal only ^d (0/1)	28.8

LARC/Injectable includes IUD, implant, or Depo-Provera. Pill/Other Hormonal includes Pill, Patch, or Ring.

^aOnly among weeks in which any contraception was used and not missing on type of method ($n=693$; 10,742 weeks).

^bOnly among respondents who reported using dual ($n=361$; 2,279 weeks).

^cOnly among respondents who reported using a condom only ($n=447$; 2,767 weeks).

^dOnly among respondents who reported using withdrawal only ($n=306$; 1,863 weeks).

SD, standard deviation.

birth control. For past pregnancies, 28.4% of women reported one or more.

In terms of weekly relationship type, 5.0% of weeks were casual (no commitment and less time-intensive), 5.4% were nonexclusive dating (no commitment and more time-intensive), 10.3% were long distance (commitment and less time-intensive), 40.7% were exclusive dating (commitment and more time-intensive), 20.0% were cohabiting, and 18.6% were married or engaged. The average total duration with the current partner was 17.87 months (range 0.08–121.24, SD 18.03). In 8.1% weeks, relationships had recently experienced a breakup (in the past month) and in 8.9% weeks, relationships had a history of breakups (before the past month). Among all relationship weeks, 8.4% were preceded by a pregnancy or birth with the current partner and in 2.2% of relationship weeks, the woman also had sex with another partner other than her current partner.

Partners were the same age or younger than the women in 20.8% of relationships. In 38.4% of relationships, partners were 1–2 years older than the respondent, and in 26.3% of relationships, partners were 3 to 5 years older than the women. 14.5% of partners were 6 or more years older than the woman. Therefore, the majority partners were older than the woman. Partners' education level varied from 13.5% with less than a high school degree, 40.7% with a high school degree, and 45.8% with more than a high school degree. 15.6% of partners had children from a prior relationship (*i.e.*, children who were not the respondents').

Overall, 13.8% of women had experienced physical violence during the study period (results not shown). In 2.1% of

TABLE 2. ADJUSTED LOGISTIC REGRESSION RESULTS OF USING ANY CONTRACEPTIVE METHOD ON INTIMATE PARTNER VIOLENCE

	<i>Used any contraceptive method</i>
	<i>OR (95% CI)</i>
Intimate partner violence	
Recent physical violence	0.47 (0.28, 0.76)
History of physical violence in current relationship	0.53 (0.33, 0.83)
History of physical violence in prior relationship(s)	0.59 (0.30, 1.17)
<i>n</i> (relationship-weeks)	12,008
<i>n</i> (respondents)	711

Logistic regression model controls for all of the variables listed in Table 1.

CI, confidence interval; OR, odds ratio.

weeks, women were physically hurt by the current partner. In 11.7% of weeks, women had a history of being physically hurt by a current partner. Also, in 3.7% of weeks, women had a history of being physically hurt by prior partner(s) (Table 1).

About 90% of relationship weeks involved some contraceptive use. LARC/Injectable was used in about 6% of weeks, Pill/Other Hormonal in almost 30% of weeks, condoms with LARC/Injectable or Pill/Other Hormonal in over 20% of weeks, condom only in 26% of weeks, and withdrawal only in about 17% of weeks. For consistency of contraceptive method used, almost 66% of weeks involved consistently using a condom among dual users, 66% of weeks involved consistently using condoms among condom-only users, and almost 29% of weeks involved consistently using withdrawal among withdrawal-only users.

Women who had recently experienced physical violence or who had a history of physical violence in their current relationship had lower odds of using any method of contraception (odds ratio [OR], 0.47; 95% confidence interval [CI], 0.28, 0.76 and OR, 0.53; 95% CI, 0.33, 0.83, respectively). A

history of physical violence in prior relationship(s) was not significantly associated with use of any contraceptive method (Table 2).

Women with a history of physical violence in their current relationships had higher odds of LARC/Injectable use than those without this history (OR, 2.58; 95% CI, 1.10, 6.06). Pill and other hormonal methods were not related to physical violence. We should caution that LARC/Injectable use, either alone or with a condom is relatively low compared to the other contraceptive method groups. However, of the 124 women in the analytic sample, who had ever reported using LARC/Injectable in a given week, 82 of them reported using LARC/Injectable only and they contributed 659 weeks to the total 10,742 weeks in the LARC/Injectable-only regression model because the unit of analysis is person-weeks. There is also considerable variation in the occurrence of physical violence within this group. Dual method use (condom combined with LARC/Injectable or Pill/Other Hormonal) was lower among women with recent or a history of physical violence in their current relationship (OR, 0.49; 95% CI, 0.26, 0.91 and OR, 0.43; 95% CI, 0.23, 0.80, respectively). Use of condoms only was lower among women with a history of physical violence in their current relationships (OR, 0.44; 95% CI, 0.26, 0.73), while use of withdrawal was higher (OR, 1.99; 95% CI, 1.24, 3.19). A history of physical violence in prior relationship(s) was not significantly associated with the specific method of contraception used (Table 3).

During times when women reported use of only condoms, consistency was lower when there was recent physical violence (OR, 0.34; 95% CI, 0.13, 0.85) or when there was a history of physical violence in prior relationships (OR, 0.27; 95% CI, 0.14, 0.52). Consistency of condom use among dual users and consistency of withdrawal among withdrawal users did not differ by recent or historical physical violence (Table 4).

Discussion

This article illustrates that the dynamics of IPV are important to our understanding of contraceptive behaviors. We find that young women are less likely to use any contraceptive

TABLE 3. ADJUSTED LOGISTIC REGRESSION RESULTS OF SPECIFIC METHOD OF CONTRACEPTION USED ON INTIMATE PARTNER VIOLENCE

	<i>Specific method of contraception used</i>				
	<i>LARC/injectable</i>	<i>Pill/other hormonal</i>	<i>Dual</i>	<i>Condom only</i>	<i>Withdrawal only</i>
	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>
Intimate partner violence					
Recent physical violence	2.37 (1.17, 4.80)	1.16 (0.77, 1.72)	0.49 (0.26, 0.91)	0.99 (0.58, 1.71)	0.98 (0.65, 1.48)
History of physical violence in current relationship	2.58 (1.10, 6.06)	1.16 (0.72, 1.87)	0.43 (0.23, 0.80)	0.44 (0.26, 0.73)	1.99 (1.24, 3.19)
History of physical violence in prior relationship(s)	0.98 (0.33, 2.96)	1.32 (0.49, 3.51)	0.90 (0.34, 2.35)	0.76 (0.43, 1.34)	1.08 (0.59, 1.97)
<i>n</i> (relationship-weeks)	10,742	10,742	10,742	10,742	10,742
<i>n</i> (respondents)	693	693	693	693	693

Each column includes the result from separate logistic regression models. All logistic regression models control for all of the variables listed in Table 1.

TABLE 4. ADJUSTED LOGISTIC REGRESSION RESULTS OF CONSISTENCY OF CONTRACEPTIVE METHOD USED ON INTIMATE PARTNER VIOLENCE

	<i>Consistency of contraceptive method used</i>		
	<i>Condom among dual users</i>	<i>Condom only</i>	<i>Withdrawal only</i>
	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>	<i>OR (95% CI)</i>
Intimate partner violence			
Recent physical violence	1.41 (0.38, 5.32)	0.34 (0.13, 0.85)	0.73 (0.32, 1.68)
History of physical violence in current relationship	1.08 (0.41, 2.88)	0.83 (0.49, 1.38)	1.00 (0.45, 2.23)
History of physical violence in prior relationship(s)	0.98 (0.43, 2.21)	0.27 (0.14, 0.52)	0.50 (0.13, 1.93)
<i>n</i> (relationship-weeks)	2,279	2,767	1,863
<i>n</i> (respondents)	361	447	447

Each column includes the result from separate logistic regression models. All logistic regression models control for all of the variables listed in Table 1.

method when they had recently experienced physical violence in their current relationship and, more generally, in current relationships that were ever physically violent in the past. A history of physical violence in the current relationship is also associated with less use of condoms (with or without LARC/Injectable or Pill/Other Hormonal), but more reliance on withdrawal. Dual method use (condom with LARC/Injectable or Pill/Other Hormonal) is particularly low during weeks in which women had recently experienced physical violence. Women experiencing physical violence have higher odds of LARC/Injectable use than those not experiencing physical violence. Furthermore, among women whose only method of contraception was condoms, consistency of condom use was lower for those who had recent physically violent experiences, as well as those with a history of physically violent experiences in prior relationship(s).

These findings are consistent with the explanations posited in past research regarding the difficulty negotiating the consistent use of contraception in violent relationships.^{8–10} The findings also support the idea that young women in violent relationships may choose methods that are more easily hidden from their partners,^{7,8} as reflected in the higher rates of LARC/Injectable use among those women. This should be interpreted somewhat cautiously, however, given that LARC/Injectable use is less common in our sample.

However, greater use of withdrawal in violent relationships than in nonviolent relationships does not support this idea, since withdrawal would require cooperation from the partner, which would be particularly difficult in a violent relationship. It may be that withdrawal is being used instead of condoms because of dissatisfaction with condoms and/or hormonal methods^{31–33} or male partners who are violent prefer withdrawal because it requires no planning, and/or is fully in their control. Or, there is a possibility that the reporting of withdrawal use when asked about contraceptive method use is a socially acceptable response for unprotected sexual activity, which would suggest that violent relationships are even less likely to be using any contraceptive method than what we find. This is an area that warrants further research.

The finding that recent physical violence as well as a history of physical violence in the current relationship are associated with whether any contraceptive method is used and what type of method is used, whereas a history of physical violence in

prior relationships is not, suggests that it is not necessarily an individual characteristic of some women that leads to both IPV and contraceptive use. However, lower consistency of condom use for women with a history of physical violence in their prior relationships may indicate some amount of individual-level selection into violent relationships that is also affecting whether condoms are used consistently. Finding that, for the most part, violent relationships rather than individual-level traits predict contraceptive behaviors will help those providing services and developing interventions to identify specific relationships, as well as specific periods in the relationship, which hold the most risk of violence to have the greatest impact on contraceptive use.

Limitations

This study has several limitations. Although the RDSL sample was randomly selected and is population representative, it consists of women residing in a single county in the state of Michigan, which may decrease the generalizability of the results. However, focusing on a single county reduces variation in other characteristics that are not of interest in this study (e.g., local availability of subsidized contraception for low-income women). We also do not expect that the underlying relationship processes will vary across regions. Further research on the dynamic role of violence on differential rates of contraceptive use among a more regionally diverse sample would provide additional insights. In addition, the age range of women is narrow at baseline (18–19); however, this was intentional as they are followed for two and half years; so there is information on them through ages 20 to 22, which allowed for a focus on the early period of emerging adulthood. Moreover, there is important variation in their relationship dynamics, including violence, and contraceptive behaviors, across those two and half years.

RDSL only asked those who responded affirmatively that she and her partner fought or argued whether the specific violent behaviors occurred, such as being hit. We may be underestimating the prevalence of physical violence because we are not capturing occurrences where her partner hit her when they were not in the context of a fight or argument. In other words, we are capturing more of what Johnson refers to as “common couple violence...one in which conflict occasionally gets out of hand,” as opposed to “patriarchal

terrorism.”³⁴ We acknowledge that we are limited in our lack of information about perpetration of violence, and sexual violence more generally. We conducted ancillary analyses of psychological violence (*e.g.*, being disrespected or insulted, or threatened with violence). Psychological violence was not associated with use of any contraceptive method, but was associated with lower use of LARC/Injectable and less consistent condom use among condom-only users. However, being disrespected or insulted was more common in these women’s relationships while being threatened with violence was rare. RDSL did not include measures of reproductive coercion, which is another form of violence that is particularly relevant for contraceptive behaviors.³⁵

We do not have direct reports about the relationship from the male partner. However this facilitated the collection of data on a diversity of relationships, from one-night stands to engaged and married relationships, as it would have been more difficult to get casual or violent partners to agree to be interviewed. Finally, while we recognize the importance of studying violence among women and men, the study sample includes women only. We believe that a closer examination of women’s experiences with victimization is a necessary step toward better understanding IPV.

Conclusions

IPV in the current relationship (recent and past) is a strong and uniform predictor of contraceptive use, but IPV in prior relationships is only predictive of consistent (vs. inconsistent) condom use. The findings also highlight factors beyond those typically considered clinically relevant, such as efficacy and access, suggesting the need for clinicians to discuss young women’s specific relationship experiences, and to do so repeatedly, as relationships change across time.

Notes

^aThe county has a large black population (about 35%), and the proportion of black residents in the major city within the county is even higher. However, the United States has 65 cities that are at least 25% black, comprising at least 10 million of the United States’ 39 million black residents. Thus, the women in the RDSL sample live in a situation that is similar to many African Americans in the United States.

^bRates of unintended pregnancy among young people in the United States remain high and vary considerably across groups, with disproportionately higher rates during emerging adulthood (ages 18–25), with the highest rates among women aged 20–24.^{36,37} Therefore, by focusing on ages 18 to 19 and following them for two and a half years, we are able to collect information at the beginning of emerging adulthood, a critical time in which young women may be at higher risk because of their sexual, relationship, and contraceptive behaviors.

^cAlthough using a driver’s license sampling frame could exclude many disadvantaged women, our sampling frame also included personal ID card holders. Personal ID cards are required to access any type of cash, food, medical, and/or emergency assistance in the state of Michigan. However, it is possible that the most disadvantaged women selected from our sampling frame refused to participate in the study. This may be particularly true for women in violent relationships. Thus, we may have underestimated the prevalence of IPV in

this population. And, more importantly, if respondents in the most violent relationships were less likely to agree to participate, and women in the most violent relationships are least likely to use contraception, we may also have underestimated the relationship between violence and contraceptive use. In addition, we have very little information about noncontacted respondents—only their age (based on their birthdate, included in the sampling frame). Age of noncontacted respondents did not differ from the age of contacted respondents, or from participants. Our recruitment procedures were designed to contact as many different types of respondents as possible (*e.g.*, different days of the week, different times of the day, letters, phone calls, face-to-face visits, and so on). However, there is always a possibility that the nonrespondents differ from the respondents.

^dTo the extent possible, RDSL used validated survey measures. For instance, most of the baseline survey measures are from the National Survey of Family Growth (NSFG), The National Longitudinal Study of Adolescent to Adult Health (Add Health), National Survey of Families and Household, Fragile Families, and the Child Development Supplement Transition into Adulthood Study, which is a part of the Panel Study of Income Dynamics. Measures of IPV and contraception were adapted from Add Health and NSFG; in the weekly surveys, however, respondents were not asked about timing (contraception at first and most recent sex) or frequency (number of times violence occurred) as done in Add Health or NSFG because these questions are asked on a weekly prospective basis and therefore timing and frequency can be measured by calculating prevalence across weeks. The RDSL team also included new survey measures in both the baseline and weekly surveys.

^eEighty-nine percent of surveys were completed within 14 days, and thus there are no missing data for 89% of the assessments.

^fThe women in this sample were more sexually experienced than the general population of 18- to 19-year-old women, limiting the generalizability of our findings to a national sample. For example, 91% of women in this study had already had heterosexual intercourse by age 18 (compared to 63% nationally) and among these women, 68% had first intercourse by age 16 (compared to 26% nationally).¹² However, our study findings are relevant to similar populations of young women with a high proportion of those who initiated intercourse early. Women who experience early intercourse are at greater risk for subsequent high-risk sexual behavior³⁸ and represent an important group for targeted interventions.

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References

- Breiding MJ, Smith SG, Basile KC, Walters ML, Chen J, Merrick MT. Prevalence and characteristics of sexual violence, stalking, and intimate partner violence victimization—National intimate partner and sexual violence survey, United States, 2011. *MWR Surveill Summ* 2014;63:1–18.
- Giordano PC, Longmore MA, Manning WD. On the nature and developmental significance of adolescent romantic relationships. *Sociolog Stud Children Youth* 2001;8:111–139.
- Elder GH. The life course paradigm: Social change and individual development. In: Moen P, Elder GH, LuIscher K, eds. *Examining lives in context: Perspectives on the ecology of human development*. Washington: American Psychological Association, 1995:101–139.
- Bergmann JN, Stockman JK. How does intimate partner violence affect condom and oral contraceptive use in the United States? *Contraception* 2015;91:438–455.
- Park J, Nordstrom SK, Weber KM, Irwin T. Reproductive coercion: Uncloaking an imbalance of social power. *Am J Obstet Gynecol* 2016;214:74–78.
- Maxwell L, Devries K, Zions D, Alhusen JL, Campbell J. Estimating the effect of intimate partner violence on women's use of contraception: A systematic review and meta-analysis. *PLoS One* 2015;10:e0118234.
- Allsworth JE, Secura GM, Zhao Q, Madden T, Peipert JF. The impact of emotional, physical, and sexual abuse on contraceptive method selection and discontinuation. *Am J Public Health* 2013;103:1857–1864.
- de Bocanegra HT, Rostovtseva DP, Khera S, Godhwani N. Birth control sabotage and forced sex: Experiences reported by women in domestic violence shelters. *Violence Against Women* 2010;16:601–612.
- Swan H, O'Connell DJ. The impact of intimate partner violence on women's condom negotiation efficacy. *J Interpers Violence* 2012;27:775–792.
- Moore AM, Frohwirth L, Miller E. Male reproductive control of women who have experienced intimate partner violence in the United States. *Soc Sci Med* 2010;70:1737–1744.
- Kusunoki Y, Barber JS, Ela EJ, Bucek A. Black-White differences in sex and contraceptive use among young women. *Demography* 2016;53:1399–1428.
- Martinez GM, Copen CE, Abma JC. Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006–2010. *Vital Health Stat* 2011;23:1–35.
- Rostosky SS, Wilcox BL, Wright MLC, Randall BA. The impact of religiosity on adolescent sexual behavior: A review of the evidence. *J Adolesc Res* 2004;19:677–697.
- Manlove J, Terry-Humen E. Contraceptive use patterns within females' first sexual relationships: The role of relationships, partners, and methods. *J Sex Res* 2007;44:3–16.
- Abma J, Driscoll A, Moore K. Young women's degree of control over first intercourse. *Fam Plann Perspect* 1998;30:12–18.
- Kusunoki Y, Upchurch DM. Contraceptive method choice among youth in the United States: The importance of relationship context. *Demography* 2011;48:1451–1472.
- Manning WD, Longmore MA, Giordano PC. The relationship context of contraceptive use at first intercourse. *Fam Plann Perspect* 2000;32:104–110.
- DiClemente RJ, Wingood GM, Crosby RA, et al. Sexual risk behaviors associated with having older sex partners: A study of black adolescent females. *Sex Transm Dis* 2002;29:20–24.
- Mercer CH, Copas AJ, Sonnenberg P, et al. Who has sex with whom? Characteristics of heterosexual partnerships reported in a national probability survey and implications for STI risk. *Int J Epidemiol* 2009;38:206–214.
- Hock-Long L, Henry-Moss D, Carter M, et al. Condom use with serious and casual heterosexual partners: Findings from a community venue-based survey of young adults. *AIDS Behav* 2013;17:900–913.
- Manlove J, Welti K, Barry M, Peterson K, Schelar E, Wildsmith E. Relationship characteristics and contraceptive use among young adults. *Perspect Sex Reprod Health* 2011;43:119–128.
- Sayegh MA, Fortenberry JD, Shew M, Orr DP. The developmental association of relationship quality, hormonal contraceptive choice and condom non-use among adolescent women. *J Adolesc Health* 2005;36:97.
- Upadhyay UD, Raifman S, Raine-Bennett T. Effects of relationship context on contraceptive use among young women. *Contraception* 2016;94:68–73.
- Beadnell B, Morrison DM, Wilsdon A, et al. Condom use, frequency of sex, and number of partners: Multidimensional characterization of adolescent sexual risk-taking. *J Sex Res* 2005;42:192–202.
- Raine TR, Gard JC, Boyer CB, et al. Contraceptive decision-making in sexual relationships: Young men's experiences, attitudes and values. *Cult Health Sex* 2010;12:373–386.
- Halpern-Meekin S, Manning WD, Giordano PC, Longmore MA. Relationship churning, physical violence, and verbal abuse in young adult relationships. *J Marriage Fam* 2013;75:2–12.
- Manning WD, Longmore MA, Copp J, Giordano PC. The complexities of adolescent dating and sexual relationships: Fluidity, meaning(s), and implications for young adults'™ well-being. *New Dir Child Adolesc Dev* 2014;2014:53–69.
- Barber J, Kusunoki Y, Gatny H, Schulz P. Participation in an intensive longitudinal study with weekly web surveys over 2.5 years. *J Med Internet Res* 2016;18:e105.
- Bruckner H, Martin A, Bearman PS. Ambivalence and pregnancy: Adolescents' attitudes, contraceptive use and pregnancy. *Perspect Sex Reprod Health* 2004;36:248–257.
- Frost JJ, Singh S, Finer LB. Factors associated with contraceptive use and nonuse, United States, 2004. *Perspect Sex Reprod Health* 2007;39:90–99.
- Arteaga S, Gomez A. "Is that a method of birth control?" A qualitative exploration of women's use of withdrawal. *J Sex Res* 2016;53:626–632.

32. Higgins J, Wang Y. Which young adults are most likely to use withdrawal? The importance of pregnancy attitudes and sexual pleasure. *Contraception* 2014;91:320–327.
33. Whittaker PG, et al. Withdrawal attitudes and experiences: A qualitative perspective among young urban adults. *Perspect Sex Reprod Health* 2010;42:102–109.
34. Johnson MP. Patriarchal Terrorism and common couple violence: Two forms of violence against women. *J Marriage Fam* 1995;57:283–294.
35. Miller E, et al. Pregnancy coercion, intimate partner violence, and unintended pregnancy. *Contraception* 2010;81: 316–322.
36. Finer LB, Zolna MR. Declines in unintended pregnancy in the United States, 2008–2011. *Obstet Gynecoll Survey* 2016; 71:408–409.
37. Kost K, Henshaw S. U.S. teenage pregnancies, births and abortions, 2010: National and state trends by age, race and ethnicity. New York: Guttmacher Institute, 2014.
38. Haydon AA, Herring AH, Halpern CT. Associations between patterns of emerging sexual behavior and young adult reproductive health. *Perspect Sex Reprod Health* 2012;44: 218–227.

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