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Intimate partner violence as a predictor of marital disruption in rural Rakai, Uganda: a longitudinal study

Jennifer A. Wagman · Blake Charvat · Marie E. Thoma · Anthony Ndyanabo · Fred Nalugoda · Joseph Ssekasanvu · Grace Kigozi · David Serwadda · Joseph Kagaayi · Maria J. Wawer · Ronald H. Gray

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Abstract

Objectives We assessed the association between intimate partner violence (IPV) and union disruption (divorce or separation) in the rural Ugandan setting of Rakai District. **Methods** We analyzed longitudinal data collected from April 1999 to June 2006, from 6834 women (15–49 years) living in 50 communities in Rakai. Participants were either officially married, traditionally married or in a consensual union during one or more surveys and completed at least

one follow-up survey. The primary outcome was union disruption through divorce or separation from the primary sexual partner.

Results Past year IPV ranged from 6.49 % (severe physical abuse) to 31.99 % (emotional abuse). Severe physical IPV was significantly associated with divorce/separation, after adjusting for other covariates (aOR = 1.80, 95 % CI 1.01–3.22). Another predictor of union disruption was a woman having two or more sexual partners in the past year (aOR = 8.42, 95 % CI 5.97–11.89). Factors protecting against divorce/separation included an increasing number of co-resident biological children and longer duration of union.

This article is part of the special issue “Violence and Health: Implications of the 2030 Agenda for South–North Collaboration”.

Blake Charvat: Deceased.

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Conclusions IPV, particularly severe physical abuse, is an important risk factor for union disruption. Marital counseling, health education and interventions should address the role of IPV on the wellbeing of women and the stability of couples in Uganda.

Keywords Intimate partner violence · Union dissolution · Divorce · Global health · Longitudinal analysis · Sub-Saharan Africa

Introduction

In 2015, the United Nations adopted the 2030 Global Development Agenda, consisting of 17 Sustainable Development Goals (SDGs) with 169 targets to mitigate global economic, environmental, and health inequity (United Nations 2015). The fifth SDG calls for greater gender equality and the empowerment of women and girls worldwide. Specifically, Goal 5.1 is to end all forms of discrimination against all women and girls everywhere, and Goal 5.2 is to eliminate all forms of violence against all women and girls in the public and private spheres (United Nations 2015). The most common form of violence against women worldwide is intimate partner violence (IPV) (Devries et al. 2013) which has been linked with a broad range of immediate and long-term adverse consequences on the physical, mental, sexual and reproductive health of women in abusive relationships (Campbell 2002; Devries et al. 2013; Ellsberg et al. 2008; Garcia-Moreno et al. 2006). Gender inequality is a key driver of IPV at the country level (Heise and Kotsadam 2015) and while formal marriage protects women from IPV in some settings (Abramsky et al. 2011) it increases risk for abuse in some populations, including Uganda. National-level data from Uganda suggest the most common perpetrators of IPV against women are their male spouses (UBOS and ICF 2011). Likewise, research from Uganda's southwest Rakai District found being married was a significant determinant of women's experiences of male-perpetrated violence (Kouyoumdjian et al. 2013b). Despite these findings, little is known about the impact of IPV on the stability of marriages and other consensual sexual partnerships in Uganda. This study sought to prospectively examine the relationship between women's experiences of emotional, physical and/or sexual IPV and union dissolution from divorce or separation in Rakai, Uganda.

Population-based data from Rakai indicate male-perpetrated IPV against women is common (Kouyoumdjian et al. 2013b). Half (49.8 %) of all sexually active women, aged 15–49 years, who participated in the Rakai Community Cohort Study (RCCS) between 2000 and 2009 experienced some form of IPV (emotional/verbal, sexual and/or physical) during the study period and 29 % reported abuse in the past year. The most common form of violence endured by female

RCCS participants was emotional/verbal (41.4 %), followed by physical (31.3 %), and sexual (30 %) (Kouyoumdjian et al. 2013b). Among sexually experienced adolescent females (aged 15–19 years) in Rakai, 14.4 % reported that their first act of sexual intercourse was forced (Koenig et al. 2004). Abuse by a male partner has been associated with incident HIV and risk of infection was greater for longer duration of IPV exposure, and for more severe and more frequent IPV (Kouyoumdjian et al. 2013a). Additionally, women who have experienced forced first sex were more likely to report unintended pregnancy as well as significantly higher rates of genital tract symptoms compared to those women who did not report sexual violence (Koenig et al. 2004). Similarly, women whose sexual debut was coerced were significantly more likely to attempt an abortion (Polis et al. 2009).

One Ugandan study found women who were dissatisfied with their marriages were more than twice as likely to experience IPV, compared to women who expressed satisfaction (Karamagi et al. 2006). While the relationships between marital satisfaction, IPV and union dissolution have not been adequately explored among Ugandan populations, available evidence from other (primarily higher income) settings suggests both marital dissatisfaction (Hirschberger et al. 2009), and IPV (DeMaris 2000, 2001) are important predictors of separation and divorce among married or cohabiting couples. Research from the United States has shown that between 38 and 43 % of women in violent relationships separate or divorce after 2–5 years of follow-up (Jacobson et al. 1996; Zlotnick et al. 2006). In another US study of divorced women, almost 20 % reported IPV as the primary reason they left their marriages (Kurz 1996).

Two prior investigations examined associations between marriage and union dissolution and HIV infection in Rakai. Results suggest women who become HIV-infected during marriage, especially when the infected women are in an HIV-discordant couple, are especially likely to face separation or divorce (Porter et al. 2004). Similarly, women who have already experienced marital dissolution are at increased risk for incident HIV, compared to women who are married (Nalugoda et al. 2014). Despite these findings on HIV risks among divorced and separated women, little is known about the way in which IPV contributes to union disruption in the rural Ugandan Rakai District. This study longitudinally examines IPV as a predictor of separation and divorce among married and partnered women enrolled in RCCS in rural Uganda between 1999 and 2006.

Methods

Study setting

Research was conducted in the Rakai District, a rural region in southwestern Uganda that borders the United

Republic of Tanzania and Lake Victoria. Most (96.1 %) of Rakai's population lived in a rural area, and 76.7 % of the population depended on subsistence farming. Rakai district had an estimated 2002 population of 470,365 (UBOS 2002). The predominant ethnic group in Rakai is Baganda who are patrilineal with women marrying into and residing with their husband's clan. Polygamous unions are common and cultural norms support multiple sexual partners among men (Olowo-Freers and Barton 1992). However, women are expected to be monogamous and marital infidelity is considered justification for punitive partner violence or abandonment (Koenig et al. 2004; McGrath et al. 1993; Olowo-Freers and Barton 1992).

This study was conducted with Rakai Health Sciences Program (RHSP), a research and service provision collaborative involving the Uganda Virus Research Institute of the Uganda Ministry of Health, and researchers from Makerere University (Kampala, Uganda), Johns Hopkins University (Baltimore, USA), and Columbia University (New York, USA). RHSP was started in 1987 with a focus on population-based research aimed at understanding and reducing transmission of HIV in rural Uganda. The program conducts extensive community-based epidemiological and behavioral studies to document the HIV/STD epidemics and risk factors and consequences, implements HIV/STD preventive services, offers community health education, provides HIV-related and general health services, and undertakes large community randomized intervention trials for AIDS prevention, STD control and prevention of adverse outcomes of pregnancy.

Design

We used data collected between April 1999 and June 2006 from the Rakai Community Cohort Study (RCCS) in Rakai, Uganda. RCCS is an ongoing prospective cohort that was initiated in 1994 for a community randomized trial of the control of sexually transmitted infections (STI) for prevention of HIV (1994–99). Since its inception, RCCS has continued surveillance surveys at 12–14 month intervals to collect detailed longitudinal data on HIV epidemiology, related behaviors, health status and service utilization, and the social effects of the HIV epidemic in all consenting adults aged 15–49 in 50 typical rural Ugandan communities (Wawer et al. 1998). A census is conducted at the beginning of each surveillance round to identify men and women eligible for enrollment and to collect information on household possessions and dwelling characteristics. Eligible people who consent to participate are interviewed using a structured survey instrument. The survey collects detailed sociodemographic and behavioral information with questions on sexual behaviors, sexual partners and reproductive

health. Biological specimens are collected for HIV/STI detection, as well as pregnancy status.

For this study, investigators for the RCCS conducted the first survey between April, 1999 and February, 2000. Five follow-up surveys were conducted between March, 2000, and February, 2001; April, 2001, and May, 2002; July, 2002, and July, 2003; September, 2003, and November, 2004; and February, 2005, and June 2006. Participants provided written informed consent for enrollment and follow-up and the research protocol and all study instruments were reviewed and approved by the Johns Hopkins University's Committee for Human Research, Columbia University's IRB, Western IRB, the Uganda Virus Research Institute's Science and Ethics Committee and the Uganda National Council of Science and Technology. At the time of this study no financial incentives were provided to respondents for their participation. Participants were provided with washing soap and access to free medical services provided by RHSP as compensation for time lost.

The World Health Organization (WHO) guidelines for conducting safe and ethical research on violence against women were followed for this study (World Health Organization 2001). As such, interviews were conducted in complete privacy in respondents' households or the location of their choice by trained interviewers of the same gender. No information from the survey was disclosed to other family members. Completed questionnaires were maintained in secure facilities, personal identifiers were stripped and interview schedules were coded with the participants' study identification numbers. In the early years of this study, limited IPV referral facilities were accessible to the research population. However, beginning in 2004, referral services became available and fieldworkers were trained to provide short-term support to victims of violence and to refer women requesting assistance to available local services and sources of support. In 2005, a domestic violence referral network was established by RHSP and included professionals, such as HIV counselors, health care workers, social welfare officers and the police. These services were located throughout the district and provided counseling, social welfare services, health care, legal advice and protective services to victims of domestic abuse (Wagman et al. 2012).

Participants for this study were Luganda-speaking women aged 15–49 years who were residents in the 50 RCCS communities. Additional criteria for inclusion in the analytic sample were completion of an RCCS interview and provision of blood for HIV testing at first visit (i.e., the baseline visit), and provision of data on the main variables of interest during at least one follow-up visit between the period of March 2000 and June 2006. The total study population consisted of 6834 women with complete

information about experiences of IPV, sexual behaviors and characteristics of partner unions.

Measures

The main outcome measure was union disruption through divorce or separation from husband/primary sexual partner. Union status was determined at enrollment. Participants were eligible (and included in the analysis) based on their affirmative response to the question, “Are you currently married, whether traditional, legal or religious, or in a consensual union?” during at least one point of data collection. At each follow-up round, participants were asked “Since the last visit, have you had a change in your relationship with your sexual partner?” Those who responded “yes” were prompted to describe the change in relationship and reports of “divorce or separation” were considered to be union dissolution.

The main exposure of interest was past year experience of IPV perpetrated by a current male intimate partner, compared with no recent experience of male-perpetrated IPV as the referent group. Respondents were asked a series of detailed questions adapted from the original Conflicts Tactics Scale (Straus 1979) about their experiences of past year IPV. We organized outcomes into four categories: emotional IPV, moderate physical IPV, severe physical violence and sexual IPV. To measure emotional violence, respondents were asked, “In the past 12 months did your husband/partner verbally abuse or shout at you?” To measure moderate physical violence, respondents were asked, “In the past 12 months did your husband/partner: Push you, slap you or hold you down? Punch you with his fist or with something that could hurt you? Kick you or drag you?” To measure severe physical violence, respondents were asked, “In the past 12 months did your husband/partner: Try to strangle you or burn you? Threaten you with a knife, gun or other type of weapon? Attack you with a knife, gun or other type of weapon?” To measure sexual violence, respondents were asked “In the past 12 months did your husband/partner physically force you to have sex when you did not want to?” (Straus 1979). Questions on emotional, moderate physical and severe physical IPV were included in all five follow-up rounds of the RCCS survey. Questions on sexual violence were excluded from the first follow-up round (March 2000 to February 2001) but included in the four subsequent rounds of RCCS.

Other key independent variables described demographic characteristics, health, and duration of the primary sexual union. Table 1 summarizes all the independent variables used in the analysis. Household social economic status (SES) was determined using information about the structure of respondents’ dwelling, based on methods established for use in RCCS analyses (Makumbi et al. 2012). Materials such as cement, iron sheets or roofing tiles are expensive and considered “modern materials” and their use in the rural setting of

Table 1 Summary of independent variables

Variable	Description ^a
Demographic	
Age	<i>15–19, 20–24, 25–34, 35 or older</i>
Education	<i>None, primary school, secondary school, higher than secondary school</i>
Household socioeconomic status	<i>High, middle, low</i>
Co-resident children	<i>0, 1–2, 3–5, 6+</i>
Health	
HIV status	<i>HIV negative, HIV positive</i>
Number of sexual partners in past year	<i>0–1, 2 or more</i>
Alcohol consumption in past month	<i>No, yes</i>
Marital/consensual partner union	
Duration of primary sexual union	<i>0–2 years, 3–9 years, 10 or more years</i>
Intimate Partner Violence in the Past 12 Months	
Emotional violence	<i>No, yes</i>
Moderate physical violence	<i>No, yes</i>
Severe physical violence	<i>No, yes</i>
Sexual violence	<i>No, yes</i>

^a The reference category is in italic type

Rakai is a potential indicator of wealth. Therefore, those who indicated their roofing material were iron/tiles, and both the walls and floor were cement, categorized as High SES. Low SES dwelling structures had only one or none of the modern materials (for the roof, walls and floor) used in construction of the High SES. Low SES households most commonly used materials such as grass thatch for the roof, and mud and wattle for the walls or floor. Middle SES dwelling structures included those that had at most two of the dwelling structure parts constructed using modern materials.

Statistical analysis

Multivariate logistic regression was used to estimate the odds ratios (ORs) and 95 % confidence intervals (CIs) of marital dissolution associated with IPV and other covariates. Participant’s age, highest level of education, HIV status, number of sexual partners in the past year, alcohol consumption in the past month, duration of union, and experience of IPV were independent variables. Covariates were assessed for their association with IPV and marital dissolution in univariate models. Generalized estimating equations (GEE) were used to estimate robust variance adjusted for within woman correlation across visits. All data analysis was done using the State 13

Table 2 Distribution of key independent variables as measured at the first follow-up visit among women who were married or in a consensual union at baseline: Rakai District, Uganda, 1999–2006

Variable	Sample (<i>N</i> = 6834)	
	<i>N</i>	%
Demographic characteristics		
Age		
15–19	1570	22.98
20–24	1992	28.12
25–34	2136	31.25
35 or older	1206	17.65
Education		
None	551	8.06
Primary school	4382	64.12
Secondary school or higher	1901	27.82
Household socioeconomic status ^a		
High	2402	35.19
Middle	1902	27.87
Low	2522	36.94
Co-resident biological children		
0	1903	27.85
1–2	2991	43.77
3–5	1587	23.22
6+	353	5.16
Health		
HIV status		
Negative	5918	86.59
Positive	916	13.41
Number of sexual partners in past year		
0–1	6345	92.85
2 or more	489	7.15
Alcohol consumption in past month		
No	4284	62.68
Yes	2550	37.32
Marital/consensual partner union		
Duration of primary sexual union		
0–2 years	1640	24.00
3–9 years	2898	42.41
10 or more years	2296	33.59
Intimate partner violence in the past 12 months		
Emotional violence		
No	4648	68.01
Yes	2186	31.99
Moderate physical violence		
No	5542	81.09
Yes	1292	18.91

Table 2 continued

Variable	Sample (<i>N</i> = 6834)	
	<i>N</i>	%
Severe physical violence		
No	6390	93.51
Yes	444	6.49
Sexual violence ^b		
No	5313	85.48
Yes	903	14.52

^a Subtotals do not equal sample size because of missing data on socioeconomic status from eight respondents

^b Subtotals do not equal sample size because sexual violence was not measured at all follow-ups, and respondents who reported not having had sex in the previous 12 months were not asked sexual violence questions in surveys where these measures were included

statistical package (Stata Corp., College Station, Texas, USA) (StataCorp. 2013).

Results

Demographic at first follow-up

A total of 6834 women contributed at least two rounds of data and were included in our analytic sample. Demographic, health, partner union and IPV characteristics are shown in Table 2. The largest percent of women interviewed were aged between 25 and 34 years. Education levels were low, 64.12 % of respondents had only attained a primary school education. Most participants lived in households characterized by low (36.94 %) or high (36.19 %) SES and the majority (43.77 %) interviewed had 1–2 biological children living with them in the same household. Most women (92.85 %) reported having only one (or no) sex partner in the past year, predominantly with their primary partner of 3–9 years (42.41 %) or longer (33.59 %). HIV prevalence was 13.41 and 37.32 % reported drinking alcohol in the past month. The most common form of violence experienced by women was emotional (31.99 %) followed by moderate physical (18.91 %), sexual (14.52 %) and severe physical IPV (6.49 %).

IPV and other covariates

Because repeated measurements were taken on the same units, we assessed the association between the key independent variables and each IPV category to account for correlation across visits. As shown in Table 3 a number of associations emerged. Each increasing age group was significantly associated with lower frequency of each IPV type with the exception of sexual violence. For emotional violence, secondary school or higher was associated with lower

Table 3 Associations between key covariates and each intimate partner violence category: Rakai District, Uganda, 1999–2006

	Type of intimate partner violence							
	Emotional		Moderate physical		Severe physical		Sexual	
	#/n* (%)	p value**	#/n* (%)	p value**	#/n* (%)	p value**	#/n* (%)	p value**
Age (years)								
15–19	378/929 (40.69)	Ref	278/929 (29.92)	Ref	62/929 (7.0)	Ref	146/719 (20.31)	Ref
20–24	1644/4456 (36.89)	0.080	1071/4456 (24.04)	0.001	202/4456 (4.53)	0.001	728/3802 (19.15)	0.594
25–34	2368/7358 (32.18)	<0.001	1452/7358 (19.73)	<0.001	285/7358 (3.87)	<0.001	1247/6429 (19.40)	0.455
≥35	1310/4402 (29.76)	<0.001	692/4402 (15.72)	<0.001	143/4402 (3.25)	<0.001	794/3673 (21.62)	0.899
Education								
None	571/1651 (34.59)	Ref	334/1651 (20.23)	Ref	97/1651 (5.88)	Ref	269/1326 (20.29)	Ref
Primary school	3932/11,630 (33.81)	0.398	2434/11,630 (21.00)	0.615	504/11630 (4.33)	0.010	2033/9905 (20.52)	0.880
Secondary school or higher	1197/3857 (31.03)	0.011	725/3857 (19.00)	0.294	94/3857 (2.44)	<0.001	613/3385 (18.11)	0.099
Household socioeconomic status								
High	1751/5609 (31.22)	Ref	1056/5609 (18.83)	Ref	144/5609 (2.57)	Ref	961/4946 (19.43)	Ref
Middle	1649/5082 (32.45)	0.376	1016/5082 (19.99)	0.293	187/5082 (3.68)	0.001	811/4399 (18.44)	0.163
Low	2299/6477 (35.66)	<0.001	1420/6477 (22.03)	0.002	364/6477 (5.65)	0.010	1143/5275 (21.67)	0.003
Co-resident biological children								
0	754/1982 (38.04)	Ref	478/1982 (24.12)	Ref	127/1982 (6.41)	Ref	415/1472 (28.19)	Ref
1–2	2183/6244 (34.96)	0.032	1422/6244 (22.77)	0.121	277/6244 (4.44)	0.001	1003/5256 (19.08)	<0.001
3–5	2230/6999 (31.86)	<0.001	1297/6999 (18.53)	<0.001	241/6999 (3.44)	<0.001	1165/6198 (18.80)	<0.001
6+	533/1918 (27.79)	<0.001	296/1918 (15.43)	<0.001	50/1918 (2.61)	<0.001	332/1697 (19.56)	<0.001
HIV status								
Negative	4798/14,547 (32.98)	Ref	2966/14,547 (20.39)	Ref	572/14,547 (3.93)	Ref	2464/12,485 (19.74)	Ref
Positive	611/1569 (38.94)	0.001	383/1569 (24.41)	0.005	81/1569 (5.16)	0.044	329/1308 (25.15)	<0.001
No. recent partners								
0–1	542/16,360 (33.14)	Ref	331/16,360 (20.24)	Ref	636/16,360 (3.89)	Ref	2748/13,942 (19.71)	Ref
≥2	279/785 (35.54)	0.524	182/785 (23.18)	0.256	59/785 (7.52)	<0.001	167/681 (24.52)	0.049
Alcohol in past month								
No	3296/10,958 (30.08)	Ref	1931/10,958 (17.62)	Ref	365/10,958 (3.33)	Ref	1671/9450 (17.68)	Ref
Yes	2404/6187 (38.86)	<0.001	1562/6187 (25.25)	<0.001	330/6187 (5.33)	<0.001	1244/5173 (24.05)	<0.001
Duration of primary union (years)								
0–2	516/1332 (38.74)	Ref	368/1332 (27.63)	Ref	83/1332 (6.23)	Ref	217/1078 (20.13)	Ref
3–9	2692/7608 (35.38)	0.079	1763/7608 (23.17)	0.002	338/7608 (4.44)	0.003	1284/6490 (19.78)	0.872
≥10	2492/8205 (30.37)	<0.001	1362/8205 (16.60)	<0.001	274/8205 (3.34)	<0.001	1414/7055 (20.04)	0.409

* n = total number of visits in this category

** p value derived by weighing covariates as to their potential for confounding by measuring the association between the other covariates and the intimate partner violence categories using generalized estimating equation (GEE) models to account for correlation across visits

frequency of abuse (compared with no education) and higher education and primary education were associated with lower frequencies of severe physical violence compared with no education. No associations were found for moderate physical and sexual violence by education level. Low SES was associated with increased likelihood of all forms of IPV. Correlations were found between increased risk for all forms of IPV and higher numbers of co-resident biological children and longer duration of marital union. Both HIV prevalence and use of alcohol in the past month were also significantly associated with all forms of IPV. Having multiple sex partners (more than 1) in the past year was associated with severe IPV, but not with other forms of abuse.

IPV as a predictor of divorce or separation

Table 4 shows the unadjusted odd ratios of reporting divorce or separation by IPV category. Univariate GEE logistic regression was used, accounting for correlation. Emotional IPV (OR = 1.45; 95 % CI 1.08–1.96) and severe physical IPV (OR = 2.79; 95 % CI 1.71–4.55) were associated with divorce or separation. Moderate physical and sexual IPV were not associated with marital disruption. Therefore, the remainder of our analysis focuses on emotional and severe physical IPV.

Other predictors of divorce or separation

Table 5 shows the multivariate adjusted odds ratios for reporting divorce or separation. Adjusted models

Table 4 Unadjusted ratio of odds of divorce or separation by intimate partner violence category: Rakai District Uganda, 1999–2006

	#/n (%)	Unadjusted	
		OR	95 % CI
Type of violence			
Emotional			
No	99/11,445 (0.87)	1.00	
Yes	72/5700 (1.26)	1.45	(1.08, 1.96)
Moderate physical			
No	127/13,652 (0.93)	1.00	
Yes	44/3493 (1.26)	1.35	(0.95, 1.90)
Severe physical			
No	153/16,450 (0.93)	1.00	
Yes	18/695 (2.59)	2.79	(1.71, 4.55)
Sexual			
No	116/11,708 (0.99)	1.00	
Yes	35/2915 (1.20)	1.21	(0.82, 1.76)

Table 5 Adjusted odds of reporting divorce or separation: Rakai District, Uganda, 1999–2006

Variable ^a	Adjusted	
	OR	95 % CI
Demographic characteristics		
Age		
15–19	1.00	
20–24	1.74	(0.81, 3.72)
25–34	3.16	(1.38, 7.25)
35 or older	1.70	(0.63, 4.57)
Education ^a		
None	1.00	
Primary school	1.12	(0.66, 1.92)
Secondary school or higher	1.31	(0.72, 2.39)
Household socioeconomic status		
High	1.00	
Middle	1.16	(0.78, 1.73)
Low	1.09	(0.74, 1.59)
Co-resident biological children		
0	1.00	
1–2	0.48	(0.33, 0.69)
3–5	0.16	(0.10, 0.25)
6+	0.08	(0.03, 0.22)
Health		
Number of sexual partners in past year		
0–1	1.00	
2 or more	8.42	(5.97, 11.89)
Alcohol consumption in past month		
No	1.00	
Yes	1.16	(0.84, 1.61)
Marital/consensual partner union		
Duration of primary sexual union		
0–2 years	1.00	
3–9 years	0.32	(0.19, 0.54)
10 or more years	0.44	(0.22, 0.87)
Intimate partner violence in the past 12 months ^b		
Emotional violence		
No	1.00	
Yes	1.26	(0.91, 1.75)
Severe physical violence		
No	1.00	
Yes	1.80	(1.01, 3.22)

^a HIV was removed as a covariate

^b Only emotional and severe intimate partner violence were included because no significant associations were found between union dissolution and moderate physical violence and sexual violence

controlled for all potential confounders except HIV status. Even after adjustment, severe IPV remained significantly associated with divorce or separation (OR = 1.80, 95 % CI 1.01–3.22). The relationship between emotional IPV and union dissolution, however, was attenuated (and not statistically significant) after adjustment. Divorce or separation was also associated with a woman having two or more sexual partners in the past year (OR = 8.42, 95 % CI 5.97–11.89). Longer duration of union and increased number of co-resident biological children were both found to be protective of union dissolution.

Discussion

Women who reported severe physical abuse (including threats of or actually being strangled, burned, or attacked with a knife, gun or other type of weapon) in their marriage were almost two times as likely to undergo a separation or divorce, compared to women who did not report this form of IPV. Also, associated with increased odds for union dissolution were having multiple intimate partners. Women who reported two or more sexual partners in the past year were more than eight times as likely to get divorced/separated, relative to women with only one (or no) partner. In the other direction, the likelihood of divorce/separation significantly declined with women's increasing number of biological, co-resident (i.e., dependent) children and longer duration of the union.

Although severe physical partner violence was only reported by 6.49 % of the women in our sample, other forms of abuse were common with 14.52, 18.91 and 31.99 % reporting sexual, moderate physical and emotional IPV, respectively. While these lesser forms of violence were not associated with dissolution of relationships in our study, research from multiple settings suggests that considerable overlap occurs between different forms (emotional vs. physical vs. sexual) and increasing levels of severity of IPV. Most women in violent relationships report being victimized by more than one typology of abuse and increasing levels of severity, depending on the situation (Ellsberg et al. 2008; Thompson et al. 2006). Corroborating these findings, research from Rakai indicates most (66 %) abused women concurrently experience multiple forms of violence at varying levels of severity (Kouyoumdjian et al. 2013b).

It is possible that emotional, moderate physical and sexual IPV are distal determinants of union dissolution, while severe physical IPV is a more direct driver of relationship breakup. This implies that the context in which violence occurs and—more specifically—the severity of abuse experienced might differentially impact women's trajectories of marriage in rural Uganda. The importance of

the role of abuse severity is recognized throughout the literature and associations have been found between (abuse severity) and adverse women's health outcomes elsewhere. For instance, a recent Canadian study found women experiencing severe partner violence were significantly more likely to develop depressive symptoms and reduced psychological quality of life, relative to women not enduring this form of abuse (Wathen et al. 2016). It is widely accepted that leaving an abusive relationship is a complicated and difficult process (Anderson and Saunders 2003). Research from South Africa found women went through two key steps when leaving a violent partnership: a phase of change (after reaching a “turning point” where they decide to leave), and the process of actually leaving the abusive partner. Heightened severity of abuse was one factor that served as a “turning point” and impelled women to consider leaving (Baholo et al. 2015). Thus, it is plausible that women in our study who experienced increasing levels and severity of IPV became less tolerant of the abuse and more motivated to end the relationship.

As is commonly observed elsewhere (South and Spitze 1986; Hirschberger et al. 2009), an inverse relationship was found between the likelihood of divorce/separation and marital duration as well as the number of children a woman had living with her. Neither of these findings is surprising given that children are considered to be a large investment in a relationship and couples are likely to become more committed to a marriage/union the longer they remain in it. Nonetheless, it is also possible that women felt limited capacity to leave their relationship with a growing number of children, if their increasing family size contributed to higher levels of economic dependence on their spouse/partner. This is particularly concerning if women felt unable to leave, even if experiencing IPV. Unfortunately, we did not measure women's financial autonomy so are unable to explore these associations. We recommend that future research build on these findings to examine associations between women's economic independence, marital satisfaction and union trajectories.

Our study has limitations. First, it would have been more meaningful to conduct a longitudinal analysis with women who were newlyweds at baseline so as to follow them throughout the course of their marriage. In our study, some women had been in their current relationship for many years while others were newly married or partnered. Thus, we were unable to distinguish how patterns of abuse might have evolved over time and differentially contributed to union dissolution. Second, we did not collect information on previous divorce/separations or specific patterns of partnering. This might have attenuated the associations between violence and union disruption, since some women might have previously left former abusive marriages/partnerships but reported no IPV/union dissolution in this

study. Further, it is likely that some women who divorced/separated from a partner, later reunited with the same partner, while other women entered into new unions within the time frame of our study. While we were unable to measure these partnering nuances, we recognized that women were at risk of divorce/separation on more than one visit and accounted for this in the analysis. Fourth, the reported rate of severe physical violence, the only type of IPV associated with divorce or separation, was low. These findings might be valid but might also represent underreporting or recall bias if abused women experienced frequent episodes and multiple forms of violence, but only reported on more recent, less severe experiences. Acts categorized as “moderate” violence could have caused severe injury, and thus we might have diluted our results by the way in which we ranked these outcomes. Finally, although we conducted a longitudinal analysis and found severe IPV to be significantly associated with divorce/separation, we cannot infer causality because there may be other factors that influenced women’s experiences of violence and union dissolution. Additionally, severe IPV could reflect the level of animosity between partners, leading to union disruption. Notwithstanding these limitations, our finding on the association between severe physical abuse and union disruption is important and has programmatic and research implications for Uganda and other settings.

Conclusions

Our study suggests an important association between women’s experiences of severe physical IPV and risk for separation or divorce in Rakai, but we feel our findings are not limited to rural Uganda. Thus, in light of the global push to end violence and discrimination against women and girls (United Nations 2015), it is essential that proven effective IPV reduction interventions be scaled up and focused outreach be implemented to target women everywhere who are in relationships with violent husbands/partners. Both primary and secondary prevention of IPV may provide a means of promoting increased relationship quality and union longevity. A meta-analysis of marriage and relationship education identified various programs that were effective in helping men and women improve the quality of their relationships and communication skills (Hawkins et al. 2008). While none of the research was conducted in sub-Saharan Africa, the review findings imply it would be worthwhile for practitioners and evaluation researchers in resource constrained settings to develop and test culturally appropriate interventions to help couples improve relationship stability and quality. Above everything, however, all women and girls who are in violent relationships have the right to an environment that supports

their ability to leave the abusive husband/partner, and access services that provide safety, necessary healthcare and legal support.

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Compliance with ethical standards

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Conflict of interest The authors declare no conflict of interests.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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