



# Violence, Well-Being and Level of Participation in Formal Education among Adolescent Girls in Eastern Democratic Republic of the Congo: The Role of Child Marriage

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*ABSTRACT* Child marriage is a well-recognized barrier to education, and exposes girls to an increased risk of violence along with other negative health and developmental outcomes. A quantitative survey was conducted with girls selected from 14 communities in South Kivu, Democratic Republic of the Congo (DRC). Data from 350 girls (ages 13-14) were analyzed using mixed effects logistic regression models. Findings revealed that child marriage was associated with lower levels of participation in formal education as well as higher rates of physical, sexual and emotional violence. In particular, when adjusting for age and girls' level of participation in formal education, being married was associated with more than a three-fold (OR: 3.23) increased risk of experiencing sexual violence ( $p < 0.001$ ). Married girls were also significantly more likely to affirm the belief that they would be forced to marry their perpetrator in the event that they were raped ( $p = 0.017$ ), suggesting that a portion of girls within this sample may have experienced this occurrence. Although higher levels of participation in formal education were associated with a reduced risk of violence among non-married girls, these differences

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*were not observed for girls who were married. Findings reveal that child marriage has a significantly negative effect on the relationship between girls' level of participation in formal education and experiences with violence. Taken cumulatively, findings from this study suggest an overall harmful relationship between child marriage and girls' safety, education and well-being, and that efforts to prevent its occurrence in the DRC and beyond are urgently needed.*

**KEYWORDS** child marriage; education; violence; adolescent girls; Democratic Republic of the Congo

## **Introduction**

Promoting the protection, equality and education of adolescent girls in conflict-affected societies epitomized the life and work of Jackie Kirk (Kirk, 2005; 2007; Kirk & Garrow, 2003). Perhaps no issue places these ideals more under threat than child marriage. As Kirk emphasized, prevention and response initiatives to address child marriage and other forms of discrimination against girls are urgently needed, along with further research to understand its implications on the lives of girls (Kirk, 2003; 2004; 2008). Informed by Kirk's legacy, the following study examines the linkages between child marriage, violence and education among a sample of adolescent girls in the Democratic Republic of the Congo (DRC).

## **Background**

Child marriage, defined internationally as a marital union in which at least one of the parties is below the age of 18, is a health and human rights issue of global concern (Nour, 2009; United Nations Population Fund, 2012). Child marriage disproportionately affects girls from rural areas and those from lower socioeconomic backgrounds (Erulkar, 2013a; Mathur, Greene, & Malhotra, 2003). In societies impacted by armed conflict, child marriage and other forms of violence against girls often increase (Kirk, 2003; 2007). In many cases, families resort to child marriage for their daughters in response to the financial and security challenges created by war (Lemmon, 2014; Schlecht, Rowley, & Babirye, 2013).

Child marriage is associated with negative health consequences, including an increased risk of contracting HIV or other sexually transmitted diseases (Clark, Bruce & Dude, 2006; Erulkar, 2013a). Married girls are also more likely to become pregnant at younger ages, subjecting them to the numerous potential health complications associated with adolescent pregnancy (DeVienne, Creveuil, & Dreyfus, 2009; Gibbs, Wendt, Peters, & Hogue, 2012; Muleta, 2006). Further, child marriage exposes girls to an increased risk of experiencing intimate partner violence (Erulkar, 2013b; Kidman, 2016; Raj, Saggurti, Lawrence, Balaiah, & Silverman, 2010).

Child marriage has a direct relationship to girls' education, and is widely considered a barrier to girls' school attendance and educational attainment (Field & Ambrus, 2008; Nguyen & Wodon, 2014; Chandra-Mouli, Raj, Travers, & Sundaram, 2015). Married girls are more likely to drop out of school or attend irregularly due to pregnancy or other household obligations (Arends-Kuenning & Amin, 2004; Wodon, Nguyen, & Tsimpo, 2016). Out-of-school girls are also more likely to marry at early ages due to financial difficulties or prevailing gender norms (Lee-Rife, Malhotra, Warner, & Glinski, 2012; Mathur et al., 2003). As a result, keeping girls in school longer has been recognized as a way to prevent child marriage (Erulkar & Muthengi, 2009; Glick, Handy, & Sahn, 2015; Raj, McDougal, Silverman, & Rusch, 2014).

Child marriage is a prevalent issue in the Democratic Republic of the Congo (DRC), which has been impacted by armed conflict for more than 20 years (Male & Wodon, 2016). It is estimated that 10% of females in the DRC between the ages of 20-24 were married before the age of 15, and 37% were married before the age of 18 (UNICEF, 2016). It is also common in the DRC for marriage to be used as a form of out-of-court settlement in the event that a girl is raped (Freedman, 2016; Mansfield, 2009). Although child marriage is widely reported to be a problem in the DRC, there are no known peer-reviewed studies that rigorously examine its occurrence within the DRC context, or its impact on affected girls. Existing knowledge has been largely based on findings from Demographic and Health Surveys (DHS), grey literature, or policy papers connecting the issue in the DRC to global trends (UNICEF, 2016; Male & Wodon, 2016). In particular, prior research in the DRC has yet to systematically examine the associations between child marriage, participation in formal education, and girls' exposure to violence. In light of these issues, as well as their crucial importance to the health, well-being and development of girls, this analysis seeks to examine the association between child marriage and key outcomes related to girls' education, well-being, and experience with violence. Further, a primary focus of this study is to investigate the potential moderating effect of child marriage on the relationship between education and violence among girls in South Kivu, Democratic Republic of the Congo (DRC). Due to these significant knowledge gaps, as well as the crucial importance of these issues to the safety, well-being and development of girls, this analysis seeks to examine the following primary research questions:

1. How does child marriage interact with girls' level of participation in formal education, exposure to violence, and well-being?
2. How does child marriage moderate the association between level of participation in formal education and exposure to violence among girls in South Kivu, DRC?

In addition, this study explores the following hypotheses:

- Hypothesis 1: Child marriage is likely to expose girls to higher rates of violence, and lower levels of participation in formal education;

- Hypothesis 2: While increasing levels of participation in formal education are likely to be associated with lower rates of violence among non-married girls, child marriage is likely to moderate this relationship;
- Hypothesis 3: Measures of hope and self-esteem are likely to be lower among married as compared to non-married girls.

## **Methods**

### *Study Design*

This paper is based on an analysis of data from a baseline survey carried out in the Democratic Republic of the Congo (DRC) from May-July 2015 by Columbia University and the International Rescue Committee (IRC) as part of a two-arm, wait-list cluster-randomized control trial to investigate the incremental effectiveness of a caregiver component to an IRC- run violence prevention and response program for adolescent girls (Falb et al., 2016; Stark et al., 2017a). The program utilized “safe spaces” in community locations to provide group-based life skills training and mentorship for adolescent girls between the ages of 10-14 along with monthly sessions for primary caregivers.

Program sites were selected from conflict-affected communities in South Kivu where IRC had an established presence. In total, 14 sites were selected, including eight in the territory of Kabare and six in the territory of Uvira. Informed consent was gathered from caregivers of all girls prior to their girls’ enrollment in the study, as well as informed assent from participating girls. Detailed ethical safeguards were developed for the study, on which the research team received in-depth training. Ethical approval was received from Columbia University Medical Center and the Ministry of Gender in South Kivu.

Quantitative survey methods were used with girls to evaluate attitudes towards a host of topics related to physical and financial assets, health-related behaviors, and experiences with violence. Survey data were gathered using Computer-Administered Personal Interviews (CAPI) for non-sensitive questions, while Audio Computer-Assisted Self-Interview (ACASI) software was used to collect data for questions on the most sensitive issues. The youngest girls (10-12 years old) completed an abbreviated version of the questionnaire with certain questions removed that were deemed too sensitive based on consultation with local experts. Data from the analysis presented in this paper is restricted to girls within the older age range (13-14 years old), in light of the fact that questions on marriage and other sensitive issues were not asked of younger girls. All survey measures were tested and validated in South Kivu in non-study locations prior to the start of data collection.

### *Research Measures*

*Outcome Variables:* Sexual violence against girls was measured in terms of whether girls reported experiencing any of the following acts in the last 12 months: unwanted sexual touching, sexual coercion, sex in exchange for favors, or forced sex. In order to summarize girls' overall exposure to sexual violence, a composite variable was derived to include girls who reported experiencing any of the individual violence types (unwanted sexual touching *or* sexual coercion *or* sex in exchange for favors *or* forced sex).

Physical violence was measured in terms of a single question in the girls' survey, which asked girls to report whether anyone has "hit or beaten" them in the last 12 months. Emotional violence was measured in terms of three individual questions that asked girls to report on whether they had experienced any of the following in the last 12 months: "loud or aggressive screaming"; being "called bad things or having someone saying mean things to them"; or feeling "not cared for by the person who should care for them." A composite form of emotional violence was also derived to reflect girls who answered affirmatively to any of the three possible forms of emotional violence in the last 12 months. The violence measures used in this study were adopted from those used in other violence against children surveys (VACS) as well as the ISPCAN Child Abuse Screening Tool Children's Version (ICAST) (Reza et al., 2009; Zolotor et al., 2009).

*Predictor Variables:* Girls' age was measured as a continuous variable. Girls' marital status was measured based on a "yes/no" question that asked girls if they were "currently married or living with someone as if married." Girls' level of participation in formal education was measured using a four-level ordered variable that was derived to include the following levels: 0: never attended school; 1: attended school, but missed all of last year; 2: attended school last year, but missed one or more days in the last week; and 3: attended school last year, and missed no days in the last week.

Girls' well-being was measured in terms of hope and self-esteem. Girls' hope was measured using the Children's Hope Scale (CHS) (Snyder et al., 1997), a six-item questionnaire that examines hope, agency and future orientation. Responses were coded so that potential scores ranged from 1-6, calculated as a mean of the total score. Girls' self-esteem was measured using the Rosenberg self-esteem scale (Rosenberg, 1965), which includes 10 questions designed to assess self-perception. Responses were coded so that potential scores ranged from 10-40. Girls were also asked a "yes/no" question regarding if they felt that they would "be forced to marry" a male perpetrator in the event that they were raped.

### *Data Analysis*

All statistical analyses were conducted using STATA 14.<sup>1</sup> Descriptive statistics were generated to determine potential variation among married versus non-married girls. For continuous measures, means and standard deviations were estimated separately by marital status, and a mixed effects regression model was utilized to test differences in the mean levels for girls by marital status, adjusted for site as random effects.<sup>2</sup> For categorical variables, the frequency and prevalence of each selected binary measure was estimated separately by marital status, and a mixed effects logistic regression model was utilized to test differences in the frequency of each selected binary measure for girls by marital status, adjusted for site as random effects since participating girls were nested within 14 communities included in the study.

The next step in the analysis involved investigating the association between girls' level of participation in formal education and exposure to each of the violence outcomes. A trend test for potential decreasing levels of violence by increasing levels of participation in formal education was used to examine potential differences in this relationship based on girls' marital status.

Sequential models were used to investigate the potential moderating effect of child marriage on the association between girls' level of participation in formal education and sexual violence as the outcome variable, using an interaction between marriage and level of participation in formal education, adjusted for site as a random effect. Models also tested the potential confounding role of selected covariates on the association between girl's level of participation in formal education and sexual violence as the outcome variable.

The Akaike's information criterion (AIC) was used in the sequential model process to examine the incremental predictive ability of each additional model, as well as to select the final predictive model (Akaike, 1973).

### **Results**

This manuscript is based on an analysis of data from 350 girls to investigate the relationship between child marriage and girls' level of participation in formal education as both relate to girls' exposure to violence. From this sample, 24.9% (87/350) of girls reported being married or living with a partner as if married. Of these 87 girls, 46 reported being married and living with their husband, 25 reported being married and not living with their husband, and 16 reported living with a man as if married. The majority of girls who were married reported being with significantly older men. Of the 78

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<sup>1</sup> Information on the STATA 14 statistical software package is available at [www.stata.com/stata14/](http://www.stata.com/stata14/)

<sup>2</sup> The logistic regression modeling approach included a random variable for site to account for potential variation across the 14 sites from which girls in the sample were selected.

married girls who provided information on their husbands' ages, 75.7% reported being married to men who were 18 years old or older, including the following breakdown across adult age groups: 44.9% (18-29 years old); 21.8% (30-49 years old), and 9.0% (50 years old or older).

Demographic factors and characteristics of girls are reported in Table 1, which compares these measures between married and non-married girls.

	<b>All Older Girls (Ages 13-14) (n=350)</b>	<b>Married (n=87)</b>	<b>Not Married (n=263)</b>	<b>p-value+</b>
<b>Mean (Standard Deviation)</b>				
<b>Girls' Age</b>	13.543 (0.499)	13.471 (0.502)	13.567 (0.496)	p=0.119
<b>Girls' Highest Grade Completed</b>	3.509 (2.634)	3.322 (2.721)	3.570 (2.607)	p=0.017*
<b>N (Percent)</b>				
<b>Girls' Level of Participation in Formal Education</b>				
Never went to school	64 (18.3)	17 (19.5)	47 (17.9)	p=0.209
Some school, but missed all of last year	142 (40.6)	39 (44.8)	103 (39.2)	p=0.390
Missed 1+ days in the last week	59 (16.9)	18 (20.7)	41 (15.6)	p=0.234
Missed 0 days in the last week	85 (24.3)	13 (15.0)	72 (27.4)	p=0.011*
<b>Mean (Standard Deviation)</b>				
<b>Girls' Hope</b>	2.300 (1.01)	2.202 (0.957)	2.332 (1.027)	p=0.225
<b>Girls' Self-Esteem</b>	32.766 (4.834)	29.587 (6.601)	33.719 (3.677)	p<0.001***
<b>N (Percent)</b>				
<b>Girls who feel they would be forced to marry male perpetrator if raped</b>	107 (34.3)	37 (48.1)	70 (29.8)	p=0.017*
<b>N (Percent)</b>				
<b>Reported Violence (Last 12 Months)</b>				
<b>Sexual Violence</b>				
Unwanted Sexual Touching	37 (11.4)	13 (16.9)	24 (9.6)	p=0.079
Sexual Coercion	30 (9.4)	14 (18.9)	16 (6.5)	p=0.004**
Sex in Exchange for Favors	30 (9.6)	15 (20.0)	15 (6.3)	p=0.001**
Forced Sex	58 (18.6)	28 (36.4)	30 (12.8)	p<0.001***
Sexual Violence Composite	97 (28.1)	40 (47.6)	57 (21.8)	p<0.001***
<b>Physical Violence</b>				
Beaten or Hit	118 (35.7)	31 (40.3)	87 (34.3)	p=0.408
<b>Emotional Violence</b>				
Loud or aggressive screaming	131 (40.2)	31 (42.5)	100 (39.5)	p=0.721
Verbal insults	120 (36.5)	40 (50.6)	80 (32.0)	p=0.003**
Felt not cared for	138 (43.3)	40 (54.1)	98 (40.0)	p=0.039*
Emotional Violence Composite	215 (67.0)	61 (82.4)	154 (62.4)	p=0.002**

\*p < 0.05, \*\*p<0.01, \*\*\*p<0.001

+ adjusted for age and site

*Table 1. Characteristics of Married vs. Not Married Girls.*

### *Girls' Demographics and Personal Characteristics by Marital Status*

The average age of girls was 13.567 years, and there was no significant difference based on girls' marital status. Girls' highest grade completed was lower among those who were married (3.322) as compared to those who were not married (3.570), and this difference was statistically significant ( $p=0.017$ ). Similarly, girls who were not married were more likely to report perfect attendance in school in the last week, with a rate of 27.4% compared to a rate of 15% among married girls ( $p=0.011$ ).

Girls' self-esteem also showed a highly significant difference based on marital status ( $p<0.001$ ), with married girls reporting lower scores on the Rosenberg self-esteem scale (29.587) than girls who were not married (33.719). Although girls' scores on the Children's Hope Scale (CHS) did not differ significantly based on girls' marital status alone, preliminary analysis examining the relationship between girls' hope and level of participation in formal education found that higher levels of participation were associated with higher scores on the CHS among girls who were not married, and that this trend was statistically significant ( $p=0.029$ ). Among married girls, however, there was no significant difference in girls' hope based on their level of participation in formal education ( $p=0.747$ ).

Regarding the belief that girls would be forced to marry their perpetrator in the event that they were raped, rates varied significantly according to girls' marital status ( $p=0.017$ ), with 48.1% of married girls believing this to be true, as compared to 29.8% of girls who were not married.

### *Violence Outcomes by Marital Status*

For each type of violence examined in this study, the rates among married girls were higher than among non-married girls. As noted in Table 1, these differences were statistically significant for the majority of violence types. For example, the reported rate of the sexual violence composite type was more than twice as high for married girls (47.6%) as compared to girls who were not married (21.8%), and this difference was highly significant ( $p<0.001$ ). Similarly, the rate of forced sex in the last 12 months was nearly three times as high among married girls (36.4%) as compared to non-married girls (12.8%), which was also highly significant ( $p<0.001$ ). Among the forms of violence measured, the highest reported rates were observed for emotional violence, with a rate of 82.4% among married girls and 62.4% among non-married girls for the composite type of emotional violence (see Table 1).

*Univariable Models Investigating the Moderating Effect of Child Marriage on the Relationship between Education and Violence Outcomes*

In examining the association between education and violence for all girls regardless of marital status, significant trends were found for forced sex and the sexual violence composite type, whereby increasing levels of participation in formal education were associated with lower rates of violence (forced sex:  $p=0.015$ ; sexual violence composite:  $p=0.008$ ). However, when considering married and non-married girls separately, these trends were significant only for non-married girls. For girls who were not married, increasing levels of participation in formal education were associated with lower rates of sexual violence, and significant trends were seen for forced sex ( $p=0.034$ ) and the sexual violence composite type ( $p=0.029$ ). In addition, the odds ratios showed progressively lower risk of experiencing these forms of sexual violence as girls' level of participation in formal education increased. In contrast, in the case of married girls, there were no significant differences in rates of violence based on girls' level of participation.

Emotional and physical violence did not vary significantly across level of participation in formal education for either married or non-married girls.

*Sequential Multivariable Models for Sexual Violence Composite Type*

The next step in the analysis involved testing a series of sequential multivariable models to examine the potential association between marriage, education, and girl's risk of exposure to the composite form of sexual violence in the last year, and to adjust for potential confounders (see Table 2). As rates of emotional and physical violence were not significantly associated with levels of participation in formal education and marital status, only sexual violence was investigated further as an outcome variable through this process.

In Model 1, which explores the potential relationship between girls' age and level of participation in formal education on girls' risk of experiencing sexual violence, girls' level of participation in formal education was significant, and associated with an odds ratio of 0.84, reflecting a 16% reduced likelihood that girls would experience sexual violence for each increasing level of participation ( $p=0.008$ ). In Model 2, girls' marital status was incorporated along with previously included components. When examined together, marriage became highly significant, and was associated with more than a three-fold increased likelihood (OR: 3.08) of sexual violence for girls who were married as compared to non-married girls. In the presence of marriage, level of participation in formal education was attenuated ( $p=0.065$ ), suggesting a potential interaction between marriage and participation in formal schooling (see Table 2).

	<u>Predictor Variables</u>	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>	<u>Model 5</u>
<b>Control Variable</b>						
	Girls' Age	0.90 (0.55, 1.45)	0.94 (0.57, 1.53)	0.91 (0.55, 1.50)	0.55 (0.26, 1.14)	0.59 (0.25, 1.40)
	Level of Participation in Formal Education (Trend)	0.84 (0.75, 0.96)**	0.89 (0.78, 1.01)	0.86 (0.74, 1.00)*	0.80 (0.64, 0.99)*	0.77 (0.60, 1.01)
	Married		3.08 (1.78, 5.32)***	3.23 (1.85, 5.62)***	2.79 (1.19, 6.55)*	1.98 (0.69, 5.70)
<b>Predictor Variables</b>						
	Level of Participation in Formal Education (Trend) x Married			1.13 (0.86, 1.48)	1.39 (0.92, 2.12)	1.31 (0.77, 2.23)
	Girls' Self-Esteem				0.93 (0.85, 1.01)	0.84 (0.74, 0.94)**
	Girls' Hope				0.57 (0.37, 0.87)**	0.54 (0.33, 0.88)*
	Girls' belief they would be forced to marry male perpetrator of forced sex				2.92 (1.38, 6.20)**	1.34 (0.53, 3.40)
<b>Co-Occurring Violence Measures (Last 12 Months)</b>						
	Beaten or hit					5.97 (2.33, 15.30)***
	Emotional Violence (Composite)					6.70 (1.93, 23.27)**
<b>Information Criterion</b>	Akaike's information criterion (AIC)	427.53	396.22	397.47	216.14	175.93
	df	4	5	6	9	11

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001

Table 2. Sequential Multivariable Models for Sexual Violence Composite 2 (Last 12 Months) by Level of Participation in Formal Education, Marital Status, Girls' Attributes and Co-Occurring Forms of Violence Against Girls: Adjusted for Age and Site.

Model 3 built upon the previously included factors, and incorporated an interaction term between girls' level of participation in formal education and marriage, aimed at detecting separate trends between married and non-married girls in the prevalence of sexual violence by level of participation. When examined in this way, girls' level of participation in formal education for non-married girls was significant, and associated with an odds ratio of 0.86, reflecting a 14% decreasing risk of sexual violence for non-married girls for each increasing level of participation. In contrast, level of participation in formal education for married girls (as evidenced by the interaction term), was not significant and did not play a protective role vis-à-vis sexual violence for married girls. Marriage itself remained a highly significant predictor of sexual violence, associated with an odds ratio of 3.23, suggesting more than a three-fold increased likelihood of sexual violence among married girls as compared to those who were not married.

As depicted in Figure 1, the model-based predicted probabilities of sexual violence for level of participation in formal education are illustrated separately for married and non-married girls, demonstrating the significant protective effect of education for non-married girls.

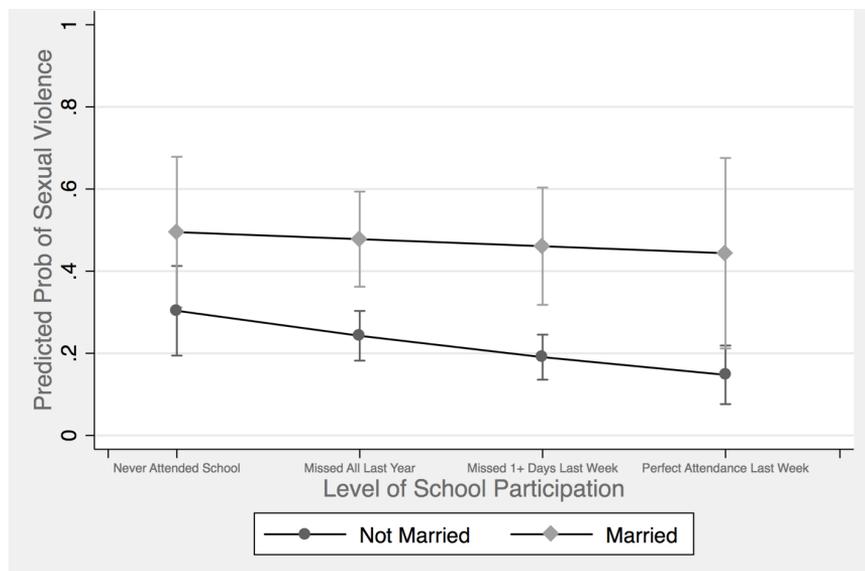


Figure 1. Adjusted Predicted Probabilities of Sexual Violence with 95% Confidence Intervals (Table 2: Model 3).

In Model 4, girls' self-esteem, hope, and girls' belief that they would be forced to marry their perpetrator in the event that they were raped were introduced along with previous measures. Girls' hope was significant, and

associated with an odds ratio of 0.57, reflecting a decreased likelihood that girls would experience sexual violence for increasing levels of hope. In addition, belief among girls that they would be forced to marry their perpetrator if they were raped was significant, and associated with nearly a three-fold increased likelihood (OR: 2.92) of experiencing sexual violence. Marriage remained significant, and was associated with an increased likelihood of experiencing sexual violence that was nearly three times as high (OR: 2.79) for married as compared to non-married girls. The education variable for non-married girls remained significant, and was associated with an odds ratio of 0.80, reflecting a 20% decreased risk of experiencing sexual violence for each increasing level of participation in formal education. Similar to previous models, education for married girls (as reflected by the interaction term) was not statistically significant, reflecting an absence of the protective relationship between education and violence observed among non-married girls.

The final phase of this analysis examined the potential added risk of sexual violence that may be associated with girls' exposure to other forms of violence (physical and emotional). In Model 5, both emotional and physical violence were introduced into the model, along with all previously included variables. Both co-occurring forms of violence were highly significant, and associated with an increased likelihood of experiencing sexual violence that was nearly six times as high for physical violence (OR: 5.97) and nearly seven times as high (OR: 6.70) for emotional violence. Girls' hope and self-esteem remained significant, with higher scores of each measure associated with odds ratios of 0.84 (self-esteem) and 0.54 (hope), reflecting decreased likelihoods that girls would experience sexual violence for increasing levels of these measures. Girls' level of participation in formal education was of borderline significance ( $p=0.056$ ), although it was attenuated for in the presence of the highly significant added risks of physical and emotional violence. As demonstrated by the AIC fit criteria, Model 5 provided incremental predictive ability as compared to previous models (see Table 2).

## **Discussion**

Findings from this research suggest child marriage to be an issue of grave concern. Notably, findings reveal a significant association between child marriage and a higher occurrence of violence. As previously described, reported proportions of physical, sexual, and emotional violence were higher for married as compared to non-married girls.

In addition, findings suggest that marriage interferes with the potential protective role that higher levels of participation in formal education can play with regard to certain forms of violence. In a previous publication based on this study, which did not account for marriage and drew upon the larger sample of girls (ages 10-14), higher levels of participation in formal education

were significantly associated with lower reported proportions of physical and sexual violence (Landis et al., 2018). In the case of this analysis, however, higher levels of participation in formal education were associated with lower proportions of sexual violence among non-married girls, while this protective benefit was not present for girls who were married. These findings suggest that the dynamics of being married not only interfere with girls' access to education and expose them to a greater likelihood of experiencing violence, but being married makes the potential protective role of education vis-à-vis violence less pronounced. These findings are supported by existing research documenting the ways in which child marriage can potentially moderate – and thereby diminish the effect of – supportive interventions for married girls (Falb et al., 2015.)

This study also highlights an association between girls who were married, and lower levels of participation in formal education. For example, the proportion of marriage was nearly double among girls who never went to school (26.6%) as compared to those who were in the highest level of participation in formal education (15.3%). In a prior article examining education among the broader sample of girls in this study (ages 10-14), the highest grade completed by participants was an average of three years behind what would be expected according to their age (Landis et al., 2018). Building on these findings, the fact that married girls in this study have completed less education than their non-married peers is even more concerning, as the sample as a whole was affected by disrupted participation in formal schooling. These findings are consistent with existing literature on child marriage as a barrier to girls' attendance and completion in formal schooling (Field & Ambrus, 2008; Glick et al., 2015). National data in the DRC also suggest that rates of child marriage are the highest among girls who have never been to school, and decline as girls complete higher levels of education (Male & Wodon, 2016).

The role of co-occurring forms of violence also emerged as significant in this research, as both physical and emotional violence were associated with an increased risk of girls experiencing sexual violence. It was also only when these added forms of violence were incorporated into sequential models that marriage was attenuated for, suggesting that girls' marriages likely involved multiple forms of violence. This notion is further supported by the fact that among the total sample reflected in this analysis, girls identified "husband or boyfriend" as the perpetrator type for the violence they experienced the vast majority of the time (at a rate of 95% or higher). These findings are consistent with existing research documenting the increased risk of intimate partner violence that child marriage often entails (Kidman, 2016; Raj et al., 2010). Research on child abuse and household violence also suggests that survivors often experience multiple forms of violence within the context of abusive relationships, and that the cumulative effect of co-occurring forms of violence is likely to be more severe than if a single type of maltreatment occurred

(Finkelhor, Omrod, & Turner, 2007; Soler, Kirchner, Paretilla, & Forns, 2013; Turner, Finkelhor, & Omrod, 2010).

It is notable that married girls in the study were predominately partnered with men outside of their own age range, often to a substantial degree. Although the conditions that led to these marriages are unknown, wider age discrepancies between husbands and child brides have been associated with higher risks of violence (Svanemyr et al., 2015). Instances in which girls are married to significantly older men are also more likely to be associated with power differentials that discriminate against girls (Kopelman, 2016; Machel, Pires, & Carlsson, 2013).

In light of the documented practice in the DRC for marriage to a male perpetrator of sexual violence to be used as a potential solution in the event that girls are raped (Freedman, 2016; Mansfield, 2009), it is also likely that a portion of the girls in this sample who reported being married had experienced this type of arrangement. Although the extent of these types marriages within the study sample is unknown, it is notable that married girls were significantly more likely to affirm the belief that they would be forced to marry their perpetrator in the event that they were raped ( $p=0.017$ ), suggesting a potential relationship that warrants further exploration.

The final area that this study elucidates is the relationship between child marriage and girls' hope and self-esteem. As previously described, married girls in this study had self-esteem scores that were significantly lower than non-married girls. Although non-married girls experienced higher levels of hope with increasing levels of participation in formal education, the association between schooling and hope was not seen for married girls. These findings suggest a potentially negative relationship between child marriage and girls' psychosocial well-being, which aligns with a limited, but evolving body of research (Gage, 2013; LeStrat, Dubertret, & Le Foll, 2011).

It is also notable that girls who had higher levels of hope and self-esteem were significantly less likely to experience sexual violence, even in the presence of marriage and co-occurring forms of violence. The notion that girls' hope can be associated with lower rates of violence was identified in a previous manuscript based on the larger sample of girls (ages 10-14), and not in reference to girls' marriage (Stark et al., 2017b). Although the temporal sequence of this relationship cannot be determined from this study design, findings suggest that additional research is needed to explore these dynamics in greater depth in the DRC and beyond.

## **Limitations**

A limitation of this research can be seen in the fact that questions about marital status and other sensitive issues were only asked to girls between the ages of 13-14. As such, it was not possible to analyze the issue of marriage across girls from the larger study sample (ages 10-14;  $n=866$ ). This smaller

sample size reduced power to detect multivariable associations, so it is possible that additional model effects with borderline significance levels still warrant further investigation.

## **Conclusion**

Ultimately, as a result of the multiple risks to girls' safety, well-being and level of school participation associated with child marriage identified by this study, findings from this research suggest an urgent need for efforts to address the root causes of child marriage in the DRC and in conflict-affected societies more broadly, and to work with girls, families and communities to prevent this practice. Interventions are particularly needed to combat harmful social norms that contribute to child marriage, and that sanction its use as a form of settlement for young survivors of rape.

Further, in light of the association between child marriage and high rates of intimate partner violence (IPV), findings suggest a need to develop approaches to prevent and respond to IPV against adolescent girls. As current IPV programming has largely focused on the situation of adult survivors, these findings have important implications for potential ways in which humanitarian actors can seek to adapt existing interventions to more adequately address the needs of adolescent girls.

In addition, in light of the limited access to education experienced by married girls, program interventions are also needed to increase educational opportunities for girls who become married, and to address other potential barriers to school attendance. These objectives are also in line with the Sustainable Development Goals, which seek to address child marriage as well as gender disparities in education by 2030 (United Nations, 2015).

Findings from this study also suggest a need to further investigate the impact of child marriage on girls' psychosocial well-being, as well as potential ways in which personal attributes such as self-esteem and hope may interact with girls' risk of experiencing violence. In light of the multiple factors that can contribute to early marriage, such as poverty, lower education, armed conflict or humanitarian events, additional research is also needed to further explore the factors that contribute to early marriage within the DRC, and to develop prevention and response initiatives accordingly.

As emphasized by Jackie Kirk, combatting child marriage along with all forms of violence and discrimination against girls is crucial in order to help them reach their full potential and realize the benefits of education in conflict-affected societies and beyond.

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