



Female Genital Mutilation and Age at Marriage: Risk Factors of Physical Abuse for Women in Sierra Leone

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Abstract

Purpose Sierra Leone, a post-conflict sub-Saharan African country, has very high rates of intimate partner violence (IPV). Female genital mutilation (FGM) and early marriage are also common. Both practices can lead to negative health outcomes, and may increase vulnerability to IPV. The current study aims to contextualize IPV risk factors in Sierra Leone, a low-income country in which empirical IPV research remains limited, by considering the intersection between age at FGM and age at marriage.

Method Analyzing data from the 2019 Sierra Leone Demographic and Health Surveys ($N = 3,324$), we use logistic regression models to examine the association of age at FGM and age at marriage, controlling for IPV risk factors, with the odds of women experiencing physical IPV. We consider the interaction between age at FGM and age at marriage, and incorporate age-specific models in light of the civil war.

Results FGM and age at marriage were not significantly associated with IPV, but those who were circumcised between 10 – 14 years of age – when the practice traditionally occurs – were associated with higher odds of IPV. Among women aged 29 and younger, women circumcised under the age of 10 and also married between the ages of 10–14 were most at risk.

Conclusions The results offer insight into the sociocultural practices and its association with IPV among Sierra Leonean women, especially in light of civil war timing. Our findings highlight the importance of considering the age at which these practices occur, as this may further exacerbate women's vulnerability to IPV victimization.

Keywords Sierra Leone · Intimate partner violence · Female genital mutilation · Age at marriage

Intimate partner violence (IPV) affects many women worldwide, and it may result in short- and long-term physical and mental health consequences for victims (Devries et al., 2013). While there is global variation in the prevalence of IPV, it is particularly prevalent in sub-Saharan Africa (Devries et al., 2013; Garcia-Moreno et al., 2006). Sub-Saharan Africa is a region comprised of 46 countries located south of the Sahara (e.g., Sierra Leone, Kenya, Nigeria), where approximately 33% of women have experienced

IPV at some point in their lives (World Health Organization [WHO], 2021). A recent comparison of 23 sub-Saharan African countries indicates that Sierra Leone has the highest prevalence of IPV in the region (Aboagye et al., 2021). According to the Demographic and Health Surveys (DHS, 2020), 61% of married women in Sierra Leone have experienced physical, sexual, or emotional IPV by their current or most recent partner. This percentage has increased since the DHS 2013, when 51% of women reported IPV. During the civil war that took place in Sierra Leone from 1991 – 2002, many girls and women were additionally forced into 'marriages' and suffered from widespread sexual violence (Human Rights Watch [HRW], n.d.; SIGI, 2014).

Several IPV risk factors which are present in Sierra Leone, such as female genital mutilation (FGM) and early age at marriage, have not yet been empirically investigated among women in Sierra Leone. FGM – a sociocultural practice in which the external female genitalia are partially or fully incised or excised for nonmedical reasons (Odukogbe

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et al., 2017) – is extremely prevalent in Sierra Leone, with approximately four out of five women having undergone the procedure (DHS, 2020). Typically, girls in Sierra Leone are subject to FGM as an initiation rite to the secret women's society named 'Bondo', which is a cultural institution that commences womanhood (Ameyaw et al., 2020). In Sierra Leone, many people consider FGM an acceptable practice to restrict women's libido and to prepare girls for marriage (DHS, 2020). Yet, FGM can result in severe health complications, such as traumatic bleeding and wound infection, and may cause long-term gynaecological, obstetric, and psychological problems (Reisel & Creighton, 2015). In addition to the health consequences of FGM, childhood violence increases the likelihood of violence later in life (Afifi & Von Bothmer, 2007; Salihu et al., 2012), underscoring recurrent victimization experiences. Women who have undergone FGM, especially those who experienced the procedure at a younger age, may be at greater risk of experiencing other forms of victimization, including IPV (Bjälkander et al., 2012a; Salihu et al., 2012).

Another risk factor of IPV is age at marriage. Women's early age at marriage has been found to be associated with increased prevalence of IPV in sub-Saharan African countries (Izugbara, 2018) as well as long-term reproductive health consequences (Mourtada et al., 2017; Nasrullah et al., 2014; Nour, 2006). Although some women in Sierra Leone marry at a young age (DHS, 2020), this is not always the case. As we discuss below, age at marriage may be closely linked to age at FGM within the Bondo society. It is therefore worthwhile to consider the intersection of age at FGM and age at marriage as earlier ages of these experiences may exacerbate the risk of IPV, providing nuance into the risk factors of IPV.

The current study used data from the nationally representative 2019 Sierra Leone DHS to examine the effects of FGM and age at marriage, while controlling for well-known IPV risk factors, on physical IPV victimization among women in Sierra Leone. We additionally look at the intersection of age at FGM with age at marriage on the risk of IPV to provide important context to these experiences. In line with this, we also examine these effects among women who were 30 years and older and women who were 29 years and younger. Sierra Leone experienced a decade long civil war that lasted until 2002. In contrast to women aged 29 and younger, the majority of women aged 30 and older during the DHS questionnaire likely entered marriage during the civil war. Given the high number of women and girls who were victimized by sexual violence (approximately 257,000 women and girls, Goodfellow, 2011) and/or entered into a forced marriage during the war, it is possible that women in this age group are particularly vulnerable for subsequent victimization. Girls who were forced to marry during the war may have married

younger – often around 11 or 12 years of age (Belair, 2006; HRW, 2003) – which by itself may increase risk of negative health consequences as well as IPV (Hayes & Protas, 2021; Mourtada et al., 2017; Nasrullah et al., 2014; Nour, 2006), but they also may have been exposed to potentially traumatic experiences. Extant research consistently shows that prior trauma, including abuse in childhood, can increase the risk of revictimization, including IPV, due the psychological effects of childhood trauma (Afifi & Von Bothmer, 2007; Kennedy, 2008). As such, we examine the risk of IPV by age at marriage and age at FGM across these different age groups. Findings will expand our knowledge of IPV in low-income countries, in particular a post-conflict country with high rates of IPV and where FGM is a common practice. Such efforts can provide more tailored policy responses rather than calls for abolition, which likely are ineffective (Cassman, 2007).

Sierra Leone

Sierra Leone is a low-income country located in Western Africa (Central Intelligence Agency [CIA], n.d.). The majority of the population (77.1%) is Muslim (CIA, n.d.). The country, which became independent from the United Kingdom in the 1960s, has been affected by a civil war that lasted from 1991 to 2002. The civil war displaced more than two million citizens, caused the death of tens of thousands of people, and destroyed most of the country's institutions (CIA, n.d.). In 2014, Sierra Leone suffered from the Ebola outbreak, which resulted in a substantial financial shortfall (CIA, n.d.). In spite of economic recovery, the COVID-19 pandemic negatively impacted Sierra Leone's economy, and Sierra Leone continues to suffer from substantial poverty. Notably due to poverty, Sierra Leone has some of the highest infant, child, and maternal mortality rates globally (CIA, n.d.). Additionally, the educational system was severely disrupted as a result of the civil war, and school enrollment and completion rates remain low, especially among women (DHS, 2020; SIGI, 2014).

While violence against women has been a problem in Sierra Leone throughout colonialism and independence, the civil war further deteriorated women's position (Schneider, 2019). During the war, rebels from the Revolutionary United Front perpetrated systematic and widespread violence against girls and women (HRW, n.d.). Girls and young women who were perceived as sexually mature during the conflict were frequently forced into 'marriages' with rebels (SIGI, 2014), which typically involved an adult male combatant who assigned a captured girl as his "wife." These young girls were exposed to war atrocities, sexual and physical violence, and domestic slavery before and during marriage (Belair, 2006; HRW, 2003;

Park, 2006). The effects of the war persevere, with many women remaining traumatized by their experiences and facing social stigma, especially if they had children as a result of the rape (SIGI, 2014). Despite the implementation of specific laws addressing gender-based violence, IPV remains prevalent in Sierra Leone (McFerson, 2012; Schneider, 2019). Given this recent historical context, it is worthwhile to see if women who reached sexual maturity during the conflict (i.e., aged 30+) have differential risk when compared to women who did so during the post-conflict years. Below we discuss culturally embedded practices within Sierra Leone that may affect risk of IPV, including FGM and age at marriage.

Female Genital Mutilation

Despite a recent decline in prevalence – from 90% in 2013 to 83% in 2019 (DHS, 2020) – the practice of FGM affects the majority of women in Sierra Leone. In Sierra Leone, FGM is part of an initiation rite to a secret women’s society, locally referred to as Bondo (Ameyaw et al., 2020). Bondo society remains popular, and the government has not actively aimed to abolish or mitigate the practice of FGM (McFerson, 2012). Bondo is now more often pursued for political and monetary reasons among those involved in the organization, and Bondo practitioners charge fees for circumcision ceremonies (Bosire, 2012; McFerson, 2012). Women who have undergone FGM are typically members of the Bondo society (Ibrahim, 2019). Bondo, which is rooted in ancient cultural rituals and is not tied to a specific ethnicity, forms an important institution that prepares girls for womanhood by teaching them matters such as housekeeping, maintaining relationships with in-laws, and motherhood (Bosire, 2012). Typically, women enter into a marriage soon after they have successfully completed Bondo. As stated by Ameyaw et al. (2020), “girls and women who are subjected to FGM/Circumcision are perceived to be well trained, ready for marriage and are rewarded with celebrations, gifts, and public recognition in Sierra Leone” (p.2). Although men in Sierra Leone appear to play a more important role than previously known, the decision to let girls undergo FGM is primarily made by their mothers (Bjälkander et al., 2012b). Despite women’s general support for FGM, the practice is rooted in women’s oppression, with the motivation for the procedure being tied to girls’ and women’s value in terms of womanhood, including their marriage prospects and their husbands’ pleasure (Bjälkander, 2013).

Girls in Sierra Leone typically undergo FGM between ages 10 and 14 (Bjälkander et al., 2012a), although approximately one in four girls is subjected to FGM before they are 10 years old. FGM is not without risk and the practice can result in health complications. The United

Nations considers the practice a human rights violation, and, as such, has provided guidelines to prohibit the practice. Many countries, including the United States, have passed legislation to either prohibit FGM or allow prosecution of FGM through other laws (for recent debate on U.S. legislation, see Abbas et al., 2023; Bader, 2023; Tahir, 2023). During or shortly after the procedure, girls may suffer from traumatic bleeding and infection, which occasionally results in death (Reisel & Creighton, 2015). Bjälkander et al. (2012b) found that almost 85% of women who had undergone FGM in Sierra Leone reported health complications after the practice, such as fever, swelling, and wound infection. Long-term, FGM may additionally cause gynaecological, obstetric, and psychological problems, such as infections, genital scarring, perineal trauma (i.e., damage to female genitalia during labor), post-traumatic stress disorder (PTSD), and dyspareunia (i.e., painful sexual intercourse; Reisel & Creighton, 2015). Many women who have undergone FGM in various countries, including Sierra Leone, report mental health problems, and factors associated with the practice – including the type of FGM and having a vivid recollection of the experience – have been found to increase risk of psychopathology (Knipscheer et al., 2015). Similarly, Behrendt & Mortiz, (2005) found that women who experienced FGM had a higher prevalence of PTSD and other psychiatric conditions compared to women who have not experienced FGM.

Research focusing on the lived experiences of women and girls who have undergone FGM reveals many have substantial negative experiences with the practice. A study based on interviews with circumcised Ethiopian women indicates that the vast majority experienced intense fear and/or helplessness during the practice (Köbach et al., 2018). Women who have undergone FGM in The Gambia reported a range of negative reactions beyond fear, including pain, anxiety, numbness, disbelief, betrayal, and anger at their mother for subjecting them to the procedure (Schultz & Lien, 2014). Similarly, interviews with Kurdish girls subjected to FGM indicate that all women remembered the day of the practice as extremely frightening and traumatizing, with the vast majority of girls describing intense fear, helplessness, horror, and severe pain, whereas three quarters of women were still suffering from intrusive re-experiences (Kizilhan, 2011). While there is a lack of research with regards to how women understand, process, and experience the practice of FGM in Sierra Leone specifically, extant work suggests that negative experiences with FGM tend to be common. It is evident that this (typically) adverse experience can have a range of negative consequences for women, and, as a result of the psychological effects of childhood trauma, may even lead to revictimization later in life (Afifi & Von Bothmer,

2007; Brassard et al., 2020; Song et al., 2022). Indeed, Chen et al. (2022) found that victims of FGM are likely to experience comorbid trauma and poly-victimization, with those who have undergone FGM having a high prevalence of past physical, emotional, and sexual abuse, often perpetrated by their partners.

Importantly, women's experiences may be affected by the age at which the practice occurs. Bjälkander et al. (2012a) found that Sierra Leonean women who had undergone FGM before they were 10 years old were more vulnerable to serious health complications compared to those who were older at the time of the practice. The practice may not only be more physically harmful at a younger age, it is also possible that girls subjected to FGM at a young age do not yet have the ability to understand their experiences or to find support. Schultz and Lien (2014) found that women who were older at the time of FGM reported social involvement and feelings of community, which was important in dealing with the trauma, while these experiences were not reported by girls who had been subjected to FGM at an early age. While the negative consequences of FGM may affect girls and women at any age, women's younger age of FGM could potentially make them more vulnerable to negative consequences.

In addition, studies in different countries have found that FGM increases women's risk of IPV (Salihu et al., 2012; Peltzer & Pengpid, 2014), although other studies did not find an association (Hayes & van Baak, 2017; Howard & Gibson, 2021), suggesting there may be important contextual factors that need to be considered. Salihu et al. (2012) found that women in Mali who were circumcised were almost three times more likely to experience some form of IPV. In the Ivory Coast, circumcised women were two times more likely to experience sexual IPV (Peltzer & Pengpid, 2014). Research suggests that women who have undergone FGM are also more likely to justify IPV (Sano et al., 2021). As FGM is often tied to patriarchal societal views, these views may lead to higher acceptance of IPV among circumcised women as a result of social learning (Sano et al., 2021). Individuals who have been subjected to childhood abuse may also be more likely to experience revictimization later in life as a result of childhood trauma (Afifi & Von Bothmer, 2007; Brassard et al., 2020; Kennedy, 2008; Song et al., 2022). When individuals experience multiple forms of victimization during childhood, referred to as poly-victimization, they have an increased risk of victimization in adulthood due to their cumulative trauma (Classen et al., 2005; Finkelhor et al., 2007). Indeed, the more forms of violence women experience during childhood, the more likely they are to be revictimized by IPV in adulthood (Brassard et al., 2020; Chen et al., 2022). Although prior research is equivocal, we hypothesize:

H1: Women who are circumcised will be more likely to experience physical IPV compared to women who were not circumcised.

H2: Women who were circumcised at an earlier age will be more likely to experience physical IPV compared to women who were circumcised at a later age.

Age at Marriage

Although women's median age at marriage has slightly increased over time in Sierra Leone, from 18.2 years in 2013 to 19.8 years in 2019, women typically marry at a young age (DHS, 2020). Women tend to marry earlier than men, evidenced by the fact that by age 20, 51% of women are married compared to 16% of men (DHS, 2020). Early marriage is often the result of girls' initiation into Bondo society in Sierra Leone, as parents are generally eager for their daughters to get married soon after the initiation (SIGI, 2014). Women in Bondo society often place a high premium on marriage, and Bondo membership is considered an effective way of attaining marriage and motherhood (Bosire, 2012). This also reinforces the potential interactive effect between age at FGM and age at marriage.

During the civil war, child marriage was especially common (SIGI, 2014). Although the prevalence of child marriage has declined – and might suggest differences between women of maturity during the civil war and women who reached maturity after – it still occurs. While the legal minimum age of marriage is 18 years for both men and women, marriages involving underaged girls remain relatively common in Sierra Leone, because customary marriages involving a minor can proceed if the parents consent (SIGI, 2014). According to a recent report by UNICEF (2021), there are 800,000 child brides in Sierra Leone, with half of them having been married before age 15.

Prior research suggests that women's early age at marriage can have negative health consequences (Mourtada et al., 2017; Nasrullah et al., 2014; Nour, 2006), and affects risk of IPV. Recent cross-national studies indicate that child marriage is associated with an increased risk of IPV (Ahinokorah et al., 2022; Hayes & Protas, 2021; Izugbara et al., 2020). In country-specific analyses of Tanzania and Nigeria, early age at marriage also increased risk of experiencing one or more forms of IPV (Izugbara, 2018). The high prevalence of IPV in child marriages could be explained by the lack of autonomy and power imbalance within these relationships, which may be exacerbated by large age and education gaps between spouses (Omidakhsh & Heymann, 2020). Girls who marry before age 15 appear to be especially vulnerable to negative outcomes as they are still developing emotionally, socially, and psychologically (Kidman, 2017). In contrast, later age at marriage may serve as a protective factor, as

it has been associated with a reduced likelihood of IPV in different countries (Hayes & Protas, 2021). Based on prior research, we hypothesize:

H3: Women married at an earlier age will be more likely to experience physical IPV.

In Bondo societies, FGM is typically followed by marriage (Bosire, 2012) and both practices tend to occur at an early age in Sierra Leone (DHS, 2020). As prior research has found evidence for both early age of FGM and early age at marriage as risk factors, it is possible that the intersection of early age at FGM *and* early age at marriage exacerbate women's vulnerability to IPV. That is, women may be at greatest risk of IPV when they experienced *both* FGM and marriage at very young ages when compared to women who were married over the age of 18 and experienced FGM later in life. We additionally consider whether those who were of sexual maturity during the civil war (i.e., women who are 30 years and older) face differential risk of IPV compared to those who reached sexual maturity in the post-conflict era (i.e., women aged 29 and younger). Therefore, we hypothesize:

H4: Women who were circumcised at an earlier age and married at an earlier age will be more likely to experience physical IPV.

Risk Factors of IPV

In addition to age at FGM and age at marriage, several other factors may increase the risk of IPV, including polygyny, witnessing or experiencing violence during childhood, education, decision-making, attitudes toward IPV, and husband's alcohol use. We provide a brief overview of these risk factors that we include as control variables in our analyses.

In Sierra Leone, 30% of women and 14% of men are in a polygynous union, meaning that the husband is married to more than one woman (DHS, 2020). Older men and women are more likely to be in a polygynous union compared to their younger counterparts, and the prevalence of polygyny has slightly decreased over recent years (DHS, 2020). Prior research indicates that being in a polygynous union increases the risk of IPV for women in various countries (Aboagye et al., 2021; Izugbara et al., 2020).

Another risk factor of IPV is exposure to violence in childhood. The DHS reports that women in Sierra Leone who witnessed parental violence were more likely to have experienced IPV (74%) than women who did not witness parental violence (54%; DHS, 2020). Childhood abuse may also amplify risk of IPV. In countries across the world, women who witnessed parental violence and/or experienced

childhood violence were more likely to experience IPV (Hayes & Randa, 2021; Meeker et al., 2020). This is likely the result of the intergenerational transmission of violence through social learning, meaning that violent behavior is passed on from parent to child, as individuals may normalize violence in their adult relationships (Hayes & Randa, 2021; Meeker et al., 2020).

Some studies have revealed that women's higher level of education increases IPV risk in a number of sub-Saharan African countries (Cools & Kotsadam, 2017; Izugbara et al., 2020). This could potentially be the result of backlash, as women with higher educational attainment may be perceived as departing from traditional gender norms (Cools & Kotsadam, 2017). Alternatively, women's educational attainment could serve as a protective factor against IPV, as it may diminish power imbalances within relationships. In contrast, several studies of sub-Saharan African countries have found that women with higher levels of education were less likely to experience IPV compared to women with no or less education (Ahinkorah et al., 2018; Nabaggala et al., 2021). Interestingly, the DHS reports that Sierra Leonean women who are equally educated compared to their partner were more likely to experience any form of IPV (71%) than women in relationships in which the partner is better educated (66%), the wife is better educated (61%), or neither is educated (56%; DHS, 2020). In addition, women with more than a secondary education were slightly less likely (55%) to have experienced such violence than women with no or less education (DHS, 2020). As a result, the direction between education and IPV in Sierra Leone is equivocal.

In Sierra Leone, 35% of women participate alone or jointly with their partners in household decisions (DHS, 2020). The level of decision-making that women have within their partnership has been found to be associated with IPV. If a man dominates in decision-making, this may increase risk of IPV (Hindin & Adair, 2002). While women who make household decisions are also associated with IPV, potentially as a result of abusers restoring power imbalances (Mann & Takyi, 2009), women who are involved in equal decision-making appear least likely to experience IPV (Hindin & Adair, 2002).

According to the DHS (2020), as much as 49% of Sierra Leonean women believe that a man is justified to beat his wife in at least one out of five scenarios. Extant research has also found that women with supportive attitudes of IPV were more likely to experience IPV in sub-Saharan Africa (Aboagye et al., 2021) and across the Global South (Hayes, 2022).

In countries across the Global South (Hayes & Randa, 2021; Howard & Gibson, 2021; Meeker et al., 2020), husbands' alcohol use increased women's risk of experiencing physical abuse. Similarly, the DHS reports that women in Sierra Leone with husbands who drank alcohol were more likely to have experienced IPV (86%) than women whose

husbands did not drink alcohol (56%; DHS, 2020). This may be due to the fact that consumption of alcohol is strongly discouraged by the Islamic faith, which is the dominant religion in Sierra Leone.

Data and Methods

The current study used data from the 2019 Sierra Leone DHS program, which collects nationally-representative household surveys in over 90 developing and transitional countries. DHS data includes a variety of topics related to health, population, and nutrition, such as family planning, HIV prevalence, and maternal health (DHS, n.d.a.). First, the DHS conducts a household questionnaire to collect information on household characteristics, which is used to identify household members eligible for individual interviews. Interviews are only conducted if the respondent provides voluntary informed consent. Eligible men and women aged 15-49 are then interviewed using the woman's or man's questionnaire, a biomarker questionnaire, and they may be selected for extra modules focusing on key social issues (DHS, n.d.b.). The 2019 Sierra Leone DHS included an extra module on IPV that was administered to a subsample of women. Among the 5,248 women that were selected for the IPV module, 1,193 women had never been married, 239 were divorced/separated/widowed, and for 74 women, their safety could not be ensured.¹ Analyses were limited to married Sierra Leonean women aged 15-49 who completed the IPV module, whose safety could be ensured, and who were not missing data on the items included in the study. This resulted in a weighted sample of 3,526 women for analyses examining the binary effect of FGM on IPV. For all other analyses, we focus on the 3,324 women who were circumcised.

Dependent Variable

The dependent variable was the experience of prior physical abuse by her current or most recent partner.² If the respondent's partner ever (1) pushed, shook, or threw something at her, (2) slapped her, (3) punched her with a fist or hit her with something harmful, (4) kicked or dragged her, (5) strangled or burnt her, or (6) threatened her with a knife or gun, this was coded as "1" = Experienced physical IPV. Respondents who did not experience any of these incidents, were coded "0.". Descriptive statistics are presented in Table 1.

¹ Based on unweighted sample data.

² Although IPV consists of different forms of violence that may co-exist, we limit analyses to physical abuse.

Independent Variables

Our independent variables focus on FGM, age at marriage, and the intersection between the two. First, we include a binary indicator of FGM to gauge prevalence. If the respondent was circumcised, she was coded as "1" = Experienced FGM. We also considered the respondent's age at FGM among those who were circumcised, which included the following categories: FGM under 9 years old, FGM between 10–14 years old, and FGM above 15 years old (reference category).

We also included the respondent's age of first cohabitation with their partner, which in most African countries conceptually represents age at marriage (Garenne, 2004), as the following categories: Married between 10–14 years old, between 15–17 years old, and married above 18 years old (reference category). The youngest age at marriage in the sample was 10.

For the interactive effect between age at FGM and age at marriage, we created combinations of these measures. These resulting categories were: FGM under 9 and married 10–14 years, FGM under 9 and married 15–17 years, FGM and marriage 10–14 years, FGM 10–14 and married 15–17 years, FGM 15+ and married 10–14 years, and FGM 15+ and married 15–17 years. For these analyses, respondents who were over the age of 18 when they married were the reference category.

Lastly, we used the linear estimates of age at marriage and age at FGM to capture the time order between FGM and marriage. We assess if marriage came first, FGM came first, or if they occurred at the same age. Three binary measures were created where if they occurred at the same age served as the reference category.

Risk Factors of IPV

If the respondent was in a polygynous union, this was coded as "1" = Husband had 1+ other wives. Respondents who indicated their father ever beat their mother were coded as "1" = Witnessed inter-parental violence. Respondents who indicated their mother, father, brother, or sister ever physically abused them were coded as "1" = Violence in family of origin. The respondent's level of education in comparison to her partner's level of education was included as a categorical measure capturing if the respondent had more education than her partner, her partner had more education than the respondent, or they had the same level of education (reference category). The respondent's working status was included as "1" = Working and "0" = Not working. For level of decision making, we created a scalar measure. Respondents were asked for different scenarios whether they alone, jointly with their partner, their partner alone, or someone else made household decisions. These scenarios were: healthcare,

Table 1 Descriptive statistics

	Circumcised sample (<i>N</i> = 3,324)		30+ sample (<i>n</i> = 2,004)		29 and younger (<i>n</i> = 1,320)	
	Mean/%	S.E	Mean/%	S.E	Mean/%	S.E
Dependent variable						
Physical IPV	49.78%		46.61%		54.85%	
FGM measures						
FGM ¹	96.23%		97.94%		93.61%	
FGM under 9 years old	26.54%		23.97%		30.65%	
FGM 10–14 years old	45.85%		47.06%		43.92%	
FGM 15+	27.61%		28.97%		25.43%	
Age at marriage						
Married 10–14 years	13.90%		13.55%		14.47%	
Married 15–17 years	31.14%		27.69%		36.65%	
Married 18+	54.96%		58.76%		48.88%	
Intersection of FGM and age at marriage						
Over 18 married	54.96%		58.76%		48.88%	
FGM under 9 and married 10–14	3.75%		3.54%		4.08%	
FGM under 9 and married 15–17	7.81%		5.88%		10.90%	
FGM 10–14 and married 10–14	7.30%		7.66%		6.73%	
FGM 10–14 and MArried 15–17	14.83%		12.71%		18.21%	
FGM 15+ and married 10–14	2.86%		2.35%		3.67%	
FGM 15+ and married 15–17	8.50%		9.10%		7.54%	
Marriage before FGM	7.51%		7.44%		7.62%	
FGM before marriage	88.77%		88.53%		89.16%	
Control variables						
Age	32.63	0.2	37.96	0.16	24.12	0.14
Urban	33.48%		31.27%		37.01%	
Wealth	2.78	0.05	2.71	0.05	2.89	0.06
Mende or temne	67.29%		67.81%		66.47%	
Number of children	3.70	0.05	4.72	0.07	2.07	0.04
Woman has more education	13.46%		9.79%		19.32%	
Husband has more education	26.03%		24.38%		28.65%	
Same level of education	60.52%		65.82%		52.03%	
Working	81.65%		86.58%		73.76%	
Attitudes toward IPV	1.64	0.05	1.62	0.06	1.67	0.07
Husband interrupted	4.66%		4.32%		5.21%	
Another man interrupted	2.48%		2.28%		2.81%	
Another woman interrupted	3.02%		3.03%		3.02%	
History of family violence	25.98%		25.05%		27.47%	
Husband drinks	17.22%		19.13%		14.15%	
Witnessed inter-parental violence	28.81%		27.30%		31.24%	
Decision-making	1.74	0.05	1.81	0.06	1.64	0.07
Polygynous relationship	32.28%		39.20%		21.22%	

¹ Descriptive statistics for circumcised or not are reported for the full sample (*N* = 3,526)

large household purchases, when to visit family or relatives, and what to do with partner's earnings. For every decision, respondents who reported they alone or jointly with their partner made the decision, were coded as "1." We combined the responses into a summative scale (*Mean* = 1.74; *S.E.* = 0.05). For women's attitudes toward

IPV we also created a scale. Respondents reported if they believed wife beating was justified in different scenarios: "goes out without telling her husband," "neglects the children," "argues with her husband," "burns the food," or "refuses to have sex." The responses to each item was coded as "1" if the respondent believed wife beating was

justified, and were then added together ($Mean = 1.64$; $S.E. = 0.05$). Finally, we included a binary measure of partner's alcohol use, where "1" = Partner drinks alcohol.

Control Variables

The respondent's age and number of children were included as continuous items. The respondent's wealth was included as a linear measure ranging from "1" = Poorest to "5" = Richest. Additionally, we included whether the respondent lived in an urban area (1 = urban, 0 = rural), and whether the respondent belonged to one of the two major ethnic groups of Sierra Leone where "1" = Mende or Temne.³

According to DHS policy, the interviewer noted if the IPV module was interrupted by the respondent's husband, an adult man, or an adult woman. We created three binary measures to capture whether they interrupted the interview as this may reflect socially desirable responses (Rabel et al., 2014).

Analytic Plan

The current study assessed the association between age at FGM, age at marriage, and physical abuse among Sierra Leonean women by their current or most recent partner. Given the binary nature of our outcome measure, logistic regression was estimated. We first consider the role of FGM as a binary measure as a benchmark. Among the sample, very few women were not circumcised. Consequently, we limited the remaining analyses to respondents who were circumcised.⁴ Second, we consider the age at which the circumcision took place among women who were circumcised. For these models, respondents who were 15 or older when the circumcision took place were the reference category. Third, we consider the intersection of age at marriage with the age of respondents' circumcision with a series of binary measures. Finally, we consider the time-order between age at marriage and age at circumcision. We then repeat these models for respondents who were 30 years and older as well as for respondents 29 and younger. These age-specific split models estimate if the effect of age at FGM and age at marriage differ for women who came to sexual maturity during the civil war (i.e. women

aged 30+) compared to women who came to sexual maturity in the post-conflict era (i.e. women 29 and younger) to gauge if these groups differ in vulnerability.

We account for the complex sample designs of the DHS by adjusting for clustering, stratification, and weighting. The IPV weight was used during this process. For the age-specific models, some strata had single PSUs. In these instances, we used the certainty estimation command so that these strata did not contribute to the standard error. We use the processes developed by Archer and Lemeshow (2006) for post-estimation goodness of fit tests when using survey sample data. All models suggested goodness of fit ($p > 0.05$). Analyses were conducted in Stata 16.0.

Results

Full Sample

First, we consider FGM as a binary measure. According to Model 1 in Table 2, FGM was not significantly associated with IPV. Overall, 96.23% of the sample was circumcised. Therefore, there likely is not much variability between those who are and who are not circumcised and IPV. As a result, in Model 2 we disaggregated the measure to consider the age at which the respondent was circumcised among respondents who had been circumcised to add context to the experience and to identify who, within this group, may be most vulnerable. As indicated in Table 1, almost half (49.78%) of the circumcised respondents had ever experienced physical IPV. To reiterate, disaggregating the FGM measure to consider the age at which it occurred might illuminate women who were most vulnerable and experienced the most negative consequences. Compared to respondents who were 15 years or older when they were circumcised, respondents who were between the ages of 10 – 14 when the circumcision took place were associated with higher odds of IPV ($OR = 1.387$, $p \leq 0.01$). The difference between those who were circumcised under the age of 10 or over the age of 14 was not significant. Across both Model 1 and Model 2, age at marriage was not significant. Model 3 considers the intersection of age at marriage with age at circumcision. Compared to women who were married at 18 years or older (regardless of age of circumcision), women who were 9 years old or younger when circumcised and married between the ages of 10 – 14 were associated with higher odds of IPV ($OR = 1.756$, $p \leq 0.05$). Model 4 demonstrates the time-order between marriage and circumcision was not significantly associated with IPV.

In line with prior research, we found that women who had supportive attitudes toward IPV, whose partner drinks alcohol, who witnessed inter-parental violence, and women in a polygynous relationship were associated with higher odds of physical IPV.

³ The civil war was started by rebels from the Revolutionary United Front, which was comprised from different ethnic groups (McFerson, 2012). Since Mende and Temne are the majority groups within Sierra Leone, we combined these two groups to distinguish between women who belong to an ethnic majority group and those belonging to an ethnic minority.

⁴ Only six respondents were not circumcised and married between the ages of 10 – 14. Sensitivity analyses were conducted that controlled for not being circumcised and 1) the intersection of age at marriage with age at FGM and 2) if age at marriage or FGM came first. It was not significant, and relationships remained the same.

Table 2 Findings from logistic regression of physical IPV victimization among women in Sierra Leone

	Full sample			
	Model 1	Model 2	Model 3	Model 4
	Odds ratio	Odds ratio	Odds ratio	Odds ratio
FGM measures				
FGM	1.245	-	-	-
FGM Under 9 years old	-	1.311	-	-
FGM 10–14 years old	-	1.387**	-	-
Age at marriage				
Married 10–14 years	1.177	1.114	-	-
Married 15–17 years	0.912	0.899	-	-
Intersection of FGM and age at marriage				
FGM under 9 and married 10–14	-	-	1.756*	-
FGM under 9 and married 15–17	-	-	0.827	-
FGM 10–14 and married 10–14	-	-	0.874	-
FGM 10–14 and married 15–17	-	-	1.049	-
FGM 15+ and married 10–14	-	-	1.235	-
FGM 15+ and married 15–17	-	-	0.762	-
Marriage before FGM	-	-	-	1.466
FGM before marriage	-	-	-	1.512
Control variables				
Age	0.981*	0.980*	0.980*	0.980*
Urban	0.953	0.914	0.922	0.923
Wealth	1.109*	1.112*	1.110	1.109
Mende or TEMNE	1.164	1.186	1.179	1.184
Number of children	1.000	1.008	1.012	1.012
Woman has more education	0.916	0.942	0.910	0.920
Husband has more education	1.046	1.043	1.046	1.031
Working	1.198	1.198	1.206	1.205
Attitudes toward IPV	1.140***	1.127***	1.126***	1.122***
Husband interrupted	0.746	0.669	0.671	0.677
Another man interrupted	1.448	1.642	1.654	1.642
Another woman interrupted	1.057	1.100	1.091	1.070
History of family violence	1.265	1.300*	1.288*	1.274
Husband drinks	3.527***	3.581***	3.610***	3.578***
Witnessed inter-parental violence	2.358***	2.408***	2.461***	2.425***
Decision-making	0.969	0.976	0.968	0.966
Polygynous relationship	0.783*	0.793*	0.795*	0.801*
Model statistics				
Constant	0.499*	0.488*	0.610	0.417*
Observations	3,526	3,324	3,324	3,324

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Respondents Age 30 and Older

Respondents who were aged 30 and older reported a lower prevalence of physical abuse (46.61%) compared to respondents aged 29 and younger (54.85%). Most respondents in this age group were circumcised between 10 and 14 years of age (47.06%), followed by 15 years and older (28.97%). According to Model 1 of Table 3, among the sample of women who were at least 30 years old, FGM was not significant.

According to Model 2, age at circumcision was significantly associated with higher odds of IPV. Women who were 9 or younger ($OR = 1.562$, $p \leq 0.05$) and women between 10–14 years old when they were circumcised ($OR = 1.531$, $p \leq 0.01$) were associated with higher odds of IPV, compared to those who were at least 15 years old when they were circumcised. Models 1 and 2 indicate age at marriage was not significant. The intersection between age at FGM and age at marriage (Model 3) and the time-order of these events

Table 3 Findings from age-specific logistic regression of physical IPV victimization among women in Sierra Leone

	30+ sample				Under 30 sample			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
FGM measures								
FGM	1.443	-	-	-	1.219	-	-	-
FGM under 9 years old	-	1.562*	-	-	-	1.081	-	-
FGM 10–14 years old	-	1.531**	-	-	-	1.196	-	-
Age at marriage								
Married 10–14 years	0.995	0.953	-	-	1.702*	1.563	-	-
Married 15–17 years	0.870	0.884	-	-	1.076	1.041	-	-
Intersection of FGM and age at marriage								
FGM under 9 and married 10–14	-	-	1.558	-	-	-	2.551*	-
FGM under 9 and married 15–17	-	-	1.043	-	-	-	0.780	-
FGM 10–14 and married 10–14	-	-	0.780	-	-	-	1.166	-
FGM 10–14 and married 15–17	-	-	0.929	-	-	-	1.321	-
FGM 15+ and married 10–14	-	-	1.102	-	-	-	1.517	-
FGM 15+ and married 15–17	-	-	0.708	-	-	-	0.955	-
Marriage before FGM	-	-	-	1.440	-	-	-	1.381
FGM before marriage	-	-	-	1.749	-	-	-	1.151
Control variables								
Age	0.982	0.981	0.982	0.982	1.062	1.066	1.066	1.050
Urban	0.801	0.757	0.763	0.752	1.243	1.229	1.259	1.260
Wealth	1.201**	1.197**	1.198**	1.203**	0.965	0.967	0.961	0.957
Mende or temne	0.950	1.004	0.999	0.999	1.491**	1.433*	1.453*	1.451*
Number of children	1.012	1.018	1.020	1.019	0.962	0.971	0.977	1.009
Woman has more education	1.083	1.209	1.137	1.145	0.750	0.713	0.701	0.711
Husband has more education	0.982	0.975	0.966	0.964	1.115	1.120	1.138	1.118
Working	1.208	1.256	1.249	1.240	1.122	1.084	1.085	1.107
Attitudes toward IPV	1.151***	1.143***	1.139***	1.136***	1.143**	1.122*	1.125*	1.114*
Husband interrupted	0.596	0.517	0.525	0.536	0.901	0.875	0.876	0.867
Another man interrupted	0.988	1.136	1.145	1.102	1.844	2.018	2.003	2.035
Another woman interrupted	1.293	1.332	1.304	1.315	1.243	1.260	1.214	1.233
History of family violence	1.057	1.069	1.063	1.044	1.573**	1.676**	1.669**	1.636**
Husband drinks	3.477***	3.647***	3.640***	3.604***	3.612***	3.453***	3.586***	3.511***
Witnessed inter-parental violence	2.249***	2.244***	2.293***	2.262***	2.458***	2.657***	2.697***	2.671***
Decision-making	0.948	0.958	0.947	0.947	0.994	0.994	0.989	0.987
Polygynous relationship	0.690**	0.702**	0.700**	0.707**	0.973	0.979	0.983	0.999
Model statistics								
Constant	0.451	0.434	0.581	0.343	0.080***	0.084**	0.092**	0.117**
Observations	2,097	2,004	2,004	2,004	1,429	1,320	1,320	1,320

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

(Model 4) were also not significant in the sample of women who were 30 years of age and older.

Respondents Age 29 and Younger

While most women in this age group were circumcised between 10 and 14 years of age (43.92%), as much as

30.65% of the women were circumcised before age 9. Interestingly, this percentage is higher compared to the group of women aged 30 years and older (23.97%). FGM was not significant among the 29 and younger sample. However, women who were 29 and younger and who were married between the ages of 10 – 14, compared to those who were at least 18 when they married, were associated with higher

odds of IPV ($OR = 1.702, p \leq 0.05$). Age at circumcision was not significantly associated with IPV for women 29 and younger (Model 6). Yet, among this sample, compared to women who were married at 18 or older (regardless of the age of circumcision), respondents who were 9 years old or younger when circumcised and who were married between the ages of 10 – 14 were associated with higher odds of IPV ($OR = 2.551, p \leq 0.05$). Finally, the time-order between these events was not significantly associated with IPV (Model 8).

Discussion

The current study used an up-to-date nationally representative dataset among Sierra Leonean women to analyze the effects of age at FGM and age at marriage, while controlling for IPV risk factors, on physical IPV. FGM was very common among the sample, although there was variability in the age at which the circumcision took place. We additionally consider the intersection between age at FGM and age at marriage, and we differentiate between women who were of sexual maturity during the civil war and those who reached sexual maturity in the post-conflict context to examine whether age-specific vulnerabilities exist.

It is apparent that IPV is prevalent among *all* Sierra Leonean women. While we expected women who were aged 30 and older to be more vulnerable to IPV as a result of potential wartime victimization, we found that women aged 29 and younger reported a higher prevalence of IPV (54.85%) compared to women aged 30 and older (46.61%). Contrary to our expectations, women who have experienced the civil war and who may have been subjected to FGM and/or marriage during this time were *not* more vulnerable to physical IPV. This may be because of our focus on physical IPV, and the fact that we did not account for sexual IPV.⁵ Women aged 29 and younger, who may have not (fully) experienced the civil war, faced a higher risk of IPV. While the data precludes us to examine *why* this difference emerged, some of the cultural aspects that underlie IPV, such as patriarchy, gender inequality, and poverty, are deeply embedded in society and are likely consistent across generations. While the atrocities during the civil war in Sierra Leone are insurmountable, women aged 29 and younger may face substantial difficulties in the post-conflict context that might increase their vulnerability. Indeed, the extreme violence against women that was committed during the civil war has spilled over into the post-conflict landscape, and gender-based violence remains prevalent (McFerson, 2012). Unfortunately, we did not have information about women's experiences in the war, so we

were unable to identify women who suffered from wartime victimization and how this may or may not be associated with IPV. Future research would benefit from longitudinal data analyzing young women's lifetime experiences of violence.

When comparing age at FGM, women in the 29 and younger sample had undergone FGM at a younger age compared to the older sample. Unfortunately, there is little information about how the civil war in Sierra Leone has affected the practice of FGM in Bondo society (Bjälkander, 2013), and it remains unknown how the experiences from women who have undergone FGM in the post-war landscape of Sierra Leone differ from the experiences of women during the civil war. Despite worldwide actions and campaigns that aim to abolish the practice, FGM continues to remain legal and prevalent in Sierra Leone (Ameyaw et al., 2020). Ameyaw et al. (2020) found that younger women in Sierra Leone were more likely to circumcise their daughters in the future compared to older women, who may have been exposed to more education on the effects of FGM. Given the continued popularity of FGM, and the severe health consequences that are especially prevalent among women circumcised before age 10 (Bjälkander et al., 2012a), it is crucial to educate men and women about FGM.

Contrary to several other studies (Salihu et al., 2012; Peltzer & Pengpid, 2014), we found that FGM was *not* directly associated with IPV. Yet, the vast majority of participants in the sample were circumcised. Therefore, in the context of Sierra Leone, this experience of FGM is quite normative. It is possible that ceiling effects on FGM (i.e., a high percentage of participants having undergone FGM) reduced the likelihood of obtaining significant results regarding the association between FGM and IPV. Further, in countries where FGM is the norm, it might be crucial to consider other contextual and social aspects that relate to FGM and marriage, and how these aspects shape women's risk of IPV. This is especially true in light of the fact that FGM may be related to Bondo societies where FGM is closely linked to age at marriage and traditional gender roles within those marriages (Ameyaw et al., 2020; Ibrahim, 2019; SIGI, 2014). As we demonstrate, one such avenue is the consideration of the age at which these practices occur.

In contrast to prior studies that identified early age at marriage as a risk factor of IPV (Ahinkorah et al., 2022; Hayes & Protas, 2021; Izugbara, 2018), age at marriage was not significantly associated with higher odds of physical IPV among women in Sierra Leone. Since women in Sierra Leone are considered to be ready for marriage *after* they have undergone FGM (Ameyaw et al., 2020), it was expected that the majority of women were already circumcised before they got married (88.77% of the sample). While women who were not circumcised before marriage thus depart from cultural norms in Sierra Leone – which in other contexts has been found to

⁵ We did not include sexual IPV in our measure, because of small cell sizes for regression analyses.

increase risk of IPV as a result of backlash (Cools & Kotsadam, 2017) – we found that the time-order of FGM and age at marriage was *not* associated with the risk of IPV. These findings illuminate that sociocultural aspects of FGM and age at marriage need to be considered, especially given the negative health behaviors associated with these two practices.

We further contextualized the experience of FGM by considering at what age the respondent was circumcised, perhaps identifying different vulnerabilities within women who were circumcised. In the full sample, women who were circumcised between the ages of 10 – 14, compared to women who were 15 and older, were associated with higher odds of IPV even when controlling for potentially confounding variables. The age specific models illuminated that the sample of women over the age of 30 was driving this finding. Among the women aged 30 and older, those who were circumcised under the age of 15 were associated with higher odds of IPV. As FGM mostly occurs among girls who are between 10 and 14 years old in Sierra Leone (DHS, 2020), part of this age range is normative for FGM. Nevertheless, we expected that women who were in the youngest age group (i.e., younger than 10) would be most at risk when compared to all other groups, but women subjected to FGM at the normative age turned out to have the highest odds of experiencing IPV. It is possible that girls who are between 10–14 at the FGM do not experience the same social involvement and feelings of community as older girls (Schultz & Lien, 2014), while having more vivid memories of their experiences compared to the girls in the youngest age group. With the high prevalence of FGM in Sierra Leone, and the practice most often occurring in this age range, this group in particular might be at risk of being overlooked in prevention and intervention efforts that aim to combat FGM, as they are likely not perceived as the youngest and most vulnerable group in need of protection and, in fact, represent the norm. Yet, given their increased risk to experience IPV later in life, especially among women 30 and older, it is essential girls between ages 10 and 14 are included in prevention and educational efforts.

Interestingly, when we considered women aged 29 and younger, the age of FGM was not significant. However, age at marriage, and particularly women who were between the ages of 10 – 14 when they married, was associated with higher odds of IPV. When the intersection of age at marriage with age at circumcision was considered, women aged 29 and younger who were circumcised under the age of 10 and married between the ages of 10 – 14 had the highest odds of IPV. In many ways, this can be considered the most vulnerable group. Girls in Sierra Leone who have undergone FGM before they were 10 years old have been found to be more vulnerable to severe health complications (Bjälkander et al., 2012a). In addition, child marriage has many negative outcomes for women, but girls who enter a marriage before age 15 are, given their emotional, social, and psychological immaturity,

especially vulnerable for these outcomes (Kidman, 2017). It is possible that the serious health complications may also result in greater psychological effects of childhood trauma that increases their risk of victimization later in life (Afifi & Von Bothmer, 2007; Brassard et al., 2020; Kennedy, 2008; Song et al., 2022). Potentially, these effects are especially visible in the group of women aged 29 and younger due to the post-conflict context in Sierra Leone, which may in turn have led to increased vulnerabilities at a younger age.

While the current study contributes to our understanding of the complex relationship between age at FGM, age at marriage and IPV in Sierra Leone, there are important limitations that merit discussion. Although the negative consequences of FGM are well-established, and many women across countries perceive their experience with the practice quite negatively (Kizilhan, 2011; Köbach et al., 2018), women have diverse experiences, and a considerable number of women subjected to FGM are capable of coping with their experience and are resilient to trauma (Knipscheer et al., 2015; Schultz & Lien, 2014). There is a number of individual, situational and cultural characteristics that are not included in the DHS data, but that may affect women's experience of FGM and the consequences thereof – including subsequent victimization later in life. Given the design of our study, we are unable to capture the lived experiences of women in Sierra Leone. As such, future research would benefit from unpacking how women in Sierra Leone experience FGM. In particular, it would be interesting to analyze why some women may be more resilient to these negative consequences – and potentially also to IPV victimization later in life – than others.

Further, similar to prior research using DHS data (Salihu et al., 2012), we reframed 'age at cohabitation' as 'age at marriage', as it is very likely that cohabitation constitutes marriage in the context of Sierra Leone. Since marriage is common practice in Sierra Leone, and women typically marry young (DHS, 2020), it is expected that cohabitating women were indeed married to their partner at the age of cohabitation.

In addition, we focused on women who reported physical IPV, and did not include if they ever initiated violence against their partner. Given the patriarchal social structure and gender inequality in Sierra Leone (McFerson, 2012), and high rates of IPV (DHS, 2020), women are disproportionately affected by IPV. Only 5.42% of the total sample ($n = 191$) reported they engaged in violence against their partner.

Furthermore, we only looked at women who reported they had experienced physical IPV, and we did not include other types of IPV that may co-exist with physical abuse or occur in isolation, such as sexual violence and controlling behavior. If our IPV measure would have included sexual violence and controlling behavior in addition to physical violence, only a small portion of respondents (15.04%) would *not* have experienced IPV. As a result of low variation within that IPV measure, this would have increased the risk of making Type

II errors due to a potential ceiling effect. Nevertheless, it is important for future research to consider how these forms of IPV are associated with FGM and age at marriage.

We also cannot disentangle wartime rape or forced marriages. Relatedly, we did not have information about the timing of the IPV incidents, so we were unable to examine how the experience of IPV relates to the timing of the civil war and/or the post-conflict context of Sierra Leone. Since IPV comprises forms of abuse that often co-exist (WHO, 2012), future research would benefit from analyzing multiple types of and how they are influenced by socio-cultural factors.

Since the DHS uses a cross-sectional design, we cannot make causal inferences. In Sierra Leone, FGM typically precedes marriage, and women's age of marriage (often) precedes IPV that occurs within the marriage. Therefore, many of the items we include likely predate IPV and we also examine the time order of FGM and marriage. Nevertheless, a longitudinal research design could provide greater insight into the vulnerabilities to IPV that women in Sierra Leone experience and how this relates to the post-conflict landscape.

Another limitation related to our dataset is that it is comprised of self-report data, and the nature of questions asked in the interviews is sensitive, meaning that IPV may be under-reported. To increase women's safety and reliability, the DHS has an extensive interview procedure in accordance with safety guidelines (i.e., the woman is by herself and if the interview is interrupted, interviewers document this; Devries et al., 2010; Ellsberg, 2006; WHO, 2001). Prior research suggests that the interview environment may impact disclosure, as Malian women whose partner interrupted the interview were associated with lower odds of reporting IPV (Hayes & van Baak, 2023), while interruption by an adult man or woman were associated with a greater likelihood of reporting IPV victimization among women in India (Rabel et al., 2014). Yet, the percentage of interviews that were reportedly interrupted in our sample was negligible (between 2.48%—4.66% among full circumcised sample), and the interruption was not associated with higher or lower odds of reporting IPV victimization.

Finally, we also considered if IPV mediated the effect between FGM and terminating a pregnancy as both IPV and FGM have been shown to be associated with reproductive health outcomes (Devries et al., 2013; Reisel & Creighton, 2015). Preliminary analyses suggest this was not the case. Nevertheless, the association between FGM, age at marriage, and IPV with reproductive health outcomes remains a worthwhile avenue for future research.

Conclusion

Many women in Sierra Leone continue to suffer from physical IPV. Women younger than 30 were especially likely to experience FGM at an early age, child marriage, and IPV.

FGM and marriage (as nominal measures), which both tend to occur at an early age in Sierra Leone, were not significantly associated with higher odds of IPV. However, once we further contextualize the experience of these sociocultural practices in tandem and in light of the civil war that took place, differences in women's risk of IPV emerge. Among women aged 30 and older, age at FGM was significantly associated with IPV, and those who were circumcised under the age of 15 were associated with higher odds of IPV. While age at FGM was not significantly associated with IPV among women 29 and younger, the intersection between age at FGM and age at marriage was significantly associated with IPV in this age group. The results offer insight into the complex and multifaceted experiences of sociocultural practices and its effect on IPV among Sierra Leonean women, especially in light of civil war timing. Our findings highlight the importance of considering the age at which these practices occur, as this may further exacerbate women's vulnerability to IPV victimization later in life.

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Data Availability The dataset used in this study is freely available at https://dhsprogram.com/data/dataset/Sierra-Leone_Standard-DHS_2019.cfm?flag=0.

Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

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