**Experiences and perpetration of recent intimate partner violence among women and men living in an informal settlement in Nairobi, Kenya: a secondary-data analysis.**

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# **Abstract**

Evidence suggests an overlap between intimate partner violence (IPV) experience and perpetration. However, few studies in sub-Saharan Africa have investigated experience and perpetration of IPV among women and men within the same community. This study reports prevalence of past-year IPV experience and perpetration among women and men living in an informal settlement in Nairobi, Kenya, and factors associated with IPV. Data analysed for this study involved a geographically distributed random sample of 273 women and 429 men who participated in a community survey. We approximated prevalence of IPV experience and perpetration and used logistic regression for estimating associations between individual-level factors and IPV. Women and men experienced similar levels of IPV, but a significantly higher proportion of men reported physical and sexual IPV perpetration. Witnessing violence between parents in childhood was associated with women’s physical and sexual, and men’s sexual IPV experience; and with women perpetrating emotional, and men perpetrating sexual IPV. Less equitable gender attitudes were associated with men’s perpetration of physical IPV. More equitable gender knowledge was associated with women’s experience of sexual IPV; and with men perpetrating IPV. Perceived skills to challenge gender inequitable practices were negatively associated with men perpetrating sexual IPV. In conclusion, we found IPV experience and perpetration were highly correlated, and that, contrary to commonly reported gender gaps, men and women experienced similar rates of IPV. We make suggestions for future research, including on IPV prevention interventions in areas with such IPV prevalence that would be beneficial for women and men and future generations.

# **Keywords**

domestic violence, domestic violence and cultural contexts, battered women, children exposed to domestic violence

# **Introduction**

Studies that investigate IPV experience and perpetration among women and men within the same community are scarce. Existing evidence suggests considerable overlap between intimate partner violence (IPV) experience and perpetration in sub-Saharan Africa (Reese, Chen, Nekkanti, & Mulawa, 2017; Tenkorang & Owusu, 2018; Watt, Guidera, Hobkirk, Skinner, & Meade, 2017), including among women in Kenya (KNBS & ICF Macro, 2010). In addition to available national estimates, more context-specific understanding of IPV occurrence among both men and women is needed for designing prevention interventions.

# **Prevalence of intimate partner violence in Kenya**

According to the 2014 Kenya Demographic and Health Survey (KDHS), prevalence of lifetime IPV experience ranges from 37% physical, 32% emotional, and 13% sexual IPV among women (age 15-49), to 21% emotional, 7% physical, and 4% sexual IPV among men (age 15-54) countrywide (KNBS et al., 2015). Lifetime experience of IPV is particularly common in the country’s capital city Nairobi where women reported experiencing all forms of IPV between two and four times as often as men (KNBS et al., 2015). Across the city of Nairobi, more men than women reported themselves to be perpetrators of physical IPV (lifetime: 43% vs 10%, recent: 18% vs 5%) (KNBS et al., 2015).

# **Socio-demographic and socio-economic factors of intimate partner violence in Kenya**

Risk and protective factors underlying the IPV epidemic have been assessed with quantitative and qualitative methods, globally and in Kenya. Due to widely reported gender gaps, studies focussed mainly on male-to-female IPV. A systematic review of studies conducted in Africa suggests that young age, low education levels and low socio-economic status are associated with women’s experience of IPV (Shamu, Abrahams, Temmerman, Musekiwa, & Zarowsky, 2011). Studies from Kenya are inconclusive on associations between age and IPV; several authors reported statistically insignificant differences of IPV experience between age groups (Kiarie et al., 2006; Makayoto, Omolo, Kamweya, Harder, & Mutai, 2013; Muthengi, Gitau, & Austrian, 2016), while others found that risk of lifetime IPV experience was greater in adult women (Fonck, Leye, Kidula, Ndinya-Achola, & Temmerman, 2005; Memiah et al., 2018). Research from Kenya suggests that correlations between socio-economic factors and IPV are complex and context specific. While education was found to be protective against experiencing IPV among women living in urban areas (Abuya, Onsomu, Moore, & Piper, 2012; Fonck et al., 2005), among women in rural areas rates of experiencing IPV were lower in both those without education and those with post primary education as compared to women with primary education (Abuya et al., 2012). Qualitative research identified poverty as a stress factor in intimate relationships and an IPV risk factor (Bamiwuye & Odimegwu, 2014; Gillum, Doucette, Mwanza, & Munala, 2018). Correlations between household income and IPV are potentially non-linear, as seen in a survey among women in Nairobi, which demonstrated no association between income level and IPV(Fonck et al., 2005). In rural and urban Kenya, rates of IPV are greater in married than unmarried women (Fonck et al., 2005; Gust et al., 2017). Evidence across sub-Saharan Africa shows that IPV continues from one generation to the next, since experience of IPV is more common among women and men who witnessed abuse of mothers and/or experienced violence during childhood (Pack, L'Engle, Mwarogo, & Kingola, 2013; Tenkorang & Owusu, 2018; Watt et al., 2017).

# **Internalised attitudes and cultural context of intimate partner violence in Kenya**

Across Kenya, women who justified wife beating for one or more reasons are more likely to experience IPV than those who reject justifications for the same (Hindin, Kishor, & Ansara, 2008). In addition, in Ghana and Tanzania, IPV perpetration was found to be less common among men who expressed more equitable gender attitudes than those holding inequitable gender attitudes (Chirwa et al., 2018; Messersmith et al., 2017). Although support for wife beating has been falling in Kenya, about 40% of women and men countrywide still believe that it is justified for at least one reason, particularly among those who are less educated and less wealthy (KNBS et al., 2015). Qualitative research in rural and urban Kenya illustrates that women and men see IPV as a normal part of life and culture (Gillum et al., 2018; Hatcher et al., 2013) and do not clearly distinguish between forced, coerced and consensual sex in marital and non-marital relationships (N. Kilonzo et al., 2008). Acceptance of IPV and lack of knowledge are rooted in inequitable gender norms and male-dominated culture, which promote male superiority in traditional heterosexual relationships and condone men’s use of violence as a means to discipline a woman and reinforce societal gender norms (Gillum et al., 2018; Hatcher et al., 2013). Our study will focus on the individual-lever factors, which are proxies for socio-cultural norms and beliefs around IPV.

# **Legal frameworks on intimate partner violence in Kenya**

The Protection Against Domestic Violence Act of 2015 provides for the protection and relief of victims of IPV and other forms of domestic violence. The law governs emotional or psychological abuse including repeated insults and threats, which cause emotional pain; verbal abuse; economic abuse including the denial of a person’s right to engage in employment or income-generating activity; physical abuse; and sexual violence within marriage. The latter was excluded from the Kenya Sexual Offences Act 2006, because it was reasoned that marital relationships implied consent for sex (Nduku Kilonzo et al., 2009). A few years later, the 2010 Constitution of Kenya adopted robust equality and non-discrimination provisions. Despite existing legal frameworks, IPV persists due to inadequate law enforcement and social acceptance of IPV in communities.

# **Justification for the study**

Most research on IPV involves women only, since they experience a greater burden of partner violence. Nonetheless, understanding the overlap of IPV experience and perpetration and intergenerational effects of violence will help develop prevention interventions that seek to interrupt the cycles of violence. This requires studies that investigate IPV experience and perpetration among women and men in the same community, which is less often used to avoid the unintentional sampling of partners/couples. Here, we report (a) prevalence of recent (past-year) IPV experience and perpetration among women and men living in an informal settlement in Nairobi, Kenya; and (b) associations between individual-level factors and recent IPV experiences and perpetration for this population.

# **Methods**

# **Design**

Our secondary data analysis uses community survey baseline data from a quasi-experimental study on “*Assessing the effectiveness of combined facility and community level Intimate Partner Violence and HIV interventions in Kenya: a quasi-experimental study*” conducted by LVCT Health Kenya from September 2016 to December 2018. The main study compared effects of an enhanced facility-level IPV/HIV intervention (site 1), a combined enhanced facility level and community IPV/HIV intervention (site 2), and standard of care (site 3 as control). The main study’s facility-based intervention (at sites 1 and 2) targeted adult women who accessed HIV testing and counselling services without a partner at public health facilities. Women with experience of IPV were enrolled in the study and received individual and group counselling. At site 2, the complementary community-based HIV and IPV primary prevention intervention targeted the general adult population across Kawangware, Gatina, and Kabiro wards in Dagoretti sub-county, Nairobi county. Prior to the start of the interventions, the community survey at site 2, whose data we analysed, was conducted between 30 November and 14 December 2016.

# **Setting and population**

Dagoretti sub-county is a densely populated urban residential area with semi-permanent structures in the western part of Nairobi, Kenya. The population in the area is young, with a majority being below the age of 35 and born in other parts of the city or country (Karanja & Makau, 2009). High mobility and diversity of ethnic backgrounds, characterize the population in Dagoretti sub-county (APHRC, 2014). Residents represent all the major Kenyan ethnic backgrounds, migrating to Nairobi from rural areas across Kenya often without extended families or strong community structures. Unemployment in the area is high (APHRC, 2014). The main economic activities are small scale trade and business, crafts and artisans, industrial and casual labour as well as employment in catering, transport, education and health sectors (Karanja & Makau, 2009).

# **Sampling and data collection**

Among the general population, women and men (age 18 years and above) who had been living in the study location for at least six months were eligible for participation in the community cross-sectional survey. A systematic point sampling strategy was used to recruit a spatially representative sample. A grid was superimposed on a map of the study area and a point was assigned to each of the 53 cells on the grid. Participants were sourced at public locations (e.g. bus stops, markets, other social spaces) closest to the assigned point. Data collection started at Sokoni, Kawangware ward from where data collectors gradually moved to the other assigned locations as the targeted number of participants per location were recruited. Interviews were conducted between 8am and 4:30pm.

Adults who were found at the selected public locations were approached and invited to take part in the survey at random. Oral informed consent was obtained from all participants prior to the interview. Participants were informed that they could decline to answer any questions that they felt uncomfortable with. Participants who consented to take part were asked to designate a quiet and private place where they felt comfortable to be interviewed.

An equal number of male and femaleKenyan interviewers, fluent in English and Swahili, participated in a five-day training that covered design, interventions and tools of the study, interviewing techniques, data entry and storage, and introduction to research ethics. The WHO ethical and safety guidelines (2001) recommend data collection by same-sex interviewers. Although data collectors aimed at approaching potential participants of their own sex, at times interviewers also interviewed participants of opposite sex. Oral interviews were guided by a structured questionnaire and conducted in English or Swahili language at the discretion of the participants. Responses were recorded on paper and later transferred to an electronic database. An independent researchercompared electronic and paper-based records to ensure accuracy.

Questionnaires were developed in English, translated into Swahili and back translated into English to verify accuracy of the Swahili version. The questionnaire was piloted in one location within the study site. After piloting, some Swahili phrases were replaced by synonyms that community members were found to understand more easily. Given the multi-ethnic population, interviewers were prepared to paraphrase questions using everyday language when respondents had difficulty understanding the questions.

As a safety and confidentiality measure, only one person was interviewed if he/she was among a group of people. For purposes of data protection, participants were assigned a study ID and no personal identifiers were collected. Participants were not remunerated and not followed up.

# **Measures**

**Demographic variables.** Participant’s gender was documented as female or male. Age was recorded in years. In accordance with common definitions (WHO, 1989), we assigned age groups namely “young people (age 18-24)”, “adults (age 25-49)”, and “older adults (age above 49)”. Given the young population in the study area, the number of people beyond reproductive age was small. Based on the assumption that distinctions between “adults” and “older adults” was more relevant to the assessment of lifetime IPV than recent IPV, the two classes were collapsed in the regression analysis.

**Marital status.** Participants were asked to state their marital status as “single”, “married” and “formerly married”, which includes being separated, divorced and widowed. Singles were included in the analysis since they could have current or previous intimate partners, hence risk of IPV. It is assumed that participants who live with a partner without being formally married were likely to classify themselves as married.

**Education and employment.** Information on participants’ education level (i.e. “none and primary”, “secondary”, and “post-secondary”), and employment status (i.e. “employed”, “self-employed” and “unemployed”) were recorded. Participants’ self-reported occupation was not included in analysis but used for verifying employment status. Self-employment included the category casual labour.

**Childhood trauma.** “Witnessing violence between parents as a child” was assessed as a binary response of “yes”, “no”.

**Gender attitudes, knowledge and skills.** The questionnaire included a gender equity instrument with three sub-scales, namely gender attitudes, knowledge and skills. Items from pretested scales were combined: (a) the Gender-Equitable Men (GEM) scale, developed to measure attitudes towards gender equity among young men, validated in Brazil (alpha = 0.81) (Pulerwitz & Barker, 2007) and India (alpha = 0.86) (Verma et al., 2006), and recently used among men and women in rural Kenya (Stephenson, Bartel, & Rubardt, 2012); (b) the Demographic and Health Survey’s (DHS) attitude towards wife beating scale (KNBS et al., 2015); (c) the SASA! survey questionnaire, which assesses attitudes, knowledge and skills around gender equity (www.raisingvoices.org).

**Gender attitude sub-scale.** It has eight items; i.e. hitting a woman is justified if she (a) cannot cook good food, keep the house clean or take care of the children, (b) spends money without informing her husband, (c) refuses to have sex with her husband, and (d) does not satisfy her husband sexually; changing diapers, giving kids a bath, and feeding the kids are the mother’s responsibility; a man should have the final word about decisions in his home; a woman should tolerate violence in order to keep her family together; and to be a man, you need to be tough. Each item was scored on a 2-point scale, where 0 = disagree, 1 = agree. Higher scores indicate less equitable attitudes.

**Gender knowledge sub-scale.** It has six items; i.e. women experiencing violence from a partner are at higher risk for HIV infection than other women; violence against women and girls is not a violation of their rights; it is healthy for a woman and a man in a relationship to have equal respect for each other; all people can make positive change in their own life; men’s use of power over women in relationships is the root cause of violence and increased HIV among women; and the community’s silence perpetuates violence against women and its connection to HIV. Each item was scored on a 4-point scale, where 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. One item (i.e. violence against women and girls is not a violation of their rights) was scored inversely, so that its answers followed the same order as other items. Higher scores represent more equitable gender knowledge.

**Gender skills sub-scale.** It has five items that assessed people’s perceived skills (a) to support a woman experiencing violence to make her own decisions about her safety; (b) to tell men using violence that it is not okay; (c) to hold men using violence accountable without blaming, shaming them; (d) to get involved with others who are promoting non-violent relationships; and (e) to move out of the roles society sets for you as a woman/man. Each item was scored on a 4-point scale, where 1 = not able at all, 2 = not very able, 3 = somewhat able, 4 = very able. Higher scores indicate more equitable gender skills.

**IPV experience.** Our first outcome variable, IPV experience, was assessed with the WHO Violence Against Women Instrument, which was validated to measure male-to-female IPV (Ellsberg & Heise, 2005). Beyond that, it has been adapted by the 2014 KDHS to also measure IPV against men. The instrument contains questions on concrete acts of violence. Emotional violence comprises of (a) insulting or making someone feel bad, (b) belittling or humiliating in front of other people, (c) scaring or intimidating on purpose, and (d) threatening to hurt. Physical violence involves (a) slapping or throwing something that could hurt one, (b) pushing or shoving, (c) hitting with fist or with something else that could hurt one, (d) kicking, dragging, or beating up, (e) choking or burning on purpose, and (f) threatening to use or actually using a gun, knife or other weapon against one. Sexual violence includes (a) physically forcing to have sexual intercourse when not wanted to, (b) having sexual intercourse when not wanted because of being afraid of what the partner might do, and (c) forcing to do something sexual that was found degrading or humiliating. Experience of IPV by current or most recent main partner during the past 12 months was assessed with a binary response of “yes”, “no” for each of the three types of violence.

**IPV perpetration.** For our second outcome variable, IPV perpetration, participants were asked if they had done any of the above acts to their current or most recent main partner during the past 12 months, with a binary response of “yes”, “no” for each of the three types of violence.

# **Statistical Analyses**

In total, 979 adults were interviewed. We assessed completeness of data on variables described above and excluded 278 (28.4%) observations with incomplete data. Missing responses were higher for IPV variables than other variables. About a third of excluded observations (n=93) had missing data on IPV variables, of whom more than half (n=56) had missing data on all IPV items. The analytic sample size was 701 (71.6%), which included 273 women and 428 men (Table 1). Level of data completeness was comparable for dates and duration of interviews (median (IQR) = 14 (12, 37) min). The proportion of cases with missing data was greatest among participants interviewed before 9am and after 3pm (37% and 43%, respectively). We hypothesize that people on their way to or from work could have skipped questions. Comparing included and excluded observations showed that the proportion of singles, unemployed and people without exposure to violence between parents in childhood was disproportionally greater among excluded than included cases (46% vs 35%, 17 vs 10%, and 65% vs 57%, respectively). Although interviewers were trained, and interviews were conducted at venues at the discretion of the participants, it cannot be ruled out that participants were not comfortable to talk about intimate questions including IPV in the community survey, including singles and marginalized people. If those whose responses are missing were IPV survivors or perpetrators, we potentially underestimated IPV prevalence.

We estimated prevalence and 95% confidence intervals (CI) of IPV experiences and perpetration by gender. To approximate statistical significance of observed differences between females and males, we applied Chi-squared test or Fisher’s Exact Test to categorical variables, pairwise for variables with more than two levels (e.g. marital status), and Pearson T-test to continuous variables.

Through factor analysis, we identified items of the gender equity scales that measured the same underlying concept in this sample. We retained many of the items that were included in the original survey (attitude: 8/10, knowledge: 6/10, skills: 5/5) to compute the final scores. We excluded factors that had factor loading less than 0.3. We determined standardized principal factor using factor analysis with principal factor estimation and orthogonal rotation. Only factors with eigenvalues greater than or equal to one were retained. Gender equity scores were considered as explanatory variables in regression analyses of male-perpetrated IPV against women.

With logistic regression analyses, we assessed associations of factors with IPV experience and perpetration. Models were fitted separately for females and males, as done in other studies involving both gender (Papas et al., 2017; Watt et al., 2017). Few women (n=13) reported perpetration of sexual violence, none of them was unemployed. This resulted in great uncertainty of estimates for the “employment status” coefficient. Therefore, this factor was not included in logistic regression of sexual IPV perpetration reported by females. In Results, we report odds ratios (OR) and respective 95% CI of full models (estimates from bivariate analyses are available upon request). We defined the threshold for statistical significance as a p-value of 0.05. Data analysis was done with RStudio (Version 1.1.463) and STATA (Version 14).

# **Ethics**

The quasi-experimental study, including the community survey, was conducted in accordance with the WHO Ethical and Safety Recommendations for Research on Domestic Violence Against Women (2001), unless otherwise stated. Interviewers linked participants to GBV service providers in the study area when required. The main study was registered with AMREF Ethics Review Committee (AMREF-ESRC P224/2016). Administrative clearance was sought from Nairobi County Health Management Team. Consent for the study was sought from chiefs in the study area.

# **Results**

Close to half of women (42.5%) and men (46.3%) reported recent emotional IPV experience (Table 2). Prevalence of recent physical IPV experience was 23.1% among women and 18.5% among men. Recent experience of sexual IPV was reported by 23.1% of women and 20.3% of men. We noted that the proportion of men who reported sexual IPV (20.3%) was greater than those who reported physical IPV (18.5%) experience. Self-reports of physical and sexual IPV perpetration were more likely among men than women, apart from physical IPV perpetration among people with post-secondary education. Across all three types of IPV, past-year IPV experience was higher among women and men who also reported to be perpetrators of IPV (Table 3). For example, women who perpetrated physical IPV were more than four times as likely to report experience of physical IPV; men nearly eight times as likely as those who did not report IPV perpetration (females: 77.8 vs 17.1, p<0.001, males: 51.3 vs 6.7, p<0.001). This relationship was also true for sexual and emotional IPV.

# **Factors associated with past-year experience of IPV**

Being married was associated with emotional and physical IPV experiences among women, being formerly married was associated with physical IPV experience among men (Table 4). Being self-employed was negatively associated with women’s emotional and physical IPV experience. Witnessing violence between parents in childhood was associated with women’s experiences of physical and sexual IPV, and men’s sexual IPV experience. Gender equity scores were not statistically significantly associated with women’s experience of IPV, except for knowledge. More equitable gender knowledge was associated with women’s experience of sexual IPV.

# **Factors associated with past-year perpetration of IPV**

Post-secondary education was negatively associated with men’s perpetration of physical IPV (Table 5). Being married was associated with men perpetrating emotional IPV and being formerly married was associated with men perpetrating emotional and physical IPV. Witnessing violence between parents as a child was associated with perpetration of emotional IPV among women, and perpetration of emotional and sexual IPV among men. Less equitable gender attitudes were associated with men’s perpetration of physical IPV. Skills in challenging inequitable gender practices were negatively associated with physical and sexual IPV perpetration among men. On the contrary, more equitable gender knowledge was associated with men’s perpetration of emotional, physical and sexual IPV.

# **Discussion**

We report the prevalence of, and factors associated with, recent IPV experience and perpetration among women and men in an informal settlement in Nairobi, Kenya. We found that women and men living in an informal settlement experienced high levels of IPV. Rates of IPV, across most types, reported here exceed national prevalence estimates of recent IPV experience against women and men reported in the 2014 KDHS (shown in Introduction). On the contrary, studies among other vulnerable populations in Kenya reported greater burden of IPV experiences, for example in HIV-positive outpatient drinkers in Western Kenya (e.g. physical IPV, females: 39%; males: 25%) (Papas et al., 2017). Because populations and methods are different, the results are not exactly comparable.

Contrary to widely documented gender differences in IPV experiences in sub-Saharan Africa, we found that women and men experienced similar rates of IPV. The 2014 KDHS, as well as studies in Rwanda and South Africa suggest greater burdens of IPV experience among women than men, especially physical and sexual IPV (KNBS et al., 2015; Gass, Stein, Williams, & Seedat, 2011; Umubyeyi, Mogren, Ntaganira, & Krantz, 2014). In contrast, Mulawa et al (2018) reported comparable (but overall lower) rates of IPV experiences between sexually active men and women in a densely-populated and impoverished district in Dar es Salaam, Tanzania. Female and male methamphetamine users in Cape Town, South Africa were found to experience similar levels of IPV, but qualitative analysis revealed that women’s IPV experience was more intense and frequent as compared to men. (Watt et al. 2017). We cannot make inferences on IPV intensity or concurrent substance misuse, since the survey did not assess frequency and severity of IPV or substance misuse. Further studies are needed to expand understanding of IPV experiences among men and women in different settings in sub-Saharan Africa and should be better equipped to capture frequency and severity of IPV.

We estimated the prevalence of emotional, physical and sexual IPV perpetration by females and males in a Nairobi slum population. Estimates reported here exceed those by the 2014 KDHS (shown in Introduction), which measured physical IPV perpetration only. Results cannot easily be compared because different methodologies were used; the KDHS assessed IPV initiated by respondents in violence-free situations, while our data potentially includes cases where violence was used as a response in situations when a partner was using violence against a respondent, including cases of bilaterally occurring situational partner violence to solve problems (Johnson & Leone, 2005). Research dedicated to comparing women’s and men’s IPV experiences and perpetration has been conducted in high-income settings (Straus, 2011). In sub-Saharan Africa, studies are needed that enhance understanding of bi-directional and female-initiated IPV. Similar to a Tanzanian study (Mulawa et al., 2018), rates of IPV experiences in this study were similar between women and men, although more men than women reported IPV perpetration. Our data potentially involves IPV occurring not only in heterosexual relationships, but we are unable to distinguish between IPV in heterosexual and same-sex partnerships, or long-term and casual relationships. Future studies could be better equipped to explain potential gaps between reports of IPV experience and perpetration and document IPV occurring within different types of relationships.

We assessed associations between individual factors and IPV experiences. Like other Kenyan studies (Kiarie et al., 2006; Makayoto et al., 2013; Muthengi et al., 2016), we found no statistically significant differences in IPV experiences between age groups. Young women in Nairobi reported that the experience of IPV was more of a problem among married women because of the shorter time periods that unmarried women spend with their intimate partners (Gillum et al., 2018). This could provide some explanation to our findings that women and men who reported being married were more likely to report experience and perpetration of IPV, respectively. In addition, it is also possible that recent IPV experience is less common in single women in dating relationships as separating from a violent partner might be easier for them than for married women. Self-employed women were less likely to report IPV experience than women in employment. Among qualitative studies, which suggest that relationship conflicts and violence arise from financial hardship (Gillum et al., 2018) and transgressing gender roles (Hatcher et al., 2013), it seems plausible that self-employment helps women in this context to reduce financial stress and/or be financially more independent, while still being able to fulfil expected gender roles. Our study contributes to evidence on the association between witnessing violence between parents and experience of IPV across countries (Fulu et al., 2017; Hindin et al., 2008), as well as in Kenya (Makayoto et al., 2013). We found a positive association between women’s gender knowledge and their experience of sexual IPV. Intuitively, we might expect that lack of knowledge was associated with a higher prevalence of IPV. However, more equitable gender knowledge could also increase the likelihood of reporting IPV. Similarly, more equitable gender attitudes and skills could also enhance reporting, but associations of attitudes and skills with IPV experiences were not statistically significant. In accordance with studies from Tanzania and South Africa (Mulawa et al., 2018; Watt et al., 2017), we found that IPV experience and perpetration were highly correlated.

We assessed relationships between individual-level factors and IPV perpetration and found that rates of physical IPV were lower among men with post-secondary education. Other studies suggest that educated men hold more equitable gender attitudes (Fulu et al., 2017) and are less likely to justify wife beating (KNBS et al., 2015), which in turn are known to protect against IPV perpetration. In our analysis, however, we accounted for gender attitudes, knowledge and skills. Our results add to evidence of associations between witnessing IPV between parents during childhood and perpetration of IPV among men reported by other studies (Chirwa et al., 2018; Fulu et al., 2017). In accordance with evidence of male-perpetrated IPV occurring in the context of inequitable gender norms (Gillum et al., 2018; Hatcher et al., 2013), we found that reports of perpetrating some types of IPV were more common in men who expressed less equitable gender attitudes and lack of skills to challenge inequitable gender behaviours. However, more equitable gender knowledge was associated with men’s perpetration of IPV. Intuitively, we would expect that better understanding of gender equity reduces IPV occurrence, since equitable gender knowledge creates awareness that violence in a partnership is not acceptable. Although the World Conference on Women in Nairobi (1985) acknowledged that violence against women is a societal problem (United Nations, 1985), national constitutional amendments and policies that promote gender equality and address GBV in Kenya were put in place more recently. We hypothesize that translating knowledge into action takes time, hence equitable gender knowledge might co-exist with less equitable behaviours, including IPV.

Given the high prevalence of IPV among women and men, IPV primary and secondary prevention interventions are urgently needed. Interventions that address male-to-female IPV should consider gender-transformative approaches, since men who expressed low support for gender equity reported higher rates of IPV perpetration. Gender-transformative interventions “*seek to transform gender roles and create more gender-equitable relationships*” (Gupta, 2000) and showed promising effects in reducing violence against women (Dworkin, Treves-Kagan, & Lippman, 2013), for example, when offering men safe spaces to reflect on and discuss gender roles (Ashburn, Kerner, Ojamuge, & Lundgren, 2017). IPV primary prevention interventions that involve both women and men also showed promising results (Arango, Morton, Gennari, Kiplesund, & Ellsberg, 2014), but were designed to address and measure male-to-female IPV (e.g. Doyle et al., 2018). Interventions designed to also address female-perpetrated and bi-directional IPV (Straus, 2011) are needed in a context with such IPV prevalence. Bilaterally occurring IPV suggests that prevention interventions need to raise awareness on the correlations between use and experience of violence and enhance relationship and conflict resolution skills. Since IPV was prevalent across all age groups and education levels, research should explore different strategies for targeting people of different ages and with different educational backgrounds. IPV prevention programmes could measure long-term impact on partners, their children and communities.

# **Diversity**

More men than women were involved in the survey. This is both unusual but expected, given that a greater proportion of men than women live in the study area (KNBS, n.d.). While the gender gap could be wider in the study area compared to the district average, it cannot be ruled out that people, especially women, who work from home or spend more time indoors, like domestic workers, housewives, and mothers with young children, were under-represented because of the sampling strategy. The survey involved adults across a wide age spectrum (18-80 years). The age profile of our sample reflects the age pattern estimated by the latest Nairobi Cross-sectional Slums Survey (APHRC, 2014), with 20-24 and 25-29 year olds being the largest age groups. In terms of marital status, the female sample of this study is comparable to estimates for Dagoretti sub-county by the slum survey. For other characteristics, the community survey sample was less representative, for example more women reported at least secondary education (68% vs 53%) and fewer women reported to be unemployed (17% vs 53%) (APHRC, 2014). It cannot be ruled out that these differences are a result of the sampling strategy. We disaggregated the statistical analysis by participants’ gender and, in parts, by intersections of gender with education. Our analysis was limited in that non-binary gender identities, cultural and religious backgrounds were not considered.

# **Limitations**

There are several limitations to our study. This is a secondary data analysis and we used data which were not collected for the purpose of our study. Because of the cross-sectional nature of the data, we estimated associations of factors with IPV but cannot draw causal inferences. Furthermore, our analysis is based on participants’ self-reported information. Reported IPV prevalence estimates were found to be high. However, it cannot be ruled out that, due to stigma around IPV, cases of experience and perpetration were underreported, especially since participants were interviewed by interviewers of either sex. Nearly 5% of all observations had missing data on all IPV variables and were excluded from the analysis. This could have introduced some bias to our estimates, although included and excluded observations were similar across most variables. Interviews were conducted in English or Swahili, which could have restricted participation. Both languages are widely spoken across the study side and data collectors did not report language barriers. We included “singles” in our analysis since they reported experience of IPV. If the class of “singles” included never-partnered cases (in the denominator), IPV prevalence in the sample could even be higher. Participants were approached and interviewed individually. Although only one person was interviewed if he/she was among a group of people, it is possible that people known to each other, including partners and relatives, were unintentionally recruited for the survey. Furthermore, it is possible that participants answered in ways that would be viewed favourably by others, especially but not limited to questions about IPV and gender equity. To minimize such biases, IPV was measured with a validated research instrument, research assistants were trained in interviewing techniques, and interviews were conducted in locations of participant’s choice. We chose to score the IPV measure using a binary scale, a common practice for WHO violence against women and Demographic and Health surveys (Ellsberg and Heise, 2005; KNBS et al., 2015). This approach bears the risk that diversity of IPV is masked through levelling different acts of violence. It limited our ability to investigate severity of female-to-male and male-to-female IPV. We advise caution for the interpretation of gender symmetry of IPV. We potentially missed associations with factors related to severity of IPV that could have been identified if IPV was measured using a continuous scale. In addition, some factors that are known for driving IPV risk were not measured. These include, for example, partner’s alcohol consumption (Gust et al., 2017; Hindin et al., 2008) and childhood trauma (Fulu et al., 2017), other than witnessing violence between parents.

# **Conclusions**

Our analysis suggests that rates of IPV experienced by women and men in an informal settlement are above country- and city-wide estimates and similarly high, in contrast to widely reported gender gaps. IPV experience and perpetration were highly correlated and both were associated with exposure to IPV between parents during childhood. We reported associations of men’s inequitable gender attitudes and skills with their use of IPV. We make suggestions for future research including on IPV prevention interventions with a wider scope of assessing effects on women and men and their children.

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**Conflict of interests, if any**

The authors declare that they have no competing interests.

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