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ASSOCIATION BETWEEN INTIMATE PARTNER VIOLENCE AND CHILD GROWTH

Findings from Demographic and Health Survey in Kenya

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ABSTRACT

Stella Ombati: Association between Intimate Partner Violence and Child Growth: Findings from Demographic and Health survey in Kenya
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Background: Intimate partner violence (IPV) is a global public health problem that causes both short-term and long-term effects on the health of women and their children. Spousal violence against women does not discriminate and it can affect anyone regardless of their culture, economic status, educational background or religion. Although IPV is practised globally, it is more prevalent in low- and middle-income countries (LMICs). When mothers are exposed to violence from their intimate partners, the ordeal can make them be preoccupied with the imminence of injuries and events following the violent experience they are going through. As a result, caring of children by affected women is compromised leading to inability to follow proper and regular nutritional guidelines required for the healthy growth of children.

Study aim: The aim of this study was to first examine the prevalence of IPV as the exposure and the prevalence of stunting and wasting as the outcome. The second aim was to examine the association between intimate partner violence and the growth of children 0-59 months old in terms of stunting and wasting in their children in Kenya.

Method: Data from the Kenya Demographic Health Survey (KDHS) 2014 was used for this study. A total of 2458 women who had children 0-59 months old and information available on the indicators of IPV and children's growth were studied. IPV was defined in terms of violence related to physical, emotional, sexual and controlling behavior against women by intimate partners. A composite measure of IPV was created summing up these indicators. Child growth as an outcome was studied in terms of stunting (indicator of linear growth) and wasting (a measure of acute malnutrition) in the youngest child. Height-for-age and weight-for-height z-scores were used to define stunting and wasting. Logistic regression model was used to calculate the odds ratios (OR) and their 95% confidence intervals (95% CIs) for the association between IPV and child growth (stunting and wasting). Regression models were adjusted for maternal socio-demographic factors.

Results: The overall prevalence of any act of IPV including physical, sexual, emotional and controlling behavior against women was 70%. Significant difference in the prevalence of any IPV

was found by all studied demographic characteristics of mother and children (age, educational level of mother and partner, wealth index, marital status, maternal BMI, child age in months). The prevalence of stunting and wasting in children of women who answered on IPV questions was 25.2% and 4.0% respectively. The children of women with the highest prevalence of stunting were found in 12-39 months old (32%), and with the highest prevalence of wasting were 0-11 months old (7%). Strong association was found between any act of IPV and stunting on children of the affected women. Adjusted odds ratio (ORs) and their 95% confidence intervals (CIs) for stunting due to any IPV was (OR 1.32, 95% CI 1.08-1.62), while the association of wasting with any IPV was not statistically significant.

Conclusion: IPV against women by their intimate partners was found to be a common practice in Kenya with 7 in every 10 women having experienced IPV. The prevalence of IPV varied by socio-demographic characteristics. One fourth of children aged 0-59 months old of women had stunting and 4% had wasting. Any act of IPV was strongly associated with stunting, but not with wasting on children 0-59 months old of affected women. This study gives a better understanding on the importance of strengthening preventive and promotive interventions that address IPV against women and the growth of their children in Kenya.

Keywords: Intimate partner violence, physical violence, sexual violence, emotional violence, controlling behavior, childcare practices, poor child growth, stunting, wasting, Sub-Saharan Africa, Kenya

“There is one universal truth, applicable to all countries, cultures and communities: violence against women is never acceptable, never excusable, never tolerable.” *Former United Nations Secretary-General, Ban Ki-Moon (2008).*

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LIST OF ABBREVIATIONS

BMI	Body Mass Index
CI	Confidence Intervals
DHS	Demographic Health Survey
IPV	Intimate Partner Violence
KDHS	Kenya Demographic Health Survey
KNBS	Kenya National Bureau of Statistics
LMICs	Low- and Middle-Income Countries
OR	Odds Ratio
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WHO	World Health Organization

1 INTRODUCTION

Intimate partner violence (IPV) is a global public health problem, commonly practiced in low- and middle-income countries (LMICs). WHO (2017), estimates show that globally 1 in 3 women have experienced an act of violence from an intimate partner in their lifetime. IPV is more prevalent in Sub-Saharan Africa with 36% of women having experienced violence from their intimate partners, exceeding a global average of 30% (García-Moreno et al., 2015). In Kenya, 47% of the women population have experienced an act of violence from their intimate partners (Chiang et al., 2018). IPV causes significant health consequences to affected women and their children, leading to disproportionate poor health seeking behaviours globally, including Kenya. Child growth is important because it guarantees good health and well-being of the child both in the present and in the future.

The level of women empowerment in Kenya is low, about 14% of women do not have liberty in making any decision of their households (Doku et al., 2020). The outcome is whereby female spouses are given little or no room to contribute any input on matters affecting the family, such as finances. As a result, women become victims of IPV as the men capitalize on these women's financial and economic instability to perpetuate violence against them. Women who have low education levels are more likely to depend on their spouses for financial support and decision making, hence lack the autonomy to make decisions within the family, which consequently leads to poor growth and health of their children (Acharya et al., 2010).

In some African cultures, the patriarchal narrative is introduced to children as they grow up, which affects how they perceive and deal with gender equality issues in their adult life. More often, boys grow up with the perception that they are better than girls. Gender inequality creates an enabling environment for males to feel superior to females, thus promoting violence against women in the relationships setup as argued by Kågesten et al., (2016). The fact that such individuals pick up the vice from the culture while growing up makes it difficult for them to overcome the vice, especially when they are in marital relationships.

IPV forms a basis for the present and long-life health impacts of mothers and their children (Victoria et al., 2008). The latest global burden of child malnutrition according to the Global Nutrition Report, (2020) indicates that 150.8 million children are stunted, while 50.5 million children are wasted with the LMICs reporting the highest figures. Even though stunting of children who are under the age 5 years is decreasing globally, Sub-Saharan Africa is still recording the highest prevalence. Earlier

studies reported that 58.7 million children of under the age of 5 years are reported to be stunted, while 13.8 million children suffer from wasting (Onyango et al., 2019). In Kenya, 26% of children under the age of 5 years are stunted while 4% are suffering from wasting (UNICEF, 2018).

IPV may impact children's growth through the manner in which childcare practices are executed by women who are affected by intimate violence. Therefore, it is important to examine this relationship so that the burden associated with severe lasting negative effects of IPV on child growth can be addressed. The consequences of IPV on children has been reported in earlier studies. However, the association between IPV and child growth, taking into consideration stunting and wasting in Kenya is poorly understood. The aim of this study was to examine the prevalence of IPV as the exposure and the prevalence of stunting and wasting as the outcome. This study also examined the association between intimate partner violence of women and the growth of their children (0-59 months) in Kenya.

2 LITERATURE REVIEW

2.1 Intimate Partner Violence

IPV is defined by WHO (2012) as any behaviour within an intimate relationship that causes physical, sexual, psychological/emotional harm to the other partner. It entails any violence acts of physical, sexual, emotional/psychological abuse as well as controlling behaviour of an individual within an intimate partnership. Some of the individual factors which contribute to IPV include young age, low education level of one of the partners or both, experiencing or witnessing intimate violence among parents during childhood and cultural gender norms and practices that support wife beating (Hilliard et al., 2016). Other factors include consumption of alcohol and harmful drugs, having extra marital affairs as well as disorders which are primarily related to personality.

Kenya is patriarchal in nature, a feature that is common for a traditional culture where women empowerment is not keenly supported, hence women do not have the independence to make any household decisions (Doku et al., 2020). This permits gender inequality as a cultural norm, that promotes violence against women by their spouses. Gender inequality forces women to remain dependent on their spouses while forcing them to endure spousal abuse in the relationship. This is particularly the case in situations where the husband commands more economical or financial power within the family, which makes them assume the sole authority position in the family. According to the Global Economy (2019), depending on a spouse for financial support is one of the major factors that promote violence against women by their intimate partners.

Tiwari et al., (2018) reports that of the more than one third of Kenyan women that have experienced an act of violence from their intimate partners, 16% have claimed that they have been forcefully driven into a sexual act by their intimate partners through a push, a shake, or by making them take some harmful substances that make them confused and take part in the sexual act. In addition, 3 % of these women have been subjected to forced sex for the first time by their intimate partners. The different acts of IPV against women by their intimate partners include physical violence, sexual violence, emotional violence and controlling behavior.

Sexual violence is an act of violence against women by their spouses that is common in Kenya whereby, individuals engage in sexual acts to their partners forcefully and without due consent. Emotional or psychological abuse is another act of IPV in Kenya which includes abuse such as belittling of a partner, constant humiliation, deliberate insults, intimidation such as destruction of another person's property, threats of either harm or taking away the matrimonial children. Emotional torture by always showing piercing objects in the attempt to take off the victims' lives is another act of emotional violence (Duyos et al., 2016).

2.1.1 Physical violence

WHO (2002) defines Physical violence as any act of an intentional act that causes harm, trauma, or physical suffering to the body of a person. According to Rakovec-Felser (2014), the perpetrators of physical violence against their spouses do not start becoming violent at once, but rather gradually develop the behavior with minor actions such as gentle pushing, which grows to become more violent. Over time, the individuals become more comfortable with their violent behaviors until they reach a point where they cause physical harm. Their spouses may find it difficult to notice, because they might not realize the gradual change of actions into more violent behaviors. Therefore, they might not recognize that they are physically or violently being abused by their spouses.

Hitting as an act of physical violence is perpetrated against victims by using hard or tough objectives that cause harm to the body. According to Mwangi et al. (2015), some of the most common objects that have been used during domestic violence include chairs, electronic devices, or gadgets such as iron boxes, belts, shoes, utensils and canes. In most cases, the item used is not predetermined but rather what is available at that particular moment during the encounter. Other prevalent acts of physical abuse against women include kicking, slapping, reckless driving, or any other acts that hurt or threaten the spouse. The fact that individuals are not well informed about violence in marriages involving spouses make it difficult for them to identify that they are being abused (Kaur et al., 2008).

Victims of physical violence face numerous challenges, such as health issues resulting from injuries they incur from due to the abuse. Physical violence affects women's overall health including the well-being of their children as a result of trauma and shame. Therefore, affected women are compelled to remain isolated and continue facing the challenges associated with physical violence from their spouses silently. Furthermore, physical assault affects how the victims perceive themselves and their

self-worth causing an impact on their overall quality of life and those around them especially their children (Walker et al., 2011).

2.1.2 Sexual violence

Sexual violence is one of the most common acts of partner violence against women by their spouses. More often, this violence goes unnoticed because some of the incidents experienced might be viewed as normal occurrences between spouses, while they have actually escalated to abuse. Sexual violence occurs when a spouse is forced or coerced unwillingly to have sex by their spouses. Wangamati et al. (2018), argues that many of the sexual abuses that occur within marriages go unnoticed and unreported. Cultural beliefs within the Kenyan society make it difficult for marital rape to be identified and effectively dealt with as violence. This is because it would be difficult to argue forceful sexual acts among intimate couples.

Sexual abuse within marriages also occur when one of the spouses intentionally denies their partner sex. This could create a situation where the affected partner is subjected to emotional or psychological torture because of the denial of conjugal rights leading to a feeling of rejection. In some instances, individuals opt to deny their spouse sex as punishment for any wrongdoing or mistakes. The affected spouses will feel lonely and isolated within the relationship, thereby affecting their health and overall well-being. Furthermore, the victims may find themselves in a situation where they live in denial because they find it difficult to believe that they are being abused by their partner (Boudreau et al., 2018).

2.1.3 Emotional violence

The nature of emotional abuse makes it one of the most difficult acts of violence to identify because victims might not be able to recognize that they are being abused. Emotional violence can be damaging to the victim because it can result into loss of self-esteem and the entire sense of self well-being by the victim. It is challenging to recognize emotional injuries and bruises because they are not visible. Over time, the continuous exposure to subsequent emotional violence can cause the victims to reach a breaking point resulting into various health problems such as depression, anxiety, heart palpitations and even committing suicide (Rogers et al., 2014).

Emotional violence can occur when the victim is constantly getting negative feedback from their partner regarding how they undertake their duties within the family, or when they are expected to put aside their needs and interests to meet those of their spouses. This engagement might require a lot of time, energy, and resources. When hard work or sacrifices made are not recognized, the person may feel less appreciated and valued by their partner (Pilch et al., 2015). In addition, emotional abuse can be experienced when individuals are constantly criticized by their partner about sensitive matters such as their weight or physical appearance. For instance, when an individual is insecure about their weight, and the partner keeps on reminding them about how they have gained weight, they are bound to experience emotional issues resulting from such comments. They will feel that they are no longer attractive and appealing to their partner, causing emotional and psychological turmoil to women.

2.1.4 Controlling behavior

Controlling behavior include behaviors such as jealousy, dominating decisions and expecting obedience by women from their spouses (García-Moreno et al., 2015). Controlling behavior is practiced through various acts including physical or electronic monitoring. Women who are affected by controlling behavior as an act of physical violence find it difficult to lead normal lives since they are constantly subjected to directives by their spouses. The result is that the victims find themselves in a situation where they cannot engage in activities that matter to them, but rather engage in activities which are desired by their partners. Bradbury et al., (2016) explains how controlling partners get very angry when their directives are not followed, hence creating avenues for partner violence against their spouses.

According to Williamson et al. (2016), checking an individual's personal messages without their consent is breach of the right to privacy. Women who are subjected to controlling behaviors of their spouses find it difficult to keep items such as emails and messages private, since their spouses will always be checking them to determine whether their partners are complying with their directives.

Partners with controlling behaviors tend to dominate decision-making within a relationship and they always tend to have their way in all matters relating to the family in general. This creates a situation where partners who are the victims, not to get the opportunity to give their input regarding any relationship issue they are facing (Fischer et al., 2016). This will affect their psychological and emotional well-being leading to lowered self-esteem and functional performance within the family.

2.2 Child Growth

Child growth is defined as the measurable process whereby the body increases in size, height and weight over a period of time (Fink et al., 2014). Child growth comprises of stunting and wasting. Stunting refers to the diminished growth and development of children because of malnutrition, inadequate psychological stimulation and re-infections, while wasting is associated with lack of the necessary required nutritional values in children. Regular child growth monitoring and recording is significant in assessing the general well-being of children. This will assist in early detection and identification of any growth abnormality and guide for timely action. The universal child growth indicators as outlined by WHO, (2006) include height-for-age, weight-for-age, weight-for-height, BMI-for-age, head circumference-for-age, arm circumference-for-age, subscapular skinfold-for-age, triceps skinfold-for-age, motor development milestones, weight velocity, length velocity, head circumference velocity. However, this study presented only the indicators based on height-for-age and weight-for-height for stunting and wasting respectively.

Child growth indicators influence the normal growth curve of children. Multiple factors determine the growth of children such as nutrition status, environment and socio-economic status of households (Evang et al., 2020). Annually, childhood malnutrition causes nearly 3.1 million deaths worldwide, and 35% of these deaths occur in children under the age of 5 years old (Black et al., 2010). Lack of proper nutrition in early childhood leads to stunting, which affects 1 in 4 children under 5 years of age globally. About “250 million children under 5 in LMICs risk not reaching their highest potential because of extreme poverty, stunting and wasting (UNICEF, 2018).

LMICs are faced with various challenges such as socio-economic problems that make it difficult for individuals to overcome poor growth and health. In addition, lack of the necessary resources needed to promote proper nutrition and better health for children might be lacking in majority of households. Poor early child growth leads to long-term consequences which affects their productivity at an adult stage (Grantham-McGregor et al., 2007). Poverty is a major contributing factor for the increased prevalence of child stunting and wasting in LMICs compared to high-income countries. Therefore, the healthy growth of children may be shadowed by lack of the required nutrients due to the effects arising from food insecurity than the impact of maternal exposure to IPV. This is a problem that is prevalent in majority of Kenyan households (Portnoy et al., 2018).

2.2.1 Stunting

A child is considered to be stunted if their height for age deviates from the below minus two standard value, set by WHO, (2019). When the growth of children is impaired, they are bound to experience negative health impacts such as adverse functional consequences and challenges in realizing the desired educational outcomes and performance. Women who give birth at an early age are at a higher risk to have children who present stunting compared to women who are more mature. This is due to the increased risks of low birth weight, preterm birth, and maternal anaemia in addition to socioeconomic disparities and behavioural characteristics (Yu et al., 2016).

One of the effective ways of monitoring child growth is using linear growth in early childhood. A positive increase would mean increased growth and development of the child, which will reduce mortality and morbidity risks. Information from regular growth monitoring would mean that children are better placed to lead healthier lives in the future, thereby enabling them to be more productive members of the society. The prevalence of stunting in Kenya among children who are under the age of 5 years is 26% (USAID, 2018). Stunting is associated with poor brain development with long-lasting consequences that are harmful to an individual. These include reduced mental and learning ability, poor childhood school performance, diminished earnings and increased risks of nutrition-related long-term diseases (UNICEF, 2018).

2.2.2 Wasting

In Kenya, the prevalence of wasting among under 5 years old children is 4% of the total population (USAID, 2018). In severe cases, wasting can cause child mortality. Therefore, it is important to observe proper feeding practices that are effective to overcome the condition. Promoting the growth and development of children will enable them overcome wasting and improve their cognitive understanding and performance in various aspects of their lives. Parents need to ensure that children are not only feeding on healthy meals but also the right quantities and at the right time and intervals (Altare et al., 2016). Promoting healthy growth of children ensures that they grow without facing the negative impacts associated with poor growth.

2.3 Association between IPV and Child Growth

Women in toxic relationships may be barred by their partners from taking precaution measures for their children in case of sickness, and even for mandatory regulated requirements for vaccinations against widespread infections (Urke, 2015). In addition, it can be difficult for women to pay for their children's clinic and other healthcare requirements due to economic instability that majority of women in LMICs experience. Abused women may also experience control on the amount of money spent on sourcing nutritious food for their children (Forster et al., 2017).

IPV related potential child malpractice ways include child neglect due to affected mothers shifting attention from the children to the pain and injuries sustained from the violence. This can lead to the inability of affected mothers to follow proper nutritional requirements when providing food for their children. Consequently, breastfeeding mothers' exposure to IPV causes pain and suffering which is likely to affect their milk production. This affects the ability for breastfeeding children to get adequate nutrients from their mothers (Mezzavilla et al., 2018). Poor child growth as a consequence of IPV against mothers include stunting and wasting.

2.3.1 Association between IPV and stunting

IPV against women by their intimate partners significantly affects the physical growth of the affected women's children. Children require an adequate amount of nutrients to overcome stunting. When children are starved due to violence against their mothers, they do not receive the required nutritional values. When mothers are exposed to violence from their intimate partners, the ordeal can make them to be preoccupied with the events following the violent experience they are going through (Memiah et al., 2018). As a result, they might not be in a position to follow proper and regular nutritional guidelines required for healthy growth of their children in for them to achieve their full growth potentiality.

Chiang et al., (2018) reports that children who are born of mothers who in one way or the other have experienced suffering due to IPV at their time of expectancy, have recorded relatively lower heights and weights as compared to those who are born of mothers who have not experienced violence during the pregnancy period. There are several ways through which IPV against a female partner can impact on the growth of a child depending on the child's nutritional status. For instance, IPV may contribute to the risk of or even share some of the contributing influences of child abuse, as well as child neglect

within the household where violence is practiced (Williamson et al., 2016). IPV can lead to childhood stress and depression, causing lower rates of metabolism of children. This will cause a decreased physical growth and development of children whose mothers are affected by IPV.

2.3.2 Association between IPV and wasting

IPV can cause negative impacts on women's physical health, mental health and their overall well-being because victims experience limited exposure and access to quality antenatal care services, including experienced and highly qualified birth attendants (Rizo et al., 2017). Similarly, in abusive relationships, partners of pregnant women may in one way or the other prevent and even deny them from attending vital health clinics for routine check-ups. Lack of nutrients cause children to become progressively emaciated resulting in reduced muscle mass, which increases the risk of death when undernourished children get infected with illnesses (Altare et al., 2016).

Conceptual framework

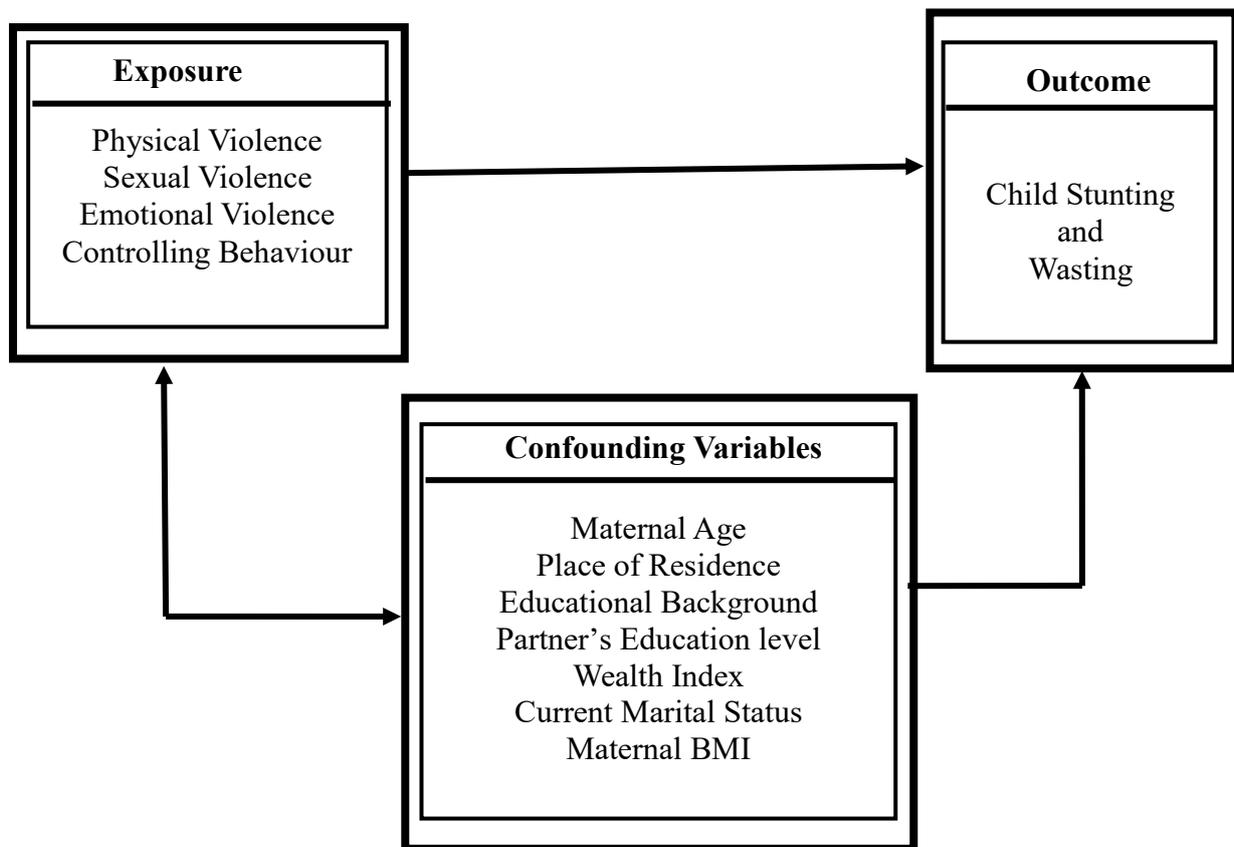


Figure 1: Conceptual framework for the association between intimate partner violence and child stunting and wasting, KDHS 2014

The above conceptual framework was developed to outline the pathways of the association of IPV and child growth. The exposure variables considered in this study were physical, sexual, emotional violence and controlling behaviour. Based on earlier literature (Tiruye et al., 2020; Chai et al., 2016; Boah et al., 2019), maternal age, place of residence, educational background, partner's education level, wealth index, current marital status and maternal BMI were considered as the confounding factors, which are associated with both the exposure and the outcome. Child stunting and wasting was considered as the outcome.

3 STUDY AIM

The aim of this study was to examine the prevalence of intimate partner violence, and child growth in terms of stunting and wasting and the association of intimate partner violence with stunting and wasting in Kenya. The study exclusively examined stunting and wasting of the youngest children who were 0-59 months old of women who had experienced any act of violence from their spouses during 5 years prior to the survey.

3.1 Study Objectives

- i) To examine the prevalence of intimate partner violence of women who have children of age 0-59 months old in Kenya.
- ii) To examine the prevalence of child growth in terms of stunting and wasting of children of age 0-59 months old in Kenya.
- iii) To study the association of intimate partner violence with child stunting.
- iv) To study the association of intimate partner violence with child wasting.

4 METHODS

The study used data from the 2014 demographic and health survey (DHS) program of nationally representative household survey that was used to collect information on domestic violence across Kenya. This is the most recent survey carried out by KDHS. The DHS used a two-stage sample based on the Kenya population census. The first stage involved selecting sample points or clusters using a sampling frame constructed from the population and census. The second stage of selection involved systematic sampling of the households listed in each cluster. The clusters were selected using systematic sampling with probability proportional to size of the population. Each household selected for the KDHS was eligible for interview using the household questionnaire. The study sample included women aged 15-49 years. Households were randomly selected, and only one woman per household was selected for the domestic violence module.

4.1 Study population and sampling

This study used DHS data that was extracted from two modules of KDHS database, individual record and children record. Two modules were combined which resulted 31 079 sample of women who completed the women's questionnaire. Of the records that were excluded, 20 747 did not meet the eligibility criteria for domestic violence module while 5 260 participants refused to participate, non-participation due to lack of privacy, or selected participants failed to be interviewed for other reasons. In addition, 553 records were not interviewed hence included in the exclusion criteria. A sample of 4 519 records completed the domestic violence module. A further 1 867 records were excluded from the study on participants who did not have children because the unit of observation in this study was a child. Therefore, 2 652 records of women and their children who had information on child growth related variables were included in the study analysis.

The study population analyzed in this study from the KDHS survey selected eligible n= 2458 women after weighting, aged 15-49 years with their children aged 0-59 months old who were living in selected households in Kenya.

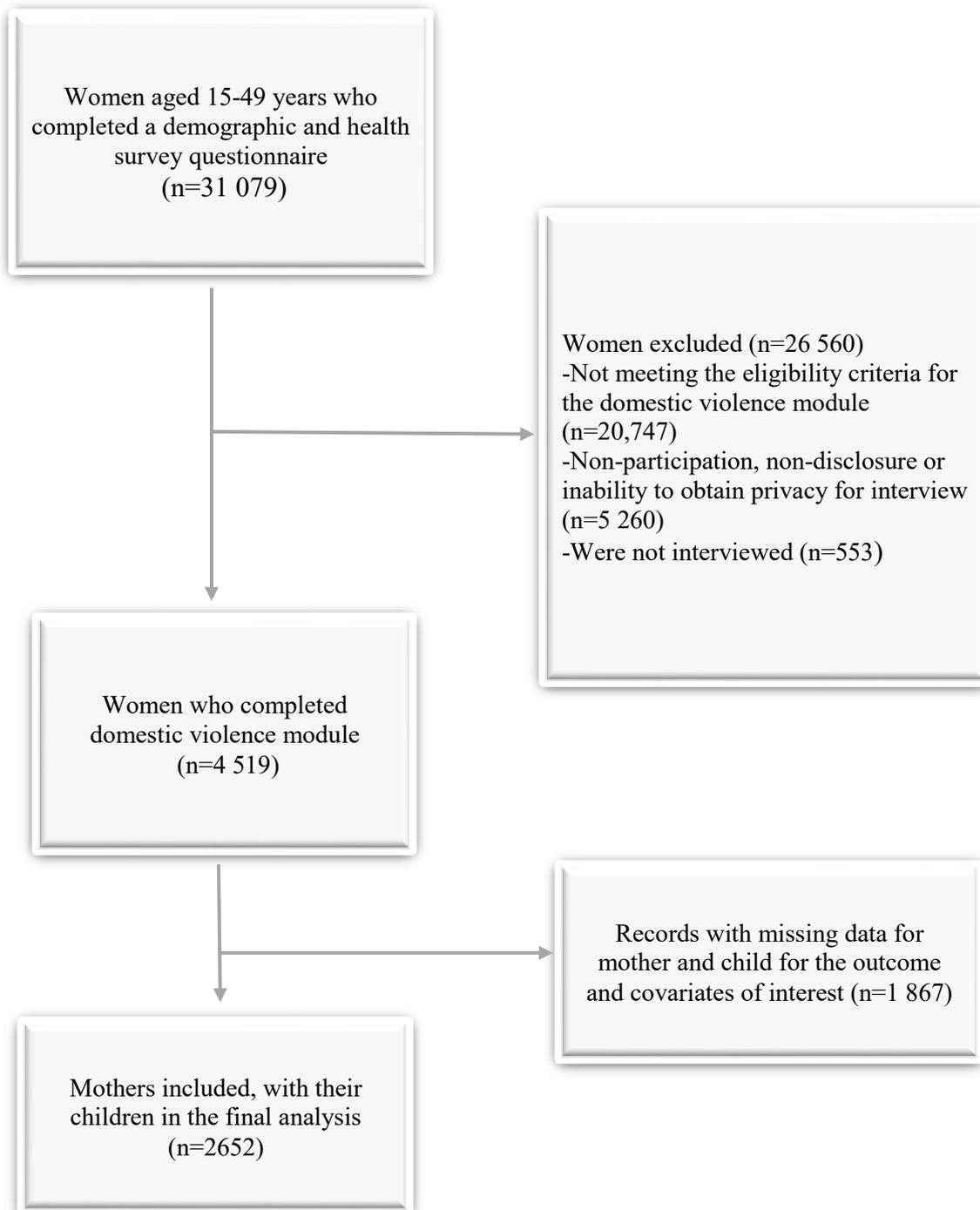


Figure 2: Sample selection for the analysis on the association between intimate partner violence and child growth, KDHS 2014.

4.2 Data

The study analyzed data from the woman-specific standard model questionnaire containing 28 questions used by DHS to collect data according to the domestic violence module. Questions measured physical, sexual, emotional and controlling behavior ever experienced by a woman from her partner. The questionnaire was reviewed and approved by the Kenya National Bureau of Statistics (KNBS) of the ministry of Planning and National Development. All questions were modified to suit best the need of domestic violence module in Kenya.

4.2.1 Measurement of variables

4.2.1.1 *Intimate Partner Violence (IPV)*

IPV variables were defined using information on physical violence, sexual violence, emotional violence and controlling behavior. Physical violence indicator of IPV was created combining all violence related to physical such as pushed, beaten, punched, kicked, slapped, strangled, restrained, arm-twisted and burned. These items were measured as yes or no. The same was computed for sexual violence indicator by combining all related sexual violence acts such as physically forced into unwanted sex, forced into other unwanted sexual acts, and physically forced to perform sexual acts respondent did not want. Similarly, emotional violence indicator of IPV was created by combining all violence related to emotional such as being accused, humiliated, insulted, threatened with a knife/gun and any type of threat. Controlling behavior indicator of IPV was created by combining all violence related to controlling such as jealousy, insecure, restraining and limiting.

Each of these individual items were measured as yes/no, coded as 1 or 0. The response were then summed up together to form a scale of 0 to 4. The scale was then dichotomized as 0 vs 1-4, where '0' means no any physical, sexual, emotional or controlling behaviour related violence respectively and '1-4' means at least one type of physical, sexual, emotional and controlling behaviour related violence respectively as follows: -

0 = never experienced any of the four acts of violence acts from partner (physical, sexual, emotional, controlling behavior)

1 = having experienced any 1 of the four acts of violence acts,

2 = having experienced any 2 of the four acts of violence acts,

3 = having experienced any 3 of the four acts of violence acts

4 = having experienced all four acts of violence acts

The four acts of violence indicators of physical, sexual, emotional and controlling behaviour were then summed up to form a final IPV variable =any IPV for the study analysis.

4.2.1.2 *Child growth*

Child growth as an outcome was studied in terms of stunting (indicator of linear growth), wasting (a measure of acute malnutrition) in the youngest child. Height-for-age and weight-for-height z-scores were used based on the height and weight from the KDHS questionnaires data. In this study, stunting was defined as being short for the optimum age, while wasting was defined as having low weight for the required age. Child growth variables used in this study were categorized for child age group, stunting and wasting according to WHO (2010), guidelines as follows;

Stunting: height for age less than -2 Standard Deviation of the WHO Child Growth Standards median.

Wasting: weight for height less than -2 Standard Deviation of the WHO Child Growth Standards median.

The highest value, =1 was used for the outcome variables being examined in this study. (1=stunting/wasting and 0=normal weight).

4.2.1.3 *Socio-demographic variables*

The study included the following demographic and socio-economic variables as covariates in the analysis; maternal age (15-49), type of residence, level of education, marital status, wealth index, partner's level of education, maternal Body Mass Index (BMI) and child's age (0-59 months).

Maternal age was used in five year group (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49), level of education (no education, primary, secondary or higher), partner's level of education (no education, primary, secondary or higher), type of residence (rural or urban), current marital status (married, live with partner, widowed or divorced or separated) and maternal BMI categorized as underweight: <18.5

kg/m², normal weight:18.5-24.9, overweight: 25.0-29.9 and obesity ≥ 30). In addition, child age in months was also studied and categorized into three clusters (0-11, 12-35, 36-59 months).

4.3 Statistical analysis

Statistical analysis was conducted using IBM SPSS Statistics 25. First, descriptive statistics were calculated and presented in frequencies and percentages in graphs and in tables. Sample weight was considered to estimate the distribution of independent and dependent variables to adjust the sampling strategy of the survey. Chi-square test was used to study the difference in demographic characteristics of the studied population according to IPV. After which, the same was run by the two outcome variables (stunting and wasting). Finally, logistic regression model was used to calculate the odds ratios (ORs) and their 95% confidence intervals (CIs) for stunting and wasting due to IPV variables. Two models were built; Model I presented unadjusted odds ratio, whereas Model II presented adjusted odds ratio from the multivariate model. The regression models were adjusted for all sociodemographic variables that included maternal age, type of residence, level of education, marital status, wealth index, partner's level of education, maternal BMI and child's age.

4.4 Ethical considerations

Informed consent and absolute anonymity of the participants was assured and observed before, during and after data collection. The questionnaires were reviewed and approved according to the ethical and safety guidelines for implementing the DHS Domestic Violence Module, as provided by the national ethical board of Kenya National Bureau of Statistics (KNBS) of the ministry of Planning and National Development. The DHS domestic violence module follows WHO guidelines and recommendations for ethical data collection of domestic violence. With the request, DHS granted permission to use their data for this analysis.

5 RESULTS

Table 1 shows weighted descriptive statistics for the studied population. It includes the total number of respondents 2458 aged 15-49 years, who completed the domestic violence module with information on their children's stunting and wasting. Of the total studied women, the highest proportion of women were of age group 25-29 years (32.9%) followed by age group 30-34 years (23.2%), while the youngest age group were the least (3.0%). There were 63.9% women living in rural areas, 57.6% of women had primary level of education, while 11.1% had no education and 7.1% had higher educational level. The poorest household wealth index was 22.2%, followed by the poorer 21.4%. The richest household wealth index was 18.8%. Married women acted the highest proportion 83.5%, The respondents' partners with primary education made the highest proportion 50.0%, followed by those with secondary education 30.4%, while those with no education were 8.7%. The respondents' children investigated in this study were aged 0-59 months old.

Table 1: Descriptive characteristics of respondents included in the study who completed the domestic violence module questionnaire, KDHS 2014

Characteristics	Frequency (n=2458)	Percentage
Maternal		
Age in 5-year groups		
15-19	73	3.0
20-24	537	21.9
25-29	808	32.9
30-34	571	23.2
35-39	311	12.6
40-44	126	5.1
45-49	32	1.3
Residence		
Urban	886	36.1
Rural	1572	63.9
Educational level		
No education	272	11.1
Primary	1417	57.6
Secondary	595	24.2
Higher	174	7.1
Partner's education level		
No education	213	8.7
Primary	1227	50.0
Secondary	746	30.4
Higher	252	10.2
Wealth Index		

Poorest	547	22.2
Poorer	526	21.4
Middle	455	18.5
Richer	470	19.1
Richest	461	18.8
Current Marital status		
Married	2053	83.5
Live with partner	190	7.7
Widowed	64	2.6
Divorced	27	1.1
Separated	123	5.0
Maternal Body Mass Index		
<18.50	314	10.3
18.50-24.99	1398	56.2
25.00-29.99	546	23.4
>30	200	10.1
Child		
Age in months		
0-11	623	25.3
12-35	1215	49.4
36-59	620	25.2

Table 2 below shows the distribution of demographic characteristics of respondents by number of IPV (physical, sexual, emotional abuse, controlling behavior) including any IPV. There was a significant difference in the prevalence of IPV in different age group of women. The highest prevalence of any act of IPV (77%) was among the youngest age group (15-19 years) of women, whereas age-group 40-44 experienced the least (65%). Similarly, rural women had significantly higher prevalence of any IPV compared to urban (71% vs. 68%).

The prevalence of ever experiencing any act of IPV was significantly higher among women with primary education (75%), primary education of their partner (75%), those in the poorer wealth quintile index (75%). The prevalence of number of IPV act decreased with increasing level of education (primary and above) of both mothers and their partners. The highest proportion of women who reported having experienced any four acts of IPV were separated (90%), followed by those who were divorced (86%) while widowed women reported the lowest prevalence (68%) of any IPV. A small but significant difference in the prevalence in number of IPV was found among rural and urban residents for any act of IPV.

Table 2: Distribution of maternal exposure to any act of intimate partner violence (physical, sexual, emotional and controlling behaviour) by demographic characteristics of respondents

Characteristics on IPV	n=2458	Intimate Partner Violence (n %)					Any IPV (1 to 4)	P-Value
		0	1	2	3	4		
Women's age (years)								<0.001
15-19	74	17(23)	37(50)	13(18)	4(5)	3(4)	57 (77)	
20-24	538	169(31)	169(31)	94(18)	77(14)	29(5)	369 (69)	
25-29	809	246(30)	232(29)	168(21)	115(14)	48(6)	563 (70)	
30-34	570	166(29)	180(32)	118(21)	69(12)	37(6)	404 (71)	
35-39	310	85(27)	78(25)	53(17)	63(20)	31(10)	225 (73)	
40-44	126	44(35)	35(28)	17(13)	23(18)	7(6)	82 (65)	
45-49	33	11(33)	15(46)	5(15)	2(6)	0(0)	22 (67)	
Residence								0.035
Urban	887	281(32)	268(30)	181(20)	103(12)	54(6)	606 (68)	
Rural	1573	457(29)	477(30)	286(18)	251(16)	102(7)	1116 (71)	
Education level								<0.001
No education	272	121(44)	67(25)	41(15)	27(10)	16(6)	151 (56)	
Primary	1416	351(25)	424(30)	289(20)	245(17)	107(8)	1065 (75)	
Secondary	595	191(32)	192(32)	115(19)	68(11)	29(5)	404 (68)	
Higher	174	75 (43)	61(35)	21(12)	14(8)	3(2)	99 (57)	
Partner's education level								<0.001
No education	214	91(42)	55(34)	34(16)	23(11)	11(5)	123 (58)	
Primary	1228	311(25)	362(30)	258(21)	209(17)	88(7)	917 (75)	
Secondary	747	224 (30)	237(32)	140(19)	96(13)	50(7)	523 (70)	
Higher	252	107 (42)	86(26)	30(12)	22(9)	7(3)	145 (58)	
Wealth Index								<0.001
Poorest	546	173 (32)	158(29)	89(16)	82(15)	44(8)	373 (68)	
Poorer	526	131(25)	148(28)	114(22)	100(19)	33(6)	395 (75)	
Middle	454	109 (24)	150(33)	84(18)	72(16)	39(9)	345 (76)	
Richer	470	145 (31)	143(30)	87(18)	68(14)	27(6)	325 (69)	
Richest	460	180 (39)	144(31)	92(20)	32(7)	12(3)	280 (61)	
Marital status								<0.001
Married	2054	643(31)	628(31)	389(19)	272(13)	122(6)	1411 (69)	
Live with partner	189	59(31)	65(34)	35(18)	27(14)	3(3)	130 (69)	
Widowed	64	20(32)	18(28)	6(9)	14(22)	6(9)	44 (68)	
Divorced	28	4 (14)	9(33)	7(25)	4(14)	4(14)	24 (86)	
Separated	123	12(10)	25(20)	29(24)	37(30)	20(16)	111 (90)	
Maternal Body Mass Index								<0.001
<18.50	314	141(31)	132(29)	79(17)	64(14)	43(9)	173 (69)	
18.50-24.99	1396	691(28)	797(32)	439(17)	405(16)	175(7)	705 (72)	
25.00-29.99	546	332(32)	327(31)	171(16)	146(14)	69(7)	214 (68)	
>30	200	137(30)	138(31)	77(17)	63(14)	34(8)	63 (70)	
Child								0.016
Age in months								
0-11	623	213(34)	192(31)	110(18)	78(12)	30(5)	410 (66)	
12-35	1214	361(30)	367(30)	243(20)	167(14)	76(6)	853 (70)	
36-59	621	164 (26)	186(30)	113(18)	109(18)	49(8)	457 (74)	

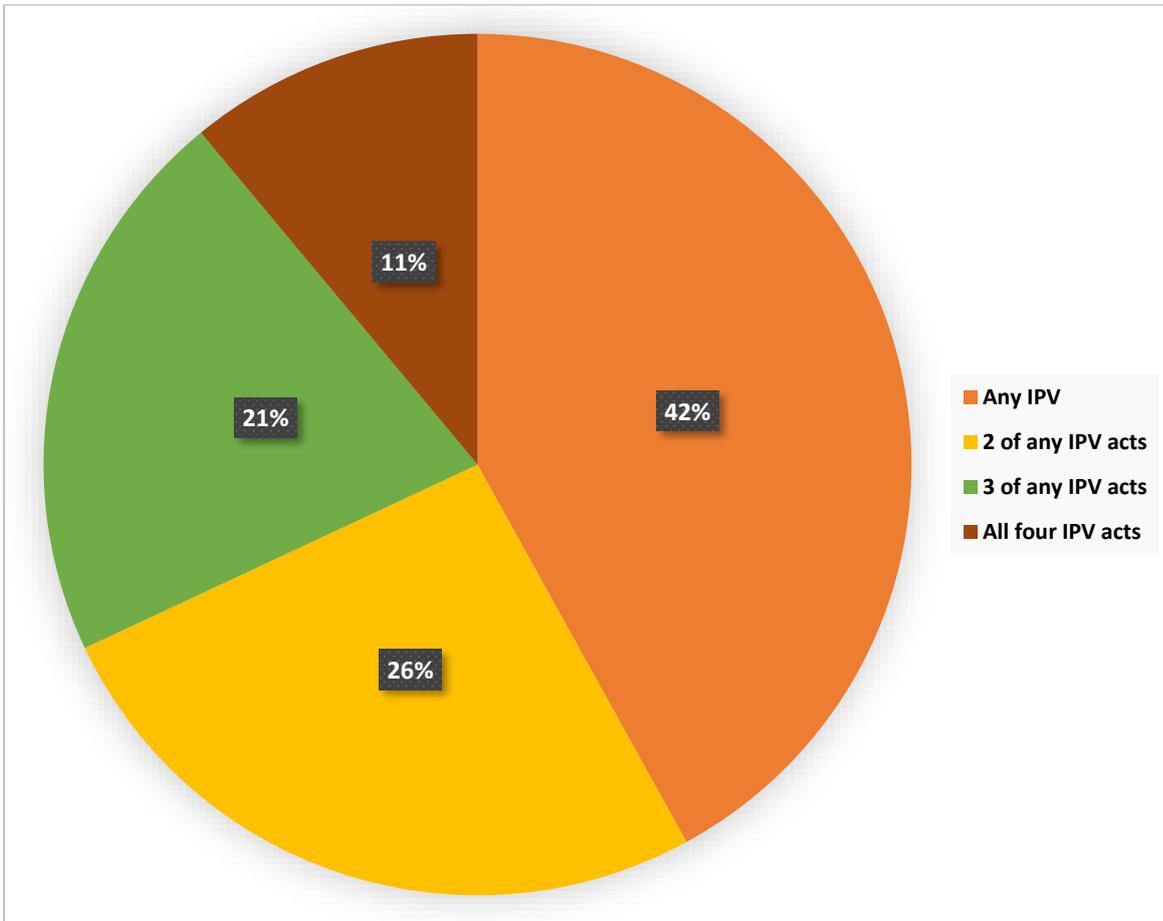


Figure 3: Prevalence of women who have experienced any act of intimate partner violence.

Among the 2458 respondents, 42% reported having experienced any of the four acts of IPV, 26% reported having experienced any two acts of IPV, while 21% reported having experienced any three acts of IPV and 11% reported having experienced any four acts of IPV (Figure 3).

Figure 4 shows that, 35% of women had experienced physical IPV including being pushed, shaken, slapped or punched, out of which 14% reported experiencing severe violence, such as being strangled, being burned, threatened with a knife, gun or with another weapon (results not shown); 29% reported emotional violence; and 11% reported sexual violence; while 25% reported having been controlled by their intimate partners.

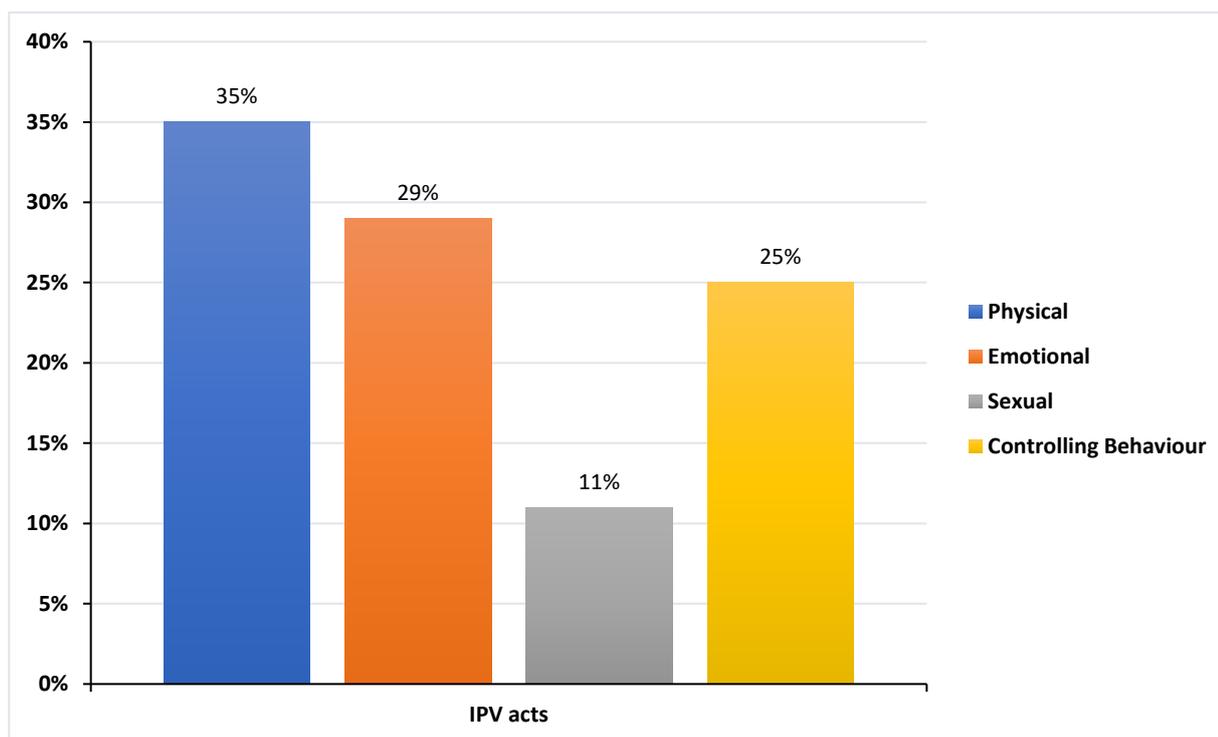


Figure 4: Prevalence of women who have experienced physical violence, emotional violence, sexual violence and controlling behaviour.

Table 3 shows the distribution of stunting and wasting in children by maternal, paternal and children socio-demographic characteristics. Significantly highest proportion of stunted children belonged to women of age-group 15-19 years (36%), those mother living in rural area (28%), whose mothers had primary education level (29%), and of mothers' partners had lower than secondary education levels (30%), those in the poorest wealth quintile (33%), as well mother who had $<18.50 \text{ kg/m}^2$. Children living in the rural areas had a slightly higher stunted growth (28%), compared to children living in urban areas (21%). Children of age group 12-35 months recorded the highest proportion of stunting (31%), followed by 36-59 months old (27%), and the least in the age group of 0-11 months old (12%).

The prevalence of wasting among children varied significantly by maternal demographic characteristics except for the age group of mothers. Significantly higher prevalence of wasting was found among children of mother of rural residents (5% vs 2%), women who had no education (13%), women whose partners had no education (15%), and children from poorest households according to the wealth quintile (10%), those mother living with partner or separated (8%) as well as mother having BMI $<18.50 \text{ kg/m}^2$. No statistically significant difference for wasting was found among children of different age group.

Table 3: Distribution of stunting and wasting among children by maternal, paternal and children demographic characteristics.

Demographic Characteristics	n=2458	Stunting (n %)		P-value	Wasting (n %)		P-value
		Normal >-200sd	Stunting <-200sd		Normal >-200sd	Wasting <-200sd	
Women's age				0.033			0.136
15-19	73	47(64)	26(36)		70(96)	3(4)	
20-24	537	390(73)	147(27)		517(96)	21(4)	
25-29	809	634(78)	175(22)		776(96)	33(4)	
30-34	570	432(76)	138(24)		553(97)	18(3)	
35-39	310	221(71)	89(29)		298(96)	13(4)	
40-44	126	92(73)	34(27)		115(91)	11(9)	
45-49	32	23(72)	9(28)		32(100)	0(0)	
Residence				<0.001			<0.001
Urban	886	703(79)	183(21)		867(98)	19(2)	
Rural	1572	1137(72)	435(28)		1493(95)	79(5)	
Educational level				<0.001			<0.001
No education	272	197(72)	75(28)		237(87)	35(13)	
Primary	1417	1001(71)	416(29)		1367(96)	50(4)	
Secondary	594	491(83)	103(17)		586(98)	9(2)	
Higher	174	150(86)	24(14)		171(98)	4(2)	
Partner's education level				<0.001			<0.001
No education	213	150(70)	83(30)		181(85)	32(15)	
Primary	1227	864(70)	363(30)		1184(96)	43(4)	
Secondary	746	599(80)	147(20)		726(97)	20(3)	
Higher	252	213(84)	39(16)		249(99)	3(1)	
Wealth Index				<0.001			<0.001
Poorest	546	365(67)	181(33)		494(90)	52(10)	
Poorer	526	370(70)	156(30)		512(97)	14(3)	
Middle	455	352(77)	103(23)		437(96)	18(4)	
Richer	470	362(77)	108(23)		463(99)	16(1)	
Richest	461	390(85)	71(15)		453(98)	8(2)	
Marital status				0.396			0.002
Married	2054	1538(75)	516(25)		1985(97)	69(3)	
Live with partner	190	147(77)	43(23)		175(92)	15(8)	
Widowed	64	48(75)	16(25)		61(94)	4(6)	
Divorced	27	22(81)	5(19)		27(100)	0(0)	
Separated	123	84(68)	39(32)		113(92)	10(8)	
Maternal BMI				0.005			<0.001
<18.50	314	225(70)	89(30)		268(85)	46(15)	
18.50-24.99	1398	1063(81)	335(19)		1343(95)	80(5)	
25.99-29.99	546	432(79)	114(21)		516(97)	15(3)	
>30	200	158(79)	42(21)		187(98)	3(2)	
Child's age in months				<0.001			0.224
0-11	623	551(88)	72(12)		591(95)	32(5)	
12-35	1215	838(69)	377(31)		1170(96)	45(4)	
36-59	620	451(73)	169(27)		599(97)	21(3)	

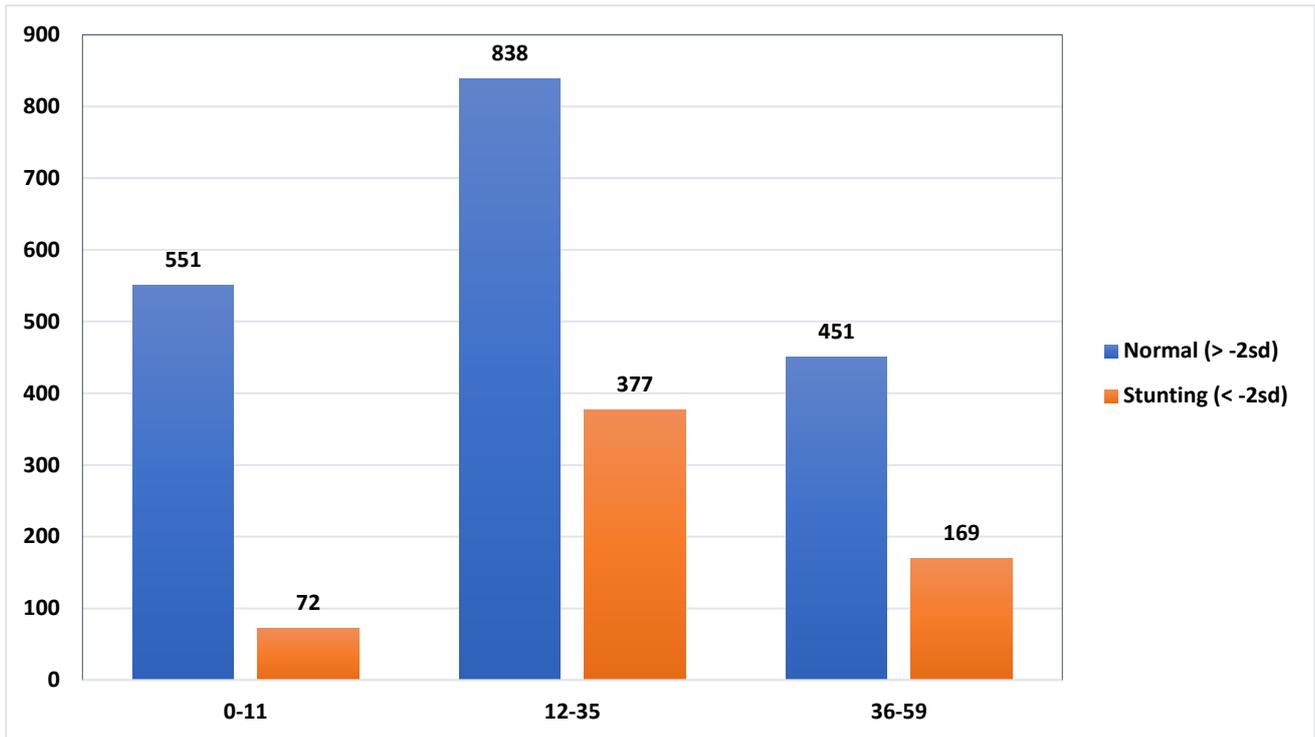


Figure 5: Distribution of children’s nutritional status in terms of stunting vs. normal.

Figure 5 shows the distribution of children nutritional status in terms of stunting. 72 (11.6%) out of 623 children of age 0-11 months old were reported to having stunting, while 377 (31%) out of 1215 children of age 12-35 were stunted and 169 (27.3%) out of 620 children aged 36-29 months old were stunted.

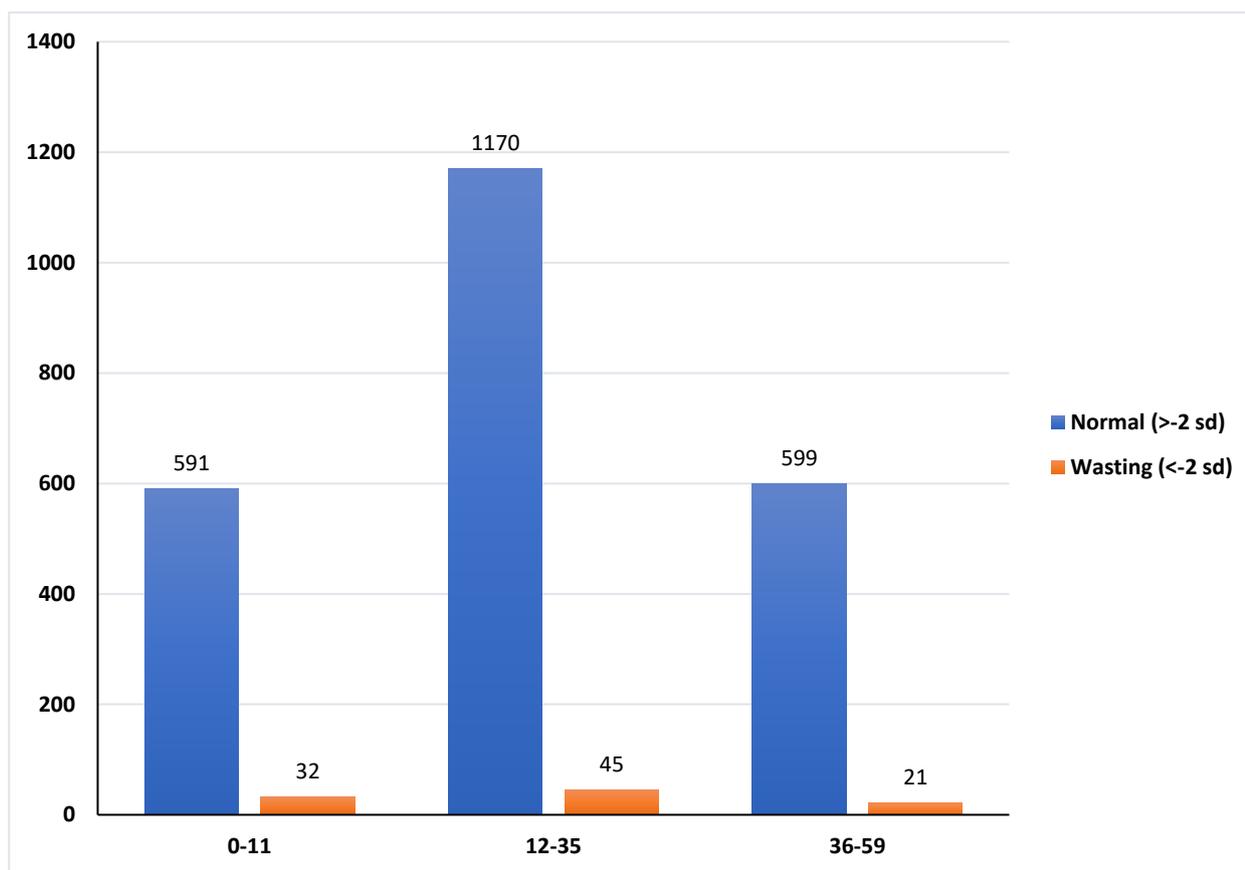


Figure 6: Distribution of children’s nutritional status in terms of wasting vs. normal

The analysis above (Figure 6) shows that 32 (5.1%) out of 623 children aged 0-11 months old were reported as having wasting, while 45 (3.7%) out of 1215 children aged 12-35 months old were wasted and 21 (3.4%) out of 620 children aged 36-59 were wasting.

Table 4 shows the results of the association between intimate partner violence and children’s growth in terms of stunting and wasting. Model I show the crude association of stunting and wasting with different act of IPV. Children whose mothers had experienced physical violence had almost 1.4 -fold higher odds (OR 1.39; 95% CI 1.14-1.69) of having their children stunted. The association of stunting with other act of IPV were not statistically significant except that the association of stunting with controlling IPV (OR 1.27, 1.06-1.52) and any act of IPV (OR 1.39, 95% CI 1.15-1.69).

Model II shows the association of stunting and wasting with different act of IPV and any IPV, adjusted for maternal, paternal and children sociodemographic variables. Children of mother who had experienced controlling IPV remained significantly associated with 1.3-fold odds of being stunted (OR 1.28, 1.06-1.54) and mothers having any act of IPV had 1.4-fold odds of being their child stunted (OR 1.35, 1.10-1.64).

Child growth in terms of wasting, none of the IPV acts were found to be statistically significant neither in crude nor in adjusted models although higher odds of being wasted in children were found among mothers who had sexual and controlling IPV.

Table 4: Associations between women’s intimate partner violence and stunting and wasting in their children.

IPV variables	n	Stunting in child		Wasting in child	
		OR, 95% CI		OR, 95% CI	
		Model I	Model II	Model I	Model II
Physical IPV only					
No	1733	1	1	1	1
Yes	916	1.39 (1.14-1.69)	1.16 (0.96-1.40)	0.91 (0.64-1.30)	0.78 (0.54-1.12)
Emotional IPV only					
No	2364	1	1	1	1
Yes	285	1.19 (0.99-1.44)	1.17 (0.96-1.42)	1.02 (0.70-1.47)	1.07 (0.73-1.57)
Sexual IPV only					
No	1915	1	1	1	1
Yes	734	1.25 (0.95-1.64)	1.14 (0.86-1.50)	1.22 (0.74-2.00)	1.24 (0.74-2.08)
Controlling IPV only					
No	1022	1	1	1	1
Yes	1627	1.27 (1.06-1.52)	1.28 (1.06-1.54)	1.00 (0.71-1.40)	1.13 (0.79-1.61)
Any IPV					
No	811	1	1	1	1
Yes	1841	1.39 (1.15-1.69)	1.35 (1.10-1.64)	0.90 (0.64-1.28)	1.01 (0.70-1.46)

Model I: Crude Odds Ratio

Model II: Adjusted for all sociodemographic variables presented in Table 3

CI: Confidence Interval

Bold figure shows the statistically significant associations

Table 5 show the association of number of IPV (0-4) with stunting and wasting. Majority of women 840 reported having experienced any one of the four acts of IPV from their intimate partners. Compared to those who were not exposed to any act of IPV, children of mothers having one or more IPV act were statistically significantly associated with stunting in the crude model (Model I). The magnitude of the association was strongest for those who had 3 IPV acts. However, when the model was adjusted for maternal, paternal and children’s sociodemographic characteristics, the significant association was lost for 4 IPV acts but other (1-3 IPV) remained significantly associated (OR for 1 IPV act 1.28, 1.01-1.61; OR for 2 IPV act 1.45, 1.11-1.90; OR for 3 IPV act 1.39, 1.04-1.85).

However, maternal exposure to one or more IPV act was not significantly associated with wasting of their children both in crude and in adjusted models. Higher odds were found only for four IPV act although not statistically significant.

Table 5: Association between any act of intimate partner violence (0-4) and child growth.

Nunmer of IPV	n=2458	Stunting OR, 95% CI		Wasting OR, 95% CI	
		Model I	Model II	Model I	Model II
0	811	1	1	1	1
1	840	1.29 (1.03-1.62)	1.28 (1.01-1.61)	0.88 (0.58-1.34)	1.05 (0.68-1.61)
2	453	1.48 (1.14-1.92)	1.45 (1.11-1.90)	0.83 (0.50-1.38)	0.92 (0.55-1.56)
3	375	1.49 (1.13-1.97)	1.39 (1.04-1.85)	0.92 (0.54-1.56)	0.95 (0.55-1.64)
4	173	1.48 (1.02-2.14)	1.32 (0.90-1.93)	1.16 (0.60-2.23)	1.18 (0.60-2.34)

Model I: Crude odds ratio

Model II: Adjusted for all sociodemographic variables

Bold figure shows the statistically significant associations

6 DISCUSSION

6.1 Summary of the findings

This study shows that IPV against women by their partners is a common (prevalence 71%) practice in Kenya, with physical violence being the most common act of IPV (35%), followed by emotional violence (29%), controlling behaviour (24%) and sexual violence (12%). IPV varies by the demographic characteristics. The prevalence of stunting and wasting in children of women who responded on the IPV questions was 25.2% and 4.0% respectively. The maternal exposure to any IPV was found to be associated with higher odds of being their children stunted (adjusted OR 1.35; 95% CI 1.10-1.64). Children of mothers having one-three IPV act were statistically significantly associated with stunting. However, no statistically significant association between any act of IPV or the number of IPV act and wasting among children of the affected women were found.

6.2 Prevalence of IPV

The overall prevalence of any IPV was found to be high in this study. The youngest women of age 15-19 years had highest prevalence of any act of IPV, but there was no clear trend of IPV act according to the age group of mothers. IPV decreased with the increase in the women's level of education from primary level and above. Similar trend was also found with partners educational level. Women with divorced or separated marital status had highest prevalence of any act of IPV (86% and 90% respectively). The prevalence of any act of IPV was found to be significantly different by all studied socio-demographic factors of mothers. Although statistically significantly higher prevalence of any act of IPV was found in rural residents, the difference was quite small with those living in urban settings. This could be due to the fact that, the impact of violence against women by their partners is the same regardless the different acts of IPV experienced and the place of residence.

Kenya is a patriarchal society, whereby gender inequality is practiced. The workforce is mainly dominated by men who make up more than 60% of the workforce (Knoema, 2019). Men are the main breadwinners for their families, giving them more control and autonomy over family affairs. Therefore, most women in intimate relationships are not empowered economically, thus affecting their economic power and position within the intimate family structure. The empowerment of women

is crucial in promoting the healthy growth of children, hence preventing long-term consequences associated to stunting and wasting (Doku et al., 2020).

Earlier studies found the overall prevalence of IPV ever experienced by women to be 34.1% (Chai et al., 2016) and 36% (García-Moreno et al., 2015) in the Sub-Saharan Africa while Chiang et al., (2018) reported 47% prevalence which is lower than what we found in this study. The differing prevalence could mainly be as a result of the methodological difference in measuring the IPV or because earlier studies included all countries in Sub-Saharan Africa, while our study focused on Kenya only. In addition, earlier studies selected only women ever- married or lived with a partner as the sample for their analysis while our study included women who were married, living with a partner, widowed and separated.

Our study agrees with earlier studies that women who have low education levels are at a higher risk of experiencing IPV from their intimate spouses. This is because of their dependency on their spouses for financial support, hence lacking the autonomy to make family decisions leading to enduring intimate partner violence. Also, our study supports an earlier study finding that women of younger age are more prone to violence their intimate spouses (Acharya et al., 2010).

6.3 Prevalence of Stunting and wasting

We found, more than one fourth of children stunted and 4% wasted. The prevalence of stunting among children was higher for women who reported any act of IPV. The prevalence of stunting and wasting differed according to the maternal characteristics with higher prevalence among women of younger age, low education levels and women whose partner's had lower education as well as living in a household with a low wealth quintile. Our study findings are supported by earlier studies which have also reported that women of younger age are likely to experience intimate partner violence more than older women (Yu et al., 2016; Wemakor et al., 2018). This could be due to the fact that younger women are more prone to low birth weight, preterm birth and socioeconomic instability compared to their counterparts who are older. In addition, due to fear of stigmatization associated to IPV, mothers of a younger age may not actively participate in the antenatal and postnatal care which is crucial in educating them on early detection of any growth-related issues (Rakovec-Felser, 2014).

In our study, we found slightly higher prevalence of stunting in children living in the rural areas 28% compared to urban areas 21%. Urban areas have access to a wide range of nutritious food products sourced from various rural locations. On the other hand, the individual rural locations may only be limited to specific food products that they produce, which limits the choices when it comes to nutritious food products that promote the overall health and growth of children. Children require an adequate amount of nutrients to overcome stunting and wasting (Boah et al., 2019).

Stunting in children was higher among children of mothers having primary education level, partners primary educational level as well and household poor wealth index. Similar findings have been reported in an earlier study (Wemakor et al., 2018). Stunting in children decreased with the increase on the level of education of women. Women with primary education had 29% of children with stunting, followed by women with no education 28% while women with higher education had 14% of children with stunting. Wasting in children was 13% higher in children whose mothers had no education compared to 2% in children whose mothers had a higher education. Women who have higher education may have a tendency to play a more autonomous role within the relationship as compared to women who are less educated (Acharya et al., 2010). Therefore, women with higher education level tend to be less prone to IPV and the growth of their children than the ones who have lower educational level.

Stunting in children decreased with the increase in the wealth quintile of households, 33% in the poorest households and 15% in the richest households. Due to the fact that most Kenyan households are poor, the impact of maternal exposure to intimate violence on the growth of children may be shadowed due to the effects brought about by food insecurity which is a common problem in the country (Portnoy et al., 2018). In addition, women in abusive relationships may experience control on the amount of money spent on buying their children nutritious food required for their healthy growth (Forster et al., 2017).

Children of age group 12-35 months recorded the highest proportion of stunting (31%), followed by 36-59 months old (27%), and the least age group was 0-11 months old (12%). Maternal exposure to IPV causes pain and suffering which is likely to affect their milk production, thus affecting their ability to breastfeed children adequately. Lower milk production means that breastfeeding children will have less milk to feed on, thus affecting their normal growth and development due to lack of necessary nutrients needed for normal physical growth (Lydecker et al., 2016).

Wasting levels were highest (5%) among children of age group 0-11 months followed by age group 12-35 months old (4%) and the least in the age group of 36-59 months old (3%). Weaning of children is commonly practiced at the age of 6-11 months and, availability of healthy and adequate food to children for consumption is crucial for their normal growth. In addition, children are more vulnerable to illnesses during this age. Consequently, wasting was highest in children whose mothers had no education as compared to children who belonged to women with higher education levels (13% and 2% respectively). Wasting was higher (15%) in children of underweight women (BMI <18.5kg/m²) compared to children who belonged to mothers in other BMI categories. Overall, 7% of children suffered from wasting with 5% of children in rural areas reported wasted compared to 2% of their counterparts in urban areas.

6.4 Association of stunting with IPV

There was a strong association between IPV and child stunting in our study. Women experiencing any act of IPV was associated with 1.35 times more likely to get their children stunted compared to those who did not exposed to any act of IPV. The association was adjusted for socio-demographic characteristics of women and child's age although the socio-demographic factors had no effect on the association. Only the controlling act of IPV among women was statistically significantly associated with increased odds of being their child stunted in the adjusted model. Other IPV acts such as physical, emotional and sexual IPV acts were associated significantly with child stunting in the crude model only.

However, for the number of IPV acts, compared to those women who did not expose to any act of IPV, those exposed to anyone, two or three IPV acts were significantly associated with stunting in their children. The magnitude of the association was highest for those who exposed to any two acts of IPV with 1.45 higher odds. Similar findings have also been reported in an earlier study by Chai et al., (2016) which found significant association between any act of any IPV and child stunting in sub-Saharan Africa. Unlike our findings, Chai et al., (2016) also reported statistically significant association of physical IPV or sexual IPV with child stunting although the magnitude of the association was quite small. Maternal exposure to physical and sexual IPV act was also reported to be associated with child stunting in Bangladesh (Rahaman et al, 2012).

When mothers are exposed to violence from their intimate partners, the injuries they sustain and experience during the ordeal can make them overlook some of the detailed and important aspects of food that their children consume. This is so because the mother could be preoccupied with the events following the violence or the injuries and the whole violent experience they are going through. As a result, they might forget to follow proper and regular nutritional guidelines when providing food for their children (Memiah et al., 2018). Regular meal intervals play a significant role in ensuring that children have enough time between meals and that they eat when they are hungry for better absorption of nutrients.

Therefore, when children are starved due to violence against their mothers, they do not receive the required nutritional values which causes reduced linear growth of children (Millward, D. J. 2017). Stunting and wasting might go unnoticed due to cases of deficiency of micro-nutrients among children as well as the reduced access to clean and proper sanitation. This is a big challenge in many poor households (Evang et al., 2020). Since Kenya is a developing economy, it has been reported for having poverty related IPV cases (Memiah et al., 2018). Poverty is therefore seen as one of the major indirect causes of frustration among households, which triggers violence of women by their intimate partners leading to child malnutrition.

IPV related potential child malpractice ways include child neglect due to affected mothers shifting attention from the children to the pain and injuries sustained from the violence. This can cause inability of affected women to follow proper nutritional guidelines when providing food for their children. Consequently, breastfeeding mothers' exposure to IPV cause pain and suffering which is likely to affect their milk production. Thus, it will affect the ability for breastfeeding children to get the adequate nutrients (Lydecker et al., 2016). Poor child growth can also be caused by recurrent infections or exposure to chronic diseases that affect the ability of the child to consume, absorb and utilize nutrients for the proper growth.

IPV experienced by women in Kenya can cause adverse effects on the females' physical as well as mental health and well-being during labour. Lack of a qualified gynaecologist at the time of delivery by a woman who has experienced violence from her intimate partner may lead to maternal complications including depression. When a woman is suffering from maternal depression, her ability to provide quality childcare is compromised leading to the risk of childhood malnutrition even if such households have enough food required for necessary nutrients. Portnoy et al., (2018) further states that children especially those from families that live below the poverty line, are retarded. The problem

with some families might not be lack of food in households, but lack of peaceful and favourable conditions to look for the food or even feed the children as required.

6.5 Association of wasting with IPV

The association of maternal exposure to any or number of IPV act with child wasting was not statistically significant in our study. The association remained statistically insignificant even in the crude model. No association of physical or sexual act of IPV among women and wasting on their children was also reported to earlier study from Bangladesh (Rahman et al, 2012). On contrary, earlier study reported statistically significant association of any IVP act with child wasting with lower odds of wasting in children who mothers had experienced any act of IPV (Chai et al, 2016).

Earlier studies indicate that the nutritional status of a woman is essential to both her health as well as the health of her children. Poor nutrition of women leads to decreased productivity, being more susceptible to infections and slowed recovery from illnesses which can lead to giving birth to low birth weight children (Altare et al., 2016). This agrees with our study that women who were underweight with a low BMI index had children who recorded more cases of wasting. In addition, children who belonged to women with lower level of education had more cases of wasting. As reported in earlier studies, women with lower education were at a higher risk of experiencing IPV (Chai et al., 2016) which consequently affected the healthy growth of their children.

Therefore, it is imperative to ensure that children overcome conditions associated with stunting and wasting to avoid developing life-long health complications which lead to a cycle of generational poverty. There is need to strengthen IPV prevention efforts in every community in Kenya. The study findings also give a better understanding on the importance of strengthening preventive and promotive interventions that address IPV against women and the growth of children of affected mothers in Kenya.

The long-term effects of stunting and wasting affects the quality of life both on the individual and societal level. These include reduced physical and cognitive development, reduced economic productivity and poor health which is associated with progressive long-term health conditions (Grantham-McGregor et al., 2007). Therefore, understanding the indicators of exposure to IPV can assist in detecting and responding to the violence meted out to women by their intimate partners. This

will prevent poor growth and health of affected women's children that will prevent the burden of diseases that is associated with IPV. Preventive measures ensure that health challenges are dealt with before they develop, which improves the overall success they have interventions.

The role of public health is to ensure that the public is safe from all kinds of potential risks to illnesses that affect the good health of the population. Children make an important group of the population because they represent the future of societies and nations. Promoting the health of children is one way of investing in the future of a country's economic stability. In addition, child health is important because it guarantees both the present and long-life health of every child (Victoria et al., 2008). Developing and implementing effective health interventions for children will ensure that they have quality health at the present time that enables them to lead better lives in the future with fewer health complications. Therefore, the study findings examined a better understanding on the importance of strengthening preventive and promotive interventions that address IPV against women and the health of children of affected women in Kenya.

Partner violence is prevalent in Kenya because of the traditional patriarchal nature which leads to lack of awareness on its societal impact among community members. Individuals may be complacent with IPV because they perceive it only as a couple's problem (Kågesten et al., 2016). Therefore, individuals are not able to intervene and take action when potential violent behaviors are practised among spouses in the society. Increasing awareness among members of the society would enable more individuals to understand and identify violence against women and take the necessary action. This is important because children in violent homes are denied a chance to grow a normal healthy life, that prevents long-term negative impacts associated to stunting and wasting including intergenerational poverty.

Although Kenya has made significant progress in addressing gender-based violence among men and women in society, there is still a challenge of IPV cases. There has been significant progress regarding reduction on child mortality and morbidity rates in Kenya (UNICEF, 2018), but it is important to recognize that more effort is needed to improve care outcomes for children under the age of 5 years. Access to an effective preventive and promotive intervention for child growth that address the impact of IPV on children of affected women is crucial. Promoting healthy child growth is important to ensure that they overcome the burden of disease related to poor growth. Proper growth of children helps in reducing the global burden of diseases that can otherwise affect the economic development

of an individual and society at large. Therefore, the well-being of a country is measured through the health of children and all the factors that influence their growth.

Answers relating to IPV could lead to better interventions to improve child health, and perhaps tackle violence against women by their spouses. This can be done through the implementation of sustainably effective preventive and health promotion programmes to address the overall health and well-being of affected women and their children from violence related cases. There are various health complications associated with stunting in children such as falling sick more often, poor performance in school, and exposure to potential chronic illnesses. When children feel sick more often, they end up missing out on opportunities for them to realize and develop so as to reach their full potential. Therefore, formulating proper health interventions can help to prevent children from being exposed to stunting and wasting and the associated negative health impact. Proper sanitation, nutrition and poverty reduction should be focused on to create an enabling environment for fighting poor child growth in children of below five years of age.

6.6 Strengths and limitations of the study

This study was based on a cross-sectional design. Despite having an advantage of no loss to follow-up of participants since data is collected all at once, the study recognized several limitations. Although stunting and wasting of children could be as a result of intimate partner violence against their mother, it could not be ascertained that poor child growth was representative of IPV. Another limitation is the potential for recall and report bias which could have affected on the outcome variables on stunting and wasting in children whose mothers had experienced intimate partner violence from their partners.

In spite of controlling for possible and available confounding factors, there could have been other confounding by unknown factors which are not used in this multivariate analysis. Due to the cultural attitudes and stigma associated with intimate partner violence in communities, self-reported information from women was not reliable. There could have been underreporting of IPV cases and therefore failure to cover fully the overall exposure to intimate partner violence. Furthermore, the study population was restricted only to mothers who had children and did not include women who lived with orphaned children. Missing and inconsistent values in the DHS data may have altered the measurements of exposure and outcome variables. However, the missing data were imputed, and inconsistent data were removed from the data already when DHS released the data.

6.7 Conclusion and recommendations

This study concludes that IPV of women is very common in Kenya with more than two third women were exposed to any act of IPV, and one fourth of children of women who responded on the IPV questions were stunted and 4% wasted. This study also found that the IPV was strongly associated with stunting in their children, whereas the association with wasting was not clear.

The findings suggest a basis for strengthening preventive and promotive interventions for child health, by addressing the impact of IPV on children whose mothers have experienced violence from their intimate partners. Even though the world has been able to realize tremendous success in promoting human rights, there are various factors that make violence against women by their spouses more prevalent in Kenya. These include negative outcomes associated with the multidimensional disadvantages in women's lives, due to structural and cultural factors (García-Moreno et al., 2015). Structural factors include the labour market in Kenya and all the opportunities it provides.

When violence is perpetrated by a spouse, it may be difficult to identify such incidents because there might be no physical marks or evidence to show that one is exposed to an abusive relationship or marriage. Violence against women by their spouses is a violation of human rights as the victims are often left exposed without any act of protection. IPV is experienced in households regardless of individuals' age, education level, type of residence and socio-economic status. Maternal violence by intimate partners is a serious issue that requires zero-tolerance due to the significant negative impact it manifests on abused women and how they take care of their children (WHO, 2012).

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