INDIVIDUAL AND JOINT INFLUENCE OF COMMUNITY'S WIFE-BEATING ACCEPTABILITY AND EDUCATIONAL ATTAINMENT ON INTIMATE PARTNER VIOLENCE AMONG MARRIED WOMEN IN NIGERIA

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CERTIFICATION

I certify that this research work was duly carried out directly under our supervision and also meets the regulations governing the award of the degree of M.Sc. Epidemiology and Medical Statistics of the Department of Epidemiology and Medical Statistics, Faculty of Public Health, College of Medicine, University of Ibadan.

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DEDICATION

This project is dedicated to my late beloved father, Dr. Abraham Olanrewaju-Phillips who believed in many great things about my future, but did not live long enough to see them unfold.

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I am first and foremost grateful to my God, who gave me the breath of life and the grace to achieve excellent success in this academic venture. Unto Him only be all the glory and honour forever and ever.

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Finally, I profoundly appreciate my beautiful and elegant wife who has stood by me in the rain and in the sun since the day we met. She was a source of strength for me when things were hard and difficult. I will always love you.

LIST OF ABBREVIATIONS AND ACRONYMS

AIC	Aikaike Information Criteria
AOR	Adjusted odds ratio
CI	Confidence interval
EA	Enumeration Area
FCT	Federal Capital Territory
ICC	Intra-cluster correlation
IPV	Intimate partner violence
MDG	Millennium Development Goals
NDHS	Nigeria Demographic and Health Survey
NPC	National Population Commission
OR	Odds ratios
PCA	Principal component analysis
PSU	Primary Sampling Unit
SD	Standard deviation
SDG	Sustainable Development Goals
WHO	World Health Organization

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ABSTRACT

Background: Globally, approximately one-third of women in relationship have experienced violence committed by their intimate partner. Attitude towards intimate partner violence has been identified as one of the strongest risk factors for IPV as women having tolerance for IPV are more likely to experience IPV. On the other hand, higher female level of education has been associated with the reduced occurrence of IPV. In Nigeria, IPV is a well-recognised societal as well as a public health problem, however most studies dwell only on individual level factors. This study aimed at determining the influences of female education and women's acceptability of wife-beating at the community and individual levels as well as their statistical interaction on the risk of IPV.

Methodology: The study was a secondary analysis of the Domestic Violence module of the 2013 Nigeria Demographic Health Survey using a sample size of 20378 married women aged 15-49 years old. Random effects variances and fixed effects (odds ratios) were estimated using five multi-level logistic regression models to assess the effects of community and individual level education, acceptability of wife-beating, and a cross-level interaction of community acceptability of wife-beating and woman's education on current and life-time IPV. Data were analysed using descriptive statistics and multi-level logistic regression (α=0.05)

Results: The mean age of the women was 30.9 years (± 9 years standard deviation), 64% had primary or no education and almost two-fifth justified wife-beating. A prevalence of 20% and 24% for current and life-time IPV, respectively, was found among married women. Community level education (current IPV AOR =1.058; 95% CI-1.022,1.096; life-time IPV AOR=1.066; 95% CI-1.030,1.104) and acceptability of wife-beating (current IPV AOR=1.356; 95% CI-1.219,1.507; life-time IPV AOR=1.386; 95% CI-1.25,1.54) were both significant positive

predictors of both forms of IPV; individual woman's education had a non-linear significant effect on IPV while a significant statistical cross-level interaction was found between the community-level acceptability of wife-beating and woman's education for life-time IPV (AOR = 1.013; 95% CI-1.001,1.024).

Conclusion: Intimate partner violence was less prominent among married women with no formal education and those with tertiary education at the individual level. Women living in communities with higher community-levels of acceptability of wife-beating are more prone to intimate partner violence. Also, intimate partner violence increased with increasing community-level acceptability of wife-beating even when individual female education is high. Improving female education at the individual level to an appreciable level and reducing the tolerance of the society to wife-mistreatment is imperative for a targeted intervention in reducing IPV to be successful.

CHAPTER ONE

1 INTRODUCTION

1.1 Background

Intimate partner violence has been defined as threatened, attempted, or completed physical or sexual violence or emotional abuse by a current or former intimate partner, who maybe a spouse, an ex-spouse, a current or former boyfriend or girlfriend, or a dating partner (Control and Prevention, 2008). Globally, approximately one-third of women in relationship have experienced violence committed by their intimate partner. These women have reported higher incidences of important health problems including reproductive and sexual problems (World Health Organization, 2013).

The defunct Millennium Development Goals (MDGs) aimed at promoting gender equality and empower women with focus on eliminating gender disparity in primary and secondary education by 2005, and in all levels of education no later than 2015 (United Nations Organization, 2015). However, in order to tackle more directly one of the notable health-related problems of women and to aid the achievement of gender equality and female empowerment, the succeeding Sustainable Development Goals (SDGs) set a health-related target of eliminating all forms of violence against women and girls in public and private spheres (MDG Gap Task Force, 2015).

In many countries especially in Asia and Africa, attitude towards intimate partner violence has been identified as one of the strongest risk factors for IPV as studies have revealed that women having tolerance for IPV are more likely to experience IPV (Boyle et al., 2009, Faramarzi et al., 2005, Owoaje and OlaOlorun, 2012, Uthman et al., 2009a, Uthman et al., 2009b). On the other hand, studies have often found a negative association between increasing female's level of education and IPV; higher female level of education being associated with the reduced occurrence of IPV (Koenig et al., 2006, Ackerson et al., 2008)

In Nigeria, IPV is a well-recognised societal as well as a public health problem (Aduloju et al., 2015, Bamiwuye and Odimegwu, 2014, Onigbogi et al., 2015, Owoaje and OlaOlorun, 2012, Umana et al., 2014, Uthman et al., 2009a). In 2015, the nation enacted the Violence Against Persons (Prohibition) Act which in its content aims to eliminate violence of any sort or in any context by prohibiting all forms of violence against persons and to provide maximum protection and remedies for victims as well as punishment of offenders (Domestic Violence and Abuse Resource Centre, 2015)

A recent study in Nigeria found supportive attitude to IPV among women a significant predictor of IPV occurrence among these women (Owoaje and OlaOlorun, 2012). The Nigeria Demographic and Health Survey (NDHS) 2013 reported an inverse correlation between women's acceptance of wife beating and female education (National Population Commission (NPC) [Nigeria] and ICF International, 2014). It is therefore plausible that the protective influence of education on IPV could be reduced by a dominant community norm tending towards acceptance of wife-beating as shown in a nationally representative study of the Indian population (Boyle et al., 2009).

This study is aimed at determining the influences of female education and women's acceptability of wife-beating at the community and individual levels on the risk of IPV; as well as the influence of women's acceptability of wife-beating aggregated to the community level on the relationship between female education and risk of IPV.

1.2 Problem Statement

Although intimate partner violence is not a new issue, it remains a significant public health problem with increasing global concern about its prevention (World Health Organization, 2013). Globally 35% of women have experienced a form of sexual violence or the other; out

of which a third (30%) have suffered intimate physical and/or sexual violence (World Health Organization, 2013). The consequences of IPV impact severely on the various aspects of the victims' health affecting the physical health, causing reproductive complications as well as mental problems (World Health Organization, 2013). For instance, female victims are more likely to have low birth weight babies by 16%; at least twice as likely to have abortions; and almost twice as likely to suffer depression (World Health Organization, 2013). The current lifetime prevalence of IPV among women age 15-49 years in Nigeria is twenty-five per cent, while nineteen per cent experienced IPV within the last 12 months prior to the 2013 Nigeria Demographic and Health Survey (National Population Commission (NPC) [Nigeria] and ICF International, 2014).

The literacy level in Nigeria is significantly low and 38% of Nigerian women have no education – and this is even worse when disaggregated by states with Northern geopolitical zones having levels as high as 69% of women with no education (National Population Commission (NPC) [Nigeria] and ICF International, 2014). These facts have the tendency to increase the possibility of the inverse relationship between education and risk of IPV in Nigeria which has often been generally reported (Aduloju et al., 2015, Boyle et al., 2009, Ackerson et al., 2008, Dalal et al., 2009) .

The prevalence of the attitude of justifying wife beating continues to be high among both men and women globally. More than half of women in 17 countries in sub-Saharan Africa (including Nigeria) justified wife beating (Uthman et al., 2009a). Acceptability of wife beating is widely accepted as a strong determinant of IPV (Uthman et al., 2011, Linos et al., 2013, Boyle et al., 2009). In a study of a nationally representative population, increasing proportions of Nigerian women and men in the community with tolerant attitudes were found to be significantly positively associated with spousal sexual, emotional abuse and, spousal physical abuse respectively (Uthman et al., 2011) Education was found to have the strongest

and most consistent negative influence on acceptability of wife-beating among both men and women (Uthman et al., 2011)

1.3 Justification

Understanding the mechanisms influencing the occurrence of IPV in the society is imperative to identifying preventable or modifiable factors which can lead to the elimination, or at least the reduction, of IPV. Many studies conducted to investigate the determinants of IPV have been carried out at the individual level (Aduloju et al., 2015, Bamiwuye and Odimegwu, 2014, Control and Prevention, 2008, Onigbogi et al., 2015, Owoaje and OlaOlorun, 2012). In recent times, the focus of research has turned to the social determinants of IPV, especially those which occur at the level of the community or higher levels, with attempts at distinguishing the community influences of these factors from the individual influences (Uthman et al., 2009b, Uthman et al., 2011, Ackerson et al., 2008, Cunradi, 2010, Boyle et al., 2009).

Risk of IPV in a developing country, such as Nigeria, with such diversity of factors including language, culture, living standard and demography, may vary across different demographic locations leading to area-patterning of IPV (Boyle et al., 2009) .For instance, Ackerson et al distinguished the independent effects of individual-level female education from community-level literacy on the risk of IPV in a population-based study in India (Ackerson et al., 2008). The study further demonstrated an interaction between these two levels in the risk of IPV. However this study did not investigate the influence of community norms on acceptability of wife-beating on the effect of education on IPV as intended in the current study.

In another Indian study, Boyle et al reported evidence of the muting of the protective effect of women's education on IPV by community-level acceptance of mistreatment (Boyle et al., 2009). However, Boyle did not consider some variables which have been identified in the Nigerian settings as significant predictors of IPV e.g. partner's controlling behaviour (Antai, 2011, National Population Commission (NPC) [Nigeria] and ICF International, 2014); partner's social habits, such as alcohol intake, (Onigbogi et al., 2015) among others. As also pointed out by Boyle, one of the limitations of the study was the difficulty in identifying and specifying confounding variables so that casual inferences were further limited, since potential confounders may not have been included in the analysis (Boyle et al., 2009).

In one of the most recent population-based study in Nigeria (based on the 2008 NDHS) on spousal violence, Linos et al, in a three-level multilevel analysis, reported non-significant cross-level interactions between state-level social norms towards spousal violence and individual-level educational attainment; however there was no indication of an analysis done at the community-level in this regard (Linos et al., 2013)

While a number of studies have reported a negative gradient between the level of education and risk of IPV, as mentioned already, several studies have also shown the converse in which higher education status have been linked to increased reporting of IPV (Antai and Adaji, 2012, Antai, 2011). In view of the lack of clarity about the true effect of education on IPV risk, Antai et al recommended further research on how educational attainment at the individual and community-levels influence the risk of IPV (Antai and Adaji, 2012)

This study intends to fill these gaps in literature by investigating the influence of community-level attitude towards mistreatment of women on the relationship between female education and risk of IPV while taking into consideration possible potential variables, with possible confounding effect, which are known to be associated with risk of IPV in the Nigerian

context. Knowledge of this interaction will help to identify the focus for intervention at either the community or individual level and, which variables should be prioritised. Furthermore, more evidence on the independent relationship between IPV and educational attainment at the individual and community-levels in the Nigerian setting will be added to the body of knowledge. Finally, identifying the pattern of variation in reporting of IPV among women across the regions of the country will enable the identification of the need to implement region-specific interventions to curb the menace, especially in affected regions.

1.4 Research Questions

1. How does IPV among married women vary across the regions of Nigeria?
2. How do community and individual-levels acceptability of wife-beating influence the risk of IPV among married women in Nigeria?
3. What are the influences of community and individual-levels female educational attainment on the risk of IPV among married women in Nigeria?
4. Is the protective influence of individual female educational attainment, if any, on risk of IPV reduced among married women residing in Nigerian communities more tolerating of wife beating?

1.5 Objectives of the Study

Broad objective

The general objective of this study is to understand the interactions between community-level female acceptability of wife beating and community and individual-levels female educational attainment in the risk of IPV among married women in Nigeria.

Specific objectives

1. To determine the prevalence of intimate partner violence among married women across the regions of Nigeria.
2. To determine the influence of community- and individual-level women's acceptability of wife beating on the experience of IPV among married women in Nigeria.
3. To determine the influence of community- and individual-level female education on the experience of IPV among married women in Nigeria.
4. To determine the influence of community-level women's acceptability of wife beating on the relationship between individual female educational attainment and intimate partner violence among married women in Nigeria.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Intimate Partner Violence

2.1.1 Definitions

A global public health problem, Intimate Partner Violence (IPV) has been an important subject of research over many decades. According to the World Health Organization (WHO) 2013 report on IPV, it is the "self-reported experience of one or more acts of physical and/or sexual violence by a current or former partner since the age of 15 years".

"Physical violence is defined as: being slapped or having something thrown at you that could hurt you, being pushed or shoved, being hit with a fist or something else that could hurt, being kicked, dragged or beaten up, being choked or burnt on purpose, and/or being threatened with, or actually, having a gun, knife or other weapon used on you.

Sexual violence is defined as: being physically forced to have sexual intercourse when you did not want to, having sexual intercourse because you were afraid of what your partner might do, and/or being forced to do something sexual that you found humiliating or degrading" (World Health Organization, 2013).

IPV also includes emotional abuse such as being humiliated, insulted, intimidated or threatened; and others have considered controlling behaviors by a partner, such as been prevented from seeing friends or family, as IPV (Coker et al., 2000, Johnson et al., 2007). WHO categorized IPV in terms of time since its occurrence: current IPV is self-reported experience of partner violence in the past year, prior IPV is described as self-reported experience of partner violence before the past year, and life-time IPV is self-reported experience of one or more acts of physical and/or sexual violence by a current or former partner since the age of 15 years (World Health Organization, 2013).

This study is focused on both current and life-time experience of IPV among married women. For the purpose of this study, married women are defined as women who were married or living with a sexual partner at the time of the study.

2.1.2 Prevalence and Effect of IPV among Women

IPV is five times more often perpetrated by men against women than the reverse (Venis and Horton, 2002). In view of the increasing global concern about IPV, the 2013 year report by World Health Organization (WHO) was focussed on estimating the global prevalence of the occurrence along with documentation of identified and recommended preventions (World Health Organization, 2013). The WHO gives a global lifetime prevalence of IPV among ever-partnered women as 30%, reporting the greatest occurrences in the WHO African, Eastern Mediterranean and South-East Asia Regions with around 37% of women ever in a union reporting the experience of physical and /or sexual abuse.

The high-income countries of the world reportedly have the lowest occurrences of IPV (23%) (World Health Organization, 2013). An earlier WHO multi-country survey put the life-time prevalence of IPV at between 15 and 71 per cent of women ever being in a relationship have been physically or sexually assaulted by an intimate partner at some time in their lives (Garcia-Moreno et al., 2006).

IPV is considered to be very high in Africa (Bamiwuye and Odimegwu, 2014). A population-based study of six African Sub-Saharan countries reported prevalence of IPV ranging from 30.5% to 57.6% (Bamiwuye and Odimegwu, 2014) In Nigeria, according to the 2013 NDHS, the current life-time prevalence of IPV among women age 15-49 is 25% while current IPV prevalence is 19% (National Population Commission (NPC) [Nigeria] and ICF International, 2014).

IPV appears to occur most at the peak of the reproductive age group (35-44 years) with about 37% of women in this age-group reporting IPV compared to women aged 15-19 with a prevalence of 29.4%. However there is a decrease in the prevalence among women of older age-group; as low as 15.1% in age-group 55-59 (World Health Organization, 2013). IPV is also known to be related to geographical location as women in rural areas are reported to have higher occurrence IPV than their counterparts in the urban regions (Antai, 2011). It is therefore not unexpected that a wide range of prevalence of IPV among Nigeria states (3%-50%) has been reported (Linos et al., 2013).The existence of diversifying community-level factors which can influence normative expectations for gender roles and the acceptability of physical force, can form a basis for area patterning of IPV (Boyle et al., 2009)

The health effects of IPV among women have been well elaborated (Igbokwe et al., Ellsberg et al., 2008, Campbell, 2002, McGarry et al., 2016). These include physical injuries, psychological problems (Ellsberg et al., 2008, McGarry et al., 2016) as well as reproductive health problems such as low birth weights and abortion (Hill et al., 2016). Current adverse health conditions and health risk behaviours have also been linked to lifetime experience of IPV (Control and Prevention, 2008).

2.2 Approach to the Determination of Predictors of Intimate Partner Violence

For many years research on IPV has mainly focussed on individual-level predictors (Shamu et al., 2011, Linos et al., 2013, Cunradi, 2010, Balogun et al., 2012, Okenwa et al., 2009, Owoaje and OlaOlorun, 2012). As posited by Cunradi, this is because IPV is a "private" event (Cunradi, 2010). However, recent thinking that considers contextual factors, which may have an influence on the propagation (or on the other hand an attenuation of IPV) have developed in the frameworks of the current social ecological theory (Cunradi, 2010).

While individual-level examination of the causation of IPV is important in the identification of factors that operate basically through the characteristics of the victim of IPV or spouse

(such as age, sex, educational attainment, socio-economic class etc.), investigation of contextual factors may reveal mechanisms operating at levels above the individual which, in many cases, are not within the control of the individual. The effect of these contextual factors may operate through the dominant characteristics of the community in which the individual lives, especially when outcome process, in this study IPV, operates largely within the social ambit (Boyle et al., 2009, Blakely and Woodward, 2000, Uthman et al., 2011, Heise, 1998).

Sound scientific investigations of outcomes of social context such as IPV would best be carried out using multi-level research where equal considerations are given to both the individual and contextual-level factors (Blakely and Woodward, 2000). This allows the combined benefits of examining the mechanisms of effect at individual and higher levels, as discussed above. However, while being careful to avoid the well-known ecological fallacy (where the observed association of an ecological variable, such as per-capital income, with the prevalence of a disease in countries may be falsely inferred as an association between the individual income and health status) and the atomistic fallacy (where a false conclusion is adduced to a group from an observed association between an individual level variable and the outcome of interest), much more important is the need to avoid making a psychologistic or a sociologistic fallacy. These later two fallacies are a consequence of cross-level confounding in which the relationship between an individual-level variable and an outcome is confounded by a group-level variable (leading to psychologistic fallacy if the group-level confounder is not controlled) or a group-level variable's association with the outcome is confounded by an individual-level variable (leading to sociologist fallacy). (Blakely and Woodward, 2000) The foregoing therefore emphasises the need to ensure the inclusion of all relevant levels of variables (keeping in mind possible multi-collinearity problems) in order to arrive at valid scientific conclusions.

2.2.1 Conceptual Framework of Causation of IPV - Theoretical Perspectives

The socio-ecological model is a framework for explaining the interactions of multiple levels of factors on the causation of outcomes such as IPV (Heise, 1998, Krug et al., 2002). It is premised on the belief that such outcomes cannot be accounted for by only considering a singular factor. Heise in her work in 1998 integrated existing theories of possible causes of gender based abuse from varied cross-cultural backgrounds by means of an ecological framework (Heise, 1998). This integrated framework has since been a backbone for multi-level studies in several countries (Cunradi, 2010, Antai and Adaji, 2012, Uthman et al., 2009a, Ackerson et al., 2008). The framework consists of four main levels that can act on or influence the event of IPV – personal history, microsystem, exosystem and the macrosystem. The first level (personal history) describes the individual factors (or ontogenic factors) that refer to experiences of the individual during the cause of development or the personality responsible for the individual's reaction to higher levels of stressors from the microsystem and exosystem. These include witnessing marital violence as a child (intergenerational exposure to abuse), being abused as a child and having an absent or rejecting father (Heise, 1998). Other individual factors also considered in this level are individual educational attainment, employment and income (Antai and Adaji, 2012).

The second level (microsystem) included male dominance in the family (or decision making autonomy), male control of wealth in the family, spousal use of alcohol and marital conflict (which could be verbal). Family structure (polygamy, nuclear or extended), relationship inequalities and controlling behaviour by the spouse are also important variables predictive of IPV in this level (Antai, 2011). The variables under this level aim to capture the situational factors under which the individual is dealing with other. They focus on the relationship experiences of the individual and may provide an immediate context or environment in which IPV could be perpetrated (Heise, 1998)

The exosystem forms the third level constituting of low socioeconomic status or state of employment, isolation of woman in the family, and delinquent peer associations. The exosystem describes the "social structures both formal and informal that impinge on the immediate settings in which a person is found and thereby influence, delimit or determine what goes on there" (Belsky, 1980).

At the last level are the macrosystem factors which refer to "cultural values and beliefs that permeate and inform the other three layers of the social ecology" (Heise, 1998). These factors include patriarchal beliefs and values which are based on a "cultural definition of manhood that is linked to dominance, toughness, or male honor" (Counts and Brown, 1992); and they "operate through their influence on factors and structures lower down in the system" (Heise, 1998). Other factors considered under the macrosystem level by Heise include male entitlement or ownership of women, masculinity linked to aggression and dominance, rigid gender role, acceptance of interpersonal violence, and acceptance of physical chastisement of women.

One of the cardinal variables investigated in this present study, community norms on acceptability of wife-beating is synonymous to the acceptance of physical chastisement, mentioned above, and is therefore an example of a macrosytem factor. Some factors operating even at higher levels (known as larger society) have been described (Antai and Adaji, 2012) ; these societal-level factors include national laws, statutes or existence/absence of sanctions (federal, state and tribal) that are permissive of or discourage mistreatment of women (Jewkes, 2002, Antai and Adaji, 2012).

Many variables at the lower levels of this framework can be aggregated to the macrosystem or societal level to highlight the contextual aspect of these variables (Antai and Adaji, 2012, Boyle et al., 2009, Linos et al., 2013, Ackerson et al., 2008, Blakely and Woodward, 2000).

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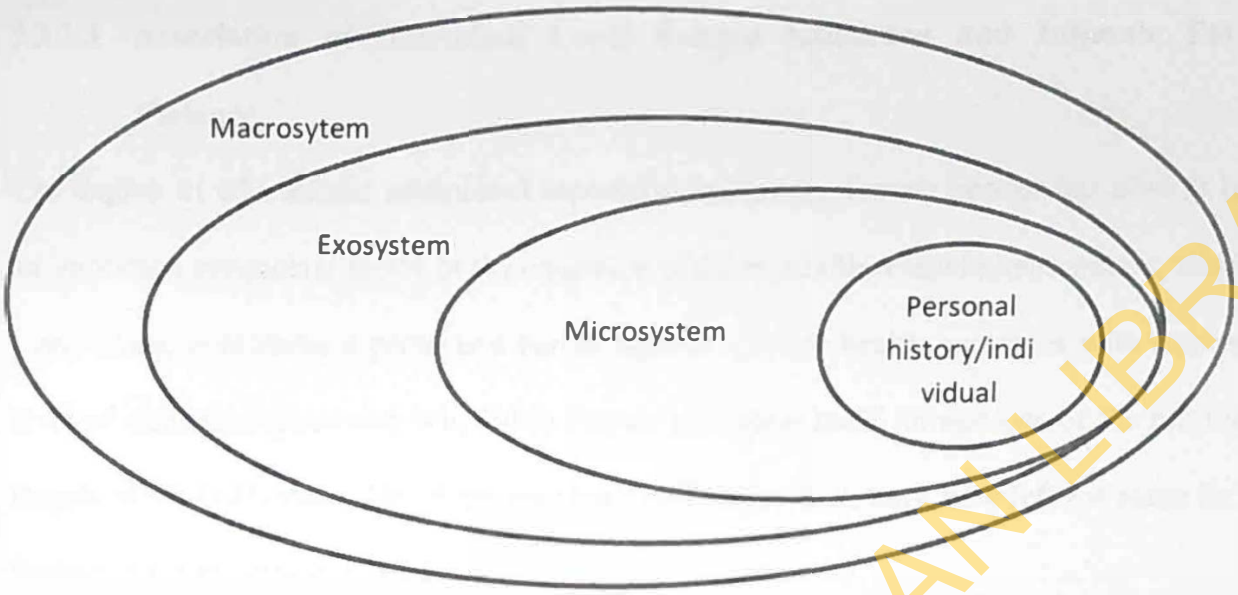
Fig 1: Conceptual framework showing factors related to IPV against women at different levels of the social ecology



Personal history

- Individual factors e.g. age, religion, educational attainment, employment
- Witnessing marital violence as a child
- Personal physical abuse as a child

Microsystem/relationship

- Male dominance in the family/ Marital conflict
- Male control of wealth and house-hold decision-making
- Family structure/type
- Use of alcohol

Exosystem/community/society

- Low socioeconomic status
- Acceptance of violence against women/Norms granting men control over women/Rigid gender roles

Macrosystem/larger society

- Gender inequality
- Acceptance of physical chastisement
- National laws and statutes (Federal, state, and tribal)
- Sanction mechanism regarding abuse

Social ecological framework on IPV [adapted from Heise (1998) and Antai and Adaji (2011)]

2.3 Review of Factors Associated With Intimate Partner Violence

2.3.1 Female Education and Intimate Partner Violence

2.3.1.1 Association of Individual Level Female Education and Intimate Partner Violence

The degree of educational attainment especially that of the female gender has always being an important prognostic factor in the causation of many health related phenomenon, which in many cases, constitutes a protective barrier against adverse health outcomes with increasing level of education (Ross and Wu, 1995) Female education itself formed one of the prominent targets of the Millennium Development Goals (MDGs), which have now left the stage for the Sustainable Development Goals.

However in the case of IPV, the word on the relationship between education and IPV is not yet final. This is because different studies in diverse settings have shown conflicting evidences about the direction of the association (Antai and Adaji, 2012, Antai, 2011, van der Heide et al., 2013). This situation has been described as the paradoxical effect of woman's education on IPV (Antai and Adaji, 2012) For instance, education was a protective factor in Bolivia, Kenya and Zimbabwe, but it was observed to be a risk factor in Haiti (Hindin et al., 2008). Antai and Adaji, in a recent population based study in Nigeria, reported that pregnant women, with primary education were less likely to report any form of IPV compared to those with higher levels of education (Antai and Adaji, 2012). Other studies in Nigeria also had reported this apparent counter-productive effect of education on IPV (Antai, 2011, Okenwa et al., 2009). It was been argued that this observation could be due to underreporting of IPV especially by less educated women due to the influence of culture and greater adherence to traditional gender norms (Antai and Adaji, 2012).

In contrast to the above, several studies have shown substantial evidence of a protective influence of individual-level education on IPV (Ackerson et al., 2008, Dalal et al., 2009,

Boyle et al., 2009). Ackerson and Dalal showed that IPV has a negative correlation with individual-level level education in India (Ackerson et al., 2008) and rural Bangladesh (Dalal et al., 2009) respectively. In an urban study in Lagos, South West Nigeria, women having lower education were about thrice more likely to experience IPV compared to those with higher education (Onigbogi et al., 2015). A similar observation was reported in a Local Government Area in South East Nigeria where about 93% of women with no formal education reported experience of IPV, a proportion greater than among those with higher levels of education (Igbokwe et al.)

However, studies conducted in eight Southern African countries showed no significant association between education and domestic physical violence in all eight countries (Andersson et al., 2007) Also, Aduloju et al did not find any significant association between education and IPV in a study in the former capital city of Nigeria, Lagos (Aduloju et al., 2015).

In terms of relationship inequality, Indian women having more education than their husbands were 18% more likely to report both recent and lifetime IPV than those with equal levels of education with their husbands (Ackerson et al., 2008)However, according to Antai and Adaji (Antai and Adaji, 2012), Nigerian women with more education than their spouse were 51% more likely, compared to those with same educational attainment with their spouse, to have experienced sexual IPV; although they found no significant association between overall IPV and educational spousal equality.

2.3.1.2 Association of Community Level Female Education and Intimate Partner Violence

The evidence of the contextual level influence of education on IPV has been suggested by studies by Koenig et al (Koenig et al., 2006) and Ackerson et al (Ackerson et al., 2008) in India, where substantial variation in IPV remained at the neighbourhood levels (community

levels), derived by aggregating individual educational attainment, even after adjusting for both contextual and individual factors.

Ackerson et al examined the role of proximate educational context (along with women's education) on IPV using a population-based data and concluded that as much as women's levels of education is crucial, proximate educational context is also important in reducing the public health burden of IPV in India (Ackerson et al., 2008) . The Indian study revealed that neighbourhoods with higher literacy levels were less likely to report IPV compared with less literate neighbourhoods. More interestingly, cross-levels interaction analysis between individual women's educational levels and neighbourhood (community level) literacy in the risk of IPV suggested that women with higher education attainment were not protected from IPV if they lived in low-level literacy neighbourhood (Ackerson et al., 2008).

The levels of literacy or education is also varied across different parts of the Nigeria, for instance, the levels of education in the southern states of the country are known to be higher than the northern counterparts (National Population Commission (NPC) [Nigeria] and ICF International, 2014). These variations in educational levels may as well contribute to possible differentiation in the risk of IPV across geographical locations. This would suggest a possible independent role of community-level education, apart from individual female education, on the risk of IPV.

In contrast to the studies above, Antai found that living in Nigeria communities with increased mean education significantly increase the risk of IPV (Antai and Adaji, 2012). In another of few studies examining effects of contextual level factors on IPV in Nigeria, Linos et al did not even consider the contextual educational attainment in their analysis.

Establishing the independent effect of community-level education on IPV will enhance the evidence of the protective influence of education on the risk of IPV (Boyle et al., 2009)

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2.3.2 Association between Community and Individual Level Acceptability of Wife Beating With Intimate Partner Violence

Although acceptability of wife beating can as well be investigated at the individual level, it is one of the variables described at the macro-system (or societal) level in the socio-ecological framework of violence (Heise, 1998). Both men's and women's attitudes to wife-beating have been investigated as well as community norms toward this act (Uthman et al., 2009a, Uthman et al., 2009b, Uthman et al., 2011). A study of 17 Sub-Sahara African countries (including Nigeria) found a high level of justification of wife-beating under given circumstances among both men and women, though women were reported to be more likely to approve of wife-beating than men (Uthman et al., 2009a).

The relationship between acceptability of wife beating and IPV was premised on the perceived transgression of gender roles (Rani et al., 2004). There is apparently a clear consensus that at both individual and contextual levels, acceptability of wife-beating is a very strong predictor of IPV among women (Linos et al., 2013, Khawaja et al., 2008, Antai, 2011, Uthman et al., 2009a, Koenig et al., 2006, Uthman et al., 2011). Koenig et al found that community attitude toward wife beating were strongly predictive of recent violence with higher risks of recent physical abuse of women residing in Indian communities tolerating wife-beating (Koenig et al., 2006). Linos et al likewise reported that permissive state level social norms toward spousal violence in Nigerian were positively associated with a woman's report of physical and sexual violence perpetrated by her husband (Linos et al., 2013)

2.3.3 Interplay between Acceptability of Wife Beating, Education and Intimate Partner Violence

Acceptability of wife beating has been associated with educational attainment along with other factors which include socioeconomic position, access to media, urbanization and joint decision making (Rani et al., 2004). According to Rani et al (Rani et al., 2004), education (as

well as household wealth) were the strongest and most consistent negative predictors of acceptability of wife beating. Uthman et al also found, in their study of Nigeria and 16 other Sub-Saharan African countries, that increasing levels of educational attainment were associated with less likelihood of acceptance of wife beating (Uthman et al., 2009a).

The prevailing culture of a community could play a strong role in the development of the social norm toward wife-beating so that a community may be more supportive of the act whereas another may be less supportive. It therefore possible that variations in community level predisposition to wife-beating could account for the known protective influence of individual-level female education on IPV. Furthermore, community norms on wife-beating could interact with education, at both the community and individual levels, in its influence on risk of IPV so that though the level of education is high, the risk of IPV may still be increased in the face of supportive community norm toward wife-beating.

An interesting finding in the Uthman study was that women in all the observed countries were more likely to justify wife beating except in Lesotho, even after adjusting for confounding, with the explanation for the exception seen in Lesotho based on the fact that the adult female literacy rate is higher than adult male literacy rate (Uthman et al., 2009a).

Considering the different influences of education and acceptability of wife beating on IPV, as have been discussed, the foregoing statement may be a cue for the possible existence of a modification effect by acceptability of wife beating on educational attainment in the risk of IPV (Boyle et al., 2009). This might be backed up by the theory of Heise that IPV is a multifaceted phenomenon which is influenced by a wide range of interacting factors (Heise, 1998). For instance, Boyle examined the possible interaction effect of community attitude towards mistreatment of women on the relationship between IPV and individual female educational attainment in India and found that the protective influence of higher education was muted by the acceptance of mistreatment at the community level (Boyle et al., 2009).

Boyles' rationalized their hypothesis by associating" higher levels of educational attainment with increased knowledge, an enhanced capacity to access and to use information, more autonomy, and more liberal ideas about the status of women" (Boyle et al., 2009, Jewkes, 2002). Furthermore, the "influence of these individual level characteristics on IPV could be muted or even reversed in circumstances where regressive ideas about the status and role of women are dominant" (Boyle et al., 2009, Sugarman and Frankel, 1996).

The Nigerian study by Linos et al (Linos et al., 2013) investigated the possibility of a similar interaction between state level norm on spousal violence and education but found no significant effect, however there was no report of any analysis done at the community level in this respect.

2.3.4 Other Variables Associated With Intimate Partner Violence

This section reviews other relevant factors that have been linked in literature to IPV. It is important to consider these factors in any study as they may have confounding effect (including cross-level confounding which may occur in the estimation of ecological effects) on the relationship between IPV and explanatory variables of interest. This is discussed under two categories of variables: a) individual-level variables and b) contextual variables.

2.3.4.1 Other Individual Level Variables Associated With Intimate Partner Violence

At the individual level studies have shown that IPV is also significantly associated (though not necessarily in every study) with woman's age, marital status was significant, wealth status, employment status of the woman and/or in relation to the spouse, location of residence, parity or childlessness, intergenerational exposure to violence, exposure to physical mistreatment (other than IPV) since age 15 years, religion, household size, ethnicity, longer duration of marriage. Other variables include controlling behaviour by spouse, partner's use of alcohol or drugs, age at marriage, smoking habit, financial autonomy, decision-making autonomy, and perceived control over family wealth (Ismayilova, 2015,

Hindin et al., 2008, Linos et al., 2013, Koenig et al., 2006, Uthman et al., 2009a, Aduloju et al., 2015, Owoaje and OlaOlorun, 2012, Cunradi et al., 2000). The three women empowerment indicators – woman's control over spouse earning, woman's control over own earnings and employment with cash earnings were not significantly associated with IPV in among Nigerian women (National Population Commission (NPC) [Nigeria] and ICF International, 2014)

2.3.4.2 Other Contextual Variables Associated with IPV

Contextual variables which have been linked with IPV include community gender roles norms and economic index (Koenig et al., 2006, Linos et al., 2013). Linos et al considered the existence or absence of sharia law at the state level as a contextual variable in their analysis and found that women living in states where sharia law existed were less likely to have report spousal violence (Linos et al., 2013).

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CHAPTER THREE

3 METHODOLOGY

3.1 Study Area

The study was conducted in Nigeria. Nigeria is situated in West Africa with a population of about 180 million people . This population consists of a huge diversity of ethnic groups, considered to be about 250 in number. The country is divided into 36 states and the Federal Capital Territory (FCT), which is the administrative centre. The states and the FCT are grouped into six geopolitical regions of the country namely: North-West, North-Central, North-East, South-West, South-South, and South-East. The female population is about 50% of the entire population, more than a third of which have no education(National Population Commission (NPC) [Nigeria] and ICF International, 2014).

3.2 Study Population

The study population consists of women age 15-49 years who were married or lived with a sexual partner.

3.3 Study Design

This study was a cross-sectional and population based study of the Nigerian population using the 2013 Nigerian Demographic and Health survey (NDHS).

3.4 Sampling Technique

The sample recruited for the 2013 DHS was nationally representative including all non-institutional residents in Nigeria. The sampling frame consisted of a list of enumeration areas (EAs) from the 2006 national population census.

The sample design was a stratified three-stage cluster sampling using the list of enumeration areas as sampling frame. 888 primary sampling units (PSUs) were selected in the first sampling stage. From these selected PSUs, 7864 households were then systematically selected in the second sampling stage using a probability technique, 45 households being

selected from each PSU (cluster). All women age 15-49 who were either permanent residents of the households in the 2013 NDHS sample or visitors present in the households on the night before the survey were eligible to be interviewed. In a subsample of half of the households, all men age 15-49 years that were either permanent residents of the households in the sample or visitors present in the households on the night before the survey were eligible to be interviewed. Also, a subsample of one eligible woman in each household was randomly selected to be asked additional questions regarding domestic violence.

In this study the PSUs were referred to as communities.

Inclusion criteria

1. Eligible woman must be a usual resident in the selected household and living with spouse at the time of survey

Exclusion criteria

1. Communities (PSUs) having less than 10 women in the study to reduce statistical overlap between individual variables and variables aggregated to the community level (Boyle et al., 2009)
2. Women with incomplete data for any of the main study variables of interest.

3.5 Study Instrument/Data Source

Secondary data analysis was done on the 2013 Nigeria Demographic Health Survey data. Data were collected by visiting households and conducting face-to-face interviews using questionnaires to obtain information on demographic characteristics, wealth, anthropometry, female genital cutting, HIV knowledge, sexual behaviour, and domestic violence and attitude towards wife-beating from both men and women in the survey. Variables relevant to the objectives of the study were extracted from the data for analysis.

3.6 Variable Definitions

Outcome variables: The outcome variables are life-time and current experience of intimate partner violence measured as binary variables.

Life-time intimate partner violence is defined for the purpose of this study as a report of any form of emotional, physical or sexual violence from a spouse or partner since the age of 15 years, while current intimate partner violence is defined as self-reported experience of any such occurrence in the last 12 months prior to the survey.

Questions for assessing domestic violence in the NDHS were obtained from the modified version of the Conflict Tactic Scale.(Straus et al., 1990). Any woman responding positively to any of the questions asked is coded "1" i.e. "IPV present", or "0" if otherwise i.e. "no IPV".

The table below summarizes the DHS variables from the domestic violence module used to measure IPV and the process of derivation of the outcome.

Table 1: Description of Variables Used In Deriving Life-Time and Current Intimate Partner Violence

Variable names in DHS	Description of variables (variable label)*
d105a	Ever been pushed, shook or had something thrown by husband/partner
d105b	Ever been slapped by husband/partner
d105c	Ever been punched with fist or hit by something harmful by husband/partner
d105d	Ever been kicked or dragged by husband/partner
d105e	Ever been strangled or burnt by husband/partner
d105f	Ever been threatened with knife/gun or other weapon by husband/partner
d105h	Ever been physically forced into unwanted sex by husband/partner
d105i	Ever been forced into other unwanted sexual acts by husband/partner (threats)
d105j	Ever had arm twisted or hair pulled by husband/partner
d105k	Ever been physically forced to perform sexual acts respondent didn't want to
d103a	Ever been humiliated by husband/partner
d103b	Ever been threatened with harm by husband/partner
d103c	Ever been insulted or made to feel bad by husband/partner

* Each variable is originally coded as 0 "Never"; 1 "Often"; 2 "Sometimes"; 3 "Yes, but not in the last 12 months"; 4 "Yes, but frequency in the last 12 months missing"

†For life-time IPV, any woman with a positive response (any response other than "never") for any of the 13 variables is coded "1" – "IPV present" or "0" – "no IPV", if otherwise.

#For current IPV, any woman with any response other than "Never" and "Yes, but not in the last 12 months" is coded "1" – "IPV present" or "0" – "no IPV", if otherwise.

Explanatory Variables

A) Individual Level Variables

The explanatory variables at the individual level considered in this study are:

i. **Women's years of education**: this was measured as a numeric variable. This variable was centred on its mean in order to avoid collinearity problems when used in the statistical interaction analysis. For descriptive purpose, level of education was derived as a categorical variable coded "0" - "No formal education"; "1" - "Primary education"; "2" – "Secondary education"; 3 - "Above secondary education".

ii. **Individual level acceptability of wife beating:** this was measured as an index score derived by using principal component analysis (PCA). The index is a linear combination of five indicator variables weighted by component score weights that maximally account for their co-variation(Boyle et al., 2009). Each of the indicator variable (coded "1" if present or "0" if absent) correspond to one of the five questions asking whether it is justified if a man beats his wife in the event that she (1) burns the food; (2) argues with him; (3) goes out without telling him; (4) neglects the children; (5) refuses to have sexual intercourse with him. Higher scores of the derived index signify higher degree of acceptability of wife-beating. For descriptive purposes, individual level acceptability of wife beating was categorized into "justify wife beating" (coded "1") if a woman justifies at least one of the conditions for wife-beating; and "does not justify wife beating" (coded "0"), if a woman does not justify any.

B) Community Level Variables

The community level variables examined were constructed by aggregating individual values in each community by summing up these values and dividing by the total number of women in each community. This aggregation is usual in multi-level studies for testing contextual and individual-level hypothesis (Blakely and Woodward, 2000)

These variables are as follows:

i. **Community acceptability of wife beating**: this was derived by summing up individual factors scores for each community obtained from the principal component analysis mentioned above. Higher scores denote community more condoning of IPV. (Koenig et al., 2006). This was also centred on the mean to avoid collinearity problems during interaction analysis

ii. **Community female educational attainment:** this was derived as the mean number of years of education for women in each community.

C) Control Variables

Controlling behaviour by spouse/partner: this was derived as a categorical variable to assess the degree of marital control by the spouse/partner. Women in the domestic violence module of the NDHS questionnaire were asked whether they experienced any of the following five controlling behaviours by their husbands:(1) he is jealous or angry if she talks to other men; (2) he frequently accuses her of being unfaithful; (3) he does not permit her to meet her female friends; (4) he tries to limit contact with her family; and (5) he insists on knowing where she is at all times. The report of the experience of any of these behaviors is coded as "1" and categorized as "Yes"; and "0" otherwise - categorized as "No".

Household wealth status: this was assessed using the household wealth index as a proxy for determining socioeconomic position. The household wealth index(Filmer and Pritchett, 2001) was constructed by applying the principal component analysis (PCA) statistical method on the household assets thereby allotting weights to individual items, after which a score was derived by summing up the weighted assets for each household. This was then categorized into quintiles ranging from "poorest" to "richest" quintile.

Other control variables: these included age of the woman, religion, ethnicity, employment status, previous experience of violence, participation in household decision making, spousal educational inequality, partner's witnessing of parental violence, husband's social habit (alcohol/drug use/smoking), and exposure to intergenerational violence by spouse. All these variables were used as categorical variables in the analysis. Area of residence (urban/rural) was analysed at the level of community.

3.7 Data Management

Data cleaning, editing and manipulation were done using Stata 14 (StataCorp, 2015).

3.8 Data Analysis

Descriptive analysis was conducted to present frequencies and proportions for categorical variables such as current and life-time IPV, age-group, region, religion, wealth status etc.; and means and standard deviations for quantitative variables such as age in years, and years of education. Individual weights as used in the DHS data were allowed in computing descriptive statistics. At the bivariate analysis level, Chi-square test was used to compare categorical variables; allowing for survey design effect by using Stata SVY command.

Multivariate Analysis

The outcome variable IPV was be modelled by multilevel logistic regression. The logistic regression model involve the conversion of the probability of response (p) to an odds (p/1-p); followed by the transformation of the odds to a logit (p) as ln [(p/1-p)]; which allows the expected response to be expressed as a linear function of the independent variables in the logit scale.

The multilevel logistic regression analysis enables the modelling of binary response variables in clustered data. The response variable in this study, IPV, is nested in i women, from j communities. Correlated responses are modelled by partitioning residual errors at each level which are expressed as random effects variances. The amount of clustering at a particular level was quantified by the intra-class correlation coefficients (ICC) which was estimated from these random effect variances. The ICC is given by the estimated residual variation at the level of the community divided by total residual variation. Odds ratios (known as 'fixed effects' in multilevel logistic regression models) were estimated as the measure of association between the outcome and explanatory variables.

A quadratic term was derived from the woman's education in years as a square of the variable to account for the non-linear relationship between woman's education in years and IPV in the models.

The multi-level models that were used in the analyses are specified as follows:

$$logit(\pi_{ij}) = \beta_0 + \varepsilon_{ij} + \mu_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Equation 1 (Null model)}$$

$$logit(\pi_{ij}) = \beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \beta_3 x_{3j} + \varepsilon_{ij} + \mu_j \ldots\ldots\ldots\ldots \text{Equation 2 (Model 1)}$$

$$logit(\pi_{ij}) = \beta_0 + \beta_4 x_{4ij} + \beta_5 x_{5j} + \varepsilon_{ij} + \mu_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Equation 3 (Model 2)}$$

$$logit(\pi_{ij}) = \beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \beta_3 x_{3j} + \beta_4 x_{4ij} + \beta_5 x_{5j} + \beta_6 x_{1ij} * x_{5j} + \varepsilon_{ij} + \mu_j \ldots$$

$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Equation 4 (Model 3)}$$

$$logit(\pi_{ij}) = \beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \beta_3 x_{3j} + \beta_4 x_{4ij} + \beta_5 x_{5j} + \beta_6 x_{1ij} * x_{5j} + \beta_p Z_p + \varepsilon_{ij} + \mu_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Equation 3 (Model 4)}$$

Where,

π_{ij} is the probability of woman i, from community j, experiencing IPV;

ε_{ij} is the unexplained residual variation at the individual level, assumed to have a standard logistic distribution with mean zero and variance $\pi^2/3$=3.29;

μ_j is the random effects intercept at the community level;

x_{1ij} is the individual level woman's education in years centered around the mean;

x_{2ij} is the square of woman's education in years;

x_{3j} is the community level education in years;

x_{4ij} is the individual level acceptability of wife-beating;

x_{5j} is the community level acceptability of wife-beating;

$x_{1ij} * x_{5j}$ is the cross level interaction term between individual level woman's education in years and community level acceptability of wife-beating

Z_p is the vector of control variables

$\beta_0 \ldots\ldots \beta_p$ are the effects of the respective independent and control variables on IPV

In order to assess for model fit, log likelihood and Aikaike Information Criterion (AIC) estimates were obtained to compare the models.

Analysis to determine the variation in the prevalence of IPV across the regions of Nigeria

The variation in the prevalence of IPV across the regions of the country was achieved by means of simple descriptive statistics presenting the proportions of IPV in the different regions of the country.

Analysis to determine the influence of community- and individual-level acceptability of wife beating on IPV

The influences of acceptability of wife-beating at the community and individual levels on IPV were determined by first estimating IPV clustering at the community levels from the multilevel null model and then determining the fixed effects odds ratios of IPV on women's levels of acceptability of wife-beating assessed individually and aggregated to the community level.

Analysis to determine the influences of community- and individual-level female education on IPV

The influences of individual and community level education on IPV were determined by estimating fixed effects odds ratios of IPV on women's levels of education assessed individually and aggregated to the community level, respectively.

Analysis to determine the influence of community-level acceptability of wife beating on the relationship between female education and IPV

The influence of community-level acceptability of wife beating on the relationship between individual female education and IPV was determined by including a cross-level interaction term between community-level acceptability of wife beating and individual level female education and obtaining odds ratios in the resultant model.

Control variables were included in the models to adjust for possible confounding if they had p-value <0.25 during bi-variate analysis. All statistical analyses were done using Stata 14 (StataCorp, 2015). Statistical significance was set at the 5% level.

3.9 Ethical Consideration

The survey was approved by the Ethics Committee of the ICF Macro at Calverton in the USA and by the National Ethics Committee in the Ministry of Health in Nigeria. Written consent was obtained from all respondents and all information was collected confidentially at the point of collection.

According to the NDHS 2013 report (National Population Commission (NPC) [Nigeria] and ICF International, 2014), there were three specific protections built into the survey questionnaire in accordance with the World Health Organization's ethical and safety recommendations for research on domestic violence (WHO, 2001). These are:

1. The DHS protocol specifies that the domestic violence module can be administered to only one randomly selected woman per household. Therefore, in households with more than one eligible woman, the respondent for the module was selected using the Kish grid built into the Household Questionnaire (Kish, 1965). Interviewing only one woman in each household for the domestic violence module provides assurance to the selected respondent that other respondents in the household will not know about the questions she was asked.

2. Informed consent for the survey was obtained from the respondent at the beginning of the individual interview. Also, at the beginning of the domestic violence section, respondents were read an additional statement informing them that the subsequent questions could be sensitive and reassuring them of the confidentiality of their responses.

3. The domestic violence module was implemented only if privacy could be obtained. If privacy could not be obtained, the interviewer was instructed to skip the module, thank the respondent, and end the interview.

CHAPTER FOUR

4 RESULTS

4.1 Characteristics of Respondents

4.1.1 Socio-Demographic Characteristics of Respondents

Table 1 below shows the frequency distribution of the socio-demographic characteristics of the 20,347 women aged 15-49 years who were analysed. Almost all of them (96.6%) were married and resided in 875 communities. The mean age was 31 years (±8.7 SD), with the age group 15-19 years constituting the smallest proportion (7.9%) while those aged 20-29 formed the largest proportion (39.1%). The largest proportion of these women was from the North West (29.3) while those from the South East were the fewest (8.5%); with the greater proportion of women (64.1%) coming from the rural area. About 44% of the women had no education and only 8.1% of them had tertiary education. Majority (69.5%) of them were employed.

Table 2: Socio-Demographics Characteristics of Respondents (N=20347)

Variable	Frequency	%
Age-group(Years)		
15-19	1610	7.9
20-29	7949	39.1
30-39	6664	32.8
40-49	4124	20.3
Wealth index (In terciles)		
Poor	6795	33.4
Middle	6975	34.3
Rich	6577	32.3
Region		
North Central	3214	15.8
North East	3756	18.5
North West	5971	29.3
South East	1724	8.5
South South	2567	12.6
South West	3115	15.3
Type of place of residence		
Urban	7301	35.9
Rural	13046	64.1
Highest educational level		
No education	8932	43.9
Primary	4104	20.2
Secondary	5662	27.8
Higher	1649	8.1
Religion		
Christian	8805	43.3
Islam	11233	55.2
Others	309	1.5
Respondent's employment status		
Unemployed	6204	30.5
Employed	14143	69.5
Type of earnings by respondent		
Not employed/not paid in cash	7043	34.6
Earn in cash	13304	65.4
Total	20347	100

4.1.2 Family Relationships, Social Habits and Experiences of Respondents

The social habits and experiences of the respondent as well as the relationship of the woman within the ambience of marriage or cohabitation are summarized in Table 2 below. Most of the women (76%) lived in a monogamous family setting. About 56% of women have lived for at least 10 years with their partner. Almost all (99%) of the women reported that their husbands were employed. A larger proportion (57%) of women reported being involved in household decision making. A half (50%) of the women reported same education with their partners while only 14.3% of them were more educated than their partners. Also, only a minor proportion (19%) of women reported spousal alcohol consumption.

Table 3: Respondent's Social Habits, Experiences and Family Relationships

Variable	Frequency	%
Respondent uses substance		
No	20274	99.6
Yes	73	0.4
Family type		
Polygamous	4890	24
Monogamous	15457	76
Duration of living with partner		
less than 10 years	8921	43.8
10-19 years	6819	33.5
More than 20 years	4607	22.6
Husband's/partner's educational level		
No education	7491	36.8
Primary	3810	18.7
Secondary	6103	30
Higher	2943	14.5
Husband's/partner's employment status		
Unemployed	256	1.3
Employed	20091	98.7
Wife is involved in household decision making		
No	8746	43
Yes	11601	57
Spousal Educational differences		
Husband more educated	7314	35.9
Level of wife's involvement in household decision making		
Not at all	8746	43
All decisions	4218	20.7
Some decisions only	7383	36.3
Spousal Educational differences		
Husband less educated	2912	14.3
Same education	10121	49.7
Husband/partner drinks		
No	16399	80.6
Yes	3948	19.4
Total	20347	100

4.2 Prevalence of Intimate Partner Violence, Attitude to Wife Beating and Violence-Related Variables

The prevalence of life-time IPV was 24.4%, slightly higher than that for current IPV (20.3%). (Table 3) More than a third of the women (38.4%) justified wife-beating. Also, just about 17% of women reported ever experiencing physical violence while only about 9% witnessed their father beating their mother during childhood. However a substantially larger proportion (64.2%) of the women reported partner exhibiting at least one controlling-behaviour (Table3).

Table 4: Frequency Distribution of Occurrence of Intimate Partner Violence, Attitude to Wife-Beating and Factors Related to Experience of Physical Violence, Among Nigerian Married Women

Variable	No.	%
Experienced current IPV		
No	16223	79.7
Yes	4124	20.3
Experienced lifetime IPV		
No	15382	75.6
Yes	4965	24.4
Respondent justifies wife beating		
No	12536	61.6
Yes	7811	38.4
Husband/partner exhibits at least 1 controlling behaviors		
No	7275	35.8
Yes	13072	64.2
Ever experienced physical violence		
No	16985	83.5
Yes	3362	16.5
Witnessed father beat mother in childhood		
No	18478	90.8
Yes	1869	9.2
Total	20347	100

4.3 Description of Community Level Variables

The Table 4 below shows the summary statistics for the community level variables. The average number of study women was 26 (8.1 standard deviation) per community, with a range of 10-44 women in a community. At the community level, years of female education ranged from 0 to 16 years of education, with an average of 5 years (±4 years standard deviation) per community. Based on aggregated PCA scores, the community level attitude to wife beating ranged from -1.23 to 2.98.

Table 5: Distribution of Community Level Variables (Number of Communities = 857)

Variable	Range	Mean (SD)	Median	Interquartile range (25^{th}-75^{th} percentile)
Number of study women per community	10-44	26.4 (8.08)	26	20 – 33
Community level justification of wife-beating (Based on aggregated PCA scores)	-1.23 – 2.98	0.00 (1.02)	-0.22	-0.84 - 0.62
Community level female education(years) –Mean (SD)	0 – 16	5.33 (4.33)	5.06	0.70 – 9.33

Bivariate Analysis

4.4 Women's Socio-Demographic Characteristics and Experience of Intimate Partner Violence

The bi-variate analysis of women's sociodemographic characteristics with experience of IPV is presented in Table 5.

Both life-time and current IPVs were observed to be significantly associated with respondents' age, current marital status, wealth status, region; educational level, religion, employment status. However, only current IPV had a statistically significant association with area of residence and whether a woman earned in cash or not.

The highest experience of IPV occurred in the 30-39 years age group (22% in current IPV and 27.3% for life-time IPV), compared to the lowest occurrence (14% current and 15% lifetime) in age-group 15-19 years (p-values <0.001). Women who were merely co-habiting with their partners, without any formal marriage, reported higher experience of IPV than those formally married (p-values <0.001).

The North East region of the country appeared to experience highest level of IPV (34% current IPV; 37% life-time IPV) compared to other regions, with the lowest experience (7% current; 8% life-time) reported in the North-West for both forms of IPV (p-values <0.001).

IPV was most dominant among women with primary or secondary education and lower among those without any education or higher education (p-value <0.001). The prevalence of IPV was lower among Muslim women (14% current; 16% lifetime) than among any other religious group (28% current; 34% lifetime for Christians and 29% current, 33% lifetime for others) (p-values <0.001).

Lastly women who were employed had a higher prevalence (22% current, 27% lifetime) of IPV compared to those not employed (17% current, 19% current) (p-values<0.001).

Table 6: Distribution of Socio-demographics characteristics according to experience of IPV

Variable	Total	Experienced current IPV		Experienced lifetime IPV	
		Yes No. (%)	χ (df); p-value	Yes No. (%)	χ (df); p-value
Age-group(Years)			10.05 (3); p<0.001		15.25 (3); p<0.001
15-19	1,610	227 (14)		245 (15.2)	
20-29	7,949	1698 (21)		1930 (24.3)	
30-39	6,664	1479 (22)		1820 (27.3)	
40-49	44,124	720 (18)		970 (23.5)	
Current marital status			62.00 (1); p<0.001		55.32 (1); p<0.001
Married	19,658	3900 (20)		4708 (23.9)	
Living with partner	689	224 (33)		257(37.3)	
Wealth index (In terciles)			3.39 (2); 0.037		72.0 (2); 0.002
Poor	6,795	1359 (20)		1562(23)	
Middle	6,975	1452 (21)		1724(24.7)	
Rich	6,577	1313 (20)		1679(25.5)	
Region			21.58 (5); p<0.001		25.79 (5); p<0.001
North Central	3,214	731 (23)		888(27.6)	
North East	3,756	1264 (34)		1382(36.8)	
North West	5,971	417 (7)		501(8.4)	
South East	1,724	476 (28)		532(30.9)	
South South	2,567	679 (27)		893(34.8)	
South West	3,115	557 (18)		769(24.7)	
Type of place of residence			2.50 (1); 0.114		6.87 (1); 0.009
Urban	7,301	1511 (21)		1892 (25.9)	
Rural	13,046	2613 (20)		3073 (23.6)	
Highest educational level			46.83 (3); p<0.001		73.05 (3); p<0.001
No education	8,932	1347 (15)		1545(17.3)	
Primary	4,104	1104 (27)		1376(33.5)	
Secondary	5,662	1420 (25)		1722(30.4)	
Higher	1,649	253 (15)		322(19.5)	

Religion			91.00 (2); p<0.001		125.85 (2) p<0.001
Other Christian	8,805	2479 (28)		3019(34.3)	
Islam	11,233	1554 (14)		1845(16.4)	
Others	309	91 (29)		101(32.7)	
Respondent's employment status			29.17 (1); p<0.001		50.51 (1); p<0.001
Unemployed	6,204	1046 (17)		1200(19.3)	
Employed	14,143	3078 (22)		3765(26.6)	
Type of earnings by respondent			1.95 (1); 0.163		8.05 (1); 0.005
Not employed/not paid in cash	7,043	1444 (21)		1646(23.4)	
Earn in cash	13,304	2680 (20)		3319(24.9)	
Total	20,347	4124 (20)		4965(24.4)	

4.5 Intimate Violence Partner and Respondent's Family Relationships and Experiences

Table 6 shows the bi-variate analysis results for the association between the two forms of IPV and the family relationships and experiences of the respondents.

Both forms of IPV was statistically associated with duration of living with partner, husband's education, involvement in household decision making, spousal educational difference, and spousal alcohol consumption. Husband's employment status and family type were not significantly associated with any form of IPV. Respondent's use of substance was only significantly associated with life-time IPV.

The pattern of the distribution of IPV prevalence across husband's education was similar to that of the wife's, those with primary or secondary education with a greater prevalence than those without education or with higher level of education (p-values <0.001). Also, women who were involved in household decision making had a greater prevalence of IPV (25% current; 34% lifetime) than those who were not involved (14% current; 16% lifetime). Women with same education as their husbands had the lowest prevalence of IPV (16% current; 20% lifetime) compared to those either having higher education (25% current; 31% lifetime) or less education (24% current; 29% lifetime) than their spouses.

Finally, women whose husband's consumed alcohol reported higher prevalence of IPV (38% current; 46% lifetime) than those whose husband did not (16% current; 19% lifetime) (p-values<0.001)

Table 7: Distribution of Respondent's Social Habits, Experiences and Family Relationships According to Experience of Intimate Partner Violence

	Total	Experienced current IPV		Experienced lifetime IPV	
		Yes	χ (df);p-value	Yes	χ (df);p-value
		Freq. (%)		Freq. (%)	
Respondent uses substance			4.47 (1); 0.035		2.18 (1); 0.140
No	20,274	4102 (20)		4942 (24.4)	
Yes	73	22 (30)		23 (31.5)	
Family type			0.96 (1); 0.327		3.00 (1); 0.084
Polygamous	4,890	1033 (21)		1230 (25.2)	
Monogamous	15,457	3091 (20)		3735 (24.2)	
Duration of living with partner			3.24(2); 0.041		15.52; (2); 0.035
less than 10 years	8,921	1800 (20)		2053 (23)	
10-19 years	6,819	1509 (22)		1846 (27.1)	
More than 20 years	4,607	815 (18)		1066 (23.1)	
Husband's educational level			40.08 (3); p<0.001		58.12 (3); p<0.001
No education	7,491	1061 (14)		1232 (16.4)	
Primary	3,810	1001 (26)		1223 (32.1)	
Secondary	6,103	1480 (24)		1821 (29.8)	
Higher	2,943	582 (20)		689 (23.4)	
Husband's employment status			0.74 (1); 0.390		2.31 (1); 0.129
No	256	56 (22)		70 (27.3)	
Yes	20,091	4068 (20)		4895 (24.4)	
Level of wife's involvement in household decision making			70.0 (2); p<0.001		105.41 (2); p<0.001
Not at all	8,746	1255 (14)		1419 (16.2)	
All decisions	4,218	868 (21)		1056 (25)	
Some decisions only	7,383	2001 (27)		2490 (33.7)	
Wife is involved in household decision making			97.00 (1); p<0.001		143.98 (1); p<0.001
No	8,746	1255 (14)		1419 (16.2)	
Yes	11,601	2869 (25)		3546 (30.6)	
Spousal Educational			42.00(2);		59.79 (2);

differences					
Husband more educated	7,314	1742 (24)	p<0.001	2085 (28.5)	p<0.001
Husband less educated	2,912	722 (25)		890 (30.6)	
Same education	10,121	1660 (16)		1990 (19.7)	
Husband drinks			284.27 (1);		407.18 (1);
No	16,399	2635 (16)	p<0.001	3140 (19.1)	p<0.001
Yes	948	1489 (38)		1825 (46.2)	
Total	20,347	4124 (20)		4965 (24.4)	

differences					
Husband more educated	7,314	1742 (24)	p<0.001	2085 (28.5)	p<0.001
Husband less educated	2,912	722 (25)		890 (30.6)	
Same education	10,121	1660 (16)		1990 (19.7)	
Husband drinks			284.27 (1); p<0.001		407.18 (1); p<0.001
No	16,399	2635 (16)		3140 (19.1)	
Yes	948	1489 (38)		1825 (46.2)	
Total	20,347	4124 (20)		4965 (24.4)	

4.6 Intimate Violence Partner and Respondent's Attitude to Wife-Beating and Violence-Related Variables

Table 7 shows the associations between IPV and attitude to wife-beating at the individual level, husband's controlling behaviour and individual experience or witness of parental physical violence.

Women justifying wife beating have a higher prevalence of IPV (26% current; 30% lifetime) than those who do not (17% current; 21% lifetime) (p-values<0.001) The prevalence was also higher for women who ever experienced physical violence (43% current; 52% lifetime) and also for those who witnessed domestic violence in childhood (45% current; 52% lifetime) compared to their counterparts (16% current; 19% lifetime and 18% current; 22% lifetime, respectively) (p-values <0.001). Likewise, the prevalence of IPV was greater among women whose husbands exhibited at least 1 controlling behaviour (27% current; 32% lifetime) than those whose husbands had no such behaviour (8% current; 11% lifetime).

Table 8: Distribution of Respondent's Attitude to Wife-Beating and Factors Related to Experience of Physical Violence According to Experience of Intimate Partner Violence

Variable		Experienced current IPV		Experienced life-time IPV	
		Yes	χ(df); p-value	Yes	χ (df); p-value
		Freq. (%)		Freq. (%)	
Respondent justifies wife beating			72.50 (1); p<0.001		59.58 (1); p<0.001
No	12,536	2103(17)		2613(20.8)	
Yes	7,811	2021(26)		2352(30.1)	
Husband exhibits at least 1 controlling behaviour			363.28 (1); p<0.001		347.75 (1); p<0.001
No	7,275	590(8.1)		788(10.8)	
Yes	13,072	3534(27)		4177(32)	
Ever experienced physical violence			400.67 (1); p<0.001		451.52 (1); p<0.001
No	16,985	2666(16)		3218(18.9)	
Yes	3,362	1458(43)		1747(52)	
Witnessed father beat mother in childhood			303.65 (1); p<0.001		399.36 (1); p<0.001
No	18,478	3293(18)		3986(21.6)	
Yes	1,869	831(45)		979(52.4)	
Total	20,347	4124 (20)		4965 (24.4)	

Multivariate Analysis

4.7 Multi-Level Modelling Analysis

The random effect variances and intra-class correlations (ICC) are shown in Table 7. The first model in this table is the null model containing only the outcome variable – IPV which gives the unadjusted random intercept variances of IPV at the community level and the ICC. The other four models in Table 7 give the adjusted random effects variances and ICC of IPV. Table 8 and Table 9 show results for four multi-level logistic regression models each for lifetime and current IPV respectively, containing the fixed effects of the explanatory variables of interest. The first models in Table 8 & Table 9 contain level 1 (Woman level) and level 2 (community level) education; model 2 contain the two levels of acceptability of wife-beating; model 3 introduces the interaction term between level-2 acceptability of wife-beating and level 1 education along with the variables themselves; and model 4 includes the control variables to the regression analysis. Independent variables which were observed to be significantly associated with IPV at p-value <0.25 during bivariate analysis were selected as control variables in the final regression models.

4.7.1 Random Effects and Intra-Class Correlation for Intimate Partner Violence

Table 7 shows the null models which give the unadjusted random effects standard deviation at the level of the community, and the intra-class correlation for the outcomes of the two forms of IPV. The standard deviations of the community intercepts for current and life-time were 1.416 and 1.446, which were statistically significant. The unadjusted ICC for current IPV and life-time IPV was 0.38 and 0.39 respectively. However, after adjusting for other independent variables the ICCs reduced to 0.22.

Table 9: Random Effect Variance and Intra-Class Correlations (ICC)

Life-time IPV					
Random effects variances and ICC	Null model	Model 1	Model 2	Model 3	Model 4
Level 2 (community) intercept σ^2, (se)	1.446 (0.047)	1.352, (0.045)	1.412, (0.046)	1.242, (0.042)	0.976 (0.037)
ICC	0.39	0.36	0.38	0.32	0.22
Current IPV					
Level 2 (community) intercept σ^2, (se)	1.416 (0.048)	1.346, (0.046)	1.370, (0.047)	1.231, (0.043)	0.956 (0.038)
ICC	0.38	0.36	0.36	0.32	0.22

4.7.2 Influences of Community- and Individual Level Education on Intimate Partner Violence

The first models (model 1) in the regression tables show the regression of IPV on individual and community level education. The square of education in years was included in the model as a quadratic term to account for non-linearity of the effect of individual education on IPV. There was a positive significant effect of individual level education on life-time IPV, adjusting for mean community level education (AOR 1.136; 95% CI = 1.084-1.149) (Table 8). The significance of the effect of square of education (AOR 0.990; 95% CI=0.988-0.992) confirms the non-linear effect of individual education which suggests that the odds of experiencing life-time IPV increases with years of female education up till a particular level but declines after achieving higher levels of education.

In the same direction, the odds of life-time IPV also increased significantly with increasing mean community level education, adjusting for individual education (OR 1.119; 95% CI=1.090-1.149). After adjusting for control variables in the model (Table 8, model 4), the effects of the two levels remain significant, though the magnitude of their effects was reduced. These observed effects were similar for current IPV as well (Model 1 and 4, Table9).

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In the same direction, the odds of life-time IPV also increased significantly with increasing mean community level education, adjusting for individual education (OR 1.119; 95% CI=1.090-1.149). After adjusting for control variables in the model (Table 8, model 4), the effects of the two levels remain significant, though the magnitude of their effects was reduced. These observed effects were similar for current IPV as well (Model 1 and 4, Table9).

4.7.3 Influences of Community- and Individual Level Acceptability of Wife-Beating on Intimate Partner Violence

Model 2 (Table 8) shows the fixed effects of individual and community level acceptability of wife-beating on life-time IPV. Increasing acceptability of wife beating at both levels were predictive of risk of life-time IPV, though the effect of community acceptance of wife-beating was much stronger (OR 1.359; 95% CI=1.211-1.524) compared to the individual level (OR 1.034; 95% CI=1.010-1.059). Strikingly, after adjusting for control variables (Model 4), the effect of community level acceptability of wife beating became even stronger (AOR 1.386; 95% CI=1.247-1.540), however the effect of individual level acceptability of wife-beating was no longer significant. This picture for life-time IPV was very much about the same as observed for life-time IPV (Table 9, Model 2).

4.7.4 Influence of Community-Level Acceptability of Wife Beating on the Relationship Between Individual Female Education and IPV

The statistical interaction between individual level education and community-level acceptability of wife-beating was tested in Model 3. This was observed to be statistically significant for life-time IPV (OR 1.011; 95% CI=1.000-1.023). However, the interaction was not significant for current IPV (OR 1.007; 95% CI=0.995-1.019).

4.7.5 Observed Effects of Other Factors

Other factors observed to significantly increase the risk of IPV include age-group between 20-29 and 30-39 years; living in the North East region, employed, having a husband that is less educated, and longer duration of living together, wife being involved in decision making, husband exhibiting controlling behaviour or drinking alcohol, experience of physical violence and witnessing father beat mother in childhood. Factors which were protective of IPV include younger age group (15-19), living in the North-West or South-South region, the Islam religion and living in a monogamous family setting.

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4.7.5 Observed Effects of Other Factors

Other factors observed to significantly increase the risk of IPV include age-group between 20-29 and 30-39 years; living in the North East region, employed, having a husband that is less educated, and longer duration of living together, wife being involved in decision making, husband exhibiting controlling behaviour or drinking alcohol, experience of physical violence and witnessing father beat mother in childhood. Factors which were protective of IPV include younger age group (15-19), living in the North-West or South-South region, the Islam religion and living in a monogamous family setting.

Table 10: Multilevel Logistic Regression of Life-Time Intimate Partner Violence

Experienced lifetime IPV	Model1	Model2	Model3	Model4
	OR 95% CI	OR 95% CI	OR 95% CI	OR 95% CI
Fixed effects				
Education in years	1.116*** [1.084,1.149]		1.105*** [1.072,1.139]	1.068*** [1.033,1.104]
Mean community education (years)	1.119*** [1.090,1.149]		1.193*** [1.160,1.226]	1.066*** [1.030,1.104]
Acceptance of wife beating		1.034** [1.010,1.059]	1.028* [1.004,1.053]	1.015 [0.990,1.041]
Community acceptance of wife beating		1.359*** [1.211,1.524]	1.866*** [1.661,2.095]	1.386*** [1.247,1.540]
Community acceptance of wife beating X education (years)			1.011* [1.000,1.023]	1.013* [1.001,1.024]
Age-group				
15-19				
20-29				1.331** [1.105,1.603]
30-39				1.337** [1.080,1.655]
40-49				1.212 [0.939,1.564]
Region				
North Central				
North East				1.392* [1.041,1.860]
North West				0.319*** [0.237,0.431]
South East				0.737 [0.541,1.005]
South South				0.716* [0.540,0.950]
South West				0.841 [0.638,1.109]
Respondent's employment status				
Unemployed (ref)				
Employed				1.143* [1.031,1.266]
Religion				
Christian				

Islam				0.772*** [0.662,0.900]
Others				1.124 [0.806,1.567]
Spousal educational difference				
Husband more educated				
Husband less educated				1.188** [1.045,1.351]
Same education				0.979 [0.888,1.080]
Family type				
Polygamous (ref)				
Monogamous				0.821*** [0.742,0.909]
Duration of living together				
less than 10 years				
10-19 years				1.221*** [1.089,1.370]
20 years or more				1.158 [0.971,1.381]
Wife is involved in household decision making*				1.266*** [1.138,1.408]
Husband exhibits at least 1 controlling behaviors†				4.067*** [3.671,4.505]
Husband drinks alcohol†				2.333*** [2.090,2.603]
Ever experienced physical violence†				2.111*** [1.899,2.346]
Witnessed father beat mother in childhood†				1.963*** [1.729,2.228]
Log-likelihood	-9402.47	-9474.18	-9338.23	-8371.46
AIC	18814.94	18956.35	18692.46	16812.93

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; †reference = "Yes"

#Adjusted also for marital status, wealth status, area of residence, respondent use of substance, and husband employment status, though not significant.

Table 11: Multilevel Logistic Regression of Current Intimate Partner Violence

Experienced lifetime IPV	Model1	Model2	Model3	Model4
Fixed effects				
Education in years	1.116*** [1.082,1.151]		1.108*** [1.073,1.144]	1.061*** [1.024,1.098]
Mean community education (years)	1.095*** [1.066,1.125]		1.169*** [1.136,1.202]	1.058** [1.022,1.096]
Acceptance of wife beating		1.034** [1.009,1.059]	1.028* [1.003,1.054]	1.016 [0.990,1.042]
Community acceptance of wife beating		1.422*** [1.269,1.594]	1.896*** [1.685,2.132]	1.356*** [1.219,1.507]
Community acceptance of wife beating X education (years)			1.007 [0.995,1.019]	1.006 [0.994,1.018]
Age-group				
15-19				
20-29				1.295** [1.072,1.565]
30-39				1.220 [0.980,1.517]
40-49				0.981 [0.753,1.278]
Marital status				
Married				
Living with partner				1.250* [1.010,1.547]
Region				
North Central				
North East				1.625*** [1.218,2.169]
North West				0.341*** [0.251,0.462]
South East				0.902 [0.662,1.229]
South South				0.631** [0.475,0.839]
South West				0.745* [0.563,0.985]
Respondent's employment status				
Unemployed (ref)				

Table 11: Multilevel Logistic Regression of Current Intimate Partner Violence

Experienced lifetime IPV	Model1	Model2	Model3	Model4
Fixed effects				
Education in years	1.116*** [1.082,1.151]		1.108*** [1.073,1.144]	1.061*** [1.024,1.098]
Mean community education (years)	1.095*** [1.066,1.125]		1.169*** [1.136,1.202]	1.058** [1.022,1.096]
Acceptance of wife beating		1.034** [1.009,1.059]	1.028* [1.003,1.054]	1.016 [0.990,1.042]
Community acceptance of wife beating		1.422*** [1.269,1.594]	1.896*** [1.685,2.132]	1.356*** [1.219,1.507]
Community acceptance of wife beating X education (years)			1.007 [0.995,1.019]	1.006 [0.994,1.018]
Age-group				
15-19				
20-29				1.295** [1.072,1.565]
30-39				1.220 [0.980,1.517]
40-49				0.981 [0.753,1.278]
Marital status				
Married				
Living with partner				1.250* [1.010,1.547]
Region				
North Central				
North East				1.625*** [1.218,2.169]
North West				0.341*** [0.251,0.462]
South East				0.902 [0.662,1.229]
South South				0.631** [0.475,0.839]
South West				0.745* [0.563,0.985]
Respondent's employment status				
Unemployed (ref)				

Employed				1.134* [1.020,1.261]
Religion				
Christian				
Islam				0.709*** [0.604,0.832]
Others				1.297 [0.925,1.819]
Duration of living together				
less than 10 years				
10-19 years				1.144* [1.016,1.289]
More than 20 years				1.083 [0.901,1.303]
Wife is involved in household decision making*				1.180** [1.057,1.318]
Husband exhibits at least 1 controlling behaviors*				4.001*** [3.583,4.467]
Husband drinks alcohol*				1.994*** [1.781,2.233]
Ever experienced physical violence*				1.955*** [1.755,2.178]
Witnessed father beat mother in childhood*				1.871*** [1.646,2.125]
Log likelihood	-8647.53	-8689.43	-8581.97	-7786.74
AIC	17305.06	17386.86	17179.94	15639.48

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Adjusted also for wealth status, area of residence, respondent's use of substance, and spousal educational difference, though not significant

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4.7.6 Regression Models Diagnostic Assessment of Best Fit

The five logistic regression models were assessed for best fit for each form of the outcome IPV (Table 10) using the log likelihood and the Aikaike Information Criteria (AIC). The AIC and log likelihood in Model 4 were the lowest for both life-time IPV (-8371.46 and 16812.93) and current IPV (-7786.74 and 15639.48) respectively. However, comparing the models between the two outcomes, the measures of goodness of fit were much lower for current IPV than for life-time. These figures suggest that the model fit for current IPV outcome was better than for the life-time. Also for each outcome, the model adjusting for all control variables (Model 4) had the best fit.

Table 12: Model Fit Diagnostics

Life-time IPV					
	Null model	Model 1	Model 2	Model 3	Model 4
Log likelihood	-9495.82	-9402.47	-9474.18	-9338.23	-8371.46
AIC	18995.64	18814.94	18956.35	18692.46	16812.93
Current IPV					
Log likelihood	-8716.08	-8647.53	-8689.43	-8581.97	-7786.74
AIC	17436.16	17305.06	17386.86	17179.94	15639.48

CHAPTER FIVE

5 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Sociodemographic Characteristics of Respondents and Intimate Partner Violence

This study aimed to understand the interactions between community-level female acceptability of wife beating and community and individual-levels female educational attainment in the risk of IPV among married women in Nigeria.

The study found that about one-fifth and a quarter of the married women of reproductive age in Nigeria had experienced IPV currently and in their life time respectively. In this study, the highest prevalence of IPV occurred among the age-group of 30-39 years and reduced at older age-group (40-49 years). This pattern is similar to the estimate by WHO that IPV occurs most at the peak of the reproductive age group (World Health Organization, 2013). This might be explained by this study's finding that couples who lived together for longer periods tend to experience IPV more than those with less duration. An older married woman would be expected to have been in marriage longer than the younger counterpart. Therefore, it is probable that with increasing marriage duration, conflicts arise between couples more than in the earlier days of living together.

The findings from the community level random effects variances from the null model in the random -effect variances table is an indication the risk of IPV measured at the individual level varied from one community to another. This affirms and justifies the use of random intercept models or multi-level modelling for this study. The unadjusted ICC accounted for about 40% of the total variation in IPV which can be explained at the community level. However, the adjusted ICC, which was reduced and accounted for one-fifth of the total variation in IPV, suggests that IPV can still be explained at the community level, while keeping other independent variables constant. Antai and Adaji also found a similar amount of

explained variation in IPV in a study of pregnant women in the Nigerian population (Antai and Adaji, 2012).

5.1.2 Variation in the Prevalence of Intimate Partner Violence among Married Women Across The Regions of Nigeria

It was found that variation exists in the prevalence of any form of IPV across the six geo-political regions of the country. Women living in the North-East region had the highest proportion of IPV experience, while women in the North-West had the lowest.

This finding is striking considering these two regions came from the North, a Muslim dominated part of Nigeria. However, investigation of the demographic structure of the country reveals that all the seven States in the North-West region (where the study shows the smallest prevalence of IPV) have Sharia Law, an Islam religion-based judicial system, fully implemented, compared to the States in the North-East region where only four out of the six States constituting the region operate the Sharia law along with the constitutional law of the country. However, these four Sharia states in the North East region only implement Sharia at a level that only affects personal status (such as marriage/divorce or adoption issues), and not to the full extent of criminal law or prosecution.

According to Nmehielle (Nmehielle, 2004), the "Islamic legal system affects all aspects of a person's conduct". This might therefore explain why the strictly Sharia-practicing North-West region appears to have the lowest prevalence of IPV and also show the lowest risk of IPV. This finding corroborates the findings by Linos et al who reported a lower likelihood of spousal violence among women living Sharia states in Nigeria. (Linos et al., 2013). Other possible reason for this finding is the presence of Boko-Haram, an Islamic sect which has

been terrorising the North-East region for about 5 years, which has the tendency to promote disharmony in the region, even among intimate partners.

5.1.3 Influence of Individual-Level Female Education on Risk of IPV

The study found that both individual and community-level female education were independent predictors of any form of IPV. At the individual level, female education had a non-linear effect on IPV as the risk of IPV appeared to increase with increasing years of education until a point, likely corresponding to above secondary education, when the risk begins to decline significantly. The prevalence of IPV among women with tertiary level education was lower than those for primary and secondary education, being only higher than for the no education group.

This non-linearity of individual education effect suggests that women with no education are more protected than women having any form of education, while those with more complete education (greater than secondary education) are less at risk of IPV than those with just some form of education (but not having full education). Boyle et al(Boyle et al., 2009) also observed a non-linear effect of individual level education in their study, however the effect was generally protective as the odds for IPV was significantly less than the null-value of 1 even for the quadratic term for education in years; although (in a pattern reminiscent for this present study) the protective effect of individual level was found to be less at some higher levels of education (Boyle et al., 2009).

Antai and Adaji reported that women with primary education were less likely to report any form of IPV than those with higher levels of education(Antai and Adaji, 2012). However, because of their categorization of the education variable a possible non-linear effect as

observed in this study could have been missed. Apart from this explanation, some studies (Antai, 2011, Okenwa et al., 2009)which also supported this reverse effect of education have only attributed it to underreporting of IPV rather than a true effect of education on IPV. Adjusting for other variables in the study only reduced the magnitude of the observed effect of individual-level education on IPV but did not obliterate it. The reduction in this effect could largely be due to the effect of wealth status which was found to be strongly correlated with female education (see correlation matrix table in appendix). A similar confounding effect of wealth on the association between female education and IPV was found in the Indian population (Boyle et al., 2009).

5.1.4 Influence of Community-Level Female Education on Risk of IPV

This study found that community-level female education was a positive independent predictor of any form of IPV. As mean community education increased the risk of IPV also increased significantly. This outcome is similar to the findings of Antai that living in Nigeria communities with increased mean education significantly increased the risk of IPV.(Antai and Adaji, 2012). This is, however, in sharp contrast to the finding in the Indian population that neighbourhoods with higher literacy levels were less likely to report IPV compared with less literate neighbourhoods(Ackerson et al., 2008). This may be due to the suggestion that Nigerian women with lower education tend to underreport IPV due to cultural beliefs and adherence to prevailing gender norms (Okenwa et al., 2009, Antai, 2011) therefore appearing as if lower education is protective and thereby distorting the true association between IPV and community-level female education aggregated from individual women's education.

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5.1.5 Influence of Community- and Individual-Level Women's Acceptability of Wife Beating on Risk of IPV.

The study also found that both individual and community-level acceptability of wife beating were strongly significant positive predictors of IPV experience among married women. However the effect of community level education on IPV was markedly stronger than that of the individual level. Remarkably, after adjusting for other control variables in the study, the individual level effect disappeared while the community level effect became even stronger. This is in consonant with other studies who have reported a strong effect of community-level attitude to wife-beating on IPV (Linos et al., 2013, Koenig et al., 2006, Uthman et al., 2009a, Uthman et al., 2011). However, while Rani explained the relationship between acceptability of wife beating and IPV as premised on the perceived transgression of gender roles (Rani et al., 2004), it appears there may be other mechanisms by which acceptability of wife beating and IPV are related. The finding in this study that despite controlling for factors which may be related to transgression of perceived gender roles, such as presence of controlling behaviour by the husband and involvement in household decision making by the women, and even individual level acceptability of wife-beating, community level variables not only remained important but actually increased in effect magnitude. This shows the relative and absolute importance of community-level attitude to wife-beating, in relation to the individual level factor and as a factor in the overall web of causation for IPV. It also highlights one of the strongest factors to be considered in the attempts to reduce IPV among married women, especially as this variable has being positioned at the societal level in the socio-ecological framework for violence (Heise, 1998).

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5.1.6 Influence of Community-Level Women's Acceptability of Wife Beating on the Relationship between Individual Female Educational Attainment and Intimate Partner Violence

The study found that there was a significant interaction between community-level acceptability of wife beating and individual female education only for life-time IPV. The interaction suggests that the risk of IPV is increased when a woman with higher level of education lives in communities more tolerant of wife-beating. Even after adjusting for potential confounding variables, this interaction effect remained significant. This is very remarkable considering that significant statistical interactions are often difficult to obtain because many data lack the statistical power to achieve such significant difference. For instance, Linos et al failed to achieve any significant cross-level interactions in their study (Linos et al., 2013). However, in similar finding to this study, Boyle et al also reported a significant cross-level interaction between these two variables with similar conclusions that the observed protective effect of individual education in their study was muted by living in communities more tolerant of wife-beating. More importantly, in testing for this interaction, this present study took account of variables which have local importance in the context of the Nigerian data, especially husband exhibiting controlling behaviour and spousal alcohol consumption which were independent predictors of IPV in this study. Such variables were not taken into account in the Boyles' Indian study.

5.1.7 Other Significant Findings

The study further found other significant predictors which increase the risk of IPV. being employed, having a husband that is less educated, and longer duration of living together, wife being involved in decision making, husband exhibiting controlling behaviour or drinking alcohol, experience of physical violence and witnessing father beat mother in childhood. On

the other hand, younger age group (15-19), the Islam religion and living in a monogamous family setting were found to be significant and protective of IPV. These findings are in tandem with many studies on IPV (Antai, 2011, Antai and Adaji, 2012, Garcia-Moreno et al., 2006, Hindin et al., 2008, Igbokwe et al.).

The study found that women with more education that their husband were more at risk of IPV than those who had less or same education than their husband. It is notable that this pattern of association is similar to that shown in the Indian population where women having more education than their husbands were more likely to report both recent and lifetime IPV than those with equal levels of education with their husbands. (Ackerson et al., 2008). This was also supported in the study by Antai and Adaji (Antai and Adaji, 2012) that Nigerian women with more education than their spouse were more likely, compared to those with same educational attainment with their spouse, to have experienced sexual IPV.

5.1.8 Limitation

Firstly, the cross-sectional design of the study makes it difficult to ascribe causation effect due to challenges to ascertaining temporality of cause and effect. Longitudinal studies are usually better designed to overcome such challenges. However, the substantial magnitude of some observed effects can still even after controlling for potential confounding, such as that seen for community-level acceptability of wife-beating, makes such findings important when considering factors to be taken seriously in intervention programmes. Secondly, there might be residual confounding because of variables which were not measured (not available in the data) but could have been better controlled for. Still, it is unlikely that substantial effect, as described above, would be completely removed considering the magnitude even if such residual confounding is taken account of. Thirdly, the problem of under-reporting of IPV is a common problem in Nigeria because findings from IPV studies are prone to social-desirability bias.

5.1.9 Contribution to Knowledge and Policy Implications

The study has shown that there is remarkable variation in the prevalence of IPV across the regions of the country; it also partly explained the differences between the Northern regions by dissecting the form and degree of implementation of Sharia law in these states.

The study found that some education is not enough to protect against IPV but a higher level of education is required to reduce the risk of IPV. The implication for policy could be that it is not sufficient to give basic education to women, but that full female education should be advocated in order to reduce the risk of IPV among married women.

The study found remarkably that while individual level acceptability of wife-beating receded in significance after making some factors constant, community level acceptability of wife-beating increased in importance. Although, studies generally have shown the importance of this variable at the individual and higher levels, this study furthermore shows the uniqueness of the effect of the community-level factor above the individual level

This study further contributes to knowledge additional evidence of the importance of the relationship between education at the individual level and acceptability of wife-beating at a higher level in the risk of IPV.

5.2 Conclusions

IPV continues to be an important public health menace. The fact that women are more vulnerable suggests the necessity to strive to understand factors and interacting factors most likely to affect women not only at the individual level, but also at the contextual levels. This is more so as IPV is a problem of social context.

Prevalence of IPV among Nigerian married women: the prevalence of IPV varies appreciably across the regions of the country. There appears to be a correlation between the

prevalence of IPV and the existence, or level, of implementation of Sharia in the States as there was evidence of relatively lower prevalence of IPV in Sharia states compared to more secular States.

Influence of community- and individual-level women's acceptability of wife beating on the experience of IPV: Both individual and community-level acceptability of wife beating had strongly significant effect on IPV experience among married women with a positive association. However the effect of community level education on IPV was markedly stronger than that of the individual level.

Influence of community- and individual-level female educational attainment on the experience of IPV: Both individual and community-level female education had independent effect on all forms of IPV. Women with no education appears to be more protected than women having any form of education, while those with more complete education (greater than secondary education) are less at risk of IPV than those with just some form of education (but not having full education). Mean community education increased the risk of IPV significantly.

Influence of community- and individual-level female educational attainment on the experience of IPV: There was evidence of significant statistical interaction between community-level acceptability of wife beating and individual female education only for life-time IPV, suggesting that the risk of IPV is increased when a woman with higher level of education lives in communities more tolerant of wife-beating.

5.3. Recommendations

There should be special focus on regions where the prevalence is high should be encouraged with implementation of appropriate culturally and geopolitically sensitive programs to deal with the scourge.

Full female education may be the necessary target of development goals, rather than simply achieving basic female education, as higher education appears to be more protective of IPV than just having primary or secondary education.

Although enabling women to get full education has desirable effects, it is also very important that the environment in which the woman lives is suitably primed to protect her from IPV by reducing the tolerance of the community for wife-mistreatment.

Interventions should be aimed at both individual education and also the community to produce a synergistic effect of reducing risk of IPV.

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