

# What is the association between IPV and Fertility in Uganda?

Sasha Frade\*, Clifford Odimegwu

**Abstract:** IPV, which emanates as a severe consequence of gender inequality in society, is the most pervasive form of IPV as most cases of abuse is perpetrated by intimate partners and has major health consequences for women. Women with a history of abuse are also at increased risk of reproductive health outcomes; such as high parity, inconsistent and lower levels of contraceptive use, unintended pregnancies, and adverse pregnancy outcomes. Despite concerted efforts by African governments, fertility levels in the region remain high. Africa is the region that has been least responsive to family planning programmes. This study investigates the associations between IPV and fertility in Uganda, using the Ugandan Demographic and Health Survey of 2011. Adult women of reproductive ages (15-49) that were included in the domestic violence module of the individual recode, were included in this study. Univariate, bivariate analysis, and unadjusted and adjusted Poisson Regression models were conducted for children ever born and the different forms of IPV (emotional, physical and sexual), as well as the socio-demographic and women's empowerment variables. Both bivariate and multivariate analyses show a strong association between both these pervasive health problematics; and may therefore be one of the unexplained proximate determinants of persistently high fertility in countries such as Uganda. These results have important implications for understanding both the fertility transition in Uganda, but also for programmes and policies addressing unwanted pregnancies and unmet need for contraception that is driving fertility up, and IPV amongst women which we know from previous work has severe reproductive health outcomes but which we have now identified is a contributor to high fertility as well.

**Keywords:** Fertility, Children Ever Born, Intimate Partner Violence, Women's Empowerment, sub-Saharan Africa, Uganda

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## Background

The only region in the world to have not experienced an expected decline in fertility, in line with the postulates of the fertility transition, is sub-Saharan Africa (Dow, 1970; Caldwell et al., 1992; Ainsworth, 1996; Bongaarts et al., 2013). One of the key tenets of the demographic transition theory, and therefore the fertility transition, is that fertility rates would decrease as a repercussion of improving development levels. In sub-Saharan Africa, however, this has not been the case. In fact, several authors have found that in sub-regions where fertility declines have occurred, these have not been

correlated to development levels at all (Bongaarts et al., 1984; Sinding, 2009; Bongaarts et al., 2013).

Regional differences exist, however, and though in general western and eastern Africa have not experienced the envisioned decline in fertility; many countries in the southern part of Africa have (Ainsworth, 1996; Potts et al., 2001; Bongaarts, 2010; Shapiro et al., 2013). As such, numerous researchers have attempted to investigate the reasons and relationships between fertility and other socio-economic and demographic factors that could explain the lack of decline in fertility in the region. Though numerous studies have been conducted to understand the reasons why the transition

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has not materialised, findings and recommendations have not translated into visible declines over the past several decades (Goliber, 1985; Caldwell et al., 1990; Ainsworth, 1996; Sneeringer et al., 2009; Shapiro et al., 2013, amongst others).

In Uganda, specifically, fertility rates remain amongst the highest in the world. In Uganda, the total fertility rate (TFR) was 5.4 children per women in the last Demographic and Health Survey (DHS) (UBOS and ICF, 2017). Some studies have attempted to understand the persistently high fertility rates in Uganda (Ntozi and Odwee, 1995; Ntozi et al., 1997; Vavrus et al., 2003; Blacker et al., 2005; Nalwadda et al., 2010; Behrman, 2015), with differential and cumulatively inconclusive results. Despite concerted efforts by the government, fertility levels in Uganda remain high and the country has been one of the least responsive to family planning programmes (Ijaiya et al., 2009). As such, new and innovative investigations into the possible reasons for a lack of decline, and in some cases a stall, in fertility rates on the continent are needed.

Intimate Partner Violence (IPV) (or otherwise known as Domestic Violence (DV), which emanates as a severe consequence of gender inequality and a lack of women's empowerment in society, is the most pervasive form of Gender-Based Violence (GBV). Most cases of abuse are perpetrated by intimate partners. Women with a history of abuse are also at increased risk of reproductive health outcomes and other health consequences; such as high parity, inconsistent and lower levels of contraceptive use, unintended pregnancies, and adverse pregnancy outcomes (Nalwadda et al., 2010). A few studies have found links between IPV and unintended pregnancy, postulating that women in abusive relationships have a limited ability to control their fertility (Pallitto et al., 2005; Pallitto et al., 2004; Nalwadda et al., 2010). The more control a woman has over her reproductive health; the more likely she is to use contraceptives and therefore decrease the number of children ever born. Furthermore, the international community has now accepted the urgency of the matter, given the high levels of IPV around the world.

The UN Women Global Database on Violence against Women (2016) shows that lifetime physical and/or sexual violence occurs amongst 51%, and amongst 35% of women in the last 12 months (accessed 14 January 2018). These figures are around 15% higher than the average results found in a 10-country study done by the WHO on DV (WHO, 2012), and the most common perpetrator (as high as 9 in 10 cases) is the woman's

husband or partner. The effect of IPV on women's ability to control their fertility has not been widely investigated in sub-Saharan Africa, and may in fact be a contributing determinant to high fertility rates in the region.

According to Principle 4 of the International Conference on Population and Development (ICPD) Programme of Action (PoA): "Advancing gender equality and equity and the empowerment of women, and the elimination of all kinds of violence against women, and ensuring women's ability to control their own fertility, are cornerstones of population and development-related programmes..." (UNFPA, 1994). Furthermore, the Sustainable Development Goals (SDGs), the successor of the Millennium Development Goals (MDGs), has placed both issues of women's sexual and reproductive health (SDG 3.7) and gender inequality issues (SDG 5) on the global agenda. Although targets for both SDGs have been set, individual countries still need to find ways in which to meet their targets and investigate the relationships between many of these developmental factors; given the interrelated nature of key development and health issues (UNFPA, 1994).

Further, Odimegwu et al. (2015) proposed that IPV be considered as a new proximate determinant of fertility in sub-Saharan Africa, given its effect on fertility-related decisions. However, what the authors failed to do is to explain how this relationship occurs, and what factors may be contributing to this effect having included only 5 independent socio-demographic variables. Kalipeni (1995), Handwerker (1991) and Upadhyay et al. (2014), on the other hand, all find that one of the most important factors that could be attributed to declining fertility rates is the upliftment in the status of women, though neither author investigated this hypothesis further nor proposed ways in which women's empowerment could be affecting fertility rates.

Therefore, the aim of this paper is to introduce a possible link between women's empowerment and IPV with fertility, and to assess whether this relationship explains part of the persistently high fertility levels in Uganda. The hypothesis is that the women who experience IPV have lower women's empowerment, which in turn increases their fertility. Conceptually, this relationship between IPV and women's empowerment, with fertility levels (or in the case of this study, children ever born) hampers on women's ability to access contraception and other methods of pregnancy control, and negotiate fertility desires and preferences with their partners.

## Data and Methods

This study attempts to find whether there are associations between IPV and fertility, and investigate these findings in Uganda – a country with persistently high fertility rates as well as high rates of IPV. Adult women of reproductive ages (15-49) from the Ugandan Demographic and Health Survey of 2011, who were included in the domestic violence module of the individual recode, were included in this study with total sample size of 2056.

The DHS are nationally representative surveys conducted in over 85 middle and low-income countries around the world. For most countries, numerous DHS rounds have been conducted, and for Uganda the survey was conducted in 1989, 1995, 2000, and 2006. The 2011 UDHS is the last available survey conducted in the country. The DHS, in general, collects a high number of indicators on population, health and nutrition; and cover a broad array of topics including (but not limited to) family planning, fertility and fertility preferences, unmet need, and women's empowerment. Furthermore, the DHS includes a domestic violence module for several sub-Saharan African countries, including Uganda (UBOS & ICF, 2012).

The sampling frame used for the 2011 UDHS was selected using a two-stage process. The first stage selected 404 enumeration areas selected from a list of clusters that had been compiled for the 2009/10 National Household Survey. At the second stage, households within each cluster were purposively selected from a complete list of households – all households within the 404 enumeration areas were included in the 2011 UDHS. A representative sample of 10 086 households were included in the 2011 UDHS, and all women of reproductive age (15 to 49 years) who were permanent residents or visitors who slept in the household the night before were interviewed and included in the final dataset (UBOS & ICF, 2012).

Children ever born (CEB) was selected as the fertility outcome variable, and three forms of IPV (Emotional, Physical and Sexual) were the main independent variables. Socio-demographic and women's empowerment variables included in the analysis were highest educational level attained, employment status, type of place of residence, age at first cohabitation, household decision making, attitude to wife beating, number of dead children,

current type of contraceptive method, and ever had a stillbirth, miscarriage or abortion<sup>1</sup>. Given that women included in the domestic violence module were married or cohabiting, marital status was not included. Furthermore, due to a high correlation with CEB and age, women's age was another demographic characteristic not included in the analysis.

CEB is a measure of a woman's lifetime fertility at the time of the survey, and is a count variable calculated in the DHS using the answers of three questions, namely:

1. How many sons and daughters live with you?
2. How many sons and daughters are alive but do not live with you?
3. How many boys and girls have died?

The main independent outcome of interest in this paper was IPV. The variables for IPV come from a special module that is added onto the standard DHS questionnaire, and is known as the domestic violence module. This module contains several questions related to the topic of domestic violence. For this module, information was collected on violence experienced by the women by her partner since her 15th birthday, amongst others. Questions were asked about physical, sexual and emotional abuse experienced; although physical IPV was separated into less severe and more severe physical IPV (UBOS & ICF, 2012). For the purposes of this paper, the analyses combined both more and less severe physical IPV. For each of the IPV variables, if a woman had not experienced that form of violence it was coded as (0) [*reference category*] and if they had experienced it was coded as (1). The variables are calculated using the answers to the following questions:

1. *Physical Violence*: whether a woman had ever been kicked / dragged, strangled / burned, threatened with knife / gun / another weapon, pushed, shook, or had something thrown at them; slapped; punched; twisted / hair pulled by husband / partner
2. *Sexual Violence*: whether a woman had ever been forced to have sexual intercourse when she did not want to, been forced to perform other sexual acts that she did not want to, and / or have faced threats if sexual acts were not performed in a way that she did not want to by her husband / partner.

<sup>1</sup> Due to the illegal and, therefore, sensitive nature of abortion in Uganda this variable did not distinguish between stillbirths, miscarriages and abortions.

3. *Emotional Violence*: whether a woman had ever been humiliated in front of others, threatened to have someone she cares about harmed, and ever been insulted or made to feel bad about herself by the husband / partner.

The remaining independent variables appear in the table below (Table 1).

Univariate analysis conducted includes percentage distributions of CEB, each form of IPV and the remaining independent variables. Bivariate analysis includes cross-tabulations and chi-square tests to assess associations between the independent and dependent variables, as well as the overall mean CEB for those that experienced and did not experience each of the forms of IPV. The final part of the analysis was the unadjusted and adjusted Poisson Regression models, showing both coefficients and Incidence Risk Ratios (IRR) for CEB with the different forms of IPV, as well as the socio-demographic and women's empowerment variables. Poisson regression was used given that CEB is a count variable. The Pearson chi-square goodness of fit was used as the diagnostic test for all models (adjusted), and Stata version 14 was used for the analyses of the data.

## The Results

Figure 1 below shows that Uganda does indeed have high fertility as over a third of women have between 3 and 6 children, whereas almost one in five women have 7 or more children. Slightly less than one in five women of reproductive age had no children ever born, whilst almost one in four had between 1 and 2 children. Therefore, almost 60% of Ugandan women of reproductive age have 3 or more children born to them.

Around 43% of women of reproductive age in Uganda report having experienced emotional and physical IPV in their lifetime, whilst over a quarter of women of reproductive age in Uganda have experienced sexual IPV as well (figure 2).

Figure 3 below shows that women who have experienced any form of IPV in their lifetime have a higher mean number of children ever born than those that have not. Those who have experienced emotional IPV have an average of 4.66 children, compared to 3.85 children amongst those who have never experienced emotional IPV. Furthermore, women who have ever experienced physical IPV have an average of 4.62

**Table 1:** Independent variables included in the study

Name of Variable	Definition of Variable
Highest educational level	None (0) [ <i>reference category</i> ], Primary (1), Secondary (2), Higher than secondary (3)
Employment Status	Unemployed (0) [ <i>reference category</i> ], Employed (1)
Type of place of residence	Urban (1) [ <i>reference category</i> ], Rural (2)
Age at First Cohabitation	Below age 15 (1) [ <i>reference category</i> ], 15-19 (2), 20-24 (3), 25 years and above (4)
Wife's Decision-Making Involvement	Wife involved in Decision Making (either solely or partially) (1) [ <i>reference category</i> ], Wife not involved in Decision-Making at all (2) <i>Created using a composite index of 3 variables derived from the UDHS – women involved in decision-making for (a) visiting friends and family (b) large household purchases (c) decisions on own (woman's) health care. Women involved in any of these decisions were coded as 1, women involved in none of these decisions were coded as 2.</i>
Attitude to Wife-Beating	Wife beating is never justified (0) [ <i>reference category</i> ], Wife beating is sometimes justified (1), Don't know if Wife Beating is Justified (2) <i>Created using a composite index of 5 variables derived from the UDHS – women had to answer whether wife beating was justified in the following instances: if wife goes out without telling husband, if wife neglects the children, if wife argues with husband, if wife refuses to have sex with husband, and if wife burns food. If women answered no to all they were categorised as (0), if yes to any they were categorised as (1), and don't know to all they were categorised as (2)</i>
Number of Dead Children	No children dead / 0 (0) [ <i>reference category</i> ], 1-2 children dead (1), more than 2 children dead (2)
Current use of contraception	No Use of Any Method (0) [ <i>reference category</i> ], Modern Methods Used (1), Traditional Methods Used (2)
Ever had a pregnancy terminated	No (0) [ <i>reference category</i> ], yes (1)

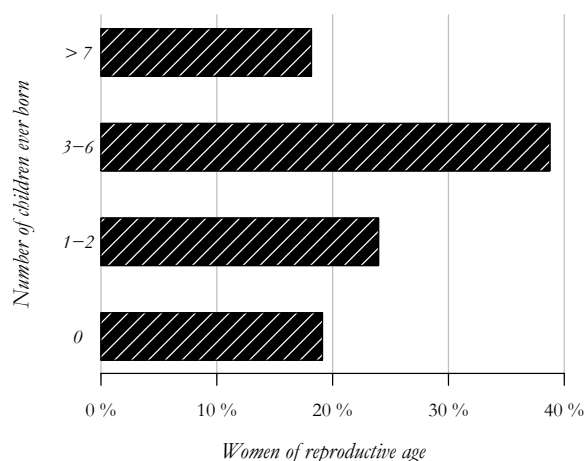
children, compared to 3.88 amongst those who have never experienced this form of IPV. Although the difference is far smaller, women who have ever experienced sexual IPV have an average of 4.51 children compared to 4.08 children amongst those who have never experienced sexual IPV.

Appendix I shows that 14% of women of reproductive age in Uganda have no education at all, and only a modest 5% have above secondary school education. Almost 60% have a primary school education level. This shows that women in Uganda of reproductive age still have very low levels of

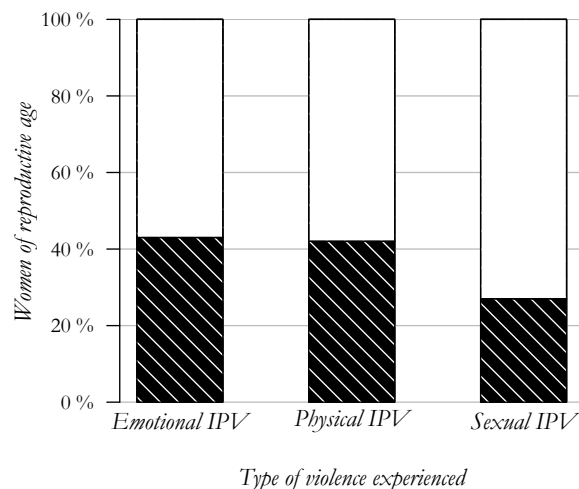
educational attainment. Although over two thirds (69%) of women of reproductive age stated that they were employed, half of whom stated they were employed in the agricultural sector (and of which the clear majority were classified as “self-employed”) and another 25% were in sales and services. Furthermore, Ugandan women of reproductive age are still largely living in rural areas, as only 18% of these women were living in urban areas in Uganda.

The lowest proportion of women were first married or cohabitating at age 25 years or older (4%) and just short of 20% were first married or cohabitating between the ages of 20 and 24 years. The remaining women of reproductive age were first married or cohabitating between the ages of 15 and 19 (59%) and below the age of 15 years (17%). Such low ages at first marriage or cohabitation are not conducive of women completing their education and enjoying higher levels of women’s empowerment. However, even though such a percentage of women of reproductive age reported extremely young age at first marriage or cohabitation – 80% of women stated that they were either solely or in part involved in key household decisions, and almost 40% of Ugandan women of reproductive age stated that it was never justified for a partner to beat his wife. However, almost 60% of women thought that it was sometimes justified if a husband or partner beat up his wife.

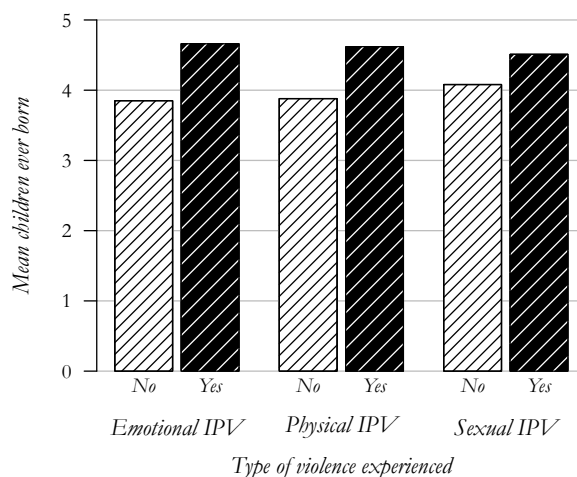
The three reproductive and maternal health outcomes included in the analysis were the number of children who had died, the current use of



**Figure 1:** Percentage Distribution of Children Ever Born amongst Ugandan Women of Reproductive Age [UDHS, 2011] (n=2056)



**Figure 2:** Percentage Distribution of women who experienced each form of IPV (Emotional (n=1704), Physical (n=1702), and Sexual (n=1701)) amongst Ugandan Women of Reproductive Age [UDHS, 2011]



**Figure 3:** Mean Children Ever Born for those who experienced, and did not experience, each form of IPV (Emotional, Physical, and Sexual) amongst Ugandan Women of Reproductive Age [UDHS, 2011]

contraceptives and whether the women had ever experienced a stillbirth / miscarriage / abortion. Almost 19% of Ugandan women of reproductive age had suffered the death of 1 child, whilst over 10% had suffered the death of 2 or more children. Furthermore, almost 21% of women stated that they had ever experienced a stillbirth / miscarriage / abortion. Surprisingly, given the high number of children ever born, over 70% of women were not currently on any form of contraceptive method, whilst 22% were on some form of modern method and over 2% were practicing traditional forms of contraception.

## The Relationship between IPV and Fertility

### Bivariate Results

The unadjusted model (Table 2) shows that CEB has a significant association with emotional IPV. Without considering the other socio-demographic, women's empowerment and reproductive health outcomes women who have ever experienced emotional IPV had 21% more children than women who had never experienced emotional IPV. The results of the adjusted models show that there is a significant associative relationship between CEB, and each of the forms of IPV, even when the effects of the socio-demographic and women's empowerment variables are included. The only factor that was not statistically significant in the unadjusted model was women's attitude to wife-beating.

### Multivariate Results

Three models are shown for the adjusted results, shown in Tables 3 to 5. The first adjusted model (Model 1) includes all independent factors, together with emotional IPV (Table 3). Tables 4 and 5 show Models 2 (physical IPV) and 3 (Sexual IPV), respectively. In the first adjusted model (Model 1), women who experienced emotional IPV had 12% more children than women who do not experience emotional IPV (Table 3).

Whilst the unadjusted model showed that women who had ever experienced physical IPV had 19% more children than women who had not experienced physical IPV (Table 2), this decreased (but remained significant) at 8% more children amongst women who had experienced physical IPV – controlling for other

key socio-demographic, women's empowerment and reproductive health outcomes (Model 2, Table 4).

The inclusion of other socio-demographic, women's empowerment and reproductive health outcomes in the model only affected the percentage contribution of sexual IPV to CEB moderately. Whilst in the adjusted model, women who had ever experienced sexual IPV had 11% more children than women who had never experienced sexual IPV (Appendix II), whilst in the adjusted model this figure was 7% (Model 3, Table 5).

## The Moderating Effects of Socio-Demographic, Women's Empowerment and Reproductive Health Outcomes on the IPV and Fertility Relationship

In this study, the results of the unadjusted and the adjusted models showed that with each increase in educational level attained, there was a commensurate decline in CEB. In the unadjusted model, women with a primary school level had 35% less children than women with no education, whilst women with a secondary and post-secondary level of education had 64% less children and 72% less children than women with no education, respectively. In the adjusted models, those with a primary school education had 18% less children, those with secondary school education had 35% less children, and those with more than secondary had 47-48% less children (47% for physical IPV, and 48% for emotional and sexual IPV) than women with no education (Tables 3-5). On the other hand, although in the unadjusted model those who stated that they were employed had 41% more children than women who were not employed, employment status in the adjusted models was no longer a significant factor.

A large percentage of Ugandan women of reproductive age live in rural areas. In the unadjusted model, women living in rural areas had 57% more children than women living in urban areas. However, after controlling for IPV and other key variables – this percentage decreased to 13% in Model 1 (Table 3), and 14% in Models 2 and 3 (Tables 4 and 5, respectively), showing that the rural / urban effect, could be better explained by the interaction of other key socio-demographic, women's empowerment and reproductive health outcomes.

The younger the age at first cohabitation, the higher the percentage contribution of CEB. In the unadjusted

**Table 2:** Results of the Unadjusted Poisson Regression Model, with each form of IPV, the Socio-Demographic and Women's Empowerment Variables amongst Ugandan Women of Reproductive Age [UDHS, 2011]

CEB (Outcome)	Unadjusted				
	Coeff.	95% CI	IRR	95% CI	P-Value
<b>Emotional IPV</b>	0.19	0.12 – 0.26	1.21	1.12 – 1.30	0.00
<b>Physical IPV</b>	0.17	0.10 – 0.25	1.19	1.10 – 1.28	0.00
<b>Sexual IPV</b>	0.10	0.02 – 0.18	1.11	1.02 – 1.20	0.01
<b>Highest Educational Level</b>					
Primary	-0.44	-0.52 – -0.35	0.65	0.60 – 0.70	0.00
Secondary	-1.02	-1.15 – -0.89	0.36	0.32 – 0.41	0.00
Higher than Secondary	-1.29	-1.57 – -1.01	0.28	0.21 – 0.37	0.00
<b>Employment Status</b>					
Employed	0.34	0.24 – 0.45	1.41	1.27 – 1.56	0.00
<b>Type of Place of Residence</b>					
Rural	0.45	0.34 – 0.56	1.57	1.41 – 1.75	0.00
<b>Age at First Cohabitation</b>					
15-19	-0.36	-0.44 – -0.28	0.70	0.65 – 0.76	0.00
20-24	-0.50	-0.61 – -0.38	0.61	0.54 – 0.68	0.00
>25	-0.49	-0.73 – -0.25	0.61	0.48 – 0.78	0.00
<b>Wife Involvement in Household Decision-Making</b>					
Wife Involved	0.26	0.14 – 0.39	1.30	1.15 – 1.47	0.00
<b>Attitude to Wife-Beating</b>					
Justified Sometimes	0.05	-0.04 – 0.13	1.05	0.96 – 1.14	0.28
Don't Know	-0.22	-0.52 – 0.07	0.80	0.60 – 1.07	0.14
<b>Number of Children Dead</b>					
1	0.74	0.66 – 0.82	2.10	1.94 – 2.26	0.00
>2	1.08	1.00 – 1.15	2.93	2.72 – 3.16	0.00
<b>Current Contraceptive Method</b>					
Traditional Method	0.36	0.17 – 0.54	1.43	1.19 – 1.72	0.00
Modern Method	0.22	0.13 – 0.30	1.24	1.14 – 1.36	0.00
<b>Ever Terminated Pregnancy</b>					
Yes	0.42	0.34 – 0.50	1.52	1.40 – 1.65	0.00

model, this was significant for all three age categories. Women who were first married or cohabitating at ages 15 to 19 years had 30% less children than women who first cohabitated or married below the age of 15. Women who first cohabitated at age 20 to 24 and 25 years and above, had 39% less children ever born. However, in the adjusted models the older age category was no longer significant (25 years and older), but in all three adjusted

models those who first married or cohabitated at age 15 to 19 years had 16% less children ever born, and those aged 20-24 years when they first married or cohabitated had 20% less children than women who married or cohabitated before the age of 15.

Surprisingly, however, the composite index of household decision-making showed that if women were solely or in part responsible for key decisions in

**Table 3:** Model 1 - Results of the Adjusted Poisson Regression Model, with Emotional IPV and the Socio-Demographic and Women's Empowerment Variables amongst Ugandan Women of Reproductive Age [UDHS, 2011]

CEB (Outcome)	Adjusted – Emotional IPV				
	Coeff.	95% CI	IRR	95% CI	P-Value
<b>Emotional IPV</b>	0.11	0.05 – 0.18	1.12	1.05 – 1.19	0.00
<b>Highest Educational Level</b>					
Primary	-0.20	-0.27 – -0.12	0.82	0.76 – 0.89	0.00
Secondary	-0.42	-0.55 – -0.30	0.65	0.58 – 0.74	0.00
Higher than Secondary	-0.66	-0.91 – -0.40	0.52	0.40 – 0.67	0.00
<b>Employment Status</b>					
Employed	0.03	-0.04 – 0.10	1.03	0.96 – 1.11	0.37
<b>Type of Place of Residence</b>					
Rural	0.13	0.02 – 0.23	1.13	1.02 – 1.25	0.02
<b>Age at First Cohabitation</b>					
15-19	-0.17	-0.24 – -0.10	0.84	0.78 – 0.90	0.00
20-24	-0.22	-0.32 – -0.13	0.80	0.73 – 0.88	0.00
>25	-0.19	-0.40 – 0.02	0.83	0.68 – 1.02	0.07
<b>Wife Involvement in Household Decision-Making</b>					
Wife Involved	0.19	0.11 – 0.28	1.21	1.11 – 1.33	0.00
<b>Attitude to Wife-Beating</b>					
Justified Sometimes	0.02	-0.04 – 0.09	1.02	0.96 – 1.09	0.48
Don't Know	-0.11	-0.31 – 0.10	0.90	0.73 – 1.10	0.31
<b>Number of Children Dead</b>					
1	0.38	0.31 – 0.45	1.46	1.36 – 1.56	0.00
>2	0.68	0.60 – 0.76	1.97	1.82 – 2.13	0.00
<b>Current Contraceptive Method</b>					
Traditional Method	0.35	0.17 – 0.53	1.42	1.18 – 1.69	0.00
Modern Method	0.21	0.14 – 0.27	1.23	1.15 – 1.32	0.00
<b>Ever Terminated Pregnancy</b>					
Yes	0.13	0.06 – 0.20	1.14	1.06 – 1.22	0.00

the household (big household purchases, going to the clinic on their own, and visiting family and friends) increased the children ever born by 30% in the unadjusted model, and 21%-22% in the three adjusted models. However, this could be explained by the high cultural value placed on children in Uganda. This variable also has the limitation that this information is self-reported, and women may be over-stating their involvement in key household decisions.

Having had a child die, greatly increases the percentage of CEB. Those who had one child die had 2.1 times more children than women who had not experienced the death of a child, whilst those who had 2 or more children die had 2.93 times more children in the unadjusted model. In the adjusted models, however, though still high this decreased when controlling for

other key factors. Women who had experienced the death of one child had 42% (Model 1, Table 3), 43% (Model 2, Table 4), and 46% (Model 3, Table 5) more children than women who had not experienced the death of a child. Correspondingly, women who had experienced the death of 2 or more children had between 97% (Model 1, Table 3) and 2 times more children (Models 4 and 5) than women who had never experienced the death of a child. Similarly, having experienced a termination of pregnancy (stillbirth / miscarriage / abortion) increased the percentage of CEB by 52% in the unadjusted model, and by 14% (Model 1, Table 3) and 15% (Models 2 and 3, Tables 4 and 5) in the adjusted models.

At first, the results of current contraceptive method seem surprising, given that currently being on modern or traditional forms of contraceptive



**Table 4:** Model 2 - Results of the Adjusted Poisson Regression Model, with Physical IPV and the Socio-Demographic and Women's Empowerment Variables amongst Ugandan Women of Reproductive Age [UDHS, 2011]

	Adjusted – Physical IPV				
<b>CEB (Outcome)</b>	<b>Coeff.</b>	<b>95% CI</b>	<b>IRR</b>	<b>95% CI</b>	<b>P-Value</b>
<b>Physical IPV</b>	0.08	0.01 – 0.14	1.08	1.01 – 1.15	0.02
<b>Highest Educational Level</b>					
Primary	-0.19	-0.27 – -0.12	0.82	0.76 – 0.89	0.00
Secondary	-0.43	-0.55 – -0.31	0.65	0.58 – 0.74	0.00
Higher than Secondary	-0.64	-0.90 – -0.39	0.53	0.41 – 0.68	0.00
<b>Employment Status</b>					
Employed	0.03	-0.04 – 0.10	1.03	0.96 – 1.11	0.41
<b>Type of Place of Residence</b>					
Rural	0.13	0.03 – 0.23	1.14	1.03 – 1.26	0.01
<b>Age at First Cohabitation</b>					
15-19	-0.18	-0.25 – -0.11	0.84	0.78 – 0.90	0.00
20-24	-0.22	-0.32 – -0.12	0.80	0.73 – 0.88	0.00
>25	-0.19	-0.39 – 0.02	0.83	0.68 – 1.02	0.07
<b>Wife Involvement in Household Decision-Making</b>					
Wife Involved	0.20	0.11 – 0.28	1.22	1.11 – 1.33	0.00
<b>Attitude to Wife-Beating</b>					
Justified Sometimes	0.03	-0.03 – 0.09	1.03	0.97 – 1.10	0.36
Don't Know	-0.09	-0.29 – 0.11	0.91	0.75 – 1.12	0.37
<b>Number of Children Dead</b>					
1	0.38	0.31 – 0.45	1.46	1.36 – 1.57	0.00
>2	0.69	0.61 – 0.77	2.00	1.85 – 2.16	0.00
<b>Current Contraceptive Method</b>					
Traditional Method	0.36	0.18 – 0.54	1.43	1.19 – 1.71	0.00
Modern Method	0.21	0.14 – 0.28	1.24	1.15 – 1.32	0.00
<b>Ever Terminated Pregnancy</b>					
Yes	0.14	0.07 – 0.21	1.15	1.07 – 1.23	0.00

methods increases the percentage of CEB in both the unadjusted and adjusted models. In the unadjusted model, women on traditional methods have 43% more children and those on modern methods have 24% more children than those who are not on contraceptive methods. Further, these values remain unchanged in the all three of the adjusted models.

## Discussion and Conclusions

Authors have cumulatively not been able to fully explain why fertility rates in Uganda, despite numerous studies and efforts by government and international funders, remain high (Ntozi and Odwee, 1995; Ntozi et al., 1997; Vavrus et al., 2003; Blacker et al., 2005; Nalwadda et al., 2010; Behrman, 2015).

To understand high fertility in sub-Saharan Africa research has looked at the failure of family planning and unmet need for contraception – often leading to mixed results. These mixed results have been associated to the influence that determining factors have on the success or failure of family planning programmes, such as women's education, the cost of contraceptives, the cultural and historical influence of post-partum amenorrhea and breastfeeding, the level of unmet need for contraception, amongst others (Caldwell et al., 1987; Ezeh et al., 2009; Letamo et al., 2001; Mbacke, 1994; Wulifan et al., 2015).

However, the role that other determinants could have on the continuously high fertility rates in the region, have been overlooked, such as the influence of IPV. The results of this study show a strong association

**Table 5:** Model 3 - Results of the Adjusted Poisson Regression Model, with Sexual IPV and the Socio-Demographic and Women's Empowerment Variables amongst Ugandan Women of Reproductive Age [UDHS, 2011]

CEB (Outcome)	Adjusted – Sexual IPV				
	Coeff.	95% CI	IRR	95% CI	P-Value
<b>Sexual IPV</b>	0.06	0.00 – 0.13	1.07	0.99 – 1.14	0.05
<b>Highest Educational Level</b>					
Primary	-0.20	-0.28 – -0.12	0.82	0.76 – 0.88	0.00
Secondary	-0.44	-0.56 – -0.32	0.64	0.57 – 0.73	0.00
Higher than Secondary	-0.66	-0.91 – -0.41	0.52	0.40 – 0.66	0.00
<b>Employment Status</b>					
Employed	0.03	-0.05 – 0.10	1.03	0.96 – 1.10	0.47
<b>Type of Place of Residence</b>					
Rural	0.13	0.03 – 0.23	1.14	1.03 – 1.26	0.01
<b>Age at First Cohabitation</b>					
15-19	-0.17	-0.25 – -0.10	0.84	0.78 – 0.90	0.00
20-24	-0.22	-0.32 – -0.13	0.80	0.73 – 0.88	0.00
>25	-0.20	-0.40 – 0.01	0.82	0.67 – 1.01	0.06
<b>Wife Involvement in Household Decision-Making</b>					
Wife Involved	0.20	0.11 – 0.29	1.22	1.12 – 1.33	0.00
<b>Attitude to Wife-Beating</b>					
Justified Sometimes	0.03	-0.03 – 0.10	1.03	0.97 – 1.10	0.30
Don't Know	-0.09	-0.30 – 0.11	0.91	0.74 – 1.12	0.37
<b>Number of Children Dead</b>					
1	0.39	0.32 – 0.46	1.47	1.37 – 1.58	0.00
>2	0.69	0.61 – 0.77	2.00	1.85 – 2.16	0.00
<b>Current Contraceptive Method</b>					
Traditional Method	0.35	0.17 – 0.53	1.42	1.18 – 1.70	0.00
Modern Method	0.21	0.14 – 0.28	1.23	1.15 – 1.32	0.00
<b>Ever Terminated Pregnancy</b>					
Yes	0.14	0.07 – 0.21	1.15	1.07 – 1.23	0.00

between both these pervasive health challenges – IPV and fertility. IPV, therefore, is in fact one of the unexplained factors of persistently high fertility in countries such as Uganda. These results have important implications for understanding both the fertility transition in Uganda, but also for programmes and policies addressing unwanted pregnancies and unmet need for contraception that is driving fertility up. Furthermore, this has implications for the national and international community working to decrease levels of IPV amongst women, which we know from previous work has severe reproductive health outcomes but which we have now identified is a contributor to high fertility as well.

This study concurs with the study conducted by Odimegwu et al. (2015), that states that IPV should in

fact be included as a factor in explaining fertility in sub-Saharan Africa. However, what remains unclear is whether the effect of IPV is acting as a proximate determinant (as Odimegwu et al. (2015) state) or as a moderating one. This current study introduced key factors of women's empowerment and reproductive health outcomes that need to be included in the analysis of the relationship between IPV and fertility. This contributes to a very limited body of knowledge that exists on this relationship, but provides an expanded understanding of the reasons contributing to persistently high fertility rates in Uganda.

However, further research is required to identify the direct and indirect pathways in which IPV acts on these women empowerment and reproductive proximate determinants, and the total effect (indirect

and direct combined) that IPV has on fertility rates in Uganda. In addition to this, qualitative studies using both in-depth interviews and focus group discussions are needed at the local levels to understand the nature in which these relationships work and provide more detailed information of the experiences of women. Understanding the actual pathways in which this relationship works and the experience of women will better equip programme and policy people to develop solutions that are able to tackle the issues of IPV, high fertility levels, women's empowerment as well as reproductive health outcomes in a coherent and well-conceptualised model.

The two women's empowerment factors had differential and rather surprising results in this study, whilst involvement in household decision-making showed an increase in CEB, attitude to wife-beating was not significant. These results, however, could be explained by the high cultural value placed on children in Ugandan society. This could, in fact, dampen the effect of women's empowerment given that women feel a cultural obligation to bear children – even when more educated, living in urban areas, and having access to family planning programmes. Caldwell and colleagues (1992) and Bongaarts and colleagues (2013) have noted that African traditional society and religion are important factors for ancestry and descent, and that large families meant higher levels of land productivity in a system of land tenure. Furthermore, having access to family planning programmes may not be sufficient to decrease fertility levels and increase levels of unmet need for contraception. This is because of the reasons stated above, and furthermore, because commitment and promotion of the use of family planning programmes by politicians and key role players are weak.

This is because these stakeholders believe that there is culturally little demand for fertility control and do not want to be associated with a failure of promoting an institution that could be deemed as foreign to, or even anti-African. As such, innovative and culturally-specific family planning programmes need to be developed that address and speak to the needs and wants of women in Uganda. This is specifically given the results of current contraceptive methods found in this study. The fact that women who were on current contraceptive methods had more children ever born, shows that women in Uganda are not using contraceptives to delay first birth, but either to limit subsequent births or extend the birth interval between children. Although different to the models

proposed by the classic population and development model from the ICPD would still go a long way to decreasing fertility levels from their current levels. As such, family planning programmes also need to address differences between fertility delaying methods of contraception and contraceptive methods for those who want to stop child-bearing permanently (Caldwell et al., 1992; Bongaarts et al., 2013).

Furthermore, another argument put forward for the seemingly strange results regarding women's involvement in decision-making and children ever born, could be one that has been identified by Dodoo and van Landewijk (1996). These authors state family planning programmes often do not account for the cultural context, in which men play an important role in deciding on family planning use, and in some places, may even have more say than the woman in the relationship. In a study in Ghana, these authors found that if one were to include male perspectives on desired family size, and see these decisions as a couple rather than an individual decision made by women only, then unmet need in the country would decrease by 50%. The authors conclude that "the findings underscore the validity of an argument for including men in our attempts to understand and/or manage the dynamics of fertility behaviour and population growth in sub-Saharan Africa". In fact, these authors state that the notion of unmet need should incorporate both male and female reproductive preferences, or at least account for male influence in such decisions. This was a limitation of this study, in that the effect of cultural and/or male influences was not included in the analysis.

Such considerations of disagreement between the male and female partner in the union goes beyond simple decision-making, but encompasses concerns regarding power dynamics in making such decisions and which, in effect, extends to the concern regarding the role that IPV plays in increasing the levels of inconsistent contraceptive use, as well as unintended pregnancies (Kaye et al., 2005; Nalwadda et al., 2010). Potts and Marks (2001) show that there has been a slight increase in the concern of women's power (or lack thereof) in marriage and sexual relationships. They note that it is also often the case that it is impossible for most women in Africa to ask their partners to use a condom; which would ultimately lead to unprotected sex and increased risk of falling pregnant (Potts et al., 2001).

The same can be said over contraceptive use, and thus simply considering female's unmet need into family planning considerations is insufficient

to decrease fertility rates. Thus, there is a need to include power dynamics and experiences of IPV within the couple when establishing true unmet need for contraception, unintended pregnancies and therefore the number of children born in a household. This is especially true given the low rates of uptake of contraceptive use in many sub-Saharan African countries, and could be a reason for higher levels of fertility in the region.

Empowering women in general, and having programmes and policies that directly talk to the value and quality of children, increasing female education and behaviour change programmes that work around the issue of the value and respect of women in society may go a long way in not only decreasing the incidence of IPV but, therefore, decrease fertility overall. This would increase Uganda's opportunity to benefit from the demographic dividend and increase levels of development and economic growth.

This, however, needs to be complimented with children's health and immunisation programmes – to ensure that children survive, given that an increased number of children who have died dramatically increases the likelihood of having subsequent children.

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**Appendix I:** Distribution and Percentage of Ugandan Women of Reproductive Age, by socio-demographic and women's empowerment factors [UDHS, 2011] [*n*=2056]

	<b>n (weighted)</b>	<b>%</b>
<b>Highest Educational Level</b>		
No Education	293	14.12
Primary	1210	58.34
Secondary	460	22.17
Higher than Secondary	111	5.37
<b>Employment Status</b>		
Not Employed	638	30.76
Employed	1436	69.24
<b>Type of Place of Residence</b>		
Urban	382	18.43
Rural	1691	81.57
<b>Age at First Cohabitation</b>		
<15	293	16.89
15-19	1022	58.85
20-24	346	19.92
>25	75	4.34
<b>Wife Involvement in Household Decision-Making</b>		
Wife Not Involved	293	19.92
Wife Involved	1180	80.08
<b>Attitude to Wife-Beating</b>		
Never Justified	825	39.78
Justified Sometimes	1177	56.77
Don't Know	71	3.44
<b>Number of Children Dead</b>		
0	1478	71.26
1	386	18.63
>2	210	10.11
<b>Current Contraceptive Method</b>		
No Method	1564	75.44
Traditional Method	53	2.55
Modern Method	456	22.01
<b>Ever Terminated Pregnancy</b>		
No	1641	79.12
Yes	433	20.88