UNIVERSITY OF GHANA

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

HIV TESTING AMONG WOMEN WHO EXPERIENCE INTIMATE PARTNER VIOLENCE IN THE CENTRAL REGION OF GHANA

BY

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF PUBLIC HEALTH (MPH) DEGREE

OCTOBER, 2020

DECLARATION

I, Beatrice Adwoa Afari, hereby declare that this submission is my original research work towards the Master of Public Health Degree and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

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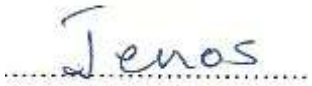
DR. JULIANA YARTEY ENOS  29th OCTOBER, 2021

(Supervisor) Signature Date

DEDICATION

I dedicate this project work to my lovely, supportive and caring husband Mr. Matthew Kwofie; my children; Ewuradjoa, Nana Kwame and Ewurama Kwofie; and my parents Mr. and Mrs. Doris Afari.

ACKNOWLEDGEMENTS

I give thanks to the almighty God, first and foremost, for enabling me to complete a Master of Public Health programme at the University of Ghana.

My profound gratitude and indebtedness go to my supervisor, Dr. Juliana Yartey Enos for her tremendous patience and guidance for the success of this project work. Her thoroughness in ensuring that I did the right thing with the necessary corrections, which were at times misconstrued as a "disturbance" are rare attributes of a good supervisor. I am forever grateful to her for taking the time, in spite of her busy schedule, to teach and explain issues to me in order to equip me with the fundamentals in public health research. I wish you and your family God's abundant blessings, Madam.

My appreciation to the World Health Organisation Human Reproduction Program (WHO/HRP) of the UNFPA-UNICEF-UNDP-WHO-World Bank Special Program for Research, Development and Research Training in Human Reproduction: for maximising the potential in me through their fully funded scholarship to support my Master of Public Health studies at the University of Ghana.

Finally, I express my heart felt gratitude to the director of the WHO/HRP Alliance University of Ghana Hub, who is also Head of the Population, Family and Reproductive Health Department, Prof Kwesi Torpey.

I duly acknowledge the support of Dr. Adom Manu, Dr. Odum Alangea, Dr. Emefa Mordey, Mr. Derrick Holdbrook and all other members of the secretariat of the WHO/HRP Alliance University of Ghana Hub.

ABSTRACT

Background: Intimate partner violence (IPV) increases the risk of HIV infection. Women are most vulnerable to both HIV and IPV. One of the main interventions to control HIV is testing, which enables infected individuals to receive treatment and improved outcomes. However, HIV testing has been lower than expected, globally. Understanding the factors associated with HIV testing especially among high risk populations such as women experiencing IPV is essential to designing targeted interventions to address them. The study sought to examine HIV testing and associated factors among women experiencing IPV.

Methods: Secondary data analysis of data generated from a cross-sectional mixed-method two arms unmatched cluster randomized controlled trial was done. The data related to four districts in the Central region of Ghana. The outcome of the study was HIV testing, with IPV, socio-demographic and sexual behavioural factors as exposure variables. Data analysis was performed using STATA IC version 16.

Results: The study showed significant association between HIV testing and IPV among women. The prevalence of HIV testing among IPV was 43.3% during lifetime, and 16.2% in past 12 months. About 50.4% of women reported lifetime experience of IPV. Prevalence of economic, emotional, physical and sexual IPV forms were estimated at 10.1%, 36.7%, 32.2% and 18.5% respectively. Factors associated with HIV testing among women experiencing IPV included living inland in coastal areas (AOR:0.51, 95% CI:0.37–0.69), living in community for 10-19 years (AOR: 0.66, 95% CI: 0.45–0.97), travelling for work (AOR:1.35, 95% CI:1.01–1.81) and having first sexual experience with a boyfriend (AOR: 0.41, 95% CI: 0.26 – 0.66).

Conclusion: HIV testing among women experiencing IPV was low. Considering the vulnerability of women experiencing IPV to HIV infection, integrating HIV testing into IPV support services is likely to facilitate early detection and entry to the HIV treatment cascade, which is essential to achieving HIV global goals and offers a unique opportunity to address these overlapping issues simultaneously

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LIST OF ABBREVIATIONS

HIV……	Human Immunodeficiency Virus
IPV……	Intimate Partner Violence
VAW……	Violence Against Women
WHO……	World Health Organization
SSA……	Sub-Saharan Africa
COMBAT……	Community-Based Action Teams
KEEA……	Komenda Edina Eguafo Abirem
GSS……	Ghana Statistical Services

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

Human Immunodeficiency Virus (HIV) continues to be a disease of public health importance with significant contributions from sub-Saharan Africa (SSA) (Meskele, Khuzwayo, & Taylor, 2019; WHO, 2004). More than half of the over 37 million people infected with HIV are women in their reproductive ages (Ahmed & Seid, 2020; Barnabas et al., 2020; Campbell et al., 2012; Drain et al., 2020; Stoicescu & Ameilia, 2019; WHO, 2004). HIV testing and screening services are crucial to the control of the infection globally, as it provides opportunity to treatment (Salima, Leah, & Stephen, 2018).

HIV testing forms a central component of the control efforts to reducing the prevalence of HIV and deaths due to HIV (Gyasi & Abass, 2018; Sambah et al., 2019; Zhang et al., 2020). It is important to improve testing rates in order to achieve set targets for the HIV epidemic control. About 20% of infected person with HIV remain unaware of their HIV status with disproportionate figures from low- and middle-income countries (KFF, 2020). Inadequate testing tends to mask the burden of HIV and contribute to the continuous spread of the virus especially among vulnerable groups including women experiencing IPV (Brima, Burns, Fakoya, Kargbo, & Conteh, 2015; Sileo et al., 2019).

Countries are expected to achieve set targets such as the agenda 90-90-90 (90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and 90% of all people receiving antiretroviral therapy will have viral suppression by the year 2020) which begins with diagnosis through testing services (Steiner et al., 2020). Efforts have been invested in knowing HIV statuses through testing programmes and introduction of treatment and preventive options (CDC, 2010; Haberland et al., 2020; Salima et al., 2018). Among the population at risk of sexually

transmitted infections such as HIV, women who experience IPV have been shown to be at higher risk (Mcclintock, Dulak, & Onah, 2020; Rigby & Johnson, 2017; Sileo, Kintu, & Kiene, 2019). HIV testing is thus, critical for early detection and prevention efforts among this population, which also serves to ensure they do not propagate the infection to others (Ante-Testard et al., 2020; Gyasi & Abass, 2018; Sambah et al., 2019).

One of the most common types of violence has been is intimate partner violence (IPV), with about three to four in ten women experiencing some form in their lifetime (Ahinkorah, Dickson, & Seidu, 2018; Breiding, 2014; Machisa, Christofides, & Jewkes, 2017; Sharma, Leight, Verani, & Tewolde, 2020). Intimate Partner Violence (IPV) against women includes physical, sexual and emotional abuse and controlling behaviours by an intimate partner (Durevall & Lindskog, 2015b; Kishor, 2015; Li et al., 2020; World Health Organization, 2012). IPV is among the structural barriers to achieving HIV related goals such as testing, treatment and adherence (Haberland et al., 2020).

There have been interventions to both improve HIV testing and address the incidence of IPV in the SSA as the determinants of HIV and IPV are closely interrelated (Sharma et al., 2020). One of such interventions is to provide support and counselling services to uphold women's dignity and rights in the provision of HIV testing services (Haberland et al., 2020). The integration of support services in the provision of HIV testing services will add to the combination prevention strategies that address the HIV epidemic and reduce the incidence of IPV (Kiene, Lule, Sileo, Silmi, & Wanyenze, 2017).

1.2 Problem statement

In Ghana, Asare, Yeboaa, & Dwumfour-Asare, (2020), found lifetime testing rate among young adults to be 45.5% with only 16.5% testing through campaigns although, more than 80% were aware of such campaigns and testing services. Djan, (2018), and Gyasi & Abass,

(2018) found the uptake of HIV testing to be 8% and 22% respectively. The testing rates from the studies are far below the 70% global estimate of those who are aware of their HIV status (Asare et al., 2020). The low uptake of testing services makes it difficult for the country to achieve the target of diagnosis at least 90% of people with HIV infection by the end of 2020 (WHO, 2017).

Women experiencing IPV, in addition to having increased risks of contracting the virus, may have challenges in accessing HIV testing and treatment services (Bernstein et al., 2016; Mcclintock et al., 2020; Shi, Kouyoumdjian, & Dushoff, 2013). The fear or perpetration of violence on women acts as barriers to utilizing testing services or disclosing their test results to their violent partners (Shamu, Zarowsky, Shefer, Temmerman, & Abrahams, 2014; WHO, 2004). This further leads to lower testing rates among women exposed to IPV (Haberland et al., 2020; Rigby & Johnson, 2017).

A comprehensive understanding of the factors associated with HIV testing among women who experience IPV is essential for guiding policies and targeted interventions to address the compounding effect of HIV and IPV among women (Arco et al., 2012; Steiner et al., 2020; Yawson, Dako-gyeke, Addo, Dornoo, & Addo, 2014; Zhang et al., 2020). This study therefore, seeks to determine the factors associated HIV testing among women who experience IPV in the Central region of Ghana.

1.3 Justification of the study

Globally, efforts have been made to end the HIV epidemic with some interventions targeting both HIV and IPV (Marshall, Fowler, Walters, & Doreson, 2018; Sharma et al., 2020). The relationship between IPV and HIV transmission and access to HIV services remain significant for discussion to find contextual ways of addressing the phenomena. There still

remains unexplored areas of the effect of IPV on HIV regarding aspects of social and demographic characteristics among other factors (Sharma et al., 2020).

This study will provide empirical evidence within the geographic as well as sociodemographic contexts to support the targeting of interventions to improve HIV control among women with focus on those who experience various forms and degrees of IPV. The findings will also be relevant to suggest ways of addressing the problem in other areas with similar characteristics as the study area and beyond. In addition, the study will also contribute to knowledge on the relationship between IPV and HIV testing as well as defining other avenues for future research, thus, contributing to literature on the influence of IPV on HIV outcomes, specifically in relation to testing.

This study is therefore, relevant to exploring the levels of HIV testing and associated factors among women who experience IPV to help address the problem of low testing using evidenced-based interventions through the study recommendations.

1.4 Research Questions

1. What is the prevalence of IPV among women?
2. What is the prevalence of HIV testing among women in the Central region of Ghana?
3. What are the characteristics of women who experience IPV?
4. What is the relationship between HIV testing and IPV among women?
5. What are the factors associated with HIV testing among women who experienced IPV?

1.5 Objectives of the study

1.5.1 General objective:

To examine HIV testing and associated factors among women who experience Intimate Partner Violence (IPV) in the Central region of Ghana.

1.5.2 Specific objectives:

1. To determine the prevalence of IPV among women.
2. To determine the prevalence of HIV testing among women who experience IPV in the Central Region of Ghana.
3. To describe characteristics of women who experience IPV.
4. To explore the relationship between HIV testing and IPV.
5. To identify factors associated with HIV testing among women who experience any form of IPV.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature based on the study objectives. The review covers HIV testing, highlighting the prevalence and the associated factors. It continues with the prevalence of IPV and follows with the associated factors to IPV. The review includes a presentation of literature on the factors associated with HIV testing among women who experience IPV.

2.2 Prevalence of HIV testing

HIV testing is crucial in the HIV/AIDS control programme and an effective intervention known to reduce deaths due to AIDS by ensuring infected persons are treated promptly (Gyasi & Abass, 2018; Sambah et al., 2019; Yawson et al., 2014; Zhang et al., 2020). It is a critical component of the framework for care, providing a cost effective entry point to reduce HIV transmission (Ante-Testard et al., 2020; Kirakoya-Samadoulougou, Jean, & Maheu-giroux, 2017; Pottie et al., 2014). Many HIV infected sexually active individuals who remain unaware of their status contribute to the spread of the virus globally (Brima et al., 2015). Ensuring adequate patronization of testing services in SSA goes a long way to control especially among women who are most vulnerable (Osei-Yeboah et al., 2019; WHO, 2004).

The levels of HIV testing general, have been low and may differ based on the location of people among other characteristics. A study on the factors affecting the attitude of young people towards HIV testing uptake in Ghana (Techiman north) showed an 8% utilization rate among its respondents (Djan, 2018). Djan, (2018), indicated that, this was higher than the national prevalence of 0.36% at the time. Gyasi & Abass, (2018), also identified a 22%

utilization rate of HIV testing uptake with women utilizing testing services that men. A similar study found the overall testing rate to be 45.5% but with more men testing in this study than women (Asare et al., 2020). The differences in the HIV testing uptake in Ghana may result from the different settings and other contextual factors as well as population used in the studies.

These Ghanaian findings were lower than the 53% of HIV testing levels within the past 12 months reported from a study conducted in Uganda (Wandera, Kwagala, & Maniragaba, 2020). In Burkina Faso, about 36% of women had a lifetime prevalence of HIV testing (Kirakoya-Samadoulougou et al., 2017). In Zambia, overall HIV self-testing among a group of female sex workers was averaging about 80% (Chanda et al., 2017). In addition, a cross-sectional study on the predictors of HIV testing in SSA using DHS data from 2011 to 2013 for four countries showed an average of 36.5% (Asaolu, Gunn, Koss, Iwelunmor, & Ehiri, 2016). Asaolu et al., (2016), provided specifics for the four countries as Congo, 31.4%, Mozambique, 45.3%, Nigeria, 24.7% and 77.5% for Uganda.

The inadequate uptake of HIV testing services is a call for attention as the WHO recommends it as central to control efforts (Ante-Testard et al., 2020; Kosack, Shanks, Beelaert, & Benson, 2017; Sambah et al., 2019). The 90-90-90 target for instance, can only be achieved through an effective testing programme (Asare et al., 2020; Iddrisu et al., 2019). This notwithstanding, levels of testing in SSA have been improving with evident result on controlling the transmission of HIV (Somefun, Wandera, & Odimegwu, 2019). This has contributed to the reduction of new infections globally (Asaolu et al., 2016).

In Tanzania for instance, HIV testing uptake was noted to increase over time from 2003 to 2012 from 7% to 40% based on the country's HV/AIDS indicator survey (Mahande, Phimemon, & Ramadhani, 2016). There are still about some one in five infected persons

unaware of their status (KFF, 2020). It remains critical for the National HIV/AIDS Control Programme and related agencies to invest effortlessly in improving testing, counselling and screening services to achieve set targets especially among women who are at high risk due to multiple structural and socio-cultural factors (Ali et al., 2019; Kasymova, 2020; Nketiah-Amponsah, Cudjoe, & Ampaw, 2019).

2.3 Factors associated with HIV testing

Several factors interplay to influence the utilization of HIV testing service especially among women in SSA. Iddrisu et al., (2019), reported that, higher education, younger age groups and knowledge of HIV were significant factors associated with HIV testing. Similarly, Djan, (2018), indicated that, having knowledge on HIV and place to access testing services as well as living in urban areas influenced HIV testing. The study on the acceptance and utilization of HIV testing among the youth by Asare et al., (2020), showed that, HIV testing was associated with age and marital status. These findings agree with earlier studies such as one by Tenkorang & Owusu, (2010) in Ghana that found knowledge, education, urban residence and marital status to be associated with HIV testing.

In Tanzania, younger age ranging between 20 to 24 years, level of education, having at least a sexual partner, ever being married and ever having a sexually transmitted infection were associated with HIV testing (Mahande et al., 2016). Ssebunya et al., (2018) found that, HIV testing increased with age. Also, they indicated higher educational level and sexual experience to be associated with HIV testing among Ugandan youth. These were congruent with the findings of Wandera et al., (2020), who added self-reported STIs and sexual activity as associated factors to HIV testing. These are consistent with the findings of Kasymova, (2020), from her study in Tajikistan, where age group of 25 to 34 years, education, marital status and knowledge on HV as well as previous pregnancy were among associated factors

that made women test for HIV. Also, HIV testing was common among those who were 25 – 44 years, urban residence, higher education among others factors including being a female (Brima et al., 2015).

Adequate comprehensive view of the HIV programme, the epidemiological patterns of HIV infection and the barriers to HIV testing may allow proactive approaches to improving testing among vulnerable groups including women to reduce the occuence of undiagnosed HIV infection (Arco et al., 2012; Steiner et al., 2020). In addition, structuring and targeting strategies such as ensuring avenues of increasing knowledge of women on HIV testing services and addressing other individual and contextual factors will improve HIV testing utilization (Brima et al., 2015; Kirakoya-Samadoulougou et al., 2017; Lakoh, Firima, Jiba, Sesay, & Conteh, 2019; Yawson et al., 2014; Zhang et al., 2020).

2.4 Burden of IPV

The double burden of HIV and IPV with their converging challenges have plagued SSA (Marshall et al., 2018; Rigby & Johnson, 2017). The occurrence of IPV in its various forms is widespread on a global scale regardless of political and social strength (Alangea et al., 2018; Kazaura, Ezekiel, & Chitama, 2016). It has negative physical, mental and reproductive consequences (Bernstein et al., 2016). IPV, the most common form of violence against women has been estimated globally to be averaging over 35% of women having a lifetime experience (Alangea et al., 2018; Amegbor, Yankey, Rosenberg, & Sabel, 2020; Memiah et al., 2018) with a range of 15% to 71% amongst women in developing countries (Chirwa et al., 2018; Dako-Gyeke et al., 2019; Field, Onah, Heyningen, & Honikman, 2018). Alebel et al., (2018), adds that, in SSA about 40% of women have reported IPV. The WHO Africa region has higher estimates of about 37% (Field et al., 2018; Mulrenan, Colombini, Howard, Kikuvi, & Mayhew, 2015).

Ghana among other sub-Saharan Africa countries have high IPV prevalence estimates (Chirwa et al., 2018). Salima et al., (2018) reported up to 44% of all forms of IPV among women and a 25.6% occurrence of physical IPV in Uganda. Similarly, Kabwama et al., (2019), reported that, 44.2% of Ugandan women in their study on intimate partner violence among HIV positive women had experienced IPV with 32.1% and 28.3% variations for physical and sexual forms respectively and these findings were similar to that of Gubi, Nansubuga, & Wandera, (2020), who found 41%, 40% and 23% of women experiencing physical, emotional and sexual IPV respectively.

In Kenya, Haberland et al., (2020) from their study on addressing intimate partner violence and power in intimate relationships in HIV testing services showed that about 35% of women reported experiencing IPV in the past year. He study of Kapiga et al., (2017), presented a higher prevalence of61% of women ever experiencing IPV. A systematic review of the implications of IPV for adolescents in Africa found varying proportions of the prevalence of IPV among African countries, ranging from about 26% to 48% with the average prevalence of IPV in a victim's lifetime being 25.7% (Roman & Frantz, 2013).

Among Ethiopian women, Meskele et al., (2019), reported a lifetime IPV prevalence of 59.7%, with 50.6%, 42.8% and 26.8% variations for emotional, physical and sexual IPV types respectively. Another study in Ethiopia found an overall prevalence of 26.1% with variations in the place of occurrence up to 35% (Alebel et al., 2018). Closely to these rates was the finding of Osinde, Kaye, & Kakaire, (2011), reporting lifetime prevalence in rural Uganda as 36.6%.

In Ghana, Alangea et al., (2018), through the study on the prevalence and risk factors of intimate partner violence in the central region reported a 34% lifetime prevalence of IPV among women respondents. A similar study using men as respondents showed that, about

50% had perpetrated at least on form of violence against their intimate female partners, with 41% being either sexual or physical (Chirwa et al., 2018).

Although, other estimates have indicated a 24% lifetime experience of IPV, it remains significantly high as in other SSA, and may suggest the influence of contextual factors at play in the occurrence of IPV (Amegbor et al., 2020). It is therefore, critical to target evidence-based multifaceted interventions to address the high prevalence of IPV in such low- and middle-income countries (Addo-Lartey et al., 2019; Alangea et al., 2018; Chirwa et al., 2018). These findings from SSA agree with levels of IPV in other regions and continents.

The National Intimate Partner and Sexual Violence Survey in the USA indicated about 35.6% of lifetime experience of intimate partner violence (CDC, 2010). Levels of IPV have been reported up to nearly 50% with variations in the levels of the specific forms of IPV (El-Bassel et al., 2007). For instance, rape a sexual form of IPV is reported to have been experienced by 19% of women in the USA. In disproportionate amounts, women more than men are victims of IPV with about 44% of women suffering other forms of sexual violence in the USA (Breiding, 2014).

Additionally, the prevalence of IPV was found to be 52% in a study on prevalence and associated factors of intimate partner violence in women living with HIV attending an inner city clinic with emotional abuse, physical abuse, and rape/sexual abuse accounting for 45%, 33% and 20% respectively in the United Kingdom (Dhairyawan, Tariq, Scourse, & Coyne, 2013). In a study conducted among students from twenty-two countries in Africa, Asia and the Americas, occurrence of IPV was about 16.3% and occurring more among women (17.2%) than the 15.4% in males (Pengpid & Peltzer, 2016). However, Jewkes et al., (2017),

reported higher lifetime IPV experiences for men (32.5% - 80%) than women (27.5% - 67.4%) in a study conducted in the Asia and the Pacific.

The findings of Jewkes et al., (2017), is one of the very few findings that showed higher prevalence of lifetime IPV experience amongst men, although there were variations when the specific IPV forms were assessed suggesting higher vulnerability of women. These findings are indicative of the strategic gender-based interventions, that need to be employed globally to reduce occurrences of IPV (Jewkes et al., 2017; Peltzer, Phaswana-mafuya, & Pengpid, 2017; Pengpid & Peltzer, 2016).

2.5 Factors associated with IPV

Understanding the risk factors to IPV is important to guide the development of programme interventions to address the growing public health phenomenon (Addo-Lartey et al., 2019). According to Alangea et al., (2018). Depression, disability, witnessing abuse of mother, childhood abuse experiences, previous multiple sexual partners as well as male partner alcohol use and male partner infidelity were associated factors to IPV in Ghana. Also Chirwa et al., (2018), identified among the male associated factors of IPV to include witnessing abuse of mother, multiple partners, involvement in transactional sex, substance abuse and gender inequitable attitudes.

Dako-Gyeke et al., (2019), indicate that, the associated factors to IPV especially as perpetrated by male partners were complex and contextual. They however, identified among others, the tendency of substance use increasing the occurrence of IPV as well as women's non-compliance with gender norms based on contextual factors. These were in agreement with the findings of Jewkes et al., (2017), from a study in Asia and the Pacific, where risk

factors to IPV included quarrelling and disagreements, partner factors such as substance use and infidelity, childhood traumatic experiences and poverty.

In South Africa, female who experience of IPV were influenced by childhood experience of violence, gender inequitable attitudes and alcohol use according to Shamu, Gevers, Mahlangu, Jama, & Chirwa, (2016). The study on the associations of emotional, physical or sexual IPV among South African women by Okafor et al., (2020), showed consistent findings as Shamu et al., (2016). Similar to these findings, Shamu, Shamu, & Machisa, (2019), identified gender inequitable norms, partner controlling behaviour, experiencing emotional abuse and having an STI to be associated with IPV in Zimbabwe.

The findings of Alebel et al., (2018), support those above by adding that, educational status, partner's alcohol use were significantly associated with IPV against women in Ethiopia and these were also identified by Meskele et al., (2019), also in Ethiopia. In addition to the factors above, early marriage and rural dwelling were identified in Ethiopia (Gebrezgi, Badi, Cherkose, & Weldehaweria, 2017). Ahinkorah et al., (2018) adds that, the odds of experiencing IPV was higher among women with decision making capacity but lower among young women and Muslims. Also, Ahinkorah et al., (2018) further reported that, male partners without education and low education among women were associated with IPV in SSA.

These findings are suggestive of the contribution of gender inequities, childhood socialization and socio-cultural underpinnings to the occurrence of IPV in SSA. It is important to prioritise the transformation of gender based roles as well as ensuring women empowerment to address aspects of IPV (Dako-Gyeke et al., 2019; Rachel Jewkes et al., 2017; Shamu et al., 2019). Prevention of the exposure of children to violence may also contribute to positive attitudes to reducing IPV (Chirwa et al., 2018; Shamu et al., 2016). In

addition, contextual factors associated with IPV should guide policy formulation and define systems for early detecting and handing IPV issues (Apiribu, Ncama, & Duma, 2020; Bernstein et al., 2016).

2.6 IPV and HIV infection among women

The relationship between IPV and HIV has been of a global concern and understanding the relations is critical for targeting interventions to address them (Campbell et al., 2012; Shi et al., 2013). Intimate partner violence is related to women's HIV-positive status when it is combined with male controlling behaviours as women experiencing IPV have increased risk for sexually transmitted infections including HIV (Durevall & Lindskog, 2015c, 2015a; Kishor, 2015; Mcclintock et al., 2020; Zablotska et al., 2009). This cements the relationship between IPV and HIV as both contribute to significant disparities in public health (Jewkes et al., 2006; Sabri et al., 2019).

Shi et al., (2013), in their study of intimate partner violence is associated with HIV infection in women, with a significant association ($p<0.01$) after controlling for confounders such as sociodemographic factors. Also, Silverman et al., (2008) in their study found that, HIV infection among married women who experience IPV was higher than those who did not. In Uganda, significant proportions of HIV positive women had suffered from IPV and this was up to 32.1% for physical violence and 44.2% for all forms of IPV. Rigby & Johnson, (2017), indicated from their model-based evaluation on the relationship between IPV and HIV that, the association was likely due to confounding behavioural factors.

2.6.1 The Conceptual framework

Women's HIV- positive status as a result of IPV could be linked to several hypothesis. For the purpose of this study, these would be grouped into four main transmission ways. These are illustrated in figure 1.

HIV could be directly transmitted from a male partner to a female partner who has been subjected to some form of IPV, either physical, sexual or emotional. IPV on women in turn affect their ability to negotiate for safe sex or have less bargaining power. For instance, the act of forced sex in the case of sexual violence does not allow room the woman to bargaining for safe sex (Durevall, D., & Lindskog, A., 2015c).

Secondly, the act of IPV could indirectly cause rebellious, separation and refuge seeking risky sexual behaviours such as infidelity or multiple sexual partners, transactional sex among others. These risky sexual behaviours increase exposure and the likelihood of being infected with sexually transmitted diseases such as HIV (Anderson et al., 2008 Jewkes, 2010).

However, these risky behaviours themselves could be reverse causal factors for IPV. For example, a woman engaged in infidelity or having multiple sexual partners is likely to be abused by the husband or other male partner (Kayibanda et al., 2012, Dunkle & Decker, 2013).

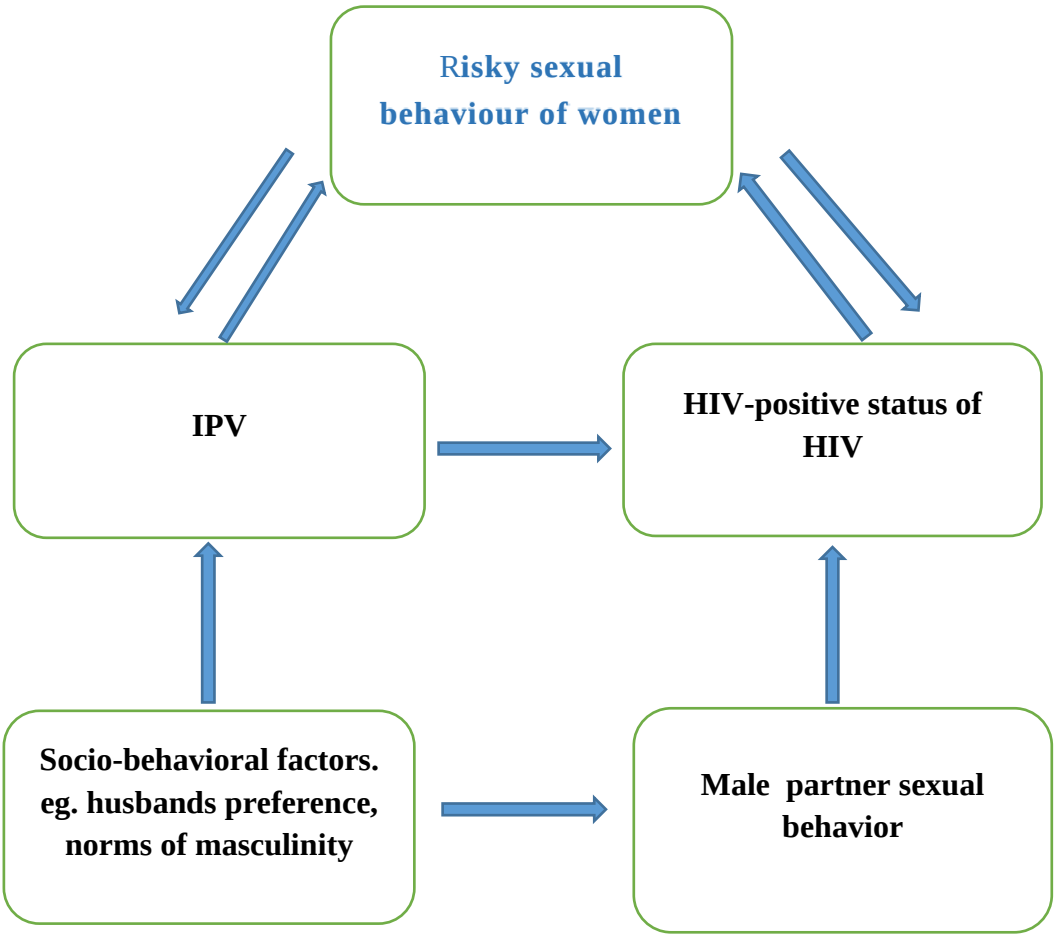

Figure 2.1: Hypothetical links between IPV and HIV-positive status of a woman

Nevertheless, the relationship between IPV and HIV could also be dependent on some socio-behavioural factors such as husband preference, norms of masculinity which influences behaviours like the use violence and other risky behaviours such as the use of or having sex under influence of alcohol, multiple sexual partners and other risk-taking sexual behaviours (Jewkes. 2010; Silverman, Gupta, & Raj, 2007).

They however added that, interventions that reduced IPV also reduced HIV incidence although, interventions should be integrated have adequate effect (Rigby & Johnson, 2017). There have also been indications of IPV following HIV infection and disclosure (Hardy, Antwi, Agbeno, & Yifieyeh, 2020; Mulrenan et al., 2015). According to Shamu, Zarowsky, Shefer, Temmerman, & Abrahams, (2014), HIV status was associated to IPV as about 40%

of women who disclosed their HIV positive status experienced some form of abuse. Hardy et al., (2020), found that post disclosure violence was up to 19.4% with the commonest form (80%) being psychological violence.

The psychological form of violence variates into emotional, spousal-related, social and sex-related and specifically include anger, frustration, use of abusive language, maltreatment, deny sex or forceful sex among others (Apiribu et al., 2020).. Post-disclosure violence was also found in Tanzania with about 85.3% of women who disclosed their status experiencing some form of IPV (Aloyce et al., 2020). With these occurrences, having an integrated programme to screen partner violence and providing need support is required into the policy and guideline of HIV care (Hardy et al., 2020).

2.7 Prevalence of HIV infection among women who experience IPV

The interrelation between IPV and HIV disproportionately affect SSA with one fuelling the other (Sabri et al., 2019; Shi et al., 2013). Shi et al., (2013), asserts that, several studies have shown the relationship between IPV and HIV with varying prevalence. According to Rigby & Johnson, (2017), IPV contributes to the higher risks of HIV incidence. In India, it was found that nearly 8% of married women who experienced physical and sexual forms of IPV had high prevalence of HIV than those not experiencing violence. Also, these women experiencing both physical and sexual IPV were about four times greater having HIV than their non-abused counterparts (Silverman et al., 2008).

In a cross-sectional DHS in ten African countries, it was found that women who reported of any IPV had between 14-16% of HIV infection (Durevall & Lindskog, 2015b). In Kenya, Haberland et al., (2020), reports a prevalence of 10% of HIV among women who experience IPV and this prevalence was higher than the 4% of those who did not experience any form

of IPV. Amongst women who reported IPV and those who did not report, the prevalence of HIV infection was about 16% and 10% respectively.

In a study on IPV and HIV status among ever-married and cohabiting Zimbabwean Women, it was found that 18.7% and 16.8% of those who experienced IPV and sexual forms of IPV respectively were HIV positive (Henderson, Zerai, & Morrow, 2017). Henderson et al., (2017), adds that 29% of women who experienced IPV tested positive for HIV as against 26% for who did not test positive. Furthermore, it was observed that nearly 17% of the women who experienced sexual IPV tested positive.

Another study in Zimbabwe reports that, of the 68 women reporting IPV after disclosing their HIV status to their partners, 22.1% of them tested positive (Shamu et al., 2014). The study further revealed that 19%, 12% and 10% the women who experienced one, two and three or more IPV tested positive for HIV respectively. In a cross-sectional study on IPV experienced by HIV-infected pregnant women in South Africa, Bernstein et al., (2016) report that 21% of the women in the study reported experiencing at least an act of IPV in the past 12 months.

2.8 Factors associated with HIV testing among women who experience IPV

The prevalence of IPV and HIV infection among women varies globally (Campbell et al., 2013; WHO, 2004). HIV testing is also associated with the exposure to IPV among women (Salima et al., 2018). It has been argued that "when women subjected to IPV are unable to protect themselves from unwanted sex, we would expect IPV to be positively associated with HIV among women whose husbands are HIV positive, since a violent HIV- infected husband is more likely to transmit the virus to his wife" (Durevall & Lindskog, 2015c).

It has been observed that physical and emotional violence are associated with higher HIV rates for women exposed to HIV in sub-Saharan Africa (Durevall & Lindskog, 2015c). Generally, IPV may undermine the uptake of HIV testing services by women (Haberland et al., 2020). This occurs as the various forms of violence act as barriers to women seeking HIV testing services (WHO, 2004). Women may find it difficult asking for money or permission from their violent partners to seek for services. With IPV known as a common incidence among women utilizing antenatal service, loss of interest due to violence may negatively affect the utilization of HIV testing services which are usually provided as part of antenatal care (Makayoto, Omolo, Kamweya, Harder, & Mutai, 2014).

Women experiencing IPV tend to reduce efforts in seeking care and adhering to HIV services which may include testing options and these may be influenced by inadequate support systems in health care for women experiencing various forms and degrees of IPV (Haberland et al., 2020). Thus, inadequacy in the health system to provide holistic care including testing service also affecting testing options of women experiencing IPV (Yawson et al., 2014).

Generally, associated factors with HIV testing may largely apply to women experiencing IPV and understanding their relationship is crucial (Salima et al., 2018). HIV testing among women have been influenced by age, living in an urban area and having higher education levels (Brima et al., 2015). Kasymova, (2020), reports among women in their reproductive age that, age, having HIV knowledge, marital status, level of education and place of residence were predictors of HV testing uptake with the strongest predictor being pregnancy history.

These notwithstanding, Salima et al., (2018), identified higher testing rates among Ugandan women who experienced IPV and these were associated with younger age groups, living in

urban centres, and having access to information through newspapers or radio. This agrees with the assertion found by Logie et al., (2016), that HIV testing was associated with perceived risks, depression, forms of abuse, stigma and having a healthcare provider. Providing interventions to support, counselling and information are important in addressing the violence by victims (Diez et al., 2009; Fanta & Worku, 2012; Haberland et al., 2020). This is indicative that, awareness of the risks of HIV through access to information and other contextual factors influenced testing among the women (Salima et al., 2018; Veloso et al., 2008). Opportunities for self-testing such as, employing single rapid diagnostic test-kits may increase HIV testing practices among women especially those who are victims of IPV (Chanda et al., 2017; Eaton et al., 2019).

CHAPTER 3

3.0 METHODOLOGY

3.1 Introduction

This chapter describes the various methods and processes of the study. It describes in detail, the study design, study area and target population, inclusion and exclusion criteria for selection of respondents for the study. The study variables - both dependent and independent variables, sample size determination and sampling procedure, data collection methods and quality control assurance, as well as statistical analysis, study limitations and ethical considerations.

3.2 Study design

This study is a cross-sectional study using secondary data from a community survey carried out in four districts (two inland and two coastal districts) in the Central Region on Rural response system to prevent violence against women (VAW): the trial assessed the community level impact of the Rural Response System which used a Community-Based Action Teams 'COMBAT' in preventing VAW in Ghana. The baseline data from the original study which was designed as a mixed-method two arms unmatched cluster randomized controlled trial was used. Addo-Lartey et al. (2019) describe in detail the study design of the original study.

3.3 Study Area

The original study was undertaken in four districts of the Central region of Ghana. The Central region covers 6.6% of Ghana's total land size representing 9,826 square kilometers with about two-thirds (63%) being rural areas (Ghana Statistical Service (GSS), 2012). The region is boarded by the Western, Ashanti, Eastern and Greater Accra regions and the Gulf

of Guinea. The 2010 census survey estimate over 2.2 million population with an intercensal growth rate of 3.1% in the Central region (Ghana Statistical Service (GSS), 2012).

The four districts selected for the study were Upper Denkyira, Agona, Abura-Asebu-Kwamankese and Komenda-Edina-Egyafo-Abirem municipal districts. Upper Denkyira and Agona districts were the inland districts of the regions whilst Abura-Asebu-Kwamankese and Komenda-Edina-Egyafo-Abirem (KEEA) municipal were from the coastal areas of the region. The most spoken dialects in these districts were Fante and Twi.

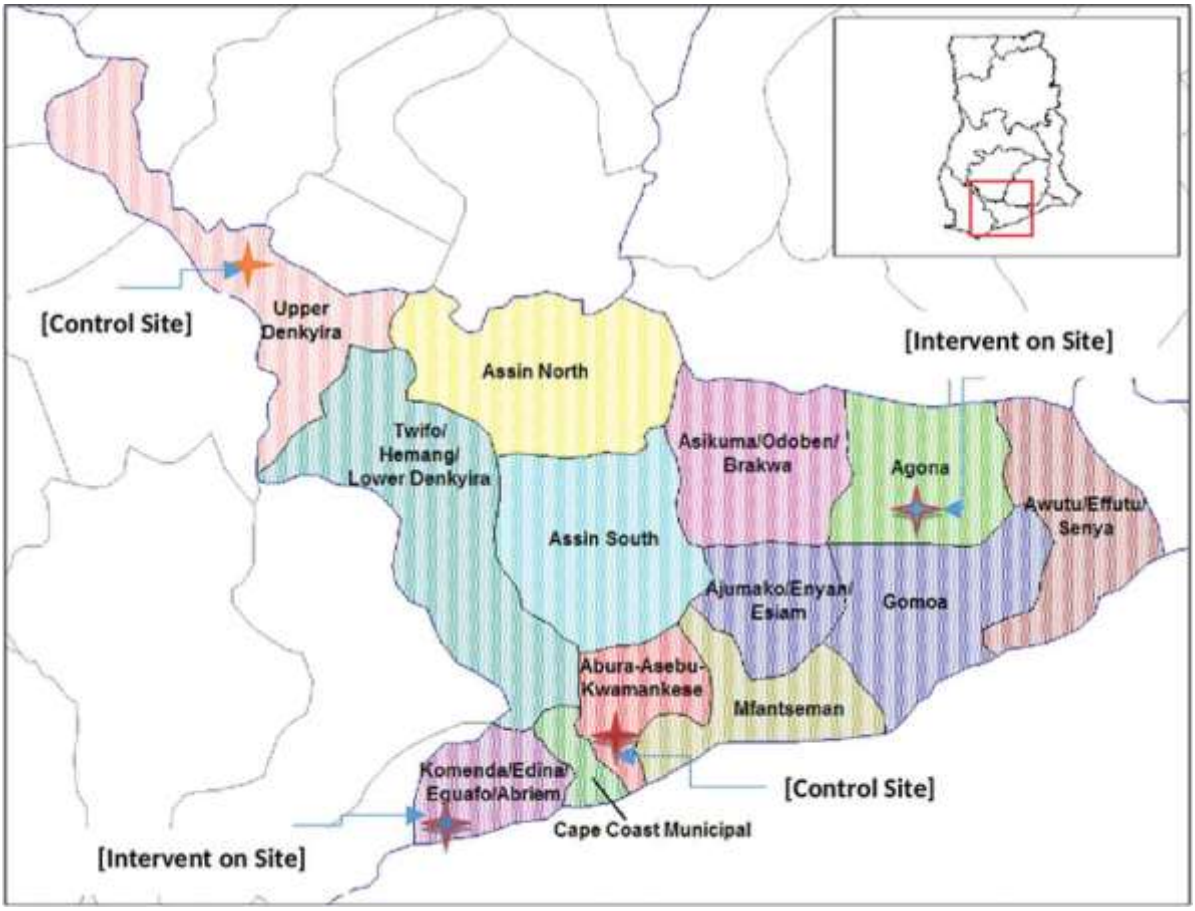

Figure 3.1: A map showing the location of the four districts selected in the original study

Source: Addo-Lartey et al., 2019

3.4 Study population

The target population in this study are women aged 18-49 years in the central regions.

3.5 Inclusion/exclusion criteria

All 2000 women interviewed during the baseline of the original study were considered for this study. None of the women were dropped for this study. For the predictors of HIV testing among IPV women, only women who had experienced IPV were included in that analyses.The participant selected for the original survey must be able to speak at least one of these languages (English, Twi and Fante). Twi and Fante are the main local dialects in the Central region.

3.6 Description of Study Variables

3.6.1 Dependent variables

There are two primary outcome variables in this study. HIV testing among women in their lifetime and HIV testing among women in the 12 months preceding the survey. HIV testing among the respondents in their lifetime is binary outcome variable that categorizes them into two groups, those who have ever tested for HIV in their lifetime and those who have never tested for HIV in their life as at the time of the survey. Likewise, HIV testing among women in the 12 months preceding the survey is a binary outcome variable which categorizes the women into two groups, those who had tested for HIV within the 12 months before they were interviewed and those who had not tested for HIV within the 12 months before they were interviewed.

No.	Dependent Variable	Type of variable	Categorization
1.	HIV testing in the lifetime of respondent	Categorical binary variable	0 = respondents who have never tested for HIV 1 = respondents who have ever tested for HIV
2.	HIV testing in the 12 months preceding the survey.	Categorical binary variable	0 = Respondents who had tested for HIV in the 12 months preceding the survey 1 = Respondents who had not tested for HIV in the 12 months preceding the survey.

3.6.2 Independent Variables

The primary exposure variables considered in the study were the experience of any form of intimate partner violence (IPV) in the lifetime of a respondent and the experience of any form of IPV in the 12 months preceding the survey. In this study, a respondent is said to have experienced any form of IPV if she suffered at least one of economic, emotional, physical or sexual abuse from an intimate partner. Definition of Economic, emotional, physical and sexual abuse in this study is the same as defined by Ogum Alangea et al. (2018) using the scale described Addo-Lartey et al. (2019) & Ogum Alangea et al. (2018).

The other independent variables considered in the study were put into two groups, socio-demographic factors and sexual behavior factors. The socio-demographic factors included the age group of the respondent, the age difference between the respondent and their partners, area of residence, region of birth, number of years the respondent had lived in the community, the highest level of education of the respondent, the current educational level of their partners compared to the woman, movement or the woman travelling for work, the woman's employment status in the 12 months preceding the survey, the employment status of the partner and the earning difference between the respondent and her partner.

The sexual behavior characteristics considered in the study were the age at first sex of the woman, first sexual partner, whether the woman had ever used condom, number of main sexual partners she has had in the 12 months preceding the survey, number of other sexual partners she had had in the 12 months preceding the survey, number of main sexual partners, number of other sexual partners and the number of transactional sex the woman had ever been involved in. The table below shows the detailed characteristic of the variables considered in the study.

Description of variables included in this study

No.	Independent Variables	Type of variable	Categorization
	Primary Exposure variables		
1.	Experience of any form of IPV in a lifetime	Categorical binary	0 = Never experienced IPV 1 = Ever experienced IPV
2.	Experience of IPV in 12 months preceding survey	Categorical binary	0 = Did not experience IPV 1 = Experienced IPV
	Socio-demographic factors		
3.	Age of woman	Both continuous and categorical ordinal	1 = <25 years 2 = 25-29 years 3 = 30-34 years 4 = 35-39 years 5 = 40-44 years 6 = 45-49 years
4.	Age difference between woman and her partner	Categorical ordinal	1 = Older or same age as male partner 2 = 1-5yrs younger 3 = 6-10yrs younger 4 = More than 10yrs younger
5.	Current area of residence	Categorical nominal (binary)	1 = Coastal 2 = Rural
6.	Region of birth	Categorical nominal (binary)	1 = Outside central region 2 = Central region
7.	Years lived in current community	Both as continuous and categorical ordinal	1 = <10years 2 = 10-19 3 = 20-29 4 = >29
8.	Highest level of education	Categorical ordinal	1 = None 2 = Primary 3 = Junior high 4 = Senior high 5 = Post senior high
9.	Current partner's education level	Categorical ordinal	1 = Male more educated 2 = Same as woman 3 = Woman more education
10.	Woman ever moved/ travelled for work	Categorical binary	0 = No 1 = Yes
11.	Woman was employed in the past 12 months	Categorical binary	0 = No 1 = Yes
12.	Earning difference between woman and partner	Categorical ordinal	1 = Partner earns more 2 = Same earnings 3 = Woman earns more

	Respondent's Sexual behavior factors		
13.	age at first sex	Categorical ordinal	1 = Never had sex 2 = <16 3 = 16-19 4 = 20 years and above
14.	First sexual partner	Categorical nominal	1 = First sex partner 2 = Husband 3 = Boyfriend 4 = Others 5 = Never had sex
15.	Ever used condom	Categorical binary	0 = No 1 = Yes
16.	Number of main sex partners in the past year	Categorical ordinal	0 = None 1 = One 2 = Two or more
17.	Number of other sex partners woman in the past year	Categorical ordinal	0 = None 1 = One 2 = Two or more
18.	Number of main sex partners in life	Categorical ordinal	0 = None 1 = One 2 = Two or more
19.	Number of other sex partners woman has had in life	Categorical ordinal	0 = None 1 = One 2 = Two or more
20.	Number of transactional sex woman has been involved in	Categorical ordinal	0 = Never 1 = Once 2 = Two or more

3.7 Sample Size Determination

This study did not determine the sample size however, all the 2000 women interviewed in this original survey were used for this study. For the predictors of HIV testing among IPV women, only women who had experienced IPV were included in that analyses.

3.8 Sampling method

The original study adopted a multistage stratified cluster random sampling method in the selection of households. Four districts in the Central region using a census of the list of districts that grouped them into inland and coastal districts. The list of districts was reduced after eliminating districts that had a similar intervention. Four districts were purposefully

selected from the remaining districts two from the inland and the other two from the coastal districts (Addo-Lartey et al., 2019).

Within each of the four selected districts, a sampling frame of the localities were obtained from the Ghana statistical service. A random selection method was then used to select 40 localities from all four districts (10 per district) as clusters (Addo-Lartey et al., 2019).

3.9 Data Analysis

The data was received in the STATA format. All statistical analyses were performed using STATA IC version 16. Frequencies and percentages were used to describe categorical variables whilst mean and standard deviations were used to summarize continuous variables. A description of the various experiences of intimate partner violence among women both in the lifetime and in the 12 months preceding the survey was presented in form of frequencies, percentages and a 95% confidence interval of the prevalence estimated.

The Pearson's Chi-square test was used to assess the factors associated with the experience of IPV among the respondents both in the lifetime and within the 12 months preceding the survey using the socio-demographic and the sexual behavior characteristics. Logistic regression model was then used to assess the adjusted odds ratios of the experience of any form of IPV both in the lifetime and within the 12 months preceding the survey.

Also, the Pearson's chi-square test was used to assess the association of socio-demographic, sexual behavior characteristics and the experience of the various forms of IPV with HIV testing both in t lifetime and in the 12 months preceding the survey. Similarly, the multiple logistic regression model was used to assess the adjusted odds ratios of factors of HIV testing both in the lifetime and within the 12 months preceding the survey among all the women.

Among the women who had ever experienced any form of IPV in their lifetime, a sub-analysis was further performed to establish the socio-demographic and the sexual behavior factors that were associated with HIV testing in the lifetime of these women using the Pearson chi-square tests and the logistic regression model. Another sub-analysis based on the women who had experienced any form of IPV 12 months preceding the survey was performed to also to establish the socio-demographic and the sexual behavior factors associated with HIV testing within the 12 months preceding the survey using both the Pearson's Chi-square test and the logistic regression model.

All statistical significance considered in the study were at 0.05 alpha level and odds ratios and their 95% confidence intervals were used to examine the strength of association.

3.10 Ethical Issues

This study is based on the analysis of secondary data of which the original study sought ethical approval from the Noguchi Memorial Institute for Medical Research at the University of Ghana (#006/15-16) and the South African Medical Research Council's Ethics Committee (EC031-9/ 2015) (Addo-Lartey et al., 2019), hence, did not require ethical approval from an ethical review board. However, for this study, permission was sought from the original study investigators. The data was de-identified using unique identification codes which could not be traced to the respondents. The identity of the respondents is not known to the authors of this study and the study does not require the use of these identifications. The data was strictly used to answer the objectives of this study for which it was intended and nothing else. This study poses little or no risk to the community that was surveyed as it does not directly deal with the modification or interaction with the people of these communities.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristic of study participants

A total of 2000 women were interviewed in 4 districts of the Central region. The mean age of women in the study was 31.7 (±8.6) years with about a quarter of them (24.2%) below the age of 25 years, 20.9% within the age range of 25-29 years and 11.3% within 45-49 years. The female respondents were on the average 5.8 (± 5.5) years younger than their male partners with only 6.9% older whilst 52.9% were 1-5 years younger, 27.1% were 6-10 years younger and 13.2% were more than 10 years younger than their male partners. More than half (52.4%) of the women lived in coastal areas as compared to those who lived in the forest areas (inland) with 24.0% born outside the central region. The mean number of years the women had lived in their community was 17.5 (± 12.2) years. A fifth (21.7%) of the women had no formal level of education, 22.9% had primary education whilst 2.7% had post senior high level of education. About a quarter of the respondents had the same level of education as their male partners, 13.6% had more education than their male partners and 63.4% had less education than their male partners. Less than half (43.7%) of the respondents had travelled outside their community for work. Among these women, 80.4% were employed in the 12 months preceding the survey and 4.2% of them had their partners unemployed whilst 5.8% earned more than their male partners. (Table 4.1).

Table 4.1: Demographic characteristics of study participants (N=2000)

Characteristics	n (%) / mean + SD
Age group of women (years) (mean ± SD)	31.71 ± 8.62
<25	484 (24.20)
25-29	418 (20.90)
30-34	359 (17.95)
35-39	276 (13.80)
40-44	237 (11.85)
45-49	226 (11.30)
Age difference between respondent and partner (mean ± SD)	5.83 ± 5.48
Older or same age as partner	137 (6.85)
1-5yrs younger	1059 (52.95)
6-10yrs younger	541 (27.05)
More than 10yrs younger	263 (13.15)
Area of residence	
Coastal	1048 (52.40)
Inland	952 (47.60)
Region of birth	
Outside central region	480 (24.00)
Central region	1520 (76.00)
Years lived in community (mean ± SD)	17.52 ± 12.24
<10	636 (31.80)
10-19	437 (21.85)
20-29	555 (27.75)
>29	372 (18.60)
Highest level of education	
None	434 (21.70)
Primary	459 (22.95)
Junior high	897 (44.85)
Senior high	156 (7.80)
Post senior high	54 (2.70)
Educational level between the respondent and her partner.	
Same	462 (23.10)
Female more educated	271 (13.55)
Male more educated	1267 (63.35)
Ever moved/ travelled for work	
Yes	874(43.70)
No	1126 (56.30)
Employed in the past 12 months	
Yes	1609 (80.45)
No	391 (19.55)
Partner unemployed	
Yes	84 (4.20)
No	1916 (95.80)
Respondents' salary difference	
Same earnings	110 (5.50)
Female earns more	115 (5.75)
Male earns more	1775 (88.75)

4.2 Sexual behaviours of study participants.

Eleven (0.6%) of the 2000 women never had sex, while 13.3% had sex before they reached the age of 16 years. About 12.7% of respondents had their first sexual experience with their husbands, 78.4% with their boyfriends and 8.4% with other people outside a relationship. A tenth (10.9%) of the women had no main sex partners 12 months before the survey, whilst 24 (1.2%) had two or more main sex partners. Twenty (20%) of the women had two or more other sex partners in 12 months before the survey. In their lifetime, 1.9% have had no main sex partners, 60.8% have had two or more main sex partners, 87.4% have had no other sex partners and 4.5% have had two or more other sex partners in addition to the main partner. Majority (82.0%) had never been involved in transactional sex, 6.9% had been involved in transactional sex once, and 11.1% for at least twice. A quarter (26.4%) of the study participants had ever used condom . (Table 4.2)

Table 4.2 Sexual behaviours of study participants

Characteristics	n (%)
Age at first sex	
Never had sex	11 (0.55)
<16	265 (13.25)
16-19	1090 (54.50)
20 years and above	634 (31.70)
First sex partner	
Husband	254 (12.70)
Boyfriend	1568 (78.40)
Others	167 (8.35)
Never had sex	11 (0.55)
Number of main sex partners in past year	
None	218 (10.90)
One	1758 (87.90)
Two or more	24 (1.20)
Number of other sex partners in the past year	
None	1892 (94.60)
One	88 (4.40)
Two or more	20 (1.00)
Number of main sex partners in life	
None	39 (1.95)
One	746 (37.30)
Two or more	1215 (60.75)
Number of other sex partners in life	
None	1748 (87.40)
One	162 (8.10)
Two or more	90 (4.50)
Number of transactional sexes engaged in	
Never	1640 (82.00)
Once	138 (6.90)
Two or more	222 (11.10)
Ever used condom	
No	1473 (73.65)
Yes	527 (26.35)

4.3 Prevalence of Intimate Partner Violence among women.

In their lifetime, 10.1% (95% CI: 8.8 - 11.5) had experienced economic IPV, 36.7% (95% CI: 34.6 – 38.9) had experienced emotional IPV, 32.2% (95% CI: 30.1 – 34.3) had experienced physical IPV and 18.5% (95% CI: 16.8 – 20.3) had experienced sexual IPV. Half (50.4%, 95% CI: 48.2 – 52.6) of the women had experienced any form of IPV in their lifetime. (Table 4.3).

In the 12 months preceding the survey, 26.2% (95% CI: 24.2 – 28.2) had experienced either economic or emotional IPV, 14.8% (95% CI: 13.3 – 16.4) had experienced physical IPV

and 11.3% (95% CI: 9.9 – 12.7) had experienced sexual IPV. About a third (32.5%, 95% CI: 30.4 – 34.6) of the respondents had experienced some form of IPV in the 12 months period before the survey. (Table 4.3)

4.3.1 Prevalence of HIV testing among women.

A significant proportion 43.3% (95% CI: 41.1 – 45.5) of the women interviewed had ever tested for HIV in their life, and 16.2% (95% CI: 14.6 – 17.8) had had an HIV test within the last 12 months before the survey. (Table 4.3).

Table 4.3 Prevalence of IPV and HIV testing among respondents

	Ever experienced (N=2000)		
Variable	**n**	**%**	**95% CI**
Economic or emotional IPV in the past 12 months	523	26.15	(24.24 - 28.14)
Physical IPV in past 12 months	296	14.80	(13.27 - 16.43)
Sexual IPV in past 12 months	225	11.25	(9.90 - 12.72)
Any form of IPV in past 12 months	649	32.45	(30.40 - 34.55)
Economic IPV in lifetime	202	10.10	(8.81 - 11.50)
Emotional IPV in lifetime	734	36.70	(34.58 - 38.86)
Physical IPV in lifetime	643	32.15	(30.11 - 34.25)
Sexual IPV in lifetime	370	18.50	(16.82 - 20.27)
Any form of IPV in lifetime	1008	50.40	(48.18 - 52.61)
Ever had HIV test in lifetime	865	43.25	(41.07 - 45.45)
Ever had HIV test in the past 12 months	323	16.15	(14.56 - 17.84)

n: Frequency. %: percentage. CI: confidence interval.

4.4: Socio-demographic factors associated with any form of IPV in lifetime.

Table 4.4 shows the frequency and percentage distribution of the prevalence of any form of IPV among women in the lifetime. The Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of study participants and experience of any form of IPV in lifetime.

The percentage of lifetime experience of IPV was significantly higher among women living in inland or forest areas compared to those living in the coastal areas (58.7% vs. 42.8%, χ^2=50.2, p-value<0.001). Also, from the Pearson's chi-square test, the percentage of lifetime experience of IPV was significantly different across the various levels of education (no education: 52.3%, primary: 55.3%, JHS: 50.3%, SHS: 42.3% and post SHS: 18.5%, χ^2=31.2, p-value <0.001). The percentage of lifetime IPV experience was significantly higher among women who were employed within 12 months preceding the survey compared to those who were not employed (52.0% vs. 43.7%, χ^2=8.64, p-value=0.003). (Table 4.4).

The multiple logistic regression model was used to assess socio demographic factors that were independent predictors of any form of IPV in the lifetime of women after controlling for sexual behaviour characteristics and other socio-demographic factors.

From the adjusted logistic regression model, the odds of experience of IPV was significantly higher among women within the age ranges 25-29 years (AOR: 1.48, 95% CI: 1.09 – 2.01), 40-44 years (AOR: 1.33, 95% CI: 1.01 – 2.24) and 45-49 years (AOR: 1.67, 95% CI: 1.10 – 2.53) when all are compared to the women less than 25 years of age. Also, compared to the women living in the coastal areas, the odds of experiencing any form of IPV in lifetime was 64% higher among those living in inland areas (AOR: 1.64, 95% CI: 1.32 – 2.02). The odds of experiencing any form of IPV in lifetime among women was significantly lower for women with senior high school education (AOR: 0.65, 95% CI: 0.42 – 0.99) and post senior high (AOR: 0.17, 95% CI: 0.08-0.38) levels of education compared to those with no formal education. Although, not significant in or from the Pearson's chi-square test of association, the odds of experience of IPV in lifetime was 26% significantly higher for women who had ever travelled outside the community for work compared to those who had never (AOR: 1.26, 95% CI: 1.03 – 1.54). (Table 4.4).

Table 4.4 Socio-demographic factors associated with experience of any form of IPV in lifetime among respondents

		Ever experience any form of IPV in lifetime (N=2000)		
Characteristics	**N**	**n (%) / χ2, p-value**	**AOR [95% CI]**	**P-value**
Age group of respondents		χ^2=8.03, P=0.154		
<25years	484	220 (45.45)	1.00 [reference]	
25-29	418	221 (52.87)	1.48 [1.09 - 2.01]	0.012 *
30-34	359	182 (50.70)	1.37 [0.98 - 1.91]	0.067
35-39	276	136 (49.28)	1.33 [0.92 - 1.91]	0.127
40-44	237	128 (54.01)	1.50 [1.01 - 2.24]	0.044 *
45-49	226	121 (53.54)	1.67 [1.10 - 2.53]	0.016 *
Age difference with partner		χ^2=6.44, P=0.092		
Older or same age as partner	137	65 (47.45)	1.00 [reference]	
1-5yrs younger	1059	516 (48.73)	1.16 [0.79 - 1.72]	0.445
6-10yrs younger	541	277 (51.20)	1.18 [0.78 - 1.77]	0.429
More than 10yrs younger	263	150 (57.03)	1.31 [0.84 - 2.05]	0.231
Area of residence		χ^2=50.29, P<0.001		
Coastal	1048	449 (42.84)	1.00 [reference]	
Inland	952	559 (58.72)	1.64 [1.32 - 2.02]	<0.001 ***
Region of birth		χ^2=0.04, P=0.841		
Outside central region	480	240 (50.00)	1.00 [reference]	
Central region	1520	768 (50.53)	1.04 [0.82 - 1.32]	0.764
Years lived in community		χ^2=1.75, P=0.625		
<10	636	329 (51.73)	1.00 [reference]	
10-19	437	221 (50.57)	0.99 [0.76 - 1.30]	0.957
20-29	555	267 (48.11)	0.94 [0.72 - 1.21]	0.615
>29	372	191 (51.34)	0.97 [0.70 - 1.34]	0.868
Highest level of education		χ^2=31.15, P<0.001		
None	434	227 (52.30)	1.00 [reference]	
Primary	459	254 (55.34)	0.97 [0.72 - 1.29]	0.819
Junior high	897	451 (50.28)	0.80 [0.61 - 1.04]	0.100
Senior high	156	66 (42.31)	0.65 [0.42 - 0.99]	0.047 *
Post senior high	54	10 (18.52)	0.17 [0.08 - 0.38]	<0.001 ***
Current partner's education level		χ^2=4.19, P=0.123		
Same	462	216 (46.75)	1.00 [reference]	
Woman more educated	271	147 (54.24)	1.20 [0.86 - 1.67]	0.282
Male partner more educated	1267	645 (50.91)	0.96 [0.76 - 1.21]	0.727
Ever travelled for work		χ^2=4.12, P=0.042		
No	1126	545 (48.40)	1.00 [reference]	
Yes	874	463 (52.97)	1.26 [1.03 - 1.54]	0.023 *
Employed in the past 12 months		χ^2=8.64, P=0.003		
No	391	171 (43.73)	1.00 [reference]	
Yes	1609	837 (52.02)	1.06 [0.82 - 1.38]	0.639
Partner employed when??		χ^2=3.45, P=0.063		
No	1916	974 (50.84)	1.00 [reference]	
Yes	84	34 (40.48)	1.05 [0.61 - 1.80]	0.861
Earning difference		χ^2=5.45, P=0.066		
Same earnings	110	44 (40.00)	1.00 [reference]	
Respondent earns more	115	62 (53.91)	1.71 [0.95 - 3.06]	0.071
Male Partner earns more	1775	902 (50.82)	1.48 [0.95 - 2.30]	0.086

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Sexual behaviour characteristics were adjusted for in estimating AOR
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

4.5 Sexual behaviour factors associated with experience of any form of IPV in the lifetime.

Table 4.5 shows the frequency and percentage distribution of the prevalence of any form of IPV among women in the lifetime. The Pearson's chi-square was also used to assess the association between the sexual behaviour factors and experience of any form of IPV in lifetime. All sexual behaviour characteristics observed were significantly associated with experience of IPV in lifetime of women from the Pearson's chi-square test (p-value <0.05).

The percentage of lifetime experience of IPV was significantly higher among women who had the first sex at a younger age (<16 years: 55.1%, 16-19 years: 54.13%, 20 years and above: 42.5%) compared to those who had never had sex (18.20%). More than a third (70.1%) of those who first had sex with other sexual partners had experience some form of IPV in their lifetime as compared to 44.1% among those who first had sex with their spouse and 49.6% among those who first had sex with their boyfriends.

Table 4.5 also shows more details on the Pearson's chi-square test of association between sexual behavioural factors and experience of any form of IPV in the lifetime of women.

The multiple logistic regression model was used to assess sexual behavioural factors than were independent predictors of any form of IPV in the lifetime of women after controlling for other sexual behavioural characteristics and socio-demographic factors.

From the logistic regression model, the adjusted odds of experience of IPV was 66% significantly higher among women who had ever used condom compared to those who had never used condoms (AOR: 1.66, 95% CI: 1.32 – 2.10). Also, the odds of experience of IPV in the lifetime of women was significantly higher among those who had have two or more main sex partners compared to those who had never had any main sex partner (AOR: 2.66, 95% CI: 1.04 – 6.78). Again, the odds of experience of any form of IPV in their lifetime was significantly higher for women who had one other sex partner in life compared to those who had never had any other sex partner in their life (AOR: 1.85, 95% CI: 1.14 – 2.99).

The odds of experience of any form of IPV in the lifetime of the women was significantly higher among women who had have two or more transactional sex compared to those who had never been involved in any transactional sex (AOR: 2.55, 95% CI: 1.64 – 3.97). (Table 4.5).

Table 4.5 Sexual behaviour factors associated with experience of any form of IPV in lifetime among respondents

		Ever experience any form of IPV in lifetime (N = 2000)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age at first sex		χ^2=28.45, P<0.001		
Never had sex	11	2 (18.18)	1.00 [reference]	
<16	265	146 (55.09)	0.68 [0.10 - 4.52]	0.692
16-19	1090	590 (54.13)	0.82 [0.13 - 5.33]	0.839
20 years and above	634	270 (42.59)	0.64 [0.10 - 4.14]	0.641
First sex partner		χ^2=34.88, P<0.001		
Husband	254	112 (44.09)	1.00 [reference]	
Boyfriend	1568	777 (49.55)	1.00 [0.73 - 1.36]	0.984
Others	167	117 (70.06)	1.60 [0.99 - 2.58]	0.053
Never had sex	11	2 (18.18)	(omitted)	
Ever used condom		χ^2=15.19, P<0.001		
No	1473	704 (47.79)	1.00 [reference]	
Yes	527	304 (57.69)	1.66 [1.32 - 2.10]	<0.001 ***
Number of main sex partners in past 12 months		χ^2=10.56, P=0.005		
None	218	108 (49.54)	1.00 [reference]	
One	1758	880 (50.06)	0.83 [0.60 - 1.15]	0.262
Two or more	24	20 (83.33)	3.12 [0.97 - 9.98]	0.056
Number of other sex partners in the past 12 months		χ^2=28.62, P<0.001		
None	1892	927 (49.00)	1.00 [reference]	
One	88	64 (72.73)	1.16 [0.65 - 2.05]	0.622
Two or more	20	17 (85.00)	1.57 [0.39 - 6.35]	0.525
Number of main sex partners in life		χ^2=43.73, P<0.001		
None	39	10 (25.64)	1.00 [reference]	
One	746	317 (42.49)	1.95 [0.76 - 4.99]	0.162
Two or more	1215	681 (56.05)	2.66 [1.04 - 6.78]	0.040 *
Number of other sex partners in life		χ^2=84.15, P<0.001		
None	1748	813 (46.51)	1.00 [reference]	
One	162	127 (78.40)	1.85 [1.14 - 2.99]	0.013 *
Two or more	90	68 (75.56)	1.14 [0.61 - 2.13]	0.686
Number of transactional sexes involved in		χ^2=97.65, P<0.001		
Never	1640	753 (45.91)	1.00 [reference]	
Once	138	75 (54.35)	1.23 [0.85 - 1.78]	0.270
Two or more	222	180 (81.08)	2.55 [1.64 - 3.97]	<0.001 ***

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic characteristics were adjusted for in estimating AOR.
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

4.6 Socio-demographic factors associated with any form of IPV in 12 months preceding survey.

Table 4.6 shows the frequency and percentage distribution of the prevalence of any form of IPV among women 12 months preceding the survey. The Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of study participants and experience of any form of IPV 12 months preceding the survey.

The percentage of lifetime experience of IPV in lifetime was significantly higher among women living in rural areas compared to those living in the coastal areas (40.2% vs. 25.4%, χ^2=50.2, p-value<0.001). Also, from the Pearson's chi-square test, the percentage of women who had experienced of any form IPV 12 months preceding the survey was significantly different across the various categories of years lived in their community (<10years: 28.1%, 10-19 years: 33.6%, 20-29 years: 29.0%, >29 years: 26.6%, χ^2=18.16, P<0.001). Also, the percentage of women who experienced IPV within 12 months preceding the survey was significantly different across their level of education (no education: 31.8%, primary: 34.2%, JHS: 34.0%, SHS: 26.9% and post SHS: 12.9%, χ^2=13.2, p-value =0.010). (Table 4.6).

The multiple binary logistic regression model was used in the assessment of socio demographic factors that were independent predictors of any form of IPV within the 12 months preceding the survey after controlling for sexual behaviour characteristics and other socio-demographic factors.

From the adjusted logistic regression model, the odds of experience of IPV was significantly higher among women who resided in rural areas compared to those residing in the coastal areas (AOR: 1.47, 95% CI: 1.17 – 1.84). The odds of experience of any form of IPV within 12 months preceding the survey was 29% significantly lower among women who had lived in the community 20-29 years compared to those who had lived their community for at most 10 years (AOR: 0.71, 95% CI: 0.54 – 0.93). The odds of experiencing any form of IPV within 12 months preceding the survey among women with post-secondary education was

80% less compared to women who had no formal level of education (AOR: 0.20, 95% CI: 0.08 – 0.48). (Table 4.6).

Table 4.6 Socio-demographic factors associated with experience of any form of IPV in past 12 months among respondents

		Ever experience any form of IPV in the past year N = 2000		
Characteristics of respondents	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age group		χ^2=6.92, P=0.227		
<25years	484	170 (35.12)	1.00 [reference]	
25-29	418	143 (34.21)	1.00 [0.73 - 1.37]	0.998
30-34	359	120 (33.43)	1.04 [0.74 - 1.48]	0.812
35-39	276	83 (30.07)	0.91 [0.62 - 1.34]	0.634
40-44	237	73 (30.80)	0.95 [0.62 - 1.44]	0.805
45-49	226	60 (26.55)	0.91 [0.58 - 1.43]	0.679
Age difference with male partner		χ^2=2.45, P=0.484		
Older or same age as partner	137	40 (29.20)	1.00 [reference]	
1-5yrs younger	1059	335 (31.63)	1.08 [0.70 - 1.65]	0.739
6-10yrs younger	541	180 (33.27)	1.10 [0.70 - 1.71]	0.684
More than 10yrs Younger	263	94 (35.74)	1.27 [0.78 - 2.06]	0.331
Area of residence		χ^2=50.18, P<0.001		
Coastal	1048	266 (25.38)	1.00 [reference]	
Inland	952	383 (40.23)	1.47 [1.17 - 1.84]	0.001 **
Region of birth		χ^2=0.13, P=0.717		
Outside central region	480	159 (33.13)	1.00 [reference]	
Central region	1520	490 (32.24)	1.09 [0.84 - 1.40]	0.520
Years lived in community		χ^2=18.16, P<0.001		
<10years	636	242 (38.05)	1.00 [reference]	
10-19	437	147 (33.64)	0.85 [0.64 - 1.12]	0.243
20-29	555	161 (29.01)	0.71 [0.54 - 0.93]	0.013 *
>29	372	99 (26.61)	0.71 [0.50 - 1.01]	0.053
Highest level of education		χ^2=13.24, P=0.010		
None	434	138 (31.80)	1.00 [reference]	
Primary	459	157 (34.20)	0.95 [0.70 - 1.30]	0.760
Junior high	897	305 (34.00)	0.87 [0.65 - 1.17]	0.360
Senior high	156	42 (26.92)	0.63 [0.39 - 1.01]	0.056
Post senior high	54	7 (12.96)	0.20 [0.08 - 0.48]	<0.001 ***
Current partner's education level		χ^2=2.81, P=0.245		
Same	462	138 (29.87)	1.00 [reference]	
Woman more education	271	97 (35.79)	1.18 [0.83 - 1.68]	0.348
Male more educated	1267	414 (32.68)	1.05 [0.81 - 1.35]	0.727
Ever moved/ travelled for work		χ^2=0.11, P=0.744		
No	1126	362 (32.15)	1.00 [reference]	
Yes	874	287 (32.84)	1.11 [0.90 - 1.38]	0.322
Employed in the past 12 months		χ^2=2.79, P=0.095		
No	391	113 (28.90)	1.00 [reference]	
Yes	1609	536 (33.31)	1.08 [0.82 - 1.43]	0.593
Partner employed		χ^2=1.57, P=0.211		
No	1916	627 (32.72)	1.00 [reference]	
Yes	84	22 (26.19)	0.85 [0.47 - 1.55]	0.603
Earning difference		χ^2=0.67, P=0.716		
Same earnings	110	34 (30.91)	1.00 [reference]	
Female earns more	115	41 (35.65)	1.42 [0.77 - 2.60]	0.257
Male earns more	1775	574 (32.34)	0.98 [0.61 - 1.56]	0.925

4.7 Sexual behaviour factors of experience of IPV within 12 months preceding the survey.

Table 4.7 shows the frequency and percentage distribution of the prevalence of any form of IPV among women in their lifetime by sexual behaviour factors. The Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of study participants and experience of any form of IPV during lifetime. All sexual behavior characteristics observed were significantly associated with experience of IPV within 12 months preceding the survey from the Pearson's chi-square test (p-value <0.05).

The percentage of lifetime experience of IPV 12 months preceding the survey was significantly higher among women who had the first sex at a younger age (<16 years: 31.7%, 16-19 years: 35.6%, 20 years and above: 27.6%) compared to the 18.2% among those who had never had sex. About a half (49.7%) of those who first had sex with other people had experience some form of IPV within 12 months preceding the survey compared to 28.4% among those who first had sex with the husband and 31.4% among those who first had sex with their boyfriends.

Table 5b shows more details on the Pearson's chi-square test of association between sexual behavioural factors and experience of any form of IPV among women 12 months preceding the survey. (Table 4.7).

The multiple logistic regression model was used to assessment sexual behavioural factors than were independent predictors of any form of IPV among women 12 months preceding the survey after controlling for other sexual behavior characteristics and socio-demographic factors.

From the adjusted logistic regression model, the odds of experience of IPV was 75% significantly higher among women who had ever used condom compared to those who had

never used condoms (AOR: 1.75, 95% CI: 1.38 – 2.22). Also, the odds of experience of IPV among women 12 months preceding the survey was significantly higher among those who had have one (AOR: 3.70, 95% CI: 2.32 – 5.91) or two or more (AOR: 6.77, 95% CI: 2.54 – 18.06) main sex partners compared to those who had never had any main sex partner. Also, the odds of experience of any form of IPV 12 months preceding the survey was 2 times significantly higher for women who have one other sex partner in life compared to those who had never had any other sex partner in their life (AOR: 2.03, 95% CI: 1.19 – 3.47). The odds of experience of any form of IPV 12 months preceding the survey was significantly higher among women who had have two or more transactional sex compared to those who had never been involved in any transactional sex (AOR: 1.81, 95% CI: 1.21 – 2.70). (Table 4.7).

Table 4.7 Sexual behavior factors associated with experience of any form of IPV in the past 12 months among respondents

		Ever experience any form of IPV in lifetime N = 2000		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age at first sex		χ^2=12.81, P=0.005		
Never had sex	11	2 (18.18)	1.00 [reference]	
<16	265	84 (31.70)	0.21 [0.03 - 1.67]	0.142
16-19	1090	388 (35.60)	0.30 [0.04 - 2.32]	0.251
20 years and above	634	175 (27.60)	0.27 [0.03 - 2.05]	0.204
First sex partner		χ^2=26.47, P<0.001		
Husband	254	72 (28.35)	1.00 [reference]	
Boyfriend	1568	492 (31.38)	1.00 [0.71 - 1.40]	0.978
Others	167	83 (49.70)	1.61 [1.00 - 2.60]	0.051
Never had sex	11	2 (18.18)	(omitted)	
Ever used condom		χ^2=21.72, P<0.001		
no	1473	435 (29.53)	1.00 [reference]	
yes	527	214 (40.61)	1.75 [1.38 - 2.22]	<0.001 ***
Number of main sex partners in past year		χ^2=49.03, P<0.001		
None	218	28 (12.84)	1.00 [reference]	
One	1758	607 (34.53)	3.70 [2.32 - 5.91]	<0.001 ***
Two or more	24	14 (58.33)	6.77 [2.54 - 18.06]	<0.001 ***
Number of other sex partners in the past year		χ^2=54.39, P<0.001		
None	1892	580 (30.66)	1.00 [reference]	
One	88	53 (60.23)	2.03 [1.19 - 3.47]	0.009 **
more	20	16 (80.00)	3.40 [0.99 - 11.68]	0.052
Number of main sex partners in life		χ^2=9.08, P=0.011		
None	39	6 (15.38)	1.00 [reference]	
One	746	225 (30.16)	0.96 [0.28 - 3.30]	0.945
more	1215	418 (34.40)	0.97 [0.28 - 3.32]	0.957
Number of other sex partners in life		χ^2=80.36, P<0.001		
None	1748	505 (28.89)	1.00 [reference]	
One	162	94 (58.02)	1.52 [0.98 - 2.37]	0.061
more	90	50 (55.56)	1.07 [0.61 - 1.90]	0.806
Number of transactional sexes involved in		χ^2=87.17, P<0.001		
Never	1640	470 (28.66)	1.00 [reference]	
Once	138	46 (33.33)	1.08 [0.73 - 1.60]	0.692
Two or more	222	133 (59.91)	1.81 [1.21 - 2.70]	0.004 **

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Sexual behavior characteristics were adjusted for in estimating AOR.
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

4.8 Socio-demographic factors associated with HIV testing in lifetime.

Table 4.8 shows the frequency and percentage distribution of the women who had ever have an HIV test. The Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of study participants and testing for HIV in lifetime.

The age group of women (χ^2=63.1, p-value<0.001), age differences with partner (χ^2=12.7, p-value=0.005), area of residence (χ^2=73.3, p-value<0.001), years lived in their community (χ^2=9.8, p-value=0.021), highest level of education (χ^2=89.0, p-value<0.001), current partner's educational level (χ^2=10.8, p-value=0.004), ever moved or travelled outside community for work (χ^2=19.1, p-value<0.001) and having employment within 12 months preceding the survey (χ^2=6.2, p-value=0.013) were the demographic characteristics of the women that showed significant association with HIV testing in life from the Pearson's chi-square test. This shows that the proportion of HIV testing was significantly different across the various categories of those socio-demographic factors. (Table 4.8).

The logistic regression model was used to assessment socio demographic factors than were independent predictors of HIV testing in the lifetime of women after controlling for sexual behavior characteristics and other socio-demographic factors.

From the logistic regression model, the odds of HIV testing in their lifetime was around 2 times significantly higher among women within the age ranges 25-29 years (AOR: 2.13, 95% CI: 1.57 – 2.90), 30-34 years (AOR: 2.08, 95% CI: 1.48 – 2.92) and 35-39 years (AOR: 1.84, 95% CI: 1.27 – 2.66) when each category is compared to the women less than 25 years of age. Also, compared to the women living in the coastal areas, the odds of HIV testing in their lifetime was 56% significantly lower among women living in the inland areas (AOR: 0.44, 95% CI: 0.35 – 0.55). The odds of HIV testing in their lifetime was significantly higher for women with higher levels of education: primary (AOR: 1.41, 95% CI: 1.04 – 1.91), Junior high (AOR: 2.14, 95% CI: 1.61 – 2.84), senior high (AOR: 3.06, 95% CI: 1.97 – 4.73) and post senior high (AOR: 10.9, 95% CI: 4.51 – 26.55) levels of education compared to those with no formal education. The odds of HIV testing were significantly

less among women who had been employed 12 months preceding the survey compared to those who had no employment (AOR: 0.74, 95% CI: 0.57 – 0.97). (Table 4.8).

Table 4.8 Socio-demographic factors associated with HIV testing in lifetime among all women in the study

		Ever tested for HIV in lifetime (N = 2000)		
Characteristics	**N**	**n (%)/ χ^2, p-value**	**AOR [95% CI]**	**P-value**
Age group of women		χ^2=63.12, P<0.001		
<25years	484	183 (37.81)	1.00 [reference]	
25-29	418	230 (55.02)	2.13 [1.57 - 2.90]	<0.001 ***
30-34	359	180 (50.14)	2.08 [1.48 - 2.92]	<0.001 ***
35-39	276	124 (44.93)	1.84 [1.27 - 2.66]	0.001 **
40-44	237	84 (35.44)	1.50 [0.99 - 2.25]	0.053
45-49	226	64 (28.32)	0.96 [0.62 - 1.50]	0.866
Age difference		χ^2=12.66, P=0.005		
Older or same age as partner	137	51 (37.23)	1.00 [reference]	
1-5yrs Younger	1059	497 (46.93)	1.34 [0.89 - 2.01]	0.164
6-10yrs Younger	541	213 (39.37)	1.07 [0.69 - 1.64]	0.770
More Than 10yrs Younger	263	104 (39.54)	1.23 [0.77 - 1.95]	0.393
Area of residence		χ^2=73.31, P<0.001		
Coastal	1048	548 (52.29)	1.00 [reference]	
Rural	952	317 (33.30)	0.44 [0.35 - 0.55]	<0.001 ***
Region of birth		χ^2=2.32, P=0.128		
Outside central region	480	222 (46.25)	1.00 [reference]	
Central region	1520	643 (42.30)	0.81 [0.63 - 1.03]	0.090
Years lived in community		χ^2=9.78, P=0.021		
<10years	636	288 (45.28)	1.00 [reference]	
10-19	437	181 (41.42)	0.96 [0.73 - 1.26]	0.755
20-29	555	258 (46.49)	0.93 [0.72 - 1.22]	0.614
>29	372	138 (37.10)	0.85 [0.61 - 1.18]	0.328
Highest level of education		χ^2=89.01, P<0.001		
None	434	136 (31.34)	1.00 [reference]	
Primary	459	170 (37.04)	1.41 [1.04 - 1.91]	0.028 *
Junior high	897	424 (47.27)	2.14 [1.61 - 2.84]	<0.001 ***
Senior high	156	89 (57.05)	3.06 [1.97 - 4.73]	<0.001 ***
Post senior high	54	46 (85.19)	10.94 [4.51 - 26.55]	<0.001 ***
Current partner's education level		χ^2=10.84, P=0.004		
Same	462	224 (48.48)	1.00 [reference]	
Woman more education	271	128 (47.23)	0.85 [0.60 - 1.18]	0.330
Male more educated	1267	513 (40.49)	0.82 [0.64 - 1.04]	0.106
Ever moved/ travelled for work		χ^2=19.07, P<0.001		
No	1126	439 (38.99)	1.00 [reference]	
Yes	874	426 (48.74)	1.22 [1.00 - 1.50]	0.052
Employed in the past 12 months		χ^2=6.21, P=0.013		
No	391	191 (48.85)	1.00 [reference]	
Yes	1609	674 (41.89)	0.74 [0.57 - 0.97]	0.026 *
Partner employed		χ^2=0.01, P=0.941		
No	1916	829 (43.27)	1.00 [reference]	
Yes	84	36 (42.86)	1.08 [0.62 - 1.87]	0.794
Earning difference		χ^2=3.24, P=0.197		
Same earnings	110	43 (39.09)	1.00 [reference]	
Female earns more	115	42 (36.52)	0.62 [0.34 - 1.14]	0.126
Male earns more	1775	780 (43.94)	0.96 [0.61 - 1.52]	0.862

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Sexual behavior characteristics and experience of IPVs were adjusted for in estimating AOR.

4.9 Sexual behavior factors and HIV testing in the lifetime.

Table 4.9 shows the frequency and percentage distribution of the prevalence of HIV testing among women in the lifetime by sexual behavior factors. The Pearson's chi-square was also used to assess the association between the sexual behavior characteristics of study participants and HIV testing in lifetime.

The age at first sex (χ^2=15.4, p-value =0.001), ever used of condoms (χ^2=44.5, p-value<0.001) and number of main sex partners in life (χ^2=6.8, p-value =0.033) were the sexual behavior factors that showed significant association with HIV testing in the lifetime of women from the Pearson's chi-square test. This shows that the proportion of HIV testing was significantly different across the levels of those sexual behavior characteristics. (Table 4.9).

The logistic regression model was used to assessment sexual behavioural factors that were independent predictors of HIV testing in their lifetime among women after controlling for other sexual behavior characteristics and socio-demographic factors.

From the logistic regression model, the odds of HIV testing was significantly higher among those who first had sex before 16 years (AOR: 22.22, 95% CI: 2.03 – 242.99), 16-19 years (AOR: 18.50, 95% CI: 1.72 – 198.37) and 20 years and above (AOR: 18.34, 95% CI: 1.72 – 195.56) compared to those who had never had sex. Compared to the women who first had sex with their husbands, the odds of HIV testing in their lifetime was 28% less for those who first had sex with their boyfriend (AOR: 0.72, 95% CI: 0.52 – 0.99). HIV testing in their lifetime was significantly higher among women who had ever used condoms compared to those who had never used condoms (AOR: 1.39, 95% CI: 1.10 – 1.75). Also, the odds of HIV testing in their lifetime was significantly higher among women who had had sex with

one other sexual partner in their life compared to those who had never had sex with other partners in their life (AOR: 1.59, 95% CI: 1.00 – 2.53). (Table 4.9).

Table 4 9 Sexual behavior factors associated with HIV test in lifetime among all women in the study

		Ever tested for HIV in lifetime (N = 2000)		
Characteristics	**N**	**n (%)/ χ^2, p-value**	**AOR [95% CI]**	**P-value**
Age at first sex		χ^2=15.43, P=0.001		
Never had sex	11	1 (9.09)	1.00 [reference]	
<16	265	106 (40.00)	22.22 [2.03 - 242.99]	0.011 *
16-19	1090	450 (41.28)	18.50 [1.72 - 198.37]	0.016 *
20 years and above	634	308 (48.58)	18.34 [1.72 - 195.56]	0.016 *
First sex partner		χ^2=5.27, P=0.153		
Husband	254	110 (43.31)	1.00 [reference]	
Boyfriend	1568	681 (43.43)	0.72 [0.52 - 0.99]	0.041 *
Others	167	73 (43.71)	0.70 [0.44 - 1.12]	0.134
Never had sex	11	1 (9.09)	(omitted)	
Ever used condom		χ^2=44.45, P<0.001		
no	1473	572 (38.83)	1.00 [reference]	
yes	527	293 (55.60)	1.39 [1.10 - 1.75]	0.006 **
Number of main sex partners in past year		χ^2=4.31, P=0.116		
None	218	80 (36.70)	1.00 [reference]	
One	1758	774 (44.03)	1.19 [0.84 - 1.69]	0.328
Two or more	24	11 (45.83)	1.19 [0.46 - 3.05]	0.718
Number of other sex partners in the past year		χ^2=0.73, P=0.695		
None	1892	818 (43.23)	1.00 [reference]	
One	88	40 (45.45)	1.05 [0.61 - 1.79]	0.873
more	20	7 (35.00)	0.94 [0.30 - 2.92]	0.916
Number of main sex partners in life		χ^2=6.81, P=0.033		
None	39	11 (28.21)	1.00 [reference]	
One	746	306 (41.02)	1.04 [0.42 - 2.56]	0.940
more	1215	548 (45.10)	1.27 [0.51 - 3.15]	0.602
Number of other sex partners in life		χ^2=4.19, P=0.123		
None	1748	754 (43.14)	1.00 [reference]	
One	162	79 (48.77)	1.59 [1.00 - 2.53]	0.048 *
more	90	32 (35.56)	0.89 [0.48 - 1.63]	0.697
Number of transactional sexes involved in		χ^2=1.96, P=0.376		
Never	1640	721 (43.96)	1.00 [reference]	
Once	138	54 (39.13)	0.95 [0.64 - 1.39]	0.777
Two or more	222	90 (40.54)	1.06 [0.70 - 1.60]	0.800

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic characteristics and experience of IPVs were adjusted for in estimating AOR.

4.10 Intimate partner violence as factors of HIV testing in lifetime of women.

Table 4.10 shows the frequency and percentage distribution of HIV testing the lifetime of women among their experience status of intimate partner violence. The Pearson's chi-square test was also used to assess the association between the various form of intimate partner violence and HIV testing in the lifetime of women. From the Pearson's chi-square test, none of the intimate partner violence was significantly associated with HIV testing in the lifetime of women in the study. The logistic regression was used to determine how the various IPV independently associates with HIV testing in the lifetime of women after adjusting for their socio-demographic and sexual behavior factors.

From the logistic regression model, HIV testing in their lifetime was significantly higher among women who experience economic or emotional intimate partner violence in the 12 months preceding the survey compared to those who did not experience (AOR: 1.90, 95% CI: 1.07 – 3.38). Also, the odds of HIV testing were significantly lower among women who had experienced sexual intimate partner violence in their life compared to those who had never experienced sexual intimate partner violence (AOR: 1.18, 95% CI: 0.74 – 1.87). (Table 4.10).

Table 4 10 Intimate partner violence as factors of HIV testing in lifetime among all women in the study

		Ever tested for HIV in lifetime (N = 2000)		
Intimate partner violence	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Economic or emotional IPV in the past 12 months		χ^2=3.34, P=0.067		
No	1477	621 (42.04)	1.00 [reference]	
Yes	523	244 (46.65)	1.90 [1.07 - 3.38]	0.028 *
Physical IPV in the past 12 months		χ^2=0.00, P=0.998		
No	1704	737 (43.25)	1.00 [reference]	
Yes	296	128 (43.24)	1.14 [0.74 - 1.74]	0.558
Sexual IPV in the past 12 months		χ^2=1.09, P=0.296		
No	1775	775 (43.66)	1.00 [reference]	
Yes	225	90 (40.00)	1.28 [0.76 - 2.15]	0.345
Any form of IPV in the past 12 months		χ^2=0.50, P=0.481		
No	1351	577 (42.71)	1.00 [reference]	
Yes	649	288 (44.38)	0.74 [0.41 - 1.34]	0.322
Economic IPV in lifetime		χ^2=0.30, P=0.586		
No	1798	774 (43.05)	1.00 [reference]	
Yes	202	91 (45.05)	0.97 [0.67 - 1.38]	0.849
Emotional IPV in lifetime		χ^2=0.27, P=0.604		
No	1266	542 (42.81)	1.00 [reference]	
Yes	734	323 (44.01)	0.82 [0.54 - 1.24]	0.343
Physical IPV in lifetime		χ^2=2.42, P=0.120		
No	1357	603 (44.44)	1.00 [reference]	
Yes	643	262 (40.75)	0.92 [0.64 - 1.31]	0.634
Sexual IPV in lifetime		χ^2=2.66, P=0.103		
No	1630	719 (44.11)	1.00 [reference]	
Yes	370	146 (39.46)	0.66 [0.44 - 0.99]	0.046 *
Any form of IPV in lifetime		χ^2=0.65, P=0.419		
No	992	438 (44.15)	1.00 [reference]	
Yes	1008	427 (42.36)	1.18 [0.74 - 1.87]	0.485

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic and Sexual behavior factors were adjusted for in estimating AOR.

4.11 Socio-demographic factors associated with HIV testing in 12 months preceding survey

The frequency and percentage distribution of the women who had HIV test in the 12 months preceding the survey was shown in Table 4.11. The Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of study participants and testing for HIV in the 12 months preceding the survey.

The age group of women (χ^2=47.77, p-value<0.001), age difference with partner (χ^2=10.27, p-value=0.016), area of residence (χ^2=25.8, p-value<0.001), years lived in their community

(χ^2=25.7, p-value<0.001), highest level of education (χ^2=29.2, p-value<0.001), current partner's educational level (χ^2=8.29, p-value=0.016), ever moved or travelled outside community for work (χ^2=10.8, p-value=0.001), having employment within 12 months preceding the survey (χ^2=7.5, p-value=0.013) and earning difference (χ^2=6.6, p-value=0.037) were the socio-demographic characteristics of the women that showed significant association with HIV testing in the 12 months preceding the survey from the Pearson's chi-square test. This shows that the proportion of HIV testing was significantly different across the various categories of those socio-demographic factors. (Table 4.11).

The multiple binary logistic regression model was used to assess socio demographic factors that were independent predictors of HIV testing in the lifetime of women after controlling for sexual behavior characteristics and other socio-demographic factors.

From the adjusted logistic regression model, the odds of HIV testing in the 12 months preceding the survey was 50% significantly higher among women within the age ranges 25-29 years (AOR: 1.51, 95% CI: 1.04 – 2.20) and 73% significantly lower among women in the age range 45-49 years (AOR: 0.37, 95% CI: 0.17 – 0.81) when both categories are compared to the women less than 25 years of age. Also, compared to the women living in the coastal areas, the odds of HIV testing in the 12 months preceding the survey was 47% significantly lower among women living in inland or forest areas (AOR: 0.53, 95% CI: 0.40 – 0.71). The odds of HIV testing in the 12 months preceding the survey was significantly higher for women with higher levels of education, Junior high (AOR: 1.62, 95% CI: 1.10 – 2.40), senior high (AOR: 2.29, 95% CI: 1.32 – 3.97) and post senior high (AOR: 2.85, 95% CI: 1.35 – 6.01) levels of education compared to those with no formal education. The odds of HIV testing in the 12 months preceding the survey was significantly high among women who had ever travelled for work compared to those who had never travelled for work (AOR: 1.34, 95% CI: 1.03 – 1.76). (Table 4.11).

Table 4 11 Socio-demographic factors associated with HIV testing in the past 12 months among all women in the study

		Ever tested for HIV in the past 12 months (N = 2000)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age group of women		χ^2=47.77, P<0.001		
<25years	484	83 (17.15)	1.00 [reference]	
25-29	418	97 (23.21)	1.51 [1.04 - 2.20]	0.030 *
30-34	359	67 (18.66)	1.39 [0.91 - 2.14]	0.127
35-39	276	42 (15.22)	1.24 [0.76 - 2.01]	0.391
40-44	237	25 (10.55)	1.01 [0.57 - 1.77]	0.985
45-49	226	9 (3.98)	0.37 [0.17 - 0.81]	0.013 *
Age difference		χ^2=10.27, P=0.016		
Older or same age as partner	137	14 (10.22)	1.00 [reference]	
1-5yrs Younger	1059	189 (17.85)	1.49 [0.81 - 2.75]	0.197
6-10yrs Younger	541	90 (16.64)	1.54 [0.82 - 2.91]	0.178
More Than 10yrs Younger	263	30 (11.41)	1.21 [0.60 - 2.46]	0.595
Area of residence		χ^2=25.80, P<0.001		
Coastal	1048	211 (20.13)	1.00 [reference]	
inland	952	112 (11.76)	0.53 [0.40 - 0.71]	<0.001 ***
Region of birth		χ^2=1.82, P=0.177		
Outside central region	480	87 (18.13)	1.00 [reference]	
Central region	1520	236 (15.53)	0.91 [0.67 - 1.24]	0.560
Years lived in community		χ^2=25.65, P<0.001		
<10years	636	115 (18.08)	1.00 [reference]	
10-19	437	75 (17.16)	1.07 [0.76 - 1.51]	0.705
20-29	555	105 (18.92)	0.95 [0.69 - 1.32]	0.775
>29	372	28 (7.53)	0.52 [0.31 - 0.86]	0.011 *
Highest level of education		χ^2=29.23, P<0.001		
None	434	48 (11.06)	1.00 [reference]	
Primary	459	62 (13.51)	1.33 [0.86 - 2.06]	0.202
Junior high	897	158 (17.61)	1.62 [1.10 - 2.40]	0.016 *
Senior high	156	38 (24.36)	2.29 [1.32 - 3.97]	0.003 **
Post senior high	54	17 (31.48)	2.85 [1.35 - 6.01]	0.006 **
Current partner's education level		χ^2=8.29, P=0.016		
Same	462	87 (18.83)	1.00 [reference]	
Woman more education	271	54 (19.93)	1.01 [0.67 - 1.53]	0.951
Male more educated	1267	182 (14.36)	0.83 [0.61 - 1.13]	0.239
Ever moved/ travelled for work		χ^2=10.82, P=0.001		
No	1126	155 (13.77)	1.00 [reference]	

Yes	874	168 (19.22)	1.34 [1.03 - 1.76]	0.029 *
Employed in the past 12 months		χ^2=7.48, P=0.006		
No	391	81 (20.72)	1.00 [reference]	
Yes	1609	242 (15.04)	0.77 [0.56 - 1.06]	0.111
Partner employed		χ^2=2.84, P=0.092		
No	1916	315 (16.44)	1.00 [reference]	
Yes	84	8 (9.52)	0.68 [0.29 - 1.56]	0.360
Earning difference		χ^2=6.59, P=0.037		
Same earnings	110	11 (10.00)	1.00 [reference]	
Female earns more	115	12 (10.43)	1.05 [0.42 - 2.65]	0.911
Male earns more	1775	300 (16.90)	1.44 [0.72 - 2.90]	0.301

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Sexual behavior characteristics and experience of IPVs were adjusted for in estimating AOR.

4.12 Sexual behavior factors of HIV testing in the 12 months preceding the survey

Table 4.12 shows the frequency and percentage distribution of the prevalence of HIV testing in the 12 months preceding the survey among women by sexual behavior factors. The Pearson's chi-square was also used to assess the association between the sexual behavior characteristics of study participants and HIV testing in the 12 months preceding the survey.

Ever used of condoms (χ^2=13.8, p-value<0.001) and number of main sex partners in life (χ^2=14.0, p-value =0.001) were the sexual behavior factors that showed significant association with HIV testing in the 12 months preceding the survey from the Pearson's chi-square test. This shows that the proportion of HIV testing was significantly different across the levels of those sexual behavior characteristics. (Table 4.12).

The logistic regression model was used to assessment sexual behavioural factors than were independent predictors of HIV testing in the 12 months preceding the survey among women after controlling for other sexual behavior characteristics and socio-demographic factors.

From the adjusted logistic regression model, compared to the women who first had sex with their husband, the odds of HIV testing in the 12 months preceding the survey was significantly less for those who first had sex with their boyfriend (AOR: 0.60, 95% CI: 0.40 – 0.92) or others (AOR: 0.46, 95% CI: 0.24 – 0.88). Also, the odds of HIV testing in the 12

months preceding the survey was significantly higher among women who had have sex with one other sexual partner in their life compared to those who had never had sex with other partners in their life (AOR: 2.22, 95% CI: 1.22 – 4.03). (Table 4.12).

Table 4 12 Sexual behavior factors associated with HIV testing in the past 12 months among all women in the study

		Ever tested for HIV in the past 12 months (N = 2000)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age at first sex		χ^2=4.38, P=0.223		
Never had sex	11	0 (0.00)	(omitted)	
<16	265	35 (13.21)	1.00 [reference]	
16-19	1090	179 (16.42)	1.07 [0.70 - 1.63]	0.753
20 years and above	634	109 (17.19)	0.84 [0.53 - 1.35]	0.483
First sex partner		χ^2=3.54, P=0.316		
Husband	254	44 (17.32)	1.00 [reference]	
Boyfriend	1568	257 (16.39)	0.60 [0.40 - 0.92]	0.018 *
Others	167	22 (13.17)	0.46 [0.24 - 0.88]	0.020 *
Never had sex	11	0 (0.00)	(omitted)	
Ever used condom		χ^2=13.76, P<0.001		
no	1473	211 (14.32)	1.00 [reference]	
yes	527	112 (21.25)	1.15 [0.86 - 1.54]	0.349
Number of main sex partners in past year		χ^2=14.01, P=0.001		
None	218	17 (7.80)	1.00 [reference]	
One	1758	304 (17.29)	2.22 [1.22 - 4.03]	0.009 **
Two or more	24	2 (8.33)	0.92 [0.18 - 4.57]	0.914
Number of other sex partners in the past year		χ^2=2.32, P=0.313		
None	1892	310 (16.38)	1.00 [reference]	
One	88	12 (13.64)	1.09 [0.51 - 2.33]	0.822
more	20	1 (5.00)	0.39 [0.04 - 3.39]	0.391
Number of main sex partners in life		χ^2=1.02, P=0.600		
None	39	4 (10.26)	1.00 [reference]	
One	746	121 (16.22)	0.54 [0.16 - 1.88]	0.334
more	1215	198 (16.30)	0.62 [0.18 - 2.16]	0.458
Number of other sex partners in life		χ^2=1.89, P=0.389		
None	1748	288 (16.48)	1.00 [reference]	
One	162	25 (15.43)	1.37 [0.75 - 2.48]	0.304
more	90	10 (11.11)	1.13 [0.50 - 2.55]	0.765
Number of transactional sexes involved in		χ^2=5.29, P=0.071		
Never	1640	275 (16.77)	1.00 [reference]	
Once	138	24 (17.39)	1.19 [0.73 - 1.94]	0.498
Two or more	222	24 (10.81)	0.73 [0.41 - 1.31]	0.291

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic characteristics and experience of IPVs were adjusted for in estimating AOR.
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

4.13 Intimate partner violence as factors of HIV testing in 12 months preceding the survey.

The frequency and percentage distribution of HIV testing in the 12 months preceding the survey among women by their experience status of intimate partner violence was shown in Table 4.13. The Pearson's chi-square test was also used to assess the association between the various form of intimate partner violence and HIV testing in the 12 months preceding the survey among women. From the Pearson's chi-square test, none of the intimate partner violence was significantly associated with HIV testing in the 12 months preceding the survey among of women in the study. The binary logistic regression was used to assess how the various IPV independently associates with HIV testing in the 12 months preceding the survey among women after adjusting for their socio-demographic and sexual behavior factors.

From the logistic regression model, HIV testing in the 12 months preceding the survey was significantly higher among women who experience economic or emotional intimate partner violence in the 12 months preceding the survey compared to those who did not experience (AOR: 2.57, 95% CI: 1.13 – 5.84). Also, the odds of HIV testing in the 12 months preceding the survey was significantly lower among women who had experienced emotional intimate partner violence in their life compared to those who had never experienced emotional intimate partner violence (AOR: 0.54, 95% CI: 0.30 – 0.98). (Table 4.13).

Table 4 13 Intimate partner violence as factors of HIV test in the past 12 months among all women in the study

		Ever tested for HIV in the past 12 months (N = 2000)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Economic or emotional IPV in the past 12 months		χ^2=1.09, P=0.297		
No	1477	231 (15.64)	1.00 [reference]	
Yes	523	92 (17.59)	2.57 [1.13 - 5.84]	0.024 *
Physical IPV in the past 12 months		χ^2=0.10, P=0.758		
No	1704	277 (16.26)	1.00 [reference]	
Yes	296	46 (15.54)	1.13 [0.64 - 2.00]	0.667
Sexual IPV in the past 12 months		χ^2=3.22, P=0.073		
No	1775	296 (16.68)	1.00 [reference]	
Yes	225	27 (12.00)	0.86 [0.43 - 1.76]	0.689
Any form of IPV in the past 12 months		χ^2=0.02, P=0.878		
No	1351	217 (16.06)	1.00 [reference]	
Yes	649	106 (16.33)	0.61 [0.27 - 1.40]	0.241
Economic IPV in lifetime		χ^2=2.21, P=0.137		
No	1798	283 (15.74)	1.00 [reference]	
Yes	202	40 (19.80)	1.38 [0.87 - 2.19]	0.173
Emotional IPV in lifetime		χ^2=0.90, P=0.342		
No	1266	212 (16.75)	1.00 [reference]	
Yes	734	111 (15.12)	0.54 [0.30 - 0.98]	0.042 *
Physical IPV in lifetime		χ^2=2.37, P=0.123		
No	1357	231 (17.02)	1.00 [reference]	
Yes	643	92 (14.31)	1.02 [0.63 - 1.65]	0.938
Sexual IPV in lifetime		χ^2=2.83, P=0.092		
No	1630	274 (16.81)	1.00 [reference]	
Yes	370	49 (13.24)	0.86 [0.50 - 1.49]	0.589
Any form of IPV in lifetime		χ^2=2.05, P=0.152		
No	992	172 (17.34)	1.00 [reference]	
Yes	1008	151 (14.98)	1.19 [0.65 - 2.20]	0.575

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval. *: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic and Sexual behavior factors were adjusted for in estimating AOR.

4.14 Socio-demographic factors associated with HIV testing in lifetime among women who had experienced any form of IPV in their lifetime.

Table 4.14 shows the frequency and percentage distribution of the women who had ever have an HIV test among those who had ever experienced IPV during their lifetime. Among women with history of any form of IPV, the Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of women who had ever experienced any form of IPV and their history of HIV testing. A total of 1,008 of the total women in the study had experienced some form of IPV in their lifetime.

The age group of women (χ^2=35.7 p-value<0.001), area of residence (χ^2=23.5, p-value<0.001), years lived in their community (χ^2=10.6, p-value=0.014), highest level of education (χ^2=42.1, p-value<0.001), current partner's educational level (χ^2=10.8, p-value=0.004), ever moved or travelled outside community for work (χ^2=11.8, p-value=0.001) and having employment within 12 months preceding the survey (χ^2=6.1, p-value=0.013) were the demographic characteristics of the women who had ever experienced some form of IPV that showed significant association with HIV testing in life from the Pearson's chi-square test.

The multiple logistic regression model was used to assessment socio demographic factors than were independent predictors of HIV testing in the lifetime of women after controlling for sexual behavior and other socio-demographic factors.

From the logistic regression model, the odds of HIV testing in their lifetime was about 2 times significantly higher among women within the age ranges 25-29 years (AOR: 2.19, 95% CI: 1.41 – 3.40), 30-34 years (AOR: 2.33, 95% CI: 1.43 – 3.80) and 35-39 years (AOR: 2.34, 95% CI: 1.38 – 3.96) when each category is compared to the women less than 25 years of age. Also, compared to the women living in the coastal areas, the odds of HIV testing in their lifetime was 49% lower among women living in inland areas (AOR: 0.51, 95% CI: 0.37 – 0.69). The odds of HIV testing during their lifetime among was significantly higher for women with higher levels of education, Junior high (AOR: 2.26, 95% CI: 1.50 – 3.41) and senior high (AOR: 3.38, 95% CI: 1.76 – 6.47) levels of education compared to those with no formal education. The odds of HIV testing were significantly less among women who had been employed 12 months preceding the survey compared to those who had no employment (AOR: 0.65, 95% CI: 0.44 – 0.96). (Table 4.14).

Table 4 14 Socio-demographic factors associated with HIV test in lifetime among women who have ever experienced any form of IPV.

		Ever tested for HIV in lifetime among women who have ever experience IPV in lifetime (N = 1008)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age group of women		X^2=35.68, P<0.001		
<25years	220	81 (36.82)	1.00 [reference]	
25-29	221	120 (54.30)	2.19 [1.41 - 3.40]	<0.001 ***
30-34	182	86 (47.25)	2.33 [1.43 - 3.80]	0.001 **
35-39	136	65 (47.79)	2.34 [1.38 - 3.96]	0.002 **
40-44	128	43 (33.59)	1.53 [0.85 - 2.73]	0.154
45-49	121	32 (26.45)	1.05 [0.56 - 1.97]	0.885
Age difference		X^2=7.03, P=0.071		
Older or same age as partner	65	21 (32.31)	1.00 [reference]	
1-5yrs Younger	516	237 (45.93)	1.67 [0.91 - 3.08]	0.101
6-10yrs Younger	277	107 (38.63)	1.28 [0.68 - 2.43]	0.443
More Than 10yrs Younger	150	62 (41.33)	1.62 [0.83 - 3.20]	0.160
Area of residence		X^2=23.50, P<0.001		
Coastal	449	228 (50.78)	1.00 [reference]	
Inland	559	199 (35.60)	0.51 [0.37 - 0.69]	<0.001 ***
Region of birth		X^2=3.41, P=0.065		
Outside central region	240	114 (47.50)	1.00 [reference]	
Central region	768	313 (40.76)	0.75 [0.53 - 1.07]	0.109
Years lived in community		X^2=10.64, P=0.014		
<10years	329	156 (47.42)	1.00 [reference]	
10-19	221	83 (37.56)	0.66 [0.45 - 0.97]	0.034 *
20-29	267	121 (45.32)	0.85 [0.58 - 1.23]	0.381
>29	191	67 (35.08)	0.73 [0.46 - 1.17]	0.192
Highest level of education		X^2=42.06, P<0.001		
None	227	73 (32.16)	1.00 [reference]	
Primary	254	90 (35.43)	1.33 [0.87 - 2.04]	0.184
Junior high	451	214 (47.45)	2.26 [1.50 - 3.41]	<0.001 ***
Senior high	66	40 (60.61)	3.38 [1.76 - 6.47]	<0.001 ***
Post senior high	10	10 (100.00)	(omitted)	
Current partner's education level		X^2=3.12, P=0.210		
Same	216	102 (47.22)	1.00 [reference]	
Woman more education	147	64 (43.54)	0.81 [0.50 - 1.30]	0.386
Male more educated	645	261 (40.47)	0.88 [0.62 - 1.25]	0.486
Ever moved/ travelled for work		X^2=11.81, P=0.001		
No	545	204 (37.43)	1.00 [reference]	
Yes	463	223 (48.16)	1.35 [1.01 - 1.81]	0.040 *
Employed in the past 12 months		X^2=6.12, P=0.013		
No	171	87 (50.88)	1.00 [reference]	
Yes	837	340 (40.62)	0.65 [0.44 - 0.96]	0.029 *
Partner employed		X^2=0.32, P=0.573		
No	974	411 (42.20)	1.00 [reference]	
Yes	34	16 (47.06)	1.19 [0.50 - 2.83]	0.689
Earning difference		X^2=5.26, P=0.072		
Same earnings	44	15 (34.09)	1.00 [reference]	
Female earns more	62	19 (30.65)	0.64 [0.25 - 1.63]	0.353
Male earns more	902	393 (43.57)	1.16 [0.58 - 2.34]	0.679

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Sexual behavior characteristics were adjusted for in estimating AOR.
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

4.15 Sexual behavior factors of HIV testing in the lifetime among women who had ever experienced any form of IPV in their lifetime.

Table 4.15 shows the frequency and percentage distribution of the prevalence of HIV testing among women who had ever experienced any form of IPV in their lifetime by sexual behavior factors. The Pearson's chi-square was also used to assess the association between the sexual behavior characteristics of women who had ever experienced any form of IPV in their life and HIV testing in lifetime.

Ever used of condoms (χ^2=16.5, p-value<0.001) was the only sexual behavior among women who had ever experienced some form of IPV in their life that showed significant association with HIV testing in the lifetime of women from the Pearson's chi-square test. (Table 4.15)

The multiple logistic regression model was used to assessment sexual behavioural factors than were independent predictors of HIV testing in their lifetime among women after controlling for other sexual behavior characteristics and socio-demographic factors.

From the logistic regression model, compared to the women who first had sex with their husband, the odds of HIV testing in the lifetime of women who had ever experienced any form of IPV in their lifetime was significantly less for those who first had sex with their boyfriend (AOR: 0.41, 95% CI: 0.26 – 0.66) and others (AOR: 0.50, 95% CI: 0.27 – 0.93). (Table 4.15).

Table 4 15 Sexual behavior factors associated with HIV test in lifetime among women who have ever experienced any form of IPV.

		Ever tested for HIV in lifetime among women who have ever experienced IPV in lifetime (N = 1008)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age at first sex		χ^2=7.50, P=0.058		
Never had sex	2	1 (50.00)	1.00 [reference]	
<16	146	49 (33.56)	3.37 [0.12 - 95.11]	0.476
16-19	590	249 (42.20)	3.70 [0.14 - 101.49]	0.438
20 years and above	270	128 (47.41)	3.36 [0.12 - 92.36]	0.473
First sex partner		χ^2=4.97, P=0.174		
Husband	112	58 (51.79)	1.00 [reference]	
Boyfriend	777	317 (40.80)	0.41 [0.26 - 0.66]	<0.001 ***
Others	117	51 (43.59)	0.50 [0.27 - 0.93]	0.029 *
Never had sex	2	1 (50.00)	(omitted)	
Ever used condom		χ^2=16.47, P<0.001		
no	704	269 (38.21)	1.00 [reference]	
yes	304	158 (51.97)	1.32 [0.97 - 1.81]	0.076
Number of main sex partners in past year		χ^2=1.44, P=0.487		
None	108	40 (37.04)	1.00 [reference]	
One	880	378 (42.95)	1.44 [0.89 - 2.32]	0.135
Two or more	20	9 (45.00)	1.29 [0.43 - 3.87]	0.650
Number of other sex partners in the past year		χ^2=3.44, P=0.179		
None	927	392 (42.29)	1.00 [reference]	
One	64	31 (48.44)	1.05 [0.55 - 2.01]	0.884
more	17	4 (23.53)	0.48 [0.11 - 2.13]	0.337
Number of main sex partners in life		χ^2=2.55, P=0.279		
None	10	5 (50.00)	1.00 [reference]	
One	317	123 (38.80)	0.38 [0.07 - 2.00]	0.255
more	681	299 (43.91)	0.50 [0.10 - 2.56]	0.402
Number of other sex partners in life		χ^2=4.97, P=0.083		
None	813	343 (42.19)	1.00 [reference]	
One	127	62 (48.82)	1.64 [0.93 - 2.88]	0.085
more	68	22 (32.35)	0.76 [0.35 - 1.64]	0.485
Number of transactional sexes involved in		χ^2=1.38, P=0.501		
Never	753	324 (43.03)	1.00 [reference]	
Once	75	27 (36.00)	0.84 [0.49 - 1.45]	0.529
Two or more	180	76 (42.22)	1.19 [0.71 - 1.99]	0.502

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic characteristics were adjusted for in estimating AOR.
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

4.16 Socio-demographic factors associated with HIV testing in 12 months preceding survey among women who had experienced any form of IPV in the 12 months preceding the survey.

Table 4.16 shows the frequency and percentage distribution of the women who had HIV test in the 12 months preceding the survey. The Pearson's chi-square was also used to assess the association between the socio-demographic characteristics of study participants and testing for HIV in the 12 months preceding the survey. A total of 649 women had experienced some form of IPV in the 12 months preceding the survey.

The age group of women (χ^2=13.6, p-value=0.018), area of residence (χ^2=9.9, p-value=0.002), years lived in their community (χ^2=8.8, p-value=0.032), highest level of education (χ^2=17.3, p-value=0.002) and current partner's educational level (χ^2=6.64, p-value=0.036) were the socio-demographic characteristics of the women who had experienced any form of IPV in the 12 months preceding the survey that showed significant association with HIV testing in the 12 months preceding the survey from the Pearson's chi-square test. This shows that the proportion of HIV testing was significantly different across the various categories of those socio-demographic factors. (Table 4.16).

The multiple logistic regression model was used to assess socio demographic factors that were independent predictors of HIV testing in the lifetime of women after controlling for sexual behavior characteristics and other socio-demographic factors.

From the adjusted logistic regression model, among women who had experienced any form of IPV in the 12 months preceding the survey, compared to those living in the coastal areas, the odds of HIV testing in the 12 months preceding the survey were 51% significantly lower among women living in inland areas (AOR: 0.49, 95% CI: 0.29 – 0.82). The odds of HIV testing in the 12 months preceding the survey among women who had ever experienced any form of IPV in the past 12 months was 62% significantly less for those who had lived in

their community for more than 29 years compared to those who had lived for less than 10 years (AOR: 0.38, 95% CI: 0.15 – 0.96). (Table 4.16).

Table 4 16 Socio-demographic factors associated with HIV test in the past 12 months among women who experienced any form of IPV in the past 12 months.

		Ever tested for HIV in lifetime among women who experienced IPV in the past 12 months (N = 649)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age group of women		χ^2=13.62, P=0.018		
<25years	170	29 (17.06)	1.00 [reference]	
25-29	143	32 (22.38)	1.27 [0.67 - 2.41]	0.462
30-34	120	17 (14.17)	0.96 [0.45 - 2.08]	0.920
35-39	83	17 (20.48)	1.97 [0.88 - 4.40]	0.100
40-44	73	9 (12.33)	1.15 [0.43 - 3.06]	0.781
45-49	60	2 (3.33)	0.34 [0.07 - 1.67]	0.182
Age difference		χ^2=2.42, P=0.491		
Older or same age as partner	40	5 (12.50)	1.00 [reference]	
1-5yrs Younger	335	58 (17.31)	1.35 [0.45 - 4.04]	0.594
6-10yrs Younger	180	32 (17.78)	1.47 [0.47 - 4.56]	0.504
More Than 10yrs Younger	94	11 (11.70)	1.08 [0.31 - 3.75]	0.905
Area of residence		χ^2=9.88, P=0.002		
Coastal	266	58 (21.80)	1.00 [reference]	
Inland	383	48 (12.53)	0.49 [0.29 - 0.82]	0.007 **
Region of birth		χ^2=0.25, P=0.616		
Outside central region	159	28 (17.61)	1.00 [reference]	
Central region	490	78 (15.92)	0.97 [0.56 - 1.70]	0.919
Years lived in community		χ^2=8.78, P=0.032		
<10years	242	49 (20.25)	1.00 [reference]	
10-19	147	20 (13.61)	0.60 [0.32 - 1.13]	0.111
20-29	161	29 (18.01)	0.76 [0.42 - 1.36]	0.351
>29	99	8 (8.08)	0.38 [0.15 - 0.96]	0.040 *
Highest level of education		χ^2=17.31, P=0.002		
None	138	16 (11.59)	1.00 [reference]	
Primary	157	20 (12.74)	1.26 [0.58 - 2.75]	0.557
Junior high	305	54 (17.70)	1.39 [0.68 - 2.82]	0.370
Senior high	42	12 (28.57)	2.27 [0.82 - 6.28]	0.115
Post senior high	7	4 (57.14)	5.81 [0.86 - 39.10]	0.070
Current partner's education level		χ^2=6.64, P=0.036		
Same	138	30 (21.74)	1.00 [reference]	
Woman more education	97	20 (20.62)	0.92 [0.45 - 1.88]	0.813
Male more educated	414	56 (13.53)	0.64 [0.37 - 1.12]	0.121
Ever moved/ travelled for work		χ^2=2.32, P=0.128		
No	362	52 (14.36)	1.00 [reference]	
Yes	287	54 (18.82)	1.20 [0.74 - 1.94]	0.451
Employed in the past 12 months		χ^2=2.41, P=0.121		
No	113	24 (21.24)	1.00 [reference]	
Yes	536	82 (15.30)	0.76 [0.42 - 1.37]	0.359
Partner employed		χ^2=0.12, P=0.728		
No	627	103 (16.43)	1.00 [reference]	
Yes	22	3 (13.64)	1.09 [0.23 - 5.15]	0.918
Earning difference		χ^2=4.51, P=0.105		
Same earnings	34	2 (5.88)	1.00 [reference]	
Female earns more	41	4 (9.76)	1.53 [0.22 - 10.58]	0.667
Male earns more	574	100 (17.42)	2.77 [0.59 - 12.93]	0.196

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Sexual behavior characteristics were adjusted for in estimating AOR.

4.17 Sexual behavior factors of HIV testing in the 12 months preceding the survey among women who had experienced some form of IPV 12 months preceding the survey.

The Table 4.17 shows the frequency and percentage distribution of the prevalence of HIV testing in the 12 months preceding the survey among women who had experienced any form of IPV in the 12 months preceding the survey by their sexual behavior factors. The Pearson's chi-square was also used to assess the association between the sexual behavior characteristics of the women who had experienced any form of IPV in the 12 months preceding the survey and HIV testing in the 12 months preceding the survey.

Ever used of condoms (χ^2=6.23, p-value=0.013) was the only the sexual behavior factor among women who had experienced some form of IPV in the 12 months preceding the survey that showed significant association with HIV testing in the 12 months preceding the survey from the Pearson's chi-square test. (Table 4.17).

The multiple binary logistic regression model was used to assess sexual behavioural factors that were independent predictors of HIV testing in the 12 months preceding the survey among women after controlling for other sexual behavior characteristics and socio-demographic factors. None of the sexual behavior characteristics of women who had experienced some form of IPV in the 12 months preceding the survey was significantly associated with HIV testing in the 12 months preceding the survey. (Table 4.17).

Table 4 17 Sexual behavior factors associated with HIV test in the past 12 months among women who have experienced any form of IPV in the past 12 months.

		Ever tested for HIV in lifetime among women who experienced IPV in the past 12 months (N = 649)		
Characteristics	**N**	**n (%)/ χ2, p-value**	**AOR [95% CI]**	**P-value**
Age at first sex		χ^2=3.73, P=0.292		
Never had sex	2	0 (0.00)	(omitted)	
<16	84	8 (9.52)	1.00 [reference]	
16-19	388	68 (17.53)	1.19 [0.51 - 2.79]	0.682
20 years and above	175	30 (17.14)	0.92 [0.35 - 2.40]	0.857
First sex partner		χ^2=0.77, P=0.857		
Husband	72	13 (18.06)	1.00 [reference]	
Boyfriend	492	81 (16.46)	0.62 [0.28 - 1.36]	0.234
Others	83	12 (14.46)	0.67 [0.24 - 1.88]	0.447
Never had sex	2	0 (0.00)	(omitted)	
Ever used condom		χ^2=6.23, P=0.013		
no	435	60 (13.79)	1.00 [reference]	
yes	214	46 (21.50)	1.34 [0.82 - 2.19]	0.250
Number of main sex partners in past year		χ^2=2.92, P=0.233		
None	28	4 (14.29)	1.00 [reference]	
One	607	102 (16.80)	1.00 [0.29 - 3.48]	0.997
Two or more	14	0 (0.00)	(omitted)	
Number of other sex partners in the past year		χ^2=1.23, P=0.541		
None	580	96 (16.55)	1.00 [reference]	
One	53	9 (16.98)	0.92 [0.34 - 2.52]	0.870
more	16	1 (6.25)	0.44 [0.04 - 5.09]	0.512
Number of main sex partners in life		χ^2=1.22, P=0.542		
None	6	0 (0.00)	(omitted)	
One	225	38 (16.89)	1.00 [reference]	
more	418	68 (16.27)	0.97 [0.58 - 1.63]	0.922
Number of other sex partners in life		χ^2=2.51, P=0.286		
None	505	82 (16.24)	1.00 [reference]	
One	94	19 (20.21)	2.38 [0.99 - 5.72]	0.052
more	50	5 (10.00)	1.17 [0.33 - 4.16]	0.806
Number of transactional sexes involved in		χ^2=0.96, P=0.618		
Never	470	80 (17.02)	1.00 [reference]	
Once	46	8 (17.39)	1.18 [0.49 - 2.82]	0.708
Two or more	133	18 (13.53)	0.72 [0.30 - 1.73]	0.465

n: Frequency. %: Percentage: χ2: Pearson's chi-square value. AOR: adjusted odds ratio. CI: confidence interval.
*: p<0.05. **: p<0.01. ***" p<0.001.
Note: Socio-demographic characteristics were adjusted for in estimating AOR.
Omitted: AOR omitted because category correlate with another characteristic or few frequencies in category.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter presents a discussion on the findings of the study based on the research questions. A cross sectional secondary data analysis was performed on a mixed-methods two arms unmatched cluster randomized control trial study in the Central region of Ghana.

5.1 Prevalence of HIV Testing among participants

The study showed that, the lifetime prevalence of HIV testing among women was 43.3% and 16.2% within the past 12 months. Different studies conducted in and outside Ghana have reported various levels of testing. For instance, among a group of young people, Djan, (2018), found an 8% testing rate in Ghana. Similar to Djan, (2018), Tenkorang & Owusu, (2010), found close to 10% of women tested in Ghana. Gyasi & Abass, (2018), also found testing rates to be 22% in the Kumasi Metropolitan area in Ghana.

These show increase in testing rates in Ghana as indicated by Yawson et al., (2014) although the differences in the levels of testing rates can be attributed to other factors including the geographic locations, study designs, testing settings as well as study population. Efforts to increase the testing rates among vulnerable groups and the population at large, are essential to meeting the goals of HIV epidemic control, marking the entry to the HIV treatment cascade (Chanda et al., 2017; Haberland et al., 2020; Steiner et al., 2020; WHO, 2004).

The lifetime prevalence of 43.3% HIV testing from this current study among women experiencing IPV in the central region is lower than the over 82.3% testing rate among of women in Uganda who were exposed to sexual and physical IPV (Salima et al., 2018). Wandera et al.,(2020), found among adults in Uganda a lifetime testing rate of 82%. Comparing with the findings of Kirakoya-Samadoulougou et al., (2017), lifetime testing

rate was higher than the 36% from Burkina Faso. Also, testing rate recorded in this study in Ghana was higher than the average 36.5% recorded for the four sub-Saharan African countries although other countries like Mozambique and Uganda having higher rates of 45.3% and 77.5% respectively (Asaolu et al., 2016).

On testing within the past year, Salima et al., (2018) reported that this was 61.5% from their study on HIV testing among women exposed to IPV in Uganda. Similarly, Wandera et al., (2020), reported a 53% testing rate among women in the past 12 months. The rate of HIV testing among women victims of IPV as found in this study was however, higher than rates reported in other studies such as Durevall & Lindskog, (2015b), Henderson et al., (2017) and Shamu et al., (2014) in Burkina Faso and Zimbabwe respectively.

The findings on HIV testing rate in this study showed unmet needs and gaps of testing services among women who experienced IPV which need to be close by expanding testing options (CDC, 2010; Haberland et al., 2020; Salima et al., 2018). This agrees with the assertion that, some women experiencing IPV in their relationships reported risk behaviours but were less likely to be tested for HIV (CDC, 2010; Kishor, 2015). It remains essential to provide avenues for women with IPV exposure to have higher testing rates.

Providing self-testing and rapid voluntary counselling and testing services in the HIV programme will be helpful (Pottie et al., 2014). For Ghana to achieve its targets on HIV control such as the 90-90-90, strategically integrated and multifaceted efforts should be directed to encourage high risk groups such women experiencing IPV to get tested (Asaolu et al., 2016; Asare et al., 2020; Iddrisu et al., 2019; Somefun et al., 2019).

5.2 Prevalence of IPV among women in the four districts of the Central Region of Ghana

The study showed lifetime prevalence of 50.4% for any IPV form. Although higher than other reported prevalence from other countries, it is within the 15% to 71% range estimated for low- and middle-income countries like Ghana (Chirwa et al., 2018; Dako-Gyeke et al., 2019). Specifically, economic, emotional, physical and sexual IPV forms were 10.1%, 36.7%, 32.2% and 18.5% respectively. The finding in this study that more than half of the women experienced one form of IPV or the other in their lifetime should intensify concern to address the growing public health problem.

The lifetime IPV prevalence confirms the assertion that, SSA estimates are much higher than global ones (Chirwa et al., 2018). The rate of IPV in this study appears to be similar to those found in Uganda ranging from 44% to 56% (Gubi et al., 2020; Kabwama et al., 2019; Kouyoumdjian et al., 2013). Also, Meskele et al., (2019), reported a higher lifetime IPV rate of 59.7% in a study conducted in Ethiopia. The levels from 50% by El-Bassel et al., (2007) in the USA and 52% by Dhairyawan et al., (2013) in the UK shows close relation to the western countries although recent estimates may be lower.

The findings from the study in the central region is however, higher than the prevalence rates reported from other SSA countries in earlier studies. For instance, Shamu et al., (2019) reported a 28.3% for Zimbabwe where as Durevall & Lindskog, (2015b) reported 26% for Burkina Faso. Roman & Frantz, (2013) had also reported IPV rates ranging from 26.5% to 48% with an average of 25.7% for sub-Saharan Africa countries including Egypt, Kenya, Malawi, Rwanda and Zambia. Alebel et al., (2018), indicated levels of IPV reported by women to be 40%.

The study further observed that about one-third of the women reportedly suffered emotional and economic IPV while less than 20% of them experienced physical IPV. Alangea et al., (2018), found similar levels of IPV in the Central region indicating the significant incidence of male perpetration of IPV. Chirwa et al., (2018), added that, 23% of male perpetrated sexual or physical violence on their intimate female partners with one form of violence co-occurring with another. These common types of IPV being perpetuated against women have also been reported in several studies globally (Bernstein et al., 2016; Breiding, 2014; Dhairyawan et al., 2013; Durevall & Lindskog, 2015b; Kishor, 2015; Kouyoumdjian et al., 2013).

With nearly a third of the women experiencing any form of IPV in their lifetime as recently as in the last year and more than half of reported incidents of IPV in different parts of Africa, it suggests the continual perpetuation and escalating levels of IPV against women thereby, requiring urgent interventions to reverse the trend (Addo-Lartey et al., 2019). As interventions are being consider, gender based ones targeting specific IPV forms and taking into consideration the contextual factors should be used in addressing the growing problem of IPV (Rachel Jewkes et al., 2017; Matseke, Rodriguez, Peltzer, & Jones, 2017; Peltzer et al., 2017).

5.3 Characteristics of women who experience IPV in the Central region of Ghana

Several factors were identified to be independently associated with IPV that describe women who experienced IPV. From the study, the age of the woman, area of residence, higher level of education and having a travel history were among socio-demographic characteristics associated with lifetime experience of IPV. In addition, sexual behaviour factors that significantly influenced lifetime exposure to any form of IPV were ever used condom,

having multiple sex partners and involving in two or more transactional sex. These finding agree with earlier studies, re-echoing areas of concern to address IPV.

Alangea et al., (2018) and Chirwa et al., (2018), identified multiple sexual partners and involvement in transactional sex as predictors of IPV in Ghana. Alebel et al., (2018) also reported the significant relationship between educational level and IPV occurrence as found in the central region. This study conducted in the central region did not explore gender-based factors as well as substance use and childhood experiences regarding violence as have been found to be associated with IPV in earlier studies such as Jewkes et al., (2017), Shamu et al., (2016) and Shamu et al., (2019). Nevertheless, the interrelatedness of the identified socio-demographic and sexual factors to these gender-based inequities and previous experiences of violence remains relevant to factor them in addressing IPV holistically (Chirwa et al., 2018; Dako-Gyeke et al., 2019; Rachel Jewkes et al., 2017; Shamu et al., 2016).

Within the past twelve months to the study, the area of residence, years of living in community and higher education level were among socio-demographic factors associated with IPV. Also, having multiple sexual partners and engaging in two or more transactional sex were sexual behaviours that influence exposure to IPV within the last 12 months. The factors identified here were similar to that of the lifetime exposure to IPV among women in the Central region of Ghana.

These factors should direct attention towards empowering women and addressing contextual predisposing factors to multiple sexual partners and engagement in transactional sex in the region and further put in structures to identify occurrences of IPV early (Apiribu et al., 2020). The understanding of these risk factors are crucial in guiding the development of programmes and policy interventions to tackle IPV at all levels including the individual

and community (Addo-Lartey et al., 2019; Dako-Gyeke et al., 2019; Rachel Jewkes et al., 2017).

5.4 Relationship between HIV testing and IPV among women in the Central region of Ghana

The study showed that 44.4% of those who had experienced IPV in the past 12 months had ever tested for HIV. Also, 43.2%, 46.7%, and 40% of those experiencing emotional, physical and sexual violence had tested ever tested for HIV. These findings were similar for the testing levels among the women's lifetime exposure to IPV. The relationship between emotional IPV in the past 12 months and lifetime sexual IPV were significant ($p<0.05$).

The findings from this study in the Central region of Ghana showed lower testing rates among women who experienced IPV as compared with Salima et al., (2018). In their study, 66.1% and 64.7% of women experiencing physical and emotional IPV tested for HIV in the past 12 months. Those who experience all forms of IPV and had HIV test in the past year was 65.1%. The significant associations between IPV and HIV testing found in Ghana was similar to that of Uganda.

It is indicative that, testing rates among women who experience IPV could be influenced by age, knowledge, access to information and making positive choices to HIV services (Salima et al., 2018). The inadequate testing levels among IPV victims are driven by the assertions that IPV is a risk factor for HIV infection and the fear of violence intimidates women from accessing HIV testing (Campbell et al., 2012). The relationship between IPV with HIV test result disclosure, for instance, has been indicated in SSA as partners who disclosed their HV test results suffered from various forms of IPV (Apiribu et al., 2020; Hardy et al., 2020; Shamu et al., 2014).

These should be the need for programmatic improvements with interventions targeted at health education, empowerment and making information readily available through the relevant media (Haberland et al., 2020; Somefun et al., 2019). The critical nature of assessing HIV among women who experience IPV should stir the interest of improving testing options such as self-testing and increasing testing centres among these vulnerable women (Haberland et al., 2020; WHO, 2004).

5.5 Factors associated with HIV testing among women who experience of IPV

The study assessed the factors associated with HIV testing among women in general and specifically narrowed on those experiencing IPV. The factors associated with HIV testing were grouped into socio-demographic, sexual and experiencing IPV. Lifetime HIV testing was associated with socio-demographic factors such as younger age groups below 40 years, place of residence, highest level of education and having been employed in the past year. In addition, age at first sex, boyfriend as first sex partner, history of condom use, having additional other sex partners, economic or emotional IPV in last 12 months and lifetime sexual IPV were other associated factors from the study.

These show the diverse interplay of factors influencing HIV testing among women in Ghana. Similar to Iddrisu et al., (2019), higher education and younger age groups influenced HIV testing. The associating of younger age groups and higher level of education were also identified in Tanzania (Mahande et al., 2016), Sierra Leone (Brima et al., 2015) and Tajikistan (Kasymova, 2020). This study in the central region did not agree with the findings of Djan, (2018) and Tenkorang & Owusu, (2010), who found marital status and knowledge on HIV as associated factors.

Similar to the findings of the lifetime HIV testing, the study found age groups 25-29 years and 45 – 49 years, area of residence, living in the community for more than 29 years, higher level of education from junior, senior and post senior high levels and history of travel among socio-demographic factors that significantly influenced HIV testing among women in the past 12 months. Sexual behaviour factors that significantly influenced HIV testing within the past 12 months also included first sex partner being husband or other groups and having a sex partner in the past year. Having experienced an economic or emotional IPV in the past 12 months was also significantly associated with HIV testing among women.

This current study brings to the fore additional behavioural factors such as multiple sexual partners and those involved in transactional sex among other risky behaviours which need to be explored to target interventions to improve testing options (Arco et al., 2012; Kirakoya-Samadoulougou et al., 2017). Achieving high testing in Africa and increasing testing sites as well as provider-initiated testing remains significant interventions (Brima et al., 2015). This should be coupled with self-testing means and decentralised systems for women to know their HIV status as such systems were found to be acceptable and accessible to vulnerable groups (Chanda et al., 2017; Eaton et al., 2019)

The study showed associated factors to life time HIV testing and within the past 12 months for women who experienced IPV. From the study, younger age groups below 40 years, inland area of residence, living in the community for 10 -19 years, higher education level at Junior high and beyond, travel history and employment history in the last 12 months. The sexual behaviour factors significantly influencing the uptake of HIV testing services among women who had a lifetime experience of IPV was first sex partner other than husband. Brima et al., (2015), agrees that, HIV testing among women is influenced by age and higher education levels. They are also congruent to the findings of Kasymova, (2020).

The findings of employment and travel history increasing HIV testing options may be explained that, such opportunities increase access to information as increase access to information was found to be associated with HIV testing in Uganda (Salima et al., 2018). These are inherent in the efforts to empower women and other vulnerable groups as interventional attempts to reduce the increasing trends of IPV (Adomako & Baffour, 2019; Machisa et al., 2017; Marshall et al., 2018; Sharma et al., 2020; WHO, 2004).

5.6 Study Limitations

This was a cross-sectional survey which was used to determine the factors associated with HIV testing both in the lifetime and within the 12 months preceding the survey. Hence, caution must be exercised in the interpretation of the results. This study sought to establish associations and not causality associated with the outcome variables.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The study found that intimate partner violence was prevalent among women in the four districts of the Central Region as more than 50% of the women reportedly experienced some form of IPV in their lifetime with emotional, physical and sexual being the most common cases of IPV. The rate of HIV testing among women who experienced IPV was much lower compared to the number of women who actually did not experience intimate partner violence in their lives, and should have done the HIV test to know their status, especially among those who suffered sexual violence. Socio-demographic factors and sexual behavioural factors such as condom use, having multiple sexual partners and involving in transactional sexes were associated with IPV and HIV testing. The age of the woman, higher level of education, travelling history and area of residence, among others, were the socio-demographic characteristics of women that were associated with HIV testing.

6.2 Recommendations

Based on the findings of the study, the following recommendations are suggested:

Primary prevention of IPV is very important in reducing the burden of HIV transmission among women and this can be achieved through creation and increasing awareness thus, knowledge or information on IPV and women sexuality. Developing approaches such as policies and programs that pursue to improve economic and employment security for young girls, strengthen compulsory basic educational systems and community engagement opportunities such as offering some savings and loans scheme opportunities to elevate the financial status of women and their families as this increases self-efficacy, decreases the risk for women who are coerced or willingly exchange sex for money.

Interventions should also be geared towards changing normative influences such as social norms (giving more power to men than women) and gender norms (roles of masculinity) as studies have shown gender inequalities and social norms to be key drivers of both IPV and STIs, and also arbitrate the relationship between abuse and HIV transmission as they give power to men over women and reduce women's ability to negotiate healthy sexual practices.

Behavioural interventions that aim to reduce risky sexual behaviour, (i.e.), developing the skills or advocating for correct and consistent use of condom and discouraging generational or multiple sexual partnership.

Implementation of policies and intervention strategies, such as disseminated service delivery for HIV, where HIV testing is carried out at every health service delivery points. This strategy should be implemented at appropriate IPV referrals providers' points (i.e., victim-cantered services points), (e.g.,) domestic violence shelters, psychology clinics, trauma and behavioural therapy centres.

Encourage social support for victimized individuals and also social examination and discussion of power imbalances, violence against intimate partner, and increased HIV vulnerability for women through a community mobilization intervention to change community norms, behaviours, and attitudes.

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