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Magnitude and determinants of intimate partner controlling behavior among women in sub-Saharan African countries from the recent demographic and health survey data: a multilevel analysis

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Abstract

Background Intimate Partner Violence (IPV) is a major public health issue affecting physical, mental, and social well-being, particularly among women. In sub-Saharan Africa (SSA), IPV is widespread, with controlling behaviors being a common form. These behaviors include monitoring movements, social isolation, financial restrictions, and dictating daily choices. Data from Demographic and Health Surveys (DHS) highlight significant variations in these behaviors across countries and communities. Understanding the determinants of intimate partner controlling behavior (IPCB) requires a multi-level approach, considering individual, relational, community, and societal factors. IPCB has far-reaching consequences, impacting victims, families, and communities. This study aims to assess the magnitude and determinants of IPCB among reproductive-age women in SSA.

Methods This study is a secondary data analysis based on the DHS conducted in eight Sub-Saharan African countries between 2021 and 2024. The study utilized the women's data-women recode component (IR file) from the most recent DHS 8 datasets with the final weighted sample size 45,839 women. Multilevel logistic regression was conducted to assess factors associated with IPCB. All variables with a p-value < 0.05 were considered statistically significant.

Results The prevalence of IPCB among reproductive age women in 8 sub-Saharan African countries was 54.47%, with a 95% CI of 54.02–54.93%. This study identified variables of age, marital status; education level, employment status, reproductive health factors, smoking habits, asset ownership, wealth index, residence, and mass media exposure were significantly associated with IPCB.

Conclusion This study highlights a high prevalence of IPCB among reproductive-age women in eight Sub-Saharan African countries, with over half of the women reporting experiences of partner control. These findings suggest the

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presence of persistent gender power imbalances and socio-cultural norms that may contribute to male dominance in intimate relationships. These associations underscore the importance of promoting women's autonomy and addressing structural gender inequalities. Programs and policies aimed at enhancing women's access to education, economic resources, and information may contribute to reducing IPCB. Community-level interventions that challenge harmful socio-cultural norms and raise awareness through media campaigns could also be beneficial.

Keywords Multilevel analysis, Intimate partner controlling behavior, Women, Demographic and health survey data, DHS data

Introduction

Intimate Partner Violence (IPV) is a global public health issue that significantly impacts the physical, mental, and social well-being of individuals, especially women [1, 2]. According to the World Health Organization (WHO), IPV is defined as any behavior within an intimate relationship that causes physical, psychological, or sexual harm to those involved [2]. IPV includes acts of physical aggression, sexual coercion, emotional abuse, and controlling behaviors [3]. Among these forms, controlling behavior often acts as a precursor to more severe forms of abuse, making it a critical area of focus for research and intervention [4].

In sub-Saharan Africa (SSA), IPV is a pervasive issue, with controlling behaviors being a common manifestation. Studies indicate that the prevalence of IPV in this region remains alarmingly high due to various socio-cultural and economic factors [5]. For instance, traditional gender norms and societal expectations often perpetuate male dominance and female subordination, creating an environment where controlling behaviors are normalized [6]. The Demographic and Health Surveys (DHS) data from sub-Saharan African countries provide valuable insights into the magnitude and determinants of these behaviors, revealing significant variations across countries and communities.

Controlling behavior in intimate relationships includes actions such as monitoring a partner's movements, isolating them from social networks, restricting their access to financial resources, and dictating their choices in daily life [7, 8]. These behaviors are often subtle and insidious, yet they have profound implications for the autonomy and agency of individuals. According to the DHS data, the prevalence of controlling behavior among intimate partners varies widely across SSA, ranging from 20% to over 50% in some countries [9].

In Ethiopia, for example, a study using DHS data found that 44% of married women reported experiencing at least one form of controlling behavior from their partners [10]. Similarly, in Tanzania, approximately 35% of women reported being subjected to controlling behaviors, with restrictions on their social interactions being the most common form [11]. These figures highlight the widespread nature of controlling behaviors in the region, underscoring the need for targeted interventions.

The high prevalence of controlling behaviors in SSA can be attributed to various factors, including patriarchal societal structures, economic dependency, and limited access to education. For instance, women with lower levels of education are more likely to experience controlling behaviors, as they may lack the resources and awareness to challenge such actions [12]. Additionally, economic dependence on male partners further exacerbates the power imbalance in relationships, making women more vulnerable to control and abuse [6].

Understanding the determinants of controlling behaviors in intimate relationships requires a multi-faceted approach that considers individual, relational, community, and societal factors. At the individual level, factors such as age, education, employment status, and exposure to violence during childhood play a significant role. Younger women and those with limited educational attainment are particularly vulnerable to controlling behaviors, as they may lack the social and economic resources to assert their autonomy [13].

Relational factors, including marital status, partner's alcohol use, and the presence of children, also influence the likelihood of controlling behaviors. Studies have shown that women in polygamous marriages are at a higher risk of experiencing controlling behaviors compared to those in monogamous unions [5]. Additionally, alcohol consumption by male partners is strongly associated with controlling behaviors, as it often exacerbates aggressive tendencies and impairs judgment [14].

At the community level, cultural norms and societal attitudes towards gender roles significantly impact the prevalence of controlling behaviors. In many sub-Saharan African communities, traditional beliefs about male dominance and female submissiveness perpetuate the acceptability of controlling behaviors. For instance, the normalization of practices such as bride price and dowry often reinforces the perception of women as property, making them more susceptible to control [15]. Furthermore, community tolerance of IPV creates an environment where controlling behaviors are not only accepted but also encouraged [4].

Societal factors, including laws, policies, and economic conditions, also play a crucial role in shaping the prevalence of controlling behaviors. Weak legal frameworks and inadequate enforcement of laws against IPV often

leave victims without recourse, perpetuating a culture of impunity [16]. Additionally, economic disparities and high levels of unemployment contribute to stress and frustration within households, increasing the likelihood of controlling behaviors [6].

The consequences of intimate partner controlling behaviors are far-reaching, affecting not only the victims but also their families and communities. Victims of controlling behaviors often experience psychological distress, low self-esteem, and feelings of powerlessness. These effects can lead to long-term mental health issues, including depression and anxiety [17]. Moreover, controlling behaviors often escalate into more severe forms of IPV, including physical and sexual violence, further exacerbating the physical and emotional toll on victims [7].

Children growing up in households characterized by controlling behaviors are also adversely affected. Exposure to such behaviors can disrupt their emotional and social development, leading to intergenerational cycles of violence [13]. Additionally, the economic impact of controlling behaviors cannot be overlooked, as victims often face limitations in accessing education and employment opportunities, perpetuating cycles of poverty and dependence [4].

Addressing the issue of intimate partner controlling behaviors in SSA requires a comprehensive understanding of its magnitude and determinants. Multilevel analysis offers a robust methodological approach to examine factors at the individual, relational, community, and societal levels simultaneously [18]. By analyzing DHS data using multilevel models, researchers can identify the contextual factors that contribute to controlling behaviors, providing insights that are critical for the development of targeted interventions.

For instance, a multilevel analysis of DHS data from SSA revealed that community-level factors, such as the prevalence of IPV and attitudes towards gender equality, significantly influence the likelihood of controlling behaviors [9]. These findings underscore the importance of addressing societal norms and community attitudes in efforts to combat IPV. Moreover, multilevel analysis can help identify vulnerable subpopulations, enabling policymakers to design interventions that are tailored to the specific needs of these groups [4]. There was conducted a few study in that concerned IPCB, there for this study that might be given insight about the magnitude and determinants of IPCB among reproductive age women in Sub-Sahara Africa countries.

To provide a theoretical foundation for this analysis, the study adopts the Ecological Model of Violence as its guiding framework. This model, developed by the World Health Organization [19], conceptualizes violence as the result of interactions among multiple factors at the individual, relationship, community, and societal levels. It is particularly relevant for this study's multilevel approach, as it facilitates a deeper understanding of how various determinants operate and interact across levels to influence the occurrence of controlling behaviors. In the sub-Saharan African context—where cultural norms, economic conditions, and institutional factors differ widely—the ecological model allows for a comprehensive and context-sensitive exploration of intimate partner controlling behaviors [20, 21]. Grounding the study in this framework enhances its analytical depth and provides a robust foundation for policy recommendations that address IPV from a systemic, multilevel perspective.

Methods

Data source, study design and sampling procedure

This study is a secondary data analysis based on the most recent DHS conducted between 2021 and 2024 in eight Sub-Saharan African countries: Burkina Faso (2021), Côte d'Ivoire (2021), Ghana (2022–2023), Kenya (2022), Lesotho (2023–2024), Madagascar (2021), Mozambique (2022–2023), and Tanzania (2022). These countries were selected based on three main criteria: the availability of DHS data collected since 2021, inclusion of the Domestic Violence Module, and representation of diverse geographic and socio-cultural contexts within SSA. The primary rationale for this selection was to provide an up-to-date and regionally representative assessment of the magnitude and determinants of IPCB among women. Including countries from different sub-regions West, East, Southern, and Central Africa enhances the generalizability and relevance of the findings. Moreover, the use of since-2021 data ensures that the study reflects current trends and associated risk factors, providing timely evidence to inform interventions and policy responses aimed at reducing IPCB in the region.

The study utilized the women's data-women recode component (IR file) from the most recent DHS 8 datasets, which include a record of every eligible woman interviewed. The DHS program, implemented by ICF international, collects cross-sectional data in low- and middle-income countries (LMICs) using standardized model questionnaires that have been modified across eight survey phases since the program's inception [22]. DHS data from the selected Sub-Saharan African countries cover a wide range of health-related indicators, including fertility and reproductive health, maternal and child health, mortality and nutrition, and self-reported health and behaviors among adults.

A multistage stratified cluster sampling technique was used, with Enumeration Areas (EAs) as primary sampling units and households as secondary sampling units. Each country's survey consists of multiple datasets, including those for men, women, children, births, couples,

and households. For this study, the Individual Record (IR) dataset was used after obtaining authorization from the Measure DHS program for data access. Data was extracted based on the literature and then appended using the STATA command "appends using". When merging data from multiple countries in the DHS datasets, it is essential to ensure that the survey weights used in each dataset are consistent to accurately reflect the combined sample. Each country's DHS dataset typically includes its own set of weights, which are designed to make the sample representative of that country's population. After adjusting the weights, we calculated the final weighted sample size by summing the adjusted weights for all respondents across the eight countries. This ensures that the final analysis is based on a representative sample of women aged 15–49 years from all selected countries in SSA. The initial sampling stage included 45,965 women, and the final weighted sample size for analysis was 45,839 women (Table 1).

Variables and measurements

Outcome variable

The primary outcome variable in this study was IPCB. Women were asked five questions to assess their partner's controlling behavior:

1. Does the husband/partner become jealous if the respondent talks with other men?
2. Does the husband/partner accuse the respondent of unfaithfulness?
3. Does the husband/partner prohibit the respondent from meeting female friends?
4. Does the husband/partner try to limit the respondent's contact with family?
5. Does the husband/partner insist on knowing where the respondent is at all times?

Women who reported experiencing any of these controlling behaviors were classified as having experienced IPCB (coded as 1 = Yes), while those who did not experience any were classified as never experiencing IPCB (coded as 0 = No).

Table 1 Description of study sample

Country	Year of survey	Weighted sample	Prevalence in %
Burkina Faso	2021	8,946	19.52
Cote d'Ivoire	2021	3,752	8.19
Ghana	22–23	4,209	9.18
Kenya	2022	12,631	27.56
Lesotho	2023–2024	1,687	3.68
Madagascar	2021	5,928	12.93
Mozambique	2022–2023	4,203	9.17
Tanzania	2022	4,483	9.78
Total	-	45,839	100.00

To compute the final aggregate measure of IPCB, the five controlling behavior components were dichotomized (Yes = 1, No = 0) and summed. The intersection of all five behaviors was considered as a strong indicator of experiencing IPCB.

The items used to construct the IPCB variable were adapted from the WHO multi-country study on women's health and domestic violence, which developed a standardized set of questions to assess intimate partner violence, including controlling behaviors (e.g., restricting contact with family, monitoring movements). In this study, the pooled Cronbach's alpha for the controlling behavior items was 0.68, indicating acceptable internal consistency. Additionally, the instrument has demonstrated cross-cultural applicability and construct validity, and has been widely used across various low- and middle-income countries [23].

Independent variables

The independent variables in this study were categorized into individual-level and community-level factors:

Individual-level variables Socio-demographic characteristics (age, current marital status, education level, and working status), health-related factors, cigarette use current pregnancy status and currently amenorrheic, asset ownership (ownership of a house (alone or jointly), ownership of land (alone or jointly), ownership of a bank account, and ownership of a mobile phone.

Community-level variables Place of residence (urban/rural), wealth index, mass media exposure (reading newspapers or magazine, listening radio, watching television, and internet usage).

Data analysis procedure

Data extraction, recoding, and analysis were performed using STATA 14. The data were weighted before conducting any statistical analysis to restore the representativeness of the sample and ensure reliable estimates and standard errors, following DHS guidelines [22]. Given the hierarchical structure of the DHS data, measures of community variation/random effects were computed: median odds ratio (MOR), intraclass correlation coefficient (ICC), and proportional change in variance (PCV). Since these measures were statistically significant, a multilevel logistic regression model was deemed more appropriate than an ordinary logistic regression model.

Four models were developed and compared using deviance to determine the best fit: Null Model– A model with no independent variables, Model I– A model including only individual-level factors, Model II– A model including only community-level factors, and Model III– A model incorporating both individual- and

Table 2 Individual and community level characteristics of women in Sub- Sahara Africa

Variable	Category	Weighted frequency	Prevalence in %
Age (in years)	15–19	2,268	4.95
	20–24	7,633	16.65
	25–29	9,672	21.10
	30–34	8,742	19.07
	35–39	7,494	16.35
	40–44	5,697	12.43
	45–49	4,334	9.45
Marital status	Single, divorced or widowed	5,859	12.78
	Living with partner	10,400	22.69
	Married	29,580	64.53
Educational level	No educated	13,673	29.83
	Primary	15,852	34.58
	Secondary	12,908	28.16
	Higher	3,407	7.43
Working condition in last 12 months	Not working	16,556	36.12
	Working	29,283	63.88
Residence	Urban	16,584	36.18
	Rural	29,255	63.82
Currently pregnant	No	41,554	90.65
	Yes	4,285	9.35
Currently amenorrheic	No	39,984	87.22
Smoking cigarette or tobacco	Yes	5,855	12.77
	No	35,997	78.53
	Yes	9,842	21.47
Ownership of home	No	26,548	57.92
	Yes	19,291	42.08
Ownership of land	No	30,337	66.18
	Yes	15,502	33.82
Having a bank account	No	37,830	82.53
	Yes	8,009	17.47
Having a mobile phone	No	13,283	28.98
	Yes	32,556	71.02
Wealth index	Poorest	8,780	19.15
	Poorer	8,533	18.61
	Middle	8,870	19.35
	Richer	10,026	21.87
	Richest	9,630	21.01
Reading newspaper or magazine	No	40,144	87.58
	Yes	5,695	12.42
Listening radio	No	18,405	40.15
	Yes	27,434	59.85
Watching television	No	23,261	50.75
	Yes	22,578	49.25
Use of internet	No	33,026	72.05
	Yes	12,813	27.95

community-level factors. Among these, Model III was selected as the best-fitted model, as it had the lowest deviance value. Bivariable and multivariable multilevel logistic regression was conducted to assess factors associated with IPCB in SSA. All variables with a p-value < 0.05 were considered statistically significant.

Results

A total of 45,839 reproductive-age women (aged 15–49 years) were included in this study. The mean age of the respondents was 31.99 years (± 8.36).

Individual-level characteristics In socio-demographic data, 21% of respondents were in the 25–29 years age group, 64.53% were married, 34.58% had completed primary school, and 36.12% of women were not engaged in any work throughout the year. Health-Related Factors: 9.35% were currently pregnant, 12.77% were currently amenorrheic, and 21.47% were smoking cigarettes. Regarding asset ownership, 57.92% did not own a house (alone or jointly), 66.18% did not own land (alone or jointly), 82.53% did not own a bank account, and 28.98% did not own a mobile phone. More than 50% of participants were categorized as middle or below in the wealth index.

Community-level characteristics 63.82% of respondents lived in rural areas, and Mass Media Exposure: 87.58% did not read newspapers or magazines,40.15% did not listen to the radio, 50.75% did not watch television, and 72.05% of respondents did not use the internet (Table 2).

Prevalence of intimate partner controlling behavior

The prevalence of IPCB among women of reproductive age in eight sub-Saharan African countries ranged from 3.68 to 27.56%, with an overall prevalence of 54.47% (95% CI: 54.02–54.93%). **Breakdown of IPCB Components: 43%** of women reported that their **husband/partner was jealous** when they talked with other men, **18%** of women experienced **accusations of unfaithfulness** from their husband/partner, **15%** of women were **prohibited from meeting female friends** by their husband/partner, **9%** of women reported that their **husband/partner limited their contact with family**, and **33%** of women indicated that their **husband/partner insisted on knowing their whereabouts at all times** (Fig. 1).

Model fitness and statistical analysis

Analysis of IPCB clustering revealed that 1.54% of variations in IPCB experiences among participants were accounted for by intra-class correlation (ICC) in the null model (Model I). The median odds ratio (MOR) for IPCB in the null model was 1.54, indicating significant

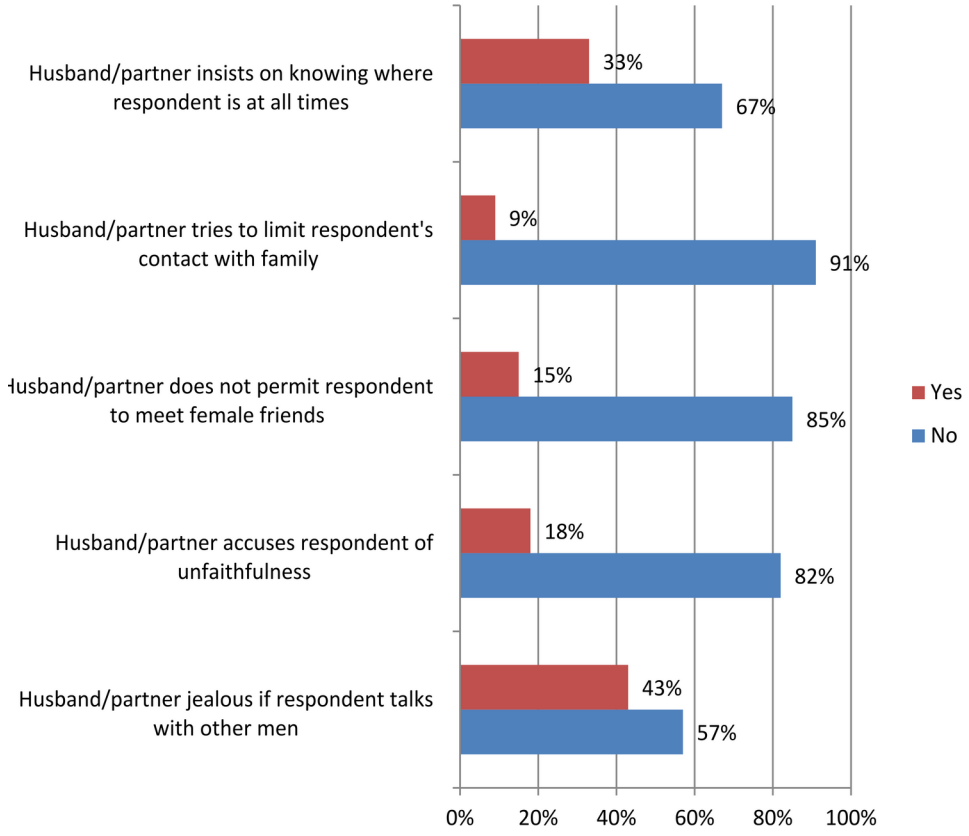

Fig. 1 Description of intimate partner control behavior in each component

variation between clusters. This suggests that the odds of experiencing IPCB were 1.54 times higher in clusters with a higher risk of IPCB than in clusters with a lower risk, assuming a randomly selected participant from each cluster. Among the four models tested, Model IV was identified **as** the best-fitting model, as it had the lowest akaike information criterion (AIC) and deviance value (Table 3**).**

Determinants of intimate partner controlling behavior

This study identified several socio-demographic, economic, and behavioral factors as significant determinants of IPCB among reproductive-age women in eight sub-Saharan African countries. These determinants include age, marital status, education level, employment status, reproductive health factors, smoking habits, asset ownership, wealth index, residence, and mass media exposure.

The odds of experiencing IPCB were significantly higher among younger women compared to those aged 45–49 years: 15–19 years: AOR = 1.48 (95% CI: 1.32–1.66), 20–24 years: AOR = 1.59 (95% CI: 1.47–1.74), 25–29 years: AOR = 1.47 (95% CI: 1.36–1.59), 30–34 years: AOR = 1.38 (95% CI: 1.28–1.50), 35–39 years: AOR = 1.26 (95% CI: 1.17–1.37), and 40–44 years: AOR = 1.14 (95% CI: 1.05–1.24). Women who were single, divorced, or widowed had higher odds of experiencing IPCB compared to married women (AOR = 1.66; 95% CI: 1.56–1.77). Women with lower education levels were more likely to experience IPCB compared to those with higher education: Primary education: AOR = 1.46 (95% CI: 1.32–1.61), and Secondary education: AOR = 1.54 (95% CI: 1.41–1.69). This indicates that education plays a protective role, likely by enhancing women's awareness of their rights and increasing economic independence. Women who were not employed in the last 12 months had lower odds of experiencing IPCB compared to those who worked (AOR = 0.80; 95% CI: 0.76–0.83). Women who were not currently amenorrhoeic had higher odds of experiencing IPCB (AOR = 1.14; 95% CI: 1.08–1.21). Women who smoked cigarettes or used tobacco had higher odds of experiencing IPCB compared to non-smokers (AOR = 1.18; 95% CI: 1.12–1.25). Women who did not own a house (alone or jointly) had lower odds of experiencing IPCB (AOR = 0.89; 95% CI: 0.84–0.93). Women who did not own land (alone or jointly) had higher odds of experiencing IPCB (AOR = 1.10; 95% CI: 1.04–1.16). Women without a bank account had higher odds of experiencing IPCB (AOR = 1.17; 95% CI: 1.09–1.25). Women residing in rural areas had lower odds of experiencing IPCB compared to those in urban areas (AOR = 0.93; 95% CI: 0.87–0.98). Women with less exposure to mass media had lower odds of experiencing IPCB

Table 3 Multilevel logistic regression analysis of IPCB among women in Sub- Sahara Africa

Variable	Null model	Model I		Model II		Model III	
		AOR(95% CI)	*p*-value	AOR(95% CI)	*p*-value	AOR(95% CI)	*p*-value
Individual level variable							
Age (in years)							
15–19		1.47(1.32, 1.65)	0.001*			1.48(1.32, 1.66)	0.001*
20–24		1.61(1.48, 1.75)	0.001*			1.59(1.47, 1.74)	0.001*
25–29		1,89(1.37, 1.61)	0.001*			1.47(1.36, 1.59)	0.001*
30–34		1.40(1.29, 1.51)	0.001*			1.38(1.28 1.50)	0.001*
35–39		1.27(1.17, 1.38)	0.001*			1.26(1.17, 1.37)	0.001*
40–44		1.15(1.05, 1.25)	0.001			1.14(1.05, 1.24)	0.002
45–49		1				1	
Marital status							
Single, divorced or widowed		1.64(1.54, 1.75)	0.001*			1.66(1.56, 1.77)	0.001*
Living with partner		1.01(0.97, 1.07)	0.001*			1.02(0.97, 1.07)	0.365
Married		1				1	
Educational level							
No educated		0.77(0.70, 0.85)	0.001*			0.90(0.81, 1.00)	0.054
Primary		1.31(1.19, 1.43)	0.001*			1.46(1.32, 1.61)	0.001*
Secondary		1.47(1.35, 1.61)	0.001*			1.54(1.41, 1.69)	0.001*
Higher		1				1	
Working status in last 12 months							
Not working		0.79(0.75, 0.82)	0.001*			0.80(0.76 0.83)	0.001*
Working		1				1	
Currently pregnant							
No		1.04(0.97, 1.11)	0.280			1.04(0.97, 1.11)	0.289
Yes		1				1	
Currently amenorrhoeic							
No		1.16(1.09, 1.23)	0.001*			1.14(1.08, 1.21)	0.001*
Yes		1				1	
Smoking cigarette or tobacco		1.22(1.15, 1.28)				)	
No		1				1	
Yes						1.18(1.12, 1.25)	0.001*
Ownership of house							
No		0.89(0.85, 0.94)	0.001*			0.89(0.84, 0.93)	0.001*
Yes		1				1	
Ownership of land							
No		1.11(1.05, 1.17)	0.001*			1.10(1.04, 1.16)	0.001*
Yes		1				1	
Having a bank account							
No		1.09(1.03, 1.17)	0.005			1.17(1.09, 1.25)	0.001*
Yes		1				1	
Having a mobile phone							
No		0.94(0.89, 0.99)	0.013			0.99(0.95, 1.05)	0.917
Yes		1				1	
Community level variable							
Residence							
Urban				1		1	
Rural				0.92(0.87, 0.96)	0.001	0.93(0.87, 0.98)	0.012
Reading newspaper or magazine							
No				0.78(0.73, 0.83)	0.001*	0.83(0.78, 0.88)	0.001*
Yes				1		1	
Listening radio							
No				0.79(0.76, 0.82)	0.001*	0.84(0.80, 0.88)	0.001*
Yes				1		1	

Table 3 (continued)

Variable	Null model	Model I		Model II		Model III	
		AOR(95% CI)	*p*-value	AOR(95% CI)	*p*-value	AOR(95% CI)	*p*-value
Watching television							
No				0.92(0.87, 0.96)	0.001*	0.93(0.88, 0.97)	0.003
Yes				1		1	
Use of internet							
No				0.80(0.76, 0.84)	0.001*	0.84(0.79, 0.89)	0.001*
Yes				1		1	
Likelihood ratio	-31023.524	-30213.948		30772.979		-30125.535	
ICC	0.066	0.056		0.061		0.055	
Deviance	62047.048	60427.896		61545.958		60251.07	
AIC	62053.05	60477.90		61559.96		60311.07	
BIC	62079.25	60696.28		61621.11		60573.14	
MOR	1.54						

Note: *= *P*-value < 0.001; AOR, Adjusted odd ratio; CI, Confidence interval

compared to those who regularly accessed media: did not read newspapers/magazines: AOR = 0.83 (95% CI: 0.78–0.88), did not listen to the radio: AOR = 0.84 (95% CI: 0.80–0.88), did not watch television: AOR = 0.93 (95% CI: 0.88–0.97), and did not use the internet: AOR = 0.84 (95% CI: 0.79–0.89).

Discussion

This study highlights the substantial burden of IPCB among reproductive-age women in eight sub-Saharan African countries, with an overall prevalence of 54.47%. This finding aligns with previous research and WHO reports indicating high levels of IPV in the region, reflecting deeply rooted gender inequalities and cultural norms that uphold male dominance [4, 24–26]. These norms often legitimize coercive control and discourage women from challenging abusive behaviors.

Younger women (15–44 years) exhibited significantly higher odds of experiencing IPCB than older women (45–49 years). The highest risk was observed among women aged 20–24 years, followed by those aged 15–19 years. The risk decreased with age, with women aged 40–44 years still facing an elevated risk. This trend aligns with prior research indicating that younger women experience greater control due to limited financial independence and lower bargaining power in relationships [27]. Additionally, power imbalances in relationships tend to be more pronounced among younger women, making them more vulnerable to coercion and restrictions [24]. As women age, they gain autonomy, social support, and economic resources, which reduce their vulnerability to IPCB [28, 29]. Women who were single, divorced, or widowed faced significantly higher odds of experiencing IPCB compared to married women. This suggests that relationship status plays a key role in determining a woman's risk of partner control. Unmarried women, particularly those in dating relationships, often face coercive control due to the lack of legal and social protections afforded to marriage [28]. Widowed and divorced women may also be subjected to surveillance and restrictions from former partners or male family members [4, 14]. Women with lower educational attainment had significantly higher odds of experiencing IPCB. Specifically, women with primary education had a 46% higher likelihood of IPCB, while those with secondary education had a 54% higher likelihood compared to women with higher education. Education enhances women's autonomy, decision-making capacity, and economic independence, reducing their vulnerability to controlling behaviors [28]. Higher education increases awareness of rights and access to support systems found that women with higher education were less likely to experience coercive control because education increases awareness of rights and provides better access to resources [4, 30]. Educated women are also more likely to challenge controlling behaviors and leave abusive relationships. Women who were unemployed in the last 12 months had lower odds of experiencing IPCB compared to those who were employed. While employment is generally considered protective, some studies suggest that working women may face increased partner control, particularly in settings where economic empowerment disrupts traditional gender roles [24, 27]. Economic independence does not always translate to freedom from control, as partners may feel threatened by a woman's autonomy.

Women who were not amenorrhoeic had 14% higher odds of experiencing IPCB. Though research specifically linking menstrual status to IPCB is limited, prior studies suggest that reproductive health changes, including pregnancy and menstruation, can influence partner control and coercion [31, 32]. Some men exert control over reproductive decisions, restricting access to contraception or enforcing fertility expectations. Women who smoked had 18% higher odds of experiencing IPCB.

Studies have shown an association between substance use and IPV, as smoking can be linked to stress, tension, and conflict within relationships [33, 34]. Smoking may also indicate broader psychological and social issues that contribute to higher risks of experiencing controlling behaviors.

Women who did not own a house had 11% lower odds of experiencing IPCB, while those who did not own land had 10% higher odds. Property ownership is often linked to financial autonomy, reducing vulnerability to IPCB [30]. However, ownership may also increase control from partners attempting to assert dominance over financial assets. Women without bank accounts had 17% higher odds of experiencing IPCB. Financial independence reduces vulnerability to economic abuse and controlling behaviors [14]. Women with access to bank accounts can resist control and seek external support more effectively. While financial resources can enhance autonomy, wealth may also lead to heightened control from partners who feel threatened by a woman's independence [30].

Women in rural areas had lower odds of experiencing IPCB compared to urban women. Rural communities may offer greater social support, which acts as a protective factor against IPCB [28]. However, urban women may experience greater anonymity and social isolation, increasing their risk. Women exposed to mass media were less likely to experience IPCB. The odds of IPCB decreased as follows: Newspaper/magazine reading, radio listening, television watching, and internet use. Mass media raises awareness about gender equality, IPV, and women's rights [32]. Media exposure challenges traditional gender norms and provides access to support networks, reducing the likelihood of experiencing IPCB [35].

These findings emphasize the need for holistic and multi-level interventions. While empowering women through education and economic opportunities is essential, such efforts must be accompanied by initiatives that address underlying gender norms and power imbalances. Community-based programs promoting gender-equitable attitudes, alongside media campaigns, can shift public perceptions and encourage healthier relationships. Legal frameworks must also be strengthened and enforced to criminalize controlling behaviors and protect survivors. This includes expanding IPV laws to explicitly include psychological and economic abuse, training law enforcement personnel, and ensuring survivors have access to legal aid and support services. Importantly, prevention strategies must be context-specific, recognizing the cultural, economic, and political diversity across SSA.

Strengths and limitations

This study has several important strengths. By utilizing DHS data from multiple Sub-Saharan African countries, it draws on large, nationally representative samples, enhancing the generalizability of the findings across diverse populations and settings. The use of standardized, validated questionnaires and rigorous data collection protocols ensures consistency and comparability across countries, reducing measurement bias. Employing multilevel modeling enables analysis of both individual- and community-level determinants, which is well-suited for the hierarchical structure of the data and provides a more comprehensive understanding of the predictors of IPCB. The application of sample weights further strengthens the representativeness of the findings by correcting for sampling bias and nonresponse. Additionally, the study includes a wide range of socio-demographic, economic, and contextual variables, offering a holistic analysis of IPCB. Cross-country comparisons also allow for the identification of both shared and context-specific patterns, enriching the regional relevance of the results.

However, the study has *limitations*. Its *cross-sectional design* prevents causal inference, as it captures data at a single point in time and cannot establish temporal relationships between variables and IPCB. The reliance on self-*reported data* may introduce recall and social desirability biases, especially given the sensitive nature of gender-based violence. The absence *of partner-specific data* limits understanding of relationship dynamics, as factors like the partner's attitudes, substance use, or history of violence are not assessed. Moreover, *psychological* variables such as trauma history, depression, or coping mechanisms ***are not*** included, though they may significantly influence IPCB risk. Finally, community-level indicators are derived from aggregated individual responses rather than external or directly observed data, which may limit the precision of community-level inferences.

Conclusion

This study highlights a high prevalence of IPCB among reproductive-age women in eight Sub-Saharan African countries, with over half of the women reporting experiences of partner control. These findings suggest the presence of persistent gender power imbalances and socio-cultural norms that may contribute to male dominance in intimate relationships.

Several socio-demographic and economic factors were found to be significantly associated with IPCB. Younger age, unmarried status, and lower educational attainment were linked with higher reported experiences of partner control. While employment and financial independence are often viewed as protective, the findings indicate that in some contexts, these factors may be associated with increased control, possibly due to tensions arising from shifting gender roles. Conversely, indicators of financial autonomy such as property ownership, bank account

access, and exposure to mass media were associated with lower odds of experiencing IPCB.

These associations underscore the importance of promoting women's autonomy and addressing structural gender inequalities. Programs and policies aimed at enhancing women's access to education, economic resources, and information may contribute to reducing IPCB. Community-level interventions that challenge harmful socio-cultural norms and raise awareness through media campaigns could also be beneficial.

Given the cross-sectional nature of the study, causal relationships cannot be established. Future research using longitudinal or experimental designs is recommended to better understand the causal pathways and dynamics underlying IPCB.

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Author contributions
All authors collaborated to complete this study. FA conceptualized and designed the study and contributed to data analysis and manuscript writing. GN, GR, MM, TT, GK, BAM, GT, GMD, and SF participated in data extraction, analysis, result interpretation, manuscript writing, and reviewing the draft. Each author contributed significantly to the study and assumed responsibility for their respective sections of the content.

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Data availability
The corresponding author can provide the extracted data used in the current analysis upon reasonable request. Additionally, the dataset supporting the conclusions of this study is available upon request on the Measure DHS website (http://www.measuredhs.com).

Declarations

Ethics approval and consent to participate
Ethics approval was not necessary because the data used in this study came from Sub-Saharan Africa and is publicly accessible on the DHS website (http://www.measuredhs.com). After receiving ethical approval from the Central Statistical Agency (CSA) and participants' informed agreement during the survey, the data was gathered anonymously. In the current analysis, the data was used anonymously. Every research technique was carried out in compliance with the Declaration of Helsinki's tenets.

Consent for publication
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Competing interests
The authors declare no competing interests.

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References

1. Framework AO. Intimate Partner Violence. 2004.
2. Organization WH. Preventing intimate partner and sexual violence against women: taking action and generating evidence. World Health Organization. 2010.
3. Bahati C, Izabayo J, Munezero P, Niyonsenga J, Mutesa L. Trends and correlates of intimate partner violence (IPV) victimization in Rwanda: results from the 2015 and 2020 Rwanda demographic health survey (RDHS 2015 and 2020). BMC Womens Health. 2022;22(1):368.
4. Heise LL, Kotsadam A. Cross-national and multilevel correlates of partner violence: an analysis of data from population-based surveys. Lancet Global Health. 2015;3(6):e332–40.
5. Kwagala B, Wandera SO, Ndugga P, Kabagenyi A. Empowerment, partner's behaviours and intimate partner physical violence among married women in Uganda. BMC Public Health. 2013;13:1–10.
6. Jewkes R, Flood M, Lang J. From work with men and boys to changes of social norms and reduction of inequities in gender relations: a conceptual shift in prevention of violence against women and girls. Lancet. 2015;385(9977):1580–9.
7. Gage AJ, Hutchinson PL. Power, control, and intimate partner sexual violence in Haiti. Arch Sex Behav. 2006;35:11–24.
8. Kishor S, Johnson K. Profiling domestic violence: a multi-country study. Stud Fam Plann. 2005;36(3):259–61.
9. MacQuarrie KL, Mallick L. Intimate partner violence and contraceptive discontinuation in Kenya. Afr J Reprod Health. 2021;25(2):17–27.
10. Alene M, Yismaw L, Berelie Y, Kassie B. Health care utilization for common childhood illnesses in rural parts of Ethiopia: evidence from the 2016 Ethiopian demographic and health survey. BMC Public Health. 2019;19:1–12.
11. UNICEF. National nutrition and health survey (NNHS) 2018. UNICEF: NBS 2018.
12. Karamagi CA, Tumwine JK, Tylleskar T, Heggenhougen K. Intimate partner violence against women in Eastern Uganda: implications for HIV prevention. BMC Public Health. 2006;6:1–12.
13. Jewkes R, Levin J, Penn-Kekana L. Risk factors for domestic violence: findings from a South African cross-sectional study. Soc Sci Med. 2002;55(9):1603–17.
14. Abramsky T, Watts CH, Garcia-Moreno C, Devries K, Kiss L, Ellsberg M, et al. What factors are associated with recent intimate partner violence? Findings from the WHO multi-country study on women's health and domestic violence. BMC Public Health. 2011;11:1–17.
15. Ansell N. Because it's our culture!'(Re) negotiating the meaning of lobola in Southern African secondary schools. J South Afr Stud. 2001;27(4):697–716.
16. Women A. Violence Against Women During COVID-19. UN Women 2021. 2021.
17. Lacey KK, McPherson MD, Samuel PS, Powell Sears K, Head D. The impact of different types of intimate partner violence on the mental and physical health of women in different ethnic groups. J Interpers Violence. 2013;28(2):359–85.
18. Diez-Roux AV. Multilevel analysis in public health research. Annu Rev Public Health. 2000;21(1):171–92.
19. EG K. World Report on Violence and Health, World Health Organization. http://www.who.int/violence_injury_prevention/violence/world_report/en/. 2002.
20. Heise LL. Violence against women: an integrated, ecological framework. Violence against Women. 1998;4(3):262–90.
21. Organization WH. Preventing intimate partner and sexual violence against women: Taking action and generating evidence. Preventing intimate partner and sexual violence against women: taking action and generating evidence2010.
22. Croft TN, Marshall AM, Allen CK, Arnold F, Assaf S, Balian S. Guide to DHS statistics. Rockville: ICF. 2018;645:292–303.
23. García-Moreno C. World health organization Multi-country study on women's health and domestic violence against women: initial results on prevalence, health outcomes and women's. Responses: World Health Organization (WHO); 2005.
24. García-Moreno C, Hegarty K, d'Oliveira AFL, Koziol-McLain J, Colombini M, Feder G. The health-systems response to violence against women. Lancet. 2015;385(9977):1567–79.
25. Organization WH. Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence. World Health Organization; 2013.

26. Machisa MT, Christofides N, Jewkes R. Structural pathways between child abuse, poor mental health outcomes and male-perpetrated intimate partner violence (IPV). PLoS ONE. 2016;11(3):e0150986.
27. Hindin MJ, Kishor S, Ansara DL. Intimate partner violence among couples in 10 DHS countries: predictors and health outcomes. Macro International Incorporated. 2008.
28. Jewkes R. Intimate partner violence: causes and prevention. Lancet. 2002;359(9315):1423–9.
29. Ellsberg M, Arango DJ, Morton M, Gennari F, Kiplesund S, Contreras M, et al. Prevention of violence against women and girls: what does the evidence say? Lancet. 2015;385(9977):1555–66.
30. Vyas S, Watts C. How does economic empowerment affect women's risk of intimate partner violence in low and middle income countries? A systematic review of published evidence. J Int Development: J Dev Stud Association. 2009;21(5):577–602.
31. Miller E, Decker MR, Reed E, Raj A, Hathaway JE, Silverman JG. Male partner pregnancy-promoting behaviors and adolescent partner violence: findings from a qualitative study with adolescent females. Ambul Pediatr. 2007;7(5):360–6.
32. Silverman JG, Boyce SC, Dehingia N, Rao N, Chandurkar D, Nanda P, et al. Reproductive coercion in Uttar Pradesh, India: prevalence and associations with partner violence and reproductive health. SSM-population Health. 2019;9:100484.
33. Golinelli D, Longshore D, Wenzel SL. Substance use and intimate partner violence: clarifying the relevance of women's use and partners' use. J Behav Health Serv Res. 2009;36(2):199–211.
34. Crane CA, Pilver CE, Weinberger AH. Cigarette smoking among intimate partner violence perpetrators and victims: findings from the National epidemiologic survey on alcohol and related conditions. Am J Addict. 2014;23(5):493–501.
35. Dutton MA, Goodman LA. Coercion in intimate partner violence: toward a new conceptualization. Sex Roles. 2005;52:743–56.

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