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# What are the associated factors of low husbands/partners independent decision-maker in women's contraceptive use decision-making process in Ethiopia? Multilevel analysis

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## Abstract

**Background** Many married women of reproductive age with husbands or partners are less cooperative in using contraceptives, often resulting in unintended pregnancies or secret contraceptive use. This private use of contraceptives causes women to suffer from side effects without proper support, and many women in Ethiopia die due to unintended pregnancies. However, the involvement of husbands or partners in the contraceptive decision-making process in Ethiopia is often neglected. There is also a lack of evidence regarding the determinants of husbands' or partners' decision-making power on contraceptive use in Ethiopia.

**Objective** This study aimed to assess the determinants of low involvement of husbands/partners in women's contraceptive use decision-making processes in Ethiopia.

**Methods** This study was based on Ethiopian Demographic and Health Survey data, collected from January 18 to June 27, 2016. Weighted samples of 3,669 reproductive-age women were included. Husbands'/partners' independent decision-making was measured by whether the husband/partner decided independently or alone about contraceptive use, categorized as "Yes" or "No". A multilevel logistic regression model was fitted, and ICC (Intra-class Correlation Coefficient), MOR (Median Odds Ratio), PCV (Proportion Change in Variance), and deviance were used to assess model fitness and comparison. Variables with a p-value of  $\leq 0.2$  in the bivariate analysis were considered candidates for multivariable multilevel analysis. An adjusted odds ratio with a 95% confidence interval was used to determine both the direction and strength of the association, and a p-value of  $< 0.05$  was used to declare statistical significance.

**Results** Husbands'/partners' independent decision-making in women's contraceptive use was found to be 5.41% [4.72-6.19%]. Significant factors associated with this included: Husbands/partners aged 31–59 years (Adjusted Odds

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Ratio (AOR)= 1.3; Confidence Interval (CI) 2.3–5.4) and over 59 years (AOR= 2.3; CI 1.2–4.3), Educational level of husbands/partners: primary education (AOR= 3.2; CI 2.9–4.3), secondary education (AOR= 3.9; CI 2.7–4.4), and higher education (AOR= 4.3; CI 2.8–5.0), Media exposure (AOR= 4.5; CI 2.2–5.4), History of pregnancy termination (AOR= 3.3; CI 2.6–4.1), Perception that distance to health facilities is not a significant problem (AOR= 3.0; CI 1.7–4.7) and Urban residency (AOR= 3.5; CI 1.6–4.2).

**Conclusions** In Ethiopia, the involvement of husbands/partners in the contraceptive use decision-making process is low. To increase their decision-making power, attention should be given to factors such as age, educational level, media exposure, history of pregnancy termination, distance to health facilities, and urban residency.

**Keywords** Contraceptives, Decision, EDHS, Ethiopia, Multilevel analysis

## Background

Family planning provision plays a crucial role in improving economic status, increasing the proportion of educated women, and reducing under-five mortality and maternal deaths related to pregnancy and childbirth. [1–5]. The Sustainable Development Goals (SDGs) critically emphasize eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and women's empowerment, reducing under-five mortality by two-thirds, and reducing maternal deaths related to childbirth by three-quarters by 2030 [6]. Unless we improve the strategies and approaches for the provision of family planning, it will be difficult to achieve all the Sustainable Development Goals by the current timeline [7]. Recently published evidence shows that Sustainable Development Goals, particularly those related to fertility, maternal, and child health, are pressing concerns for developing countries. These goals require attention at three levels: community, household, and health facility [7, 8].

Despite some improvements in the modern contraceptive prevalence rate—rising from 6% in 2000 to 35% by 2016—there remains a significant burden of unmet needs in Ethiopia [9, 10]. In particular, the unmet need for postpartum family planning is pervasive [11]. It is an underlying cause of maternal, neonatal, child, and adolescent deaths [12–14] and the challenge to achieve the sustainable development goal [15].

Therefore, maintaining a focus on contraceptive use is crucial for achieving the Sustainable Development Goal related to reducing maternal mortality from unsafe abortion and preventing neonatal and child deaths resulting from maternal mortality [16, 17]. One key area that needs attention to increase contraceptive use and reduce unmet needs is cultivating a culture of husbands'/partners' involvement in women's contraceptive decision-making at the community, household, and health facility levels [18, 19]. Importantly, the World Health Organization (WHO, 2016) universally recommends the involvement of supportive husbands/partners in maternal healthcare services, including postpartum contraceptive use [20]. Additionally, in developing countries, women's

decision-making power regarding contraceptive use is often constrained by the disapproval or lack of support from their husbands/partners [21]. Unfortunately, one out of ten married women in Ethiopia who do not use contraceptives reported that their reason for not using them was the influence of their husbands/partners [22]. In the patriarchal societies of Ethiopia, married women of reproductive age are often pressured to have more children against their will due to the influence of their husbands/partners. This exploitation contributes to high rates of maternal and neonatal deaths today, often due to complications from short birth intervals and adverse pregnancy outcomes [23, 24]. The magnitude of short interbirth intervals in Ethiopia is high [25, 26]. Additionally, Ethiopia faces a high maternal mortality ratio of 412 per 100,000 live births and a high neonatal mortality rate of 49 per 1,000 live births [9]. According to a World Health Organization report, a woman in a developing country dies every 8 min due to complications from unsafe abortion [27].

When husbands/partners are less cooperative in the contraceptive decision-making process, their wives may resort to using contraceptives secretly [22]. Studies have shown that secret use of contraceptives ranges from 6–20% [28]. Among married women of reproductive age, secret contraceptive use is a serious but often neglected issue. It affects the choice of contraceptive methods, follow-up for side effects, and can lead to complications related to workload. Various studies highlight the negative impacts of secret contraceptive use due to a lack of cooperation from husbands/partners. [29].

In general, both the direct and indirect consequences of limited husbands'/partners' involvement in women's contraceptive decision-making can be mitigated by identifying and addressing the prohibiting factors within the scientific community.

For achieving the desired family size and delaying the age of reproduction, cultural factors play a significant role. The philosophy of modern family planning advocates that children should be born by choice rather than by chance. However, many people still adhere to the opposite belief—that children are to be born by chance

[30]. Primarily, sociocultural factors are the most significantly associated with husbands'/partners' involvement in women's contraceptive decision-making processes in low- and middle-income countries [31, 32].

To address this issue effectively, data is needed to illustrate the low involvement of husbands/partners in women's contraceptive decision-making and to identify the major determinant factors at the community, household, individual, and health facility levels. While various studies have explored women's decision-making power regarding contraceptive use, comprehensive data on these factors is still required [21, 33, 34]. In Ethiopia, there is a lack of evidence regarding husbands'/partners' decision-making power in women's contraceptive use and the associated factors. Therefore, this study aims to assess the determinants—both individual-level and community-level factors—that contribute to the low involvement of husbands/partners in women's contraceptive decision-making process. In this study, an independent decision-maker is defined as the husband/partner alone in the context of women's contraceptive use. Ensuring husbands'/partners' cooperation in contraceptive decision-making is crucial for reducing maternal and neonatal mortality associated with high fertility rates, unintended pregnancies, and unsafe abortions [35–37]. This finding could serve as a landmark for program implementers to take action at the community level. Furthermore, the results of this study could provide a foundation for guiding policymakers in designing innovative approaches to foster the involvement of husbands/partners in women's contraceptive decision-making process.

## Methods

### Study design, area and period

The study was conducted using secondary data collected through a cross-sectional survey from January 18, 2016, to June 27, 2016. The data were sourced from the Ethiopian Demographic and Health Survey (EDHS 2016), which covered nine regions (Amhara, Tigray, Oromia, Benishangul-Gumuz, Somali, Harari, Gambella, Southern Nations, Nationalities, and Peoples' Region (SNNPR), and Afar) as well as two administrative cities (Dire Dawa and Addis Ababa). At the time of the survey, Ethiopia had a total population of 102 million, with 44,339,400 individuals under the age of 14. In 2016, the total fertility rate was 4.46, the prevalence of modern contraceptive use was 36.7%, and the prevalence of unmet needs among married women of reproductive age was 22% [9]. In Ethiopia, family planning services are provided to clients free of charge [38].

### Source population

The source population for the study comprised all married women of reproductive age in Ethiopia.

### Study population

The study population consisted of all married, non-pregnant women of reproductive age who were using contraceptives at the time of the Ethiopian Demographic and Health Survey 2016.

### Data source

The official database of the DHS Program ([www.measuredhs.com](http://www.measuredhs.com)) was used to access the data. First, the objective of the study was explained, and permission was subsequently requested to utilize the data for the current study. Sample size determination and sampling procedure.

During the Ethiopian Demographic and Health Survey data collection, a two-stage stratified sampling technique was employed, with stratification based on urban and rural areas. In the first stage, 645 enumeration areas (EAs) were selected with probability proportional to the size of the EA, and with independent selection within each sampling stratum. In the second stage, a systematic random sampling technique was used to select households. The sampling procedure is described in detail in the Ethiopian Demographic and Health Survey 2016 report [9].

The sample size for this study was determined using the EDHS 2016 data, specifically from the women's dataset (IR). The final sample size was adjusted using the weighting variable V005. A total weighted sample of 3,669 married, non-pregnant women of reproductive age who were using contraceptives was included in the analysis (Fig. 1).

## Study variables

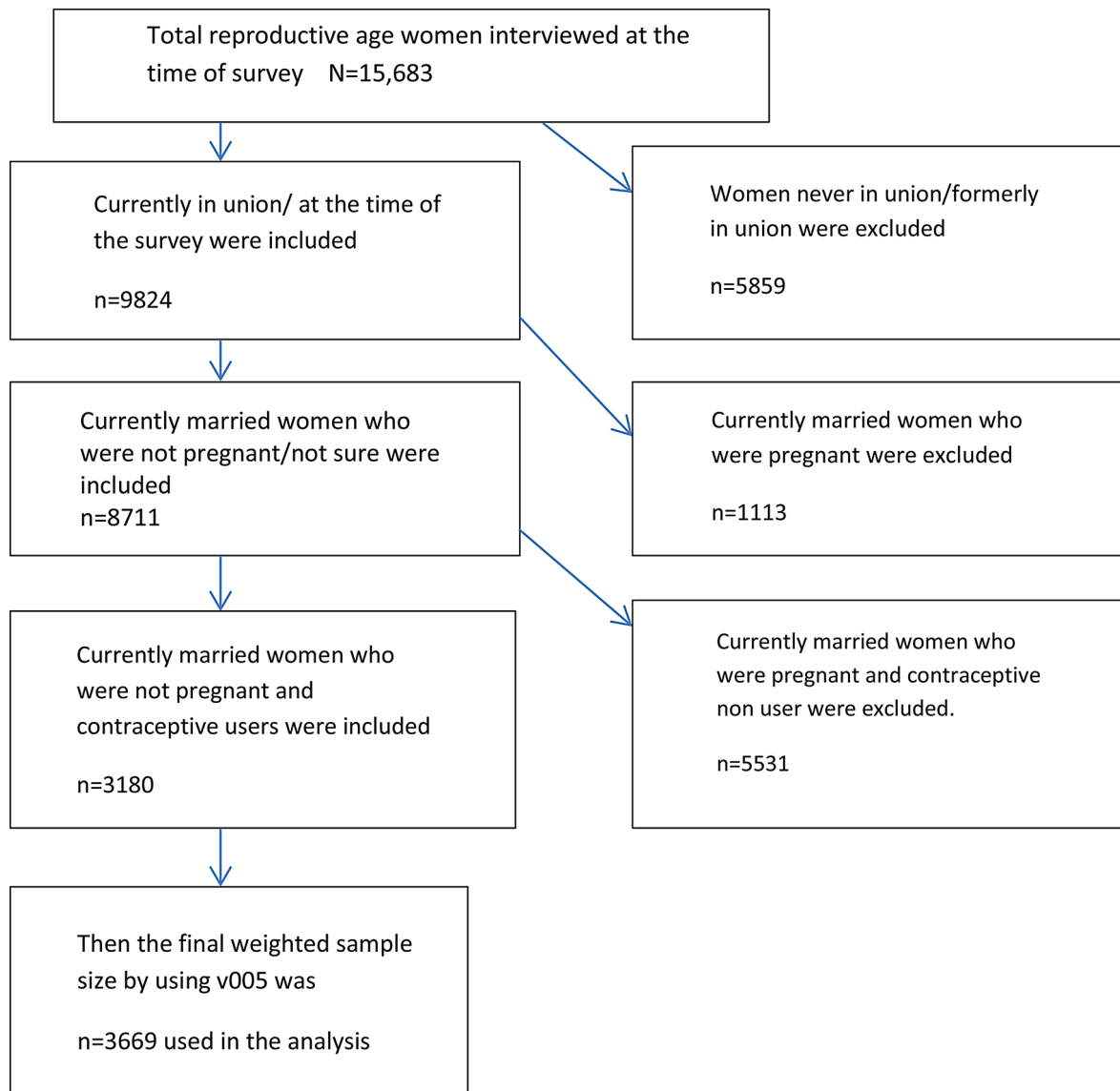
### Dependent variable

The outcome variable in this study was measured based on the woman's self-report regarding who makes the decision about contraceptive use at the time of the survey. The variable of interest was "V632," which identifies the decision-maker and includes four possible responses: respondent, husband/partner, joint decision, and other [39]. The responses were then dichotomized into "Yes" or "No," indicating whether husbands/partners are considered independent decision-makers in women's contraceptive use decision-making process.

Flow of participant selection.

### Operational definition

Husbands/partners were categorized as independent decision-makers in women's contraceptive use decision-making based on the variable V632. The categorization was dichotomized as follows: "mainly respondent, joint decision, and other" were coded as 0 (No), and "mainly husband/partner alone" was coded as 1 (Yes).



**Fig. 1** Flow of participant selection and sample size determination

### Independent variables

All those independent variables were grouped into two major classifications (Socio-demographic factors, and obstetrical and health care service-related factors). During analysis, the age of husbands/partners, husbands/partners level of education, religion, sex of household head, wealth status, exposure to mass media, history of pregnancy termination, fertility desire, and information on family planning use. All information about independent variables is clearly elaborated in Table 1 (Table 1).

### Data processing and statistical analysis [40]

The statistical software STATA version 14 was used to extract and perform both descriptive and analytical analyses. Descriptive statistics, such as median and proportion, were presented as a summary of the data.

Since the EDHS data was collected considering clusters as the study unit, this violated the independence assumption of a standard logistic regression model. Consequently, multilevel logistic regression analysis was employed. First, the intra-class correlation coefficient (ICC) of the null model was calculated to assess the variation in the outcome variable (husbands/partners' involvement in contraceptive use decision-making) across different clusters. The ICC was found to be 25.1%, indicating a significant clustering effect that required consideration in the analysis using an advanced statistical model. The median odds ratio (MOR), another indicator of clustering effect, was 2.6 (CI: 2.3–2.9) in the null model [40–42].

Fixed effects were used to assess the relationship between the outcome variable and the independent

**Table 1** Description and measurement of independent variables for husbands/partners independent decision making power of women contraceptive use among postpartum period women in Ethiopia EDHS 2016

Age of women's	Re-coded in to three categories with a value of "1" for 15–19, "2" for 20–34, and "3" for 35–49. In the data set this variable was continuous data.
Women's level of education	The variable women's educational level was recorded as no education primary, secondary, and higher in the dataset and we used without change.
Religion	Re-coded in four categories with a value of "1" for Orthodox, "2" for Muslim, "3" for protestant, and "4" for other religious groups (combining catholic, traditional and the other religious categories as most women's in this category are small in number).
Information about family planning	This variable was generated from 4 variables from the data set (1. heard about family planning from radio, 2. heard about family planning from newspaper/magazine, 3. heard about family planning from TV, 4. heard about family planning from text message. A women at least one from the four listed considered as informed
Wealth status	It was coded as "poorest", "poorer", "Middle", "Richer", and "Richest" in the EDHS data set. For this study we recoded it in to three categories as "poor" (includes the poorest and the poorer categories), "middle", and "rich" (includes the richer and the richest categories)
Residence	The variable place of residence was recorded as "rural" and "urban" in the dataset and used was used without change for this study.
Community media exposure	Defined as the proportion of women who had mass media exposure within the cluster. The aggregate of individual women with mass media exposure can show overall mass media exposure of the cluster. It was categorized as high if cluster has more than or equal to median proportion (57.14%) of women with mass media exposure or low otherwise [40].
Community poverty	Defined as the proportion of women who resided in poor or poorest households within the cluster. The aggregate of individual households with poorest or poor wealth index can show overall poverty of the cluster. It was categorized as high if clusters had more than or equal to median proportion (60%) of poorest or poor households or low otherwise [40].
Community women's education	Defined as the proportion of women who attended primary/secondary/higher education within the cluster. The aggregate of individual woman's primary/secondary/higher educational level can show overall educational attainment of the women in the cluster. It was categorized as high if clusters with more than or equal to median proportion (27.27%) of primary/secondary/higher education or low otherwise [40].

variables. The crude odds ratio (COR) with a 95% confidence interval was employed to measure both the direction and strength of the association. In the bivariate multilevel analysis, variables with a p-value of  $\leq 0.2$  were selected for inclusion in the adjusted model. Finally, in the multivariable multilevel analysis, the association between the outcome variable and explanatory variables was evaluated using an adjusted odds ratio (AOR) with a 95% confidence interval, and statistical significance was determined at a p-value of  $< 0.05$  [40–42].

Random effects (measures of variability) were assessed using the intra-class correlation coefficient (ICC), median odds ratio (MOR), proportion change in variance (PCV), and deviance ( $-2 \log$ -likelihood ratio) [40–42].

#### Intra-class correlation coefficient (ICC)

The ICC measures the variation in the outcome variable (husbands'/partners' involvement in contraceptive use decision-making) between clusters. In the null model, the ICC was 25.1%, indicating that, regardless of other factors such as socio-demographic, obstetrical, and health-care service-related factors, 25.1% of the variation in the outcome variable was attributable to differences between clusters [40–42].

#### Median odds ratio (MOR)

The MOR quantifies the median odds ratio between the highest and lowest odds ratios due to clustering effects, providing an alternative way to express cluster-level variance in terms of odds ratios. In this study, the MOR in the null model was 2.6 (95% CI: 2.3–2.9), indicating a

significant clustering effect. It was calculated as follows:  $MOR = \exp. [\sqrt{(2 \times VA) \times 0.6745}]$ ,  $MOR = e^{0.95 \sqrt{VA}}$  where  $VA = \text{cluster level variance}$  [40–42].

#### Proportion change in variance (PCV)

PCV measures the percentage of variation in husbands'/partners' decision-making power regarding contraceptive use that is explained by the model with the available variables. In this study, the PCV of the final model was 18%, indicating that 18% of the variability was explained by the model, while the remaining 82% was not explained by the model [40–42].

#### Deviance ( $-2 \log$ -likelihood)

Deviance measures the total variation explained by both individual and community-level factors. It is used for model comparison, with the model exhibiting the lowest deviance being preferred for interpreting the findings. In this study, Model IV had the lowest deviance and was selected for interpretation [40, 41].

#### Results

Out of 3669 married women of reproductive age, 2412 (66%) were aged 20–34. Among all participants, 1445 (39%) had husbands who attended primary education. Additionally, 1877 (51%) identified as orthodox. In this study, 1989 (54%) had media exposure. Regarding community factors, 2451 (67%) had low community women's education, while 2241 (61%) were in high community poverty (Table 2).

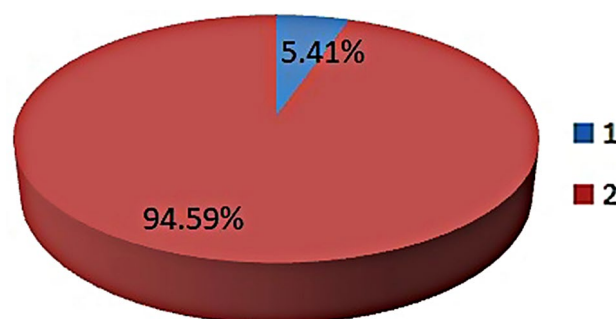
**Table 2** Socio-demographic characteristics of study participants for husbands/partners independent decision making power of women contraceptive use among postpartum period women in Ethiopia EDHS 2016

Characteristics	Weighted frequency (n = 3669)	Percent
<b>Age of women in year</b>		
15–19	189	5
20–34	2412	66
35–49	1068	29
<b>Age of husbands/partners</b>		
< 31	1038	28
31–59	2394	65
> 59	237	7
<b>Women's level of education</b>		
Had no formal education	1948	53
Primary(grade1-8)	1146	31
Secondary(grade9-12)	343	9
Higher	232	7
<b>Husband/partner level of education</b>		
Had no formal education	1427	39
Primary(grade1-8)	1445	39
Secondary(grade9-12)	432	12
Higher	365	10
<b>Sex of house hold head</b>		
Female	3274	89
Male	395	11
<b>Religion</b>		
Orthodox	1877	51
Muslim	768	21
Protestant	968	26
Others*	56	2
<b>Wealth status</b>		
Poor	1028	28
Middle	765	21
Rich	1876	51
<b>Residency</b>		
Urban	862	24
Rural	2806	76
<b>Exposure to mass media</b>		
Yes	1989	54
No	1680	46
<b>Community women's education</b>		
Low	2451	67
High	1218	33
<b>Community poverty</b>		
Low	1428	39
High	2241	61
<b>Community media exposure</b>		
Low	2310	63
High	1359	37

Others\* = catholic, traditional follower

**Table 3** Obstetric and health care services related characteristics of participants for husbands/partners independent decision making power of women contraceptive use among postpartum period women in Ethiopia EDHS 2016

Variables	Frequency	Percent
<b>History of pregnancy termination</b>		
No	3365	92
Yes	304	8
<b>Fertility preference</b>		
Have another	2059	56
Undecided	145	4
Others	1465	40
<b>Information about family planning</b>		
No	2396	65
Yes	1273	35
<b>Distance to reach health facility</b>		
Not a big problem	1674	46
A big problem	1995	54

**Fig. 2** The magnitude of husbands/partners independent decision-making power on women contraceptive use among postpartum period women in Ethiopia EDHS 2016

### Obstetric and health care services related characteristics of participants in Ethiopia

Out of all participants, 3365 (92%) had no history of pregnancy termination. Additionally, 2396 (65%) had no information about family planning. (Table 3).

### Prevalence of husbands/partners' decision-maker on contraceptive use in Ethiopia

The magnitude of husbands/partners decision makers on contraceptive use in Ethiopia was found to be 5.41%; 95% [4.72-6.19%] (Fig. 2).

### Multilevel logistic regression analysis of determinant factors for husbands/partners' involvement in women's contraceptive use decision making process in Ethiopia

In the bivariate multilevel logistic regression analysis, twelve variables were significantly associated with husbands'/partners' decision-making power regarding contraceptive use in Ethiopia. In the multivariable multilevel logistic regression analysis, six variables remained significantly associated: the age of husbands/partners, their

educational level, media exposure, history of pregnancy termination, distance to a health facility, and residency.

Husbands/partners aged 31–59 and over 59 were 1.3 and 2.3 times more likely to make decisions about contraceptive use, respectively, compared to those under 31 (AOR=1.3; 95% CI: 0.7–2.3 and AOR=2.3; 95% CI: 1.2–4.3). Husbands/partners with primary, secondary, and higher education levels were 3.2, 3.8, and 4.3 times more likely, respectively, to make decisions about contraceptive use compared to those with no formal education (AOR=3.2; 95% CI: 2.9–4.3, AOR=3.8; 95% CI: 2.7–4.4, and AOR=4.3; 95% CI: 2.8–5.0).

Women with media exposure were 4.5 times more likely to have husbands/partners make decisions about contraceptive use (AOR=4.5; 95% CI: 2.2–5.4) compared to women without mass media exposure. Women with a history of pregnancy termination were 3.3 times more likely to have their husbands/partners make decisions about contraceptive use (AOR=3.3; 95% CI: 2.6–4.1) compared to women with no history of pregnancy termination. Participants who reported that distance to a health facility was not a significant problem were 3.0 times more likely to have husbands/partners decide on contraceptive use (AOR=3.0; 95% CI: 1.7–4.7) compared to those who found distance to be a significant problem. Women residing in urban areas were 3.5 times more likely to have their husbands/partners make decisions about contraceptive use (AOR=3.5; 95% CI: 1.6–4.2) compared to women living in rural areas.

The Median Odds Ratios (MOR) for models I, II, III, and IV were 2.6, 2.44, 2.4, and 2.34, respectively. The Proportion Change in Variance (PCV) for models II, III, and IV were 10%, 13%, and 18%, respectively (Table 4).

## Discussion

Empowering husbands/partners to be independent decision-makers in women's contraceptive choices can indeed have a positive impact on maternal, neonatal, and child mortality rates. When husbands/partners are involved in the decision-making process, it can lead to increased access to and consistent use of contraceptives, which in turn can help in better family planning, reducing unintended pregnancies, and ultimately decreasing maternal, neonatal, and child mortality. This involvement can also foster better communication and collaboration within the family, leading to improved health outcomes for women and children. [36, 43, 44]. The low percentage of husbands'/partners' independent decision-making in the contraceptive choices of women in Ethiopia, at 5.41%, indicates a significant gap in involvement compared to studies in other regions like Nigeria, where the rate was 89%. The disparity highlights the need for more research to identify specific factors contributing to this low engagement level in Ethiopia. Understanding these

determinants can help develop targeted interventions to enhance husbands'/partners' involvement in women's contraceptive decision-making processes, ultimately leading to improved reproductive health outcomes for women and children in the country. [45]. The disparities in educational levels and residency between studies can indeed significantly influence husbands'/partners' involvement in women's contraceptive decision-making processes. In the context of Ethiopia, where a higher percentage of participants had no formal education, compared to other studies with more educated participants, this could contribute to the lower levels of involvement observed. Additionally, the difference in data sources (secondary analysis versus primary data collection) and the demographic composition of participants (urban versus rural) can also impact reported levels of husbands'/partners' involvement. These socio-demographic factors are key considerations for understanding and addressing male involvement in family planning decisions, ultimately promoting better reproductive health outcomes for women in Ethiopia.

It's interesting to note the contrast in husbands'/partners' involvement in contraceptive decision-making between Ethiopia and Malawi. While the current study in Ethiopia reported better levels of involvement, Malawi faced challenges with reported zero involvement. Factors like the age, educational status, history of terminated pregnancies, media exposure, distance to health facilities, and residency all play significant roles in determining husbands'/partners' involvement in contraceptive decision-making processes. Understanding and addressing these factors are essential for promoting greater male involvement in family planning decisions, which can have positive impacts on reproductive health outcomes. The association between husbands'/partners' age and their involvement in contraceptive decision-making processes is a significant finding. In the current study in Ethiopia, it was observed that husbands/partners in the age groups of 31–59 and over 59 were 1.3 and 2.3 times more likely to be involved in these decisions compared to those under 31. This mirrors similar findings in studies conducted in Nigeria, showcasing a trend where older age groups tend to exhibit higher levels of involvement in family planning discussions. Understanding age-related dynamics can help tailor interventions to enhance male involvement in contraceptive decision-making across different settings. [46, 47]. The premise that older husbands/partners are more likely to be involved in contraceptive decision-making due to a decreased demand for more children and an increased demand for contraception aligns with existing evidence. As individuals age, their family planning preferences often shift towards smaller family sizes or maintaining the current number of children. This shift in desires can lead to a greater interest in

**Table 4** -Multilevel logistic regression analysis of determinant factors for husbands/partners independent decision maker on women contraceptive use among postpartum period women in Ethiopia, EDHS 2016

Variable	Null Model	Model II AOR(95% CI)	Model III AOR(95% CI)	Model IV AOR(95% CI)
<b>Age of the husbands/partners</b>				
<31		1		1
31–59		4.3(3.1–5.2)		3.1(2.3–5.4)***
>59		3.3(2.6–5.0)		2.3(1.2–4.3)***
<b>Husband educational level</b>				
No formal education		1		1
Primary(grade1-8)		2.1(1.2–3.0)		3.2(2.9–4.3)***
Secondary(grade9-12)		2.9(1.6–3.2)		3.9(2.7–4.4)***
Higher		3.2(1.8–4.9)		4.3(2.8–5.0)***
<b>Religion</b>				
Orthodox		2.1(0.99–2.6)		1.8(0.7–1.9)
Muslim		3.1(1.8–1.9)		2.1(0.91–2.5)
Protestant		2.5(1.8–3.9)		1.7(0.9–2.5)
Others*		3.4(2.6–4.9)		2.6(0.7–3.0)
<b>Sex of house hold head</b>				
Female		1		1
Male		1.55(1.2–3.0)		1.2(0.87–2.1)
<b>Media exposure</b>				
No		1		
Yes		4.23(3.9–5.6)		4.5(2.2–5.8)***
<b>Wealth status</b>				
Poor		1		1
Middle		2.2(0.81–2.6)		2.1(0.9–2.5)
Rich		2.9(2.1–2.2)		1.4(0.7–1.9)***
<b>History of termination pregnancy</b>				
No		1		1
Yes		2.8(1.6–3.1)		3.3(2.6–4.1)***
<b>Information about family planning</b>				
No		1		1
Yes		2.8(1.8–3.34)		1.8(0.8–1.6)
<b>Distance to reach health facility</b>				
Big problem		1		1
Not big problem		2.3(2.8–3.56)		3.0(1.7–4.7)***
<b>Fertility desire</b>				
Have another		1		1
Undecided		2.9(2.5–4.7)		0.7(0.5–1.0))
Others**		3.9(2.7–5.4)		1.2(0.8–2.2))
<b>Residency</b>				
Urban			5.1(3.9–6.7)	3.5(1.6–4.2)***
Rural			1	1
<b>Community media exposure</b>				
Low			1	1
High			3.2(3.6–4.5)	1.2(0.8–2.4)
<b>Community women education</b>				
Low			1	
High			1.7(0.6–1.9)	2.5(0.8–3.5)
<b>Community poverty</b>				
Low			1	
High			1.5(0.78–1.8)	1.3(0.7–1.9)***
<b>Random effect</b>				
Community level variance	0.98	0.88	0.85	0.80



**Table 4** (continued)

Variable	Null Model	Model II	Model III	Model IV
ICC	25.1%	24.6%	23.5%	18.7%
MOR	2.6(2.3–2.9)	2.44	2.40	2.34
PCV	Reff	10%	13%	18%
<b>Model fit statistics</b>				
Log likely hood	-2032.431	1961.9667	-2026.5522	1944.3158
Deviance	4064.862	3923.9334	4053.1044	3888.6316

AOR=Adjusted Odds Ratio, CI=Confidence Interval, MOR=Median Odds Ratio, Others<sup>\*</sup> = catholic, traditional follower, others<sup>\*\*</sup> = no more, in fecund, sterilized, PCV=Proportion Change in Variance, \* = p-value < 0.05, \*\* = p-value < 0.01, \*\*\* = p-value < 0.001

contraceptive use and active participation in decision-making processes related to family planning. Understanding these nuanced motivations can inform targeted strategies to promote male involvement in contraceptive decisions across different age groups. [48]. The correlation between husbands'/partners' educational levels and their involvement in contraceptive decision-making is a notable finding corroborated by research in Ethiopia. The study indicates that individuals with primary, secondary, and higher education levels are 3.2, 3.9, and 4.3 times more likely to participate in these decisions compared to those with no formal education. This underscores the positive relationship between education and engagement in family planning discussions, highlighting the importance of educational interventions in fostering male involvement in contraceptive decision-making processes. [49, 50]. Educational initiatives that inform individuals about the benefits of family planning can indeed play a crucial role in increasing male involvement in decision-making processes. By understanding the positive impact of family planning on reducing maternal morbidity associated with high fertility rates, individuals may be more inclined to actively participate in discussions related to contraceptive use. Moreover, education can help individuals grasp the significance of family planning in achieving desired family sizes and promoting the overall well-being of both partners and children. Through targeted educational efforts, promoting awareness and understanding of family planning concepts can lead to greater engagement and support for reproductive health decisions [51]. Research from the Philippines, India, Ghana, Indonesia and Malawi suggest a strong association between media exposure and increased involvement of husbands/partners in contraceptive decision-making processes. Individuals with media exposure are reportedly 4.5 times more likely to participate in these discussions compared to those without media exposure. This underscores the influential role of media in disseminating information about family planning and reproductive health, ultimately fostering greater male engagement in decision-making. By leveraging media platforms to promote awareness and education on contraceptive use, key messages can reach broader audiences, encouraging

more inclusive and informed discussions within relationships [54–56]. Absolutely! Exposure to mass media plays a critical role in shaping individuals' knowledge and understanding of family planning. Through media channels, individuals can access information about the demographic, human rights, and health implications of family planning, including the potential risks associated with high fertility rates. By highlighting the positive impact of family planning on women's and children's health, media exposure can empower individuals to make informed decisions regarding contraceptive use and engage in discussions about family planning within their relationships. This increased knowledge can lead to more supportive and collaborative decision-making processes, ultimately benefiting the health and well-being of families [57, 58]. Absolutely! When husbands/partners are exposed to information highlighting the benefits of family planning and the importance of their involvement in contraceptive decision-making, it can positively influence their attitudes and behaviors. By fostering a greater understanding of the health and social implications of family planning, media campaigns can encourage husbands/partners to actively participate in these discussions, leading to more collaborative decision-making processes within relationships. This increased participation can ultimately contribute to improved communication, mutual understanding, and support for family planning choices, creating a more inclusive and informed approach to reproductive health. Women with a history of pregnancy termination are 3.3 times more likely to have their husbands/partners involved in the contraceptive use decision-making process compared to women without such a history. This increased likelihood may be due to the fact that women who have previously terminated a pregnancy are often less inclined to engage in subsequent pregnancies. As a result, they may have a stronger desire to use contraceptives, making it more likely that their husbands/partners will be involved in the decision-making process [59, 60]. Additionally, husbands/partners whose wives have experienced pregnancy terminations are more likely to be counseled by healthcare providers about family planning options. This counseling often occurs when they accompany their wives to health facilities for the

termination procedure, thus increasing their engagement in family planning decisions [28, 35, 61].

Women for whom distance to the nearest health facility is not a significant issue are 3.0 times more likely to have their husbands/partners involved in the contraceptive use decision-making process compared to women for whom distance is a significant problem. Various studies have demonstrated that easy access to health facilities is a key determinant for effective utilization of maternal health care services, including contraceptive use, in Ethiopia [62–65].

Living closer to a health facility not only facilitates easier access to health services but also increases the likelihood of being reached by fieldwork and outreach programs. These programs help inform both women and their husbands/partners about the benefits of contraceptive use, potentially leading to greater involvement of husbands/partners in the contraceptive decision-making process.

Furthermore, women residing in urban areas are 3.5 times more likely to have their husbands/partners involved in the contraceptive use decision-making process compared to those living in rural areas. This finding is consistent with studies conducted in Nigeria [66], Mozambican [67], and Ghana [68]. Women in urban areas have high media exposure compared to women in rural [53, 69]. This increased accessibility to health facilities and outreach programs in urban areas means that husbands/partners are more likely to be informed about family planning options. Consequently, they are more likely to be involved in the contraceptive use decision-making process.

## Conclusions

The involvement of husbands/partners in women's contraceptive use decision-making was generally low in Ethiopia. However, several factors were positively associated with their involvement, including: Age of husbands/partners 31–59, and >59, educational level of husbands/partners primary, secondary, and higher, positive media exposure, distance not a big problem, and urban residency were positively associated with husbands/partners' involvement in women's contraceptive use decision making process in Ethiopia.

## Abbreviations

AOR	Adjusted Odds Ratio
CI	Confidence Interval
DHS	Demographic and Health Survey
EDHS	Ethiopian Demographic and Health Survey
EAs	Enumeration Areas
ICC	Intra- Class Correlation Coefficient
MOR	Median Odds Ratio
PCV	Proportion Change In variance
PSU	Primary Sampling Unit
SDG	Sustainable Development Goal

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## Author contributions

Melaku Hunie Asratie wrote the main manuscript text Melaku Hunie Asratie, Daniel Gashaneh Belay, Adugnaw Zeleke Alem, Dagmawi Chilot, Nuhamin Tesfa Tsega, Anteneh Ayelign Kibret, Mehari Woldemariam Merid & Fantu Mamo Aragaw performed the analysis and reviewed the manuscript and approved the submission.

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## Data availability

All output based data are available within the manuscript and additionally, the data set can be accessed from [www.measuredhs.com](http://www.measuredhs.com).

## Declarations

### Ethics approval and consent to participate

Since the study was a secondary data analysis of publically available survey data from the measure DHS program, ethical approval and participant consent were not necessary for this particular study. We requested DHS Program and permission was granted to download and use the data for this study from <http://www.dhsprogram.com>. The Institution Review Board approved procedures for DHS public-use datasets do not in any way allow respondents, households, or sample communities to be identified. There were no names of individuals or household addresses in the data file. The geographic identifiers only go down to the regional level (where regions are typically very large geographical areas encompassing several states/provinces). Each enumeration area (Primary Sampling Unit) has a PSU number in the data file, but the PSU numbers do not have any labels to indicate their names or locations.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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