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# BMJ Open

## Two-fifths of women are not autonomous in maternal health service utilization

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# Two-fifths of women are not autonomous in maternal health service utilization

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## ABSTRACT

**Objectives:** Women's autonomy is valued in a range of health-care settings, from seeking and receiving care to deciding between treatment options. The goal of this study was to see how much decision-making autonomy women have when it comes to using maternal health care services and other aspects.

**Methods:** using the STROBE cross-sectional reporting guidelines

**Design:** A community-based cross-sectional study was conducted.

**Setting:** The study was conducted in Mettu rural district, Iluababor zone, southwest Ethiopia from June 19 to August 20, 2021.

**Participants:** Data was collected using a pretested interviewer-administered questionnaire from 541 randomly selected women. The collected data was entered into Epi-Data version 3.1 and exported to SPSS version 22 for analysis. Bivariate and multivariate logistic regression were used to identify factors associated with women's decision-making autonomy on maternal health service utilization. The

significance of association was declared by using the odds ratio with a 95% confidence interval and a p-value less than 0.05 in the multivariable model.

**Primary outcome:** level of women's decision-making autonomy on maternal health service utilization

**Results:** It was found that 60.5% of women were autonomous in maternal health service utilization (95% CI: 56.2%–64.7%). Women's healthcare decision-making autonomy was predicted by their age (adjusted odds ratio (AOR) =4.27 (95%CI: 1.59–11.43), education status (AOR =3.87 (95%CI: 2.15–6.99), family size (AOR =2.5 (95%CI: 1.5–4.1), and distance from health facilities (AOR =5.33 (95%CI: 2.50-11.33).

**Conclusion:** Two-fifths of women have no role in making health care decisions about their own health. Age, level of education, family size, and accessibility of health services were found to influence women's autonomy. Special attention has to be given to education and access to health services to improve women's autonomy.

**Keywords:** women, autonomy, maternal health service utilization, Ethiopia

## Article Summary

### Strengths and limitations of this study

- The study assessed the magnitude of women's decision making autonomy and its associated factors in maternal health service utilization in Mettu district, Southwest Ethiopia.
- Multivariate logistic regression analysis was used to identify the predictors of women's autonomy.
- As long as the participants were only women, there remained a potential for bias and discordance regarding the level of autonomy enjoyed by women, as this is to a large extent a subjective phenomenon.
- Since this was a cross-sectional study design, the temporal relationship of dependent and independent variables was not addressed, and spousal autonomy is a complex concept and difficult to quantify, there is no universally agreed upon definition or tool for measurement.

## INTRODUCTION

Autonomy is the power to obtain information and arrive at decisions about personal concerns. Women's autonomy refers to women's ability and freedom to choose and act independently, including women's capability to articulate strategic choices, access to and control over resources, and participation in

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2  
3 decision-making. It is the control women have over their own lives and the extent to which a woman has  
4 equal voice with her husband in all matters affecting themselves and their families, control over  
5 resources, access to information, authority to take independent decisions and freedom of mobility [1].The  
6  
7 United Nations International Conference on Population and Development (UNICPD) widely declared that  
8  
9 increased gender equality among families is a requirement for achieving advances in all matters of  
10  
11 development. Its program of action highlighted the need for improving women's status for the  
12  
13 enhancement of their decision-making capacity at all levels in all spheres of life [2].  
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15  
16 Women's status in many societies, particularly in developing or low-income countries, frequently inhibits  
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18 their autonomy and ability to make decisions about many elements of their own lives. These societies  
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20 have strong social structures that rigorously define men's and women's roles, which are frequently  
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22 encoded in religious, tribal, and social traditions. These limits frequently characterize the circumstances in  
23  
24 which women have or do not have autonomy to make health-related decisions for themselves [3].  
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27 The relationship between women's decision-making autonomy and use of maternal health services is due  
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29 to women's power to realize their preferences, which includes a stronger preference for ensuring their  
30  
31 own health [4]. Evidence shows that adequate health service utilization and empowering women in  
32  
33 decision-making about their own health have a positive impact on improving maternal health care  
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35 utilization and are key to tackling maternal morbidity and mortality [5].

36  
37 The World Health Organization has specifically stated that meeting the maternal health goal requires  
38  
39 guaranteeing universal healthcare coverage for sexual, reproductive, and maternity health care, as well  
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41 as eliminating inequities in access and quality of sexual, reproductive, and maternal health care by  
42  
43 addressing all causes of maternal mortality, illness, and disability, as well as enhancing healthcare  
44  
45 systems to meet the needs and priorities of women [6].

46  
47 Studies have also shown that higher female autonomy confers benefits, including total fertility reduction,  
48  
49 higher child survival rates, and allocation of resources in favor of children in the household [7]. Women  
50  
51 with high autonomy are assumed to have high self-esteem, not accept gender inequalities in power, and  
52  
53 disagree with any justification for wife beating. Many studies elsewhere have shown that a woman's  
54  
55 decision-making ability and attitudes toward domestic violence are valid measures for assessing a  
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57 woman's autonomy (8 ,9).  
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3 Various studies have shown that women's flexibility in decision-making in health care is crucial to better  
4 outcomes in maternal and child health. For example, research from Nepal found that higher levels of  
5 female autonomy were connected with increased use of maternal services [1]. Another Indian study also  
6 found that female autonomy was associated with increased use of maternity care services, particularly  
7 prenatal and postnatal care (10).

8  
9 Evidence from Africa and South-East Asian countries has shown that girls usually have less power and  
10 higher cognitive process autonomy than men, concerning issues associated with their own health care.  
11 Moreover, they sometimes have unequal access to nutrition, education, and health care, yet as a limited  
12 opportunity to earn income and have control over resources, as well as few effective legal rights [11]. In  
13 addition, according to the demographic and health survey (DHS) Kenyan report, 39% of women are the  
14 primary decision-makers in their own health care, while 40% of women decide jointly with their husbands  
15 and 21% decide primarily with their husbands. Less than a quarter of women (23%) are the primary  
16 decision makers for visits to family or relatives and only 20% on major household purchases (12).

17  
18 Other studies have identified negligible correlations between the participation of women in decision-  
19 making and the use of antenatal and delivery care services (13). Such studies in the sense of African  
20 countries are, however, minimal. For one study conducted using the 2005 Ethiopian demographic and  
21 health survey (EDHS), the use of maternal health services (14) was correlated with the participation of  
22 women for household decision-making. Also, other factors such as age, education, employment or labor  
23 force participation and wealth quintile have also been found to be associated with maternal healthcare  
24 utilization (15–18). Evidence from Ethiopian demographic and health surveys has shown that  
25 approximately six out of every ten married women were employed, whereas almost all currently married  
26 men aged 15–49 were employed in the 12 months preceding the survey. Furthermore, nearly a quarter of  
27 married women (19) had no control over their health-care decisions.

28  
29 More than 80% of women in Ethiopia reside in rural areas where they are considered the subordinates of  
30 their husbands. This would restrict women's ability to fully exercise their reproductive health rights.  
31 Overall, few studies from Ethiopia have examined the relationship between women's autonomy and  
32 maternal health-care-seeking behavior. There is a need to study the major determinant factors influencing  
33 women's decision-making autonomy in the South-west Ethiopia regarding reproductive health services,  
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which are crucial for designing locally feasible, contextually appropriate, and practically sound interventions to empower women in reproductive health decision-making autonomy.

### Study objectives

This study was designed to determine women's decision-making autonomy on maternal health services utilization among reproductive age women in Mettu rural district, southwest Ethiopia.

## METHODS

### Study setting

A community based cross-sectional study was conducted in Mettu rural district, Iluababor zone, southwest Ethiopia from June 19 to August 20 in the year 2021. Mettu rural district is one of 13 rural districts in the Iluababor zone, located 600km to the south-west of Addis Ababa, the capital city of Ethiopia. The district has 29 rural *kebeles* with an estimated total population of 87,771, of whom 44,448 (50.6%) are females and 43,323 are male rural dwellers. A total of 5/5 health centers and 29 health posts are available in the district. Married women who had given birth at least once and lived in Mettu rural district for at least 6 months were included in the study. The sample size was determined by using a single population proportion formula considering 95% confidence level, 5% margin of error and taking 80% of women making autonomous decisions regarding their own health care needs from a study done in southern Ethiopia (21). These assumptions are substituted in the formula below:

$$n = \frac{(Z_{(1-\alpha/2)})^2 \times P(1-P)}{d^2} = \frac{(1.96)^2 \times 0.8(0.2)}{(0.05)^2} = 246$$

Where: n = the initial sample size, Z/2 = the critical value for normal distribution at 95% confidence level, which equals 1.96 (z value at =0.05), p = the proportion of women who participate in health-care decision-making, and 80% (0.80) taken from the study conducted in the Wolaita zone, Southern Ethiopia (21) and d= is a margin of error, 5% (0.05). The calculated sample size is multiplied by a design effect of 2 and 10% nonresponse rate is added and the final sample size was 541 women. Sample size calculation was also considered for factors associated with decision making autonomy of women by considering different factors associated with women's decision making autonomy on maternal health service utilization using Epi-info version 7 software by the following assumption made, two sided confidence level of 95%, power



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3 80%, exposed to unexposed ratio of 1:1, design effect 2, 10% non-response rate. The factors  
4 considered are taken from studies conducted in different parts of Ethiopia (46, 47, 35). (*Table 1*)  
5 Accordingly, from the magnitude (541) and factors (440) sample sizes, the largest sample size was taken,  
6 which was 541. Figure 1 shows the sampling procedure where multi-stage sampling technique was used  
7 to choose study participants in the district. The district had twenty-nine kebeles (the lowest administrative  
8 unit in Ethiopia), and nine kebeles were selected using a simple random sampling method in the first  
9 stage. The total sample size was allocated to each selected kebele using proportional allocation. A  
10 systematic random sampling method was used to select eligible married women from households in  
11 selected *kebele* in the second stage. The sampling interval was ten, and first household selected from the  
12 list was number 2, by lottery method, and then every tenth household was included in the study. A woman  
13 in the reproductive age group was interviewed from the selected households, and if there were more than  
14 one woman in the selected households, a lottery method was used to select only one.  
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### 27 **Data collection**

28 A structured, pre-tested, and interviewer-guided questionnaire was used to collect data. The  
29 questionnaire was prepared originally in English and then translated into the local language, Afan Oromo.  
30 Three public health officers administered the questionnaire, and five female nurse workers were assigned  
31 as data collectors/interviewers. Women's autonomy in health care decision making was assessed by  
32 asking women about who makes decisions concerning their own health care using the answers to the  
33 following six questions: on ANC, delivery at a health institution, PNC services, where to get maternal  
34 health services, when to give birth, and continuation or stopping of using/intending maternal health  
35 services. Accordingly, their responses were classified into any of the following four choices: 'mainly wife';  
36 'wife and husband jointly'; 'mainly husband'; or 'someone else'. As a result, a woman was considered  
37 autonomous in healthcare decision-making if she usually made that decision alone or in collaboration with  
38 her husband. A score of 1 was given if women decided independently or together, and a score of zero (0)  
39 was scored by partners who decided independently or whose decision was made by others. Likewise, the  
40 maximum score was six and the minimum was zero. Women's decision-making autonomy on utilization of  
41 maternal healthcare services was below the mean. That means those scoring less than three points have  
42 no decision-making power and those scoring greater than or equal to the mean, meaning greater than or  
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3 equal to three points, have decision-making power. Finally, women's decision-making autonomy on  
4 maternal health care service utilization was dichotomous, with having decision-making autonomy if the  
5 score was above three and having no decision-making autonomy if the score is below three and three  
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9 (21,61).

### 10 **Patient and public involvement**

11 Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of  
12  
13 our research.  
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### 15 **Data management and analysis**

16 The quality of the data was assured through careful design, pretesting of the tools, proper training of the  
17 data collectors, and supervisors, close supervision of the data collectors and proper handling of the data.  
18 The collected data was coded, cleaned, and entered into Epi-data version 3.1 and exported to SPSS  
19 version 22 for analysis. The analysis results output of the participants' socio-demographic characteristics  
20 and outcome variables were summarized using descriptive summary measures. A mean (SD) was used  
21 for normally distributed continuous variables and percent for categorical variables. A variable with a p-  
22 value less than 0.2 in binary logistic regression was a candidate variable for multivariable logistic  
23 regression analysis. Then, a multivariable logistic regression analysis was used to identify the presence  
24 of an association between the dependent and independent variables. The goodness of fitness of the  
25 model was checked by Hosmer-Lemeshow's goodness of fit test, which indicated that  $p = 0.292$ .  
26 Statistical significance was declared using 95% confidence intervals of adjusted odds ratios and a p-value  
27 of less than 0.05.  
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## 41 **RESULTS**

42 A total of 532 married women were involved in the study, making up 98% of the response rate. Two  
43 hundred twenty (41.4%) respondents were in the age group of 30–39 years, and the minimum  
44 respondents from the age group of 15–19 years represented eight (1.5%) with an age range from 17 to  
45 48 years. The mean ( $\pm$ SD) age of women was 32.17 ( $\pm$ 8.599) years. Regarding the educational status,  
46 two hundred twelve (39.9%) of women have not attended formal education and 72.2% of the husbands of  
47 participants have. As for the occupation of respondents, two hundred sixty-six (50%) of the respondents  
48 were housewives, and 60.4% of the respondents' husbands were farmers. Regarding the monthly income  
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of households, 15.8% of the respondents got 2,500–10,000 ETB, while forty-eight (9.2%) of the respondents got > 10,000 ETB per month. Four hundred six (76.3%) had family sizes of five or less than five members. (*Table 2*)

Five hundred twenty five (98.7%) of the study participants reported having attended antenatal care during their pregnancy. However, only 46.7% of them had attended the recommended ANC4+ visits per pregnancy. A majority of the participants, 71.3%, go to health facilities by public transportation. Regarding postnatal care services, 14.8% of the mothers reported getting checkups while they were in the health institutions. Ninety eight (18.4%) of the participants were less than or equal to 30 minutes away from the health facility (by foot). (*Table 3*)

Overall, three hundred eight (57.9%) married women have high autonomy and participation in household decision-making. Figure 2 shows the level of women's autonomy in household decision-making. Concerning women's decision-making autonomy in household decisions, twenty-eight (5.3%) of the participants decide on their husband's earning alone, two hundred fifty-two (47.4%) jointly, and two hundred thirty-eight (44.7%) on household purchases jointly, twenty-eight (5.3%) alone. About fifty-six (10.5%) of participants made decisions related to visiting family, friends, or relatives alone and one hundred sixty-eight (31.6%) with their husband. Also, concerning women's decision-making autonomy with regard to their own health care, 5.3% of them usually make decisions themselves. In 42.1% of the study participants, women's health care decisions are made by their husbands or partners. Two hundred fifty-two (47.4%) of the respondents reported that they decided to visit a health facility jointly, as indicated in *Table 4*.

#### **Level of women's decision-making autonomy on maternal health service utilization**

Figure 2 shows the magnitude of women's decision –making autonomy on maternal health service utilization. Accordingly, 322 (60.5%) of women who had decision-making autonomy in maternal health service utilization (95% CI: 56.2%–64.7%). Concerning women's decision-making autonomy on when to give birth, 5.3% of them made decisions themselves, whereas 60.9% made decisions jointly with their husbands. In addition, women's decision-making autonomy concerning participation in and attendance at ANC is diminished. 7.9% of participants decide alone, and 44.4% of PNC participants are sought by their

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3 husbands. About 42 (7.9%) of participants made decisions on the continuation or stopping of using  
4 intending maternal health services alone, and 296 (55.6%) with their husbands. (*Table 5*)  
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8 In bivariate logistic regression, the respondent's age, educational status, household income, family size,  
9 women's occupation, number of ANC visits, and distance to the health facility were found to be  
10 significantly associated with women's decision-making autonomy, and variables with p-values of 0.2 were  
11 used in multivariable logistic regression analysis.  
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15 After controlling for confounding using backward stepwise multivariable logistic regression analysis,  
16 women's age, women's education, family size, and distance from the health facility were identified as  
17 independent predictors of women's health care decision-making autonomy. Accordingly, the odds of  
18 women aged 30–39 years old having decision-making autonomy on maternal health services were four  
19 times higher compared to women aged 40–49, AOR = 4.27 (95%CI: 1.59–11.43). Also, the odds of  
20 participating in health care decision making among women who have a primary education are around four  
21 times higher than compared to women who have no formal education; AOR = 3.874 (95%CI: 2.146–6.99).  
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25 In addition, the odds of women who had a family size of less than or equal to five were 75% less likely to  
26 have decision-making autonomy on maternal health care services compared to women who had more  
27 than five members. AOR = 0.249 (95%CI: 0.150–0.414). Furthermore, the odds of decision-making  
28 autonomy on maternal health services are higher among women who live less than thirty minutes from a  
29 health facility than among women who live more than thirty minutes from a health facility, AOR = 5.328  
30 (95%CI: 2.505–11.33). (*Table 6*)  
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## 33 34 35 36 37 38 39 40 41 **DISCUSSION**

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43 Women's autonomy is likely to vary according to characteristics at the individual, interpersonal,  
44 community, and macro-political and societal level. In this study, it is found that 322 (60.5%) at 95% CI  
45 (56.2%–64.7%) of study participants have autonomy in making health care decisions either alone or  
46 jointly.  
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50 This finding was higher than that of a study conducted in Dawro, Southern Ethiopia, and lower than that  
51 of Dabat, Northern Ethiopia, and of an Ethiopian demographic and health survey (16, 19, 20). This finding  
52 is also higher than the study conducted in the Bale zone (21). This difference may be due to the fact that  
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3 in Ethiopia, over a period of time (since the study was conducted in Bale), there has been a strong  
4 commitment and effort made by the Ethiopian government on maternal health. This finding is also  
5 somewhat higher compared to the study conducted in Ghana (22) which found that nearly half of the  
6 maternal health service utilization is independently decided by husbands, and women have very little  
7 autonomy in deciding about their maternal health service utilization. The difference might be due to the  
8 difference in the study populations. For example, previous studies conducted in Dawro, Southern Ethiopia  
9 [16] and Dabat, Northern Ethiopia [25] focused on women's decision-making autonomy among age  
10 groups of less than twenty-five to greater than thirty years of age, whereas the current study focused on  
11 the age group of fifteen to forty-nine years of age. This difference might be the result of a discrepancy in  
12 the scope of studies, as the current study only involved rural women while the former studies incorporated  
13 both rural and urban women. It is known that urban women have relatively better education, the economy,  
14 and information access. Hence, the current study found a relatively lower rate of health care decision-  
15 making autonomy than the aforementioned study.  
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19 Furthermore, the possible difference might also be due to a difference in the education and  
20 socioeconomic status of study participants, as evidenced by the presence of low participation in the  
21 decision-making autonomy of maternal health services in the current study. About two hundred ten study  
22 participants in the current study actually thought decision-making was the responsibility of the husband.  
23 This suggests that women did not exercise their decision-making autonomy sufficiently to obtain maternal  
24 health services and freedom from household decision-making in their lives. Additionally, the differences in  
25 the socio-economic characteristics and geographical contexts across countries and the time period of  
26 studies might also explain the observed inconsistencies of the findings.  
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30 Regarding factors associated with decision-making autonomy, this study indicated that age of  
31 respondents or women was significantly associated with women's decision-making autonomy on maternal  
32 health care services. In this study, younger women have higher decision-making power in maternal health  
33 care as compared to older women. This finding is similar to that of a study conducted in Legatafo, Eastern  
34 Ethiopia (23); however, a study conducted in Mizan-Aman, South Ethiopia (24) found that women aged  
35 30–44 have greater decision-making power in maternal health care than younger women. This difference  
36 might be due to the educational coverage of women age below 39 years old more educated, level of  
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3 current government, and other stakeholder efforts to increase women's empowerment in decision-making  
4 related to maternal health.  
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7 The odds of women's decision-making autonomy on maternal health care were higher among those who  
8 had received primary or higher education than their counterparts or illiterate counterparts. This finding is  
9 in line with the study conducted in Nepal (25) and also consistent with a study from Ethiopia (26) in which  
10 women who have received primary or higher education were four times more likely to make decisions on  
11 seeking health care than uneducated women. This might be because the more a woman is educated, the  
12 more she will accept gender equality and believe in equal participation in decision-making with her  
13 husband. This means that improving education has a significant impact on later-life decision-making  
14 participation in maternal health care services.  
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18 Women with a family size greater than or equal to six were 75% less likely to have decision-making  
19 autonomy over maternal health care services than women with a family size less than or equal to five.  
20 Similarly, this finding is supported by a study conducted by Delbiso in which having fewer children was  
21 associated with better reproductive health decision making [20]. As a result, having a smaller family would  
22 help women exercise freedom of health care decision-making and end male dominance in a family. Also,  
23 the study conducted in southern Ethiopia reveals that the probability of a woman participating in health  
24 care decision-making decreases when women with a family size of five to six people have a lower chance  
25 of participating in health care decision-making as compared to women with a family size of less than five  
26 people. Similarly, women with a family size of six people or above have a lower chance of participating in  
27 decision-making (16).  
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31 Also, the odds of decision-making autonomy on maternal health care services among women who live a  
32 distance from the health facility of less than thirty minutes are higher compared with those who live a  
33 distance greater than thirty minutes. The study conducted in Nigeria revealed that the further a patient  
34 lives from a health facility, the less likely they are able to utilize the services [26]. A study in Kenya also  
35 identified distance and physical proximity of the facility or care source as barriers to the use of skilled  
36 attendance [27]. The preferred care source was often the closest one. In the African context, the principal  
37 barriers to accessibility are transport and cost, so distance is mostly reported as a single obstacle to the  
38 utilization of delivery care services.  
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## CONCLUSION

Even though every woman has the right to participate in her own health care decision-making, two fifths of them have no role in making health care decisions about their own health. Husbands play a major role in making health care decisions for their wives. Age, education, family size, and distance from the health facility were identified as factors associated with women's decision-making autonomy on maternal health service utilization. Women's empowerment and education actions that increase women's autonomy at home could be effective in helping assure good participation in maternal health decision making.

### Generalizability

The study was conducted with a random selection of participants obtained after a random selection of a representative number of kebeles (35%) in the district. Hence, the results can be generalized for the district as well as the respective zone.

### Acknowledgements

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**Author statement:** AK made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work. AZ participated in drafting the work or revising it critically for important intellectual content. Both authors are involved in the final approval of the version to be published and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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**Data availability statement:** The data sets used and/or analyzed during this study are available from the corresponding author on reasonable request.

### Ethics statement

Ethical clearance was obtained from Ethical Review Committee of College of Health Science, Mettu University by approval number RCS/036/2020 and presented to Mettu district administration and health office. Official letter was obtained from Mettu district Administration and Health office and presented to the respective Kebeles. The purpose and importance of the study was explained for study participants and informed the right to withdraw at any time during the study period. Mothers were interviewed after verbal consent was obtained and the privacy and confidentiality of participants was maintained at all levels.

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Table 1. Sample size calculation based different factors associated with women decision making autonomy in maternal health service

Variable	Proportion among exposed (p1)	Proportion among unexposed (p2)	Ratio of exposed to unexposed	Odds ratio	Non-response rate	Design effect	Total sample size
Age of woman* (46)	66.3	45	1:1	2.4	10%	2	416
Income** (47)	70.5	49	1:1	2.49	10%	2	396
Education of woman*** (35)	84	66	1:1	2.7	10%	2	440

\*Women age "20-29" years" compared to "less than 20 years"

\*\*Women generating their own income compared to non-working women

\*\*\*Educated woman compared to non-educated

Table 2. Socio-demographic characteristics of women in Mettu rural district, Oromia Regional State, Southwest Ethiopia 2021 n=532

Variables	Category	Frequency	Percent
Age group	15-19	48	9
	20-29	156	29.5
	30-39	220	41.2
	40-49	108	20.3
Educational level	No formal education	212	39.8
	Primary level(1-8)	224	42.1
	Secondary and above	96	18
Husband education	No formal education	148	27.8
	Primary level(1-8)	240	45.1
	Secondary and above	144	27.1
Occupation of respondent	Housewife	266	50
	Farmer	84	15.8
	Merchant	98	18.4
	government employee	56	10.5
	daily laborer	28	5.3
Husband occupation	Farmer	320	60.2
	daily laborer	60	11.3
	Merchant	80	15.0
	government employee	60	2.3
	Other	12	3.0
Monthly income of husband	< 2,500	399	75
	2,500-10,000	84	15.8
	> 10,000	49	9.2
Family size	≤ Five	406	76.3
	≥ Six	126	23.6

Table 3. Maternal health service utilization of the respondents in Mettu district, Iluababora Zone, Oromia Regional State, Southwest Ethiopia, 2021= (n =532)

Variables	Category	Frequency	Percent
ANC follow up	Yes	525	98.7
	No	7	1.3
Number of ANC visits	< 4 times visits	280	53.3
	> 4 times visits	245	46.7
Time start ANC	< 4 month	294	56
	> 4 month	231	44
Means of transportation to reach health care facility	By foot	153	28.7
	By public transportation	379	71.3
Distance of HF	<30 min	98	18.4
	>30 min	434	81.6
postnatal checkup	Yes	105	19.7
	No	427	80.3
First postnatal check up	< 24 hours	79	14.8
	24- 48 hours	26	4.9
Number of postnatal	one times	69	14
	two times	23	4.3
	three times	13	2.4
Reasons for not seek postnatal care	Too much cost	43	8.1
	Too far	185	34
	No trust/poor quality	100	18.8
	No transportation	99	18

Table 4. Women's household decision-making characteristics in Mettu rural district, Oromia region, Southwest Ethiopia 2021, n=532

Variables	Who decided	Frequency	Percent
Decision made husband earning	Husband/ other else	252	47.4
	Jointly	252	47.4
	women alone	28	5.3
Major decision house hold purchase	Husband /other else	266	50
	Jointly	238	44.7
	women alone	28	5.3
Decision made visiting family	husband/other else	168	31.6
	Jointly	308	57.9
	women alone	56	10.5
Decision made on respondent health Care	Husband /other else	224	42.1
	Jointly	280	52.6
	women alone	28	5.3
Decision made on child health care	husband/other else	196	36.8
	Jointly	308	57.9
	women alone	28	5.3
Decision made visiting health Facility	Husband/ other else	238	44.7
	Jointly	252	47.4
	women alone	42	7.9
Women participation on household decision making	low autonomy	224	42.1
	high autonomy	308	57.9

Table 5: Women's decision-making autonomy on maternal health service utilization in Mettu rural district, Oromia region Southwest Ethiopia, 2021 (n =532)

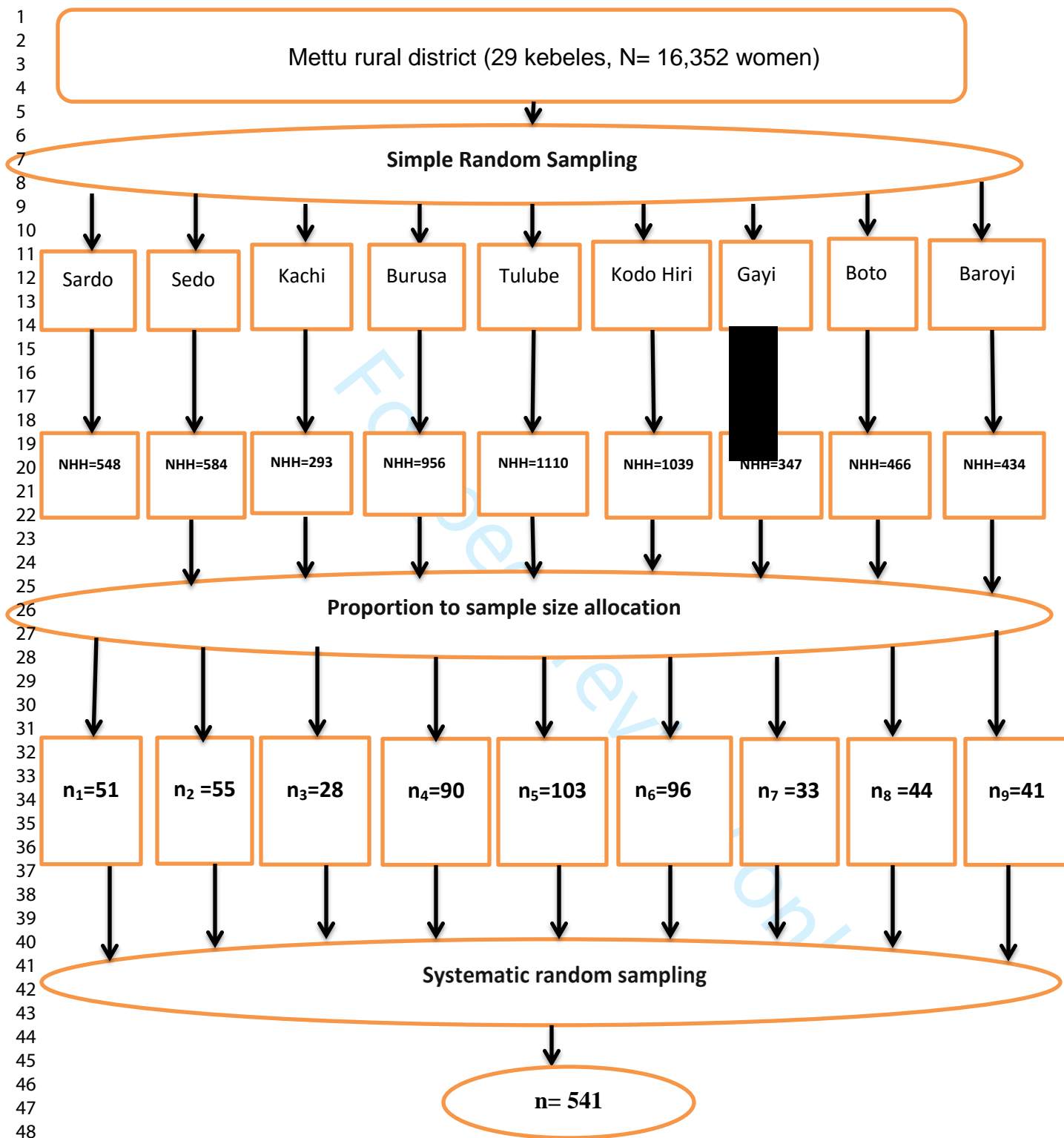
Variable	Category	Frequency	Percent
Decision-making on attending ANC	husband/other else	218	41
	Jointly	272	51.1
	women alone	42	7.9
Decision-made giving birth at health Institution	husband/other else	220	41.3
	Jointly	284	53.4
	women alone	28	5.3
Decision made for seeking PNC services	husband/other else	236	44.4
	Jointly	268	50.3
	women alone	28	5.3
Decision made on when to give birth	husband/other else	180	33.8
	Jointly	324	60.9
	women alone	28	5.3
Decision made on where to get maternal health services	husband/other else	212	39.8
	Jointly	292	54.9
	women alone	28	5.3
Decision made on continuation or stopping of using/intending MHS	husband/other else	194	36.5
	Jointly	296	55.6
	women alone	42	7.9
Decision-making autonomy On maternal health care services	Has no autonomy	210	39.5
	Has autonomy	322	60.5

Table 6:- Multivariate logistic regression showing factors associated with women's decision- making autonomy on maternal health services utilization in Mettu rural district, Oromia region, Southwest Ethiopia, 2021 n=532

Variable	Autonomy on maternal health service utilization		COR (95%C.I)	AOR (95% C.I)
	Has Autonomy	Has no Autonomy		
<b>Age of respondent</b>				
15-19	26	22	.830 (.225 – 3.061)	1.236( .324 -4.713)
20-29	96	60	.543 (.208 – 1.4)	1.941.749 – 5.026)
30-39	130	90	.220 (.081 – .597)	4.27(1.59 -11.43) *
40-49	70	38	1	1
<b>Women Education</b>				
No formal education	168	44	1	1
Primary level(grade1-8)	110	114	.253(.166-.386)	3.874(2.146-6.994) *
Secondary and above	44	52	.222(.132-.373)	.878(.493-1.563)
<b>Household income</b>				
≤ 2,500 ETB	226	171	1	1
2,500- 10,000 ETB	48	34	1.068(.60 – 1.730)	.367(.134 – 1.004)
>10,000 ETB	48	5	7.264(2.831 – 18.636)	0.392(.128 – 1.198)
<b>Family size</b>				
Five and less members	280	126	1	1
Above five members	42	84	4.444(2.903- 6,804)	.249(.150 - .414) *
<b>Woman's occupation</b>				
Housewife	186	80	1	1
Farmer	56	28	.923 (.548 – 1.556)	3.605(1.483 - 8.765)
Government employ	42	56	.346( .255 - .557)	2.4( .921 - 6.257)
Merchant	28	28	.462( .257 - .828)	.957( .357 - 2.569)
Daily laborer	10	18	.462( .211 - 1.011 )	.193 (.116 - 1.543)
<b>Distance of HF</b>				
≤ 30 min	70	28	.554( .343 – .893 )	5.636 (2.689-11.814) *
>30 min	252	182	1	1
<b>ANC Visits</b>				
< four times	154	126	1	1
≥ four times	163	82	1.626 (1.141- 2.319)	.741(.478 – 1.149 )

\* p- Value < 0.05 C.I: confidence interval COR: crude odds ratio AOR: adjusted odds ratio

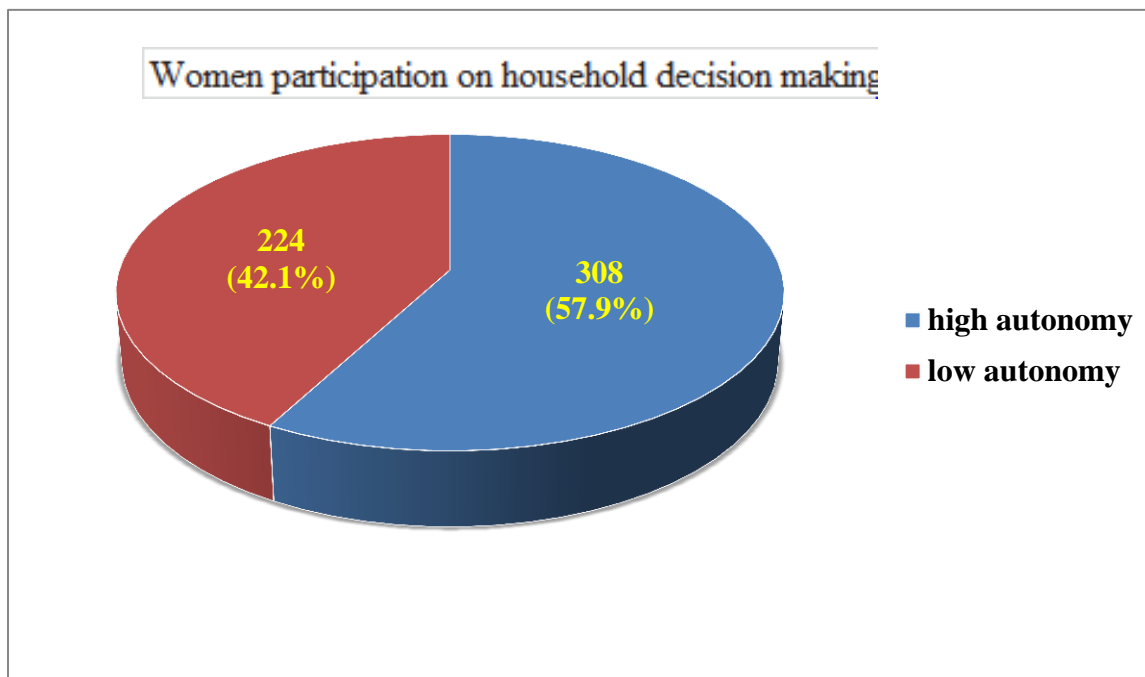




NHH= number of households in each kebele

$n_i$ = sample size from each kebele

Figure 1. Schematic presentation of the sampling procedure



29 **Figure 1. Women's participation on household decision making in Mettu rural district, southwest**  
30 **Ethiopia, 2021**

review only

### Women's decision making autonomy on maternal health service utilization

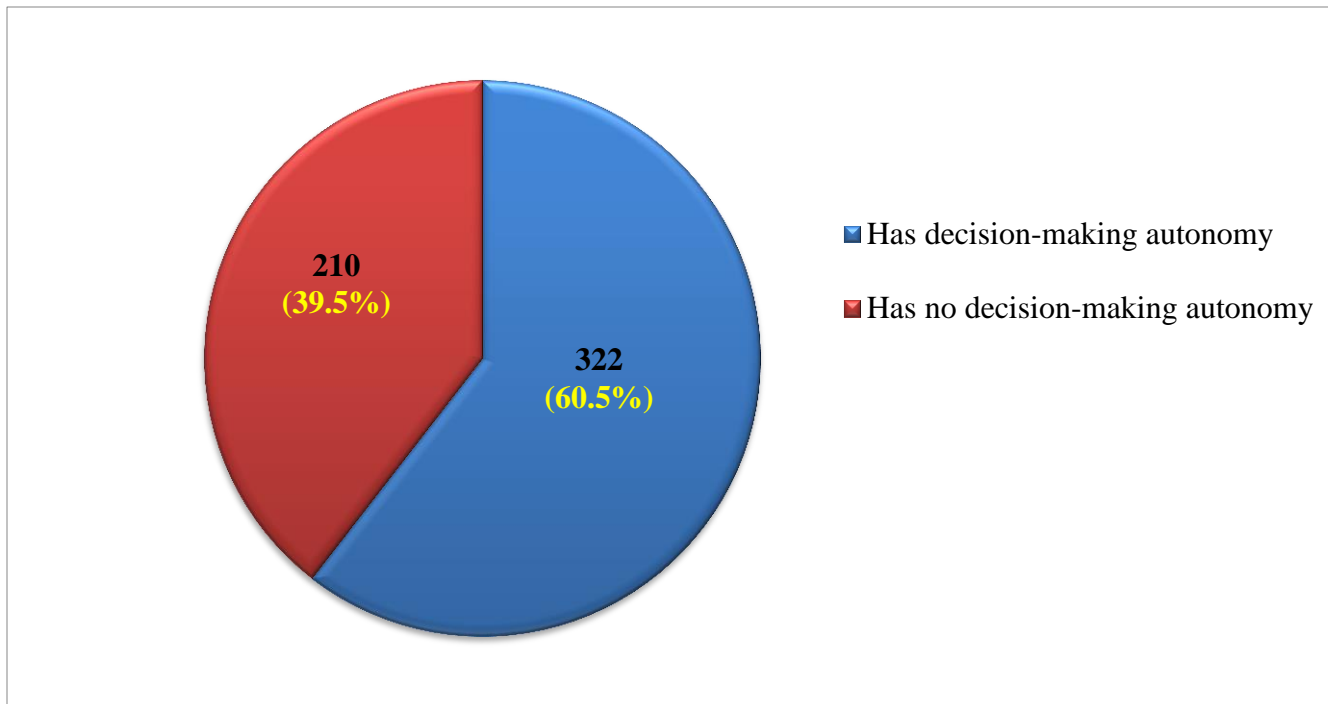


Figure 1. Women's decision making autonomy on maternal health service utilization in Mettu rural district, southwest Ethiopia, 2021

# Reporting checklist for cross sectional study.

Based on the STROBE cross sectional guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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In your methods section, say that you used the STROBE cross sectional reporting guidelines, and cite them as:

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			Page Number
<b>Title and abstract</b>			
Title	<a href="#">#1a</a>	Indicate the study's design with a commonly used term in the title or the abstract	1
Abstract	<a href="#">#1b</a>	Provide in the abstract an informative and balanced summary	1

of what was done and what was found

## Introduction

Background / rationale	<a href="#">#2</a>	Explain the scientific background and rationale for the investigation being reported	3
Objectives	<a href="#">#3</a>	State specific objectives, including any prespecified hypotheses	5
<b>Methods</b>			
Study design	<a href="#">#4</a>	Present key elements of study design early in the paper	5
Setting	<a href="#">#5</a>	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Eligibility criteria	<a href="#">#6a</a>	Give the eligibility criteria, and the sources and methods of selection of participants.	5
	<a href="#">#7</a>	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6
Data sources / measurement	<a href="#">#8</a>	For each variable of interest give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group. Give information separately for for exposed and unexposed groups if applicable.	6
Bias	<a href="#">#9</a>	Describe any efforts to address potential sources of bias	6
Study size	<a href="#">#10</a>	Explain how the study size was arrived at	6

1	Quantitative	<a href="#">#11</a>	Explain how quantitative variables were handled in the	6
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3	variables		analyses. If applicable, describe which groupings were chosen,	
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9	Statistical	<a href="#">#12a</a>	Describe all statistical methods, including those used to control	7
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11	methods		for confounding	
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14	Statistical	<a href="#">#12b</a>	Describe any methods used to examine subgroups and	7
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16	methods		interactions	
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19	Statistical	<a href="#">#12c</a>	Explain how missing data were addressed	7
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25	Statistical	<a href="#">#12d</a>	If applicable, describe analytical methods taking account of	7
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27	methods		sampling strategy	
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30	Statistical	<a href="#">#12e</a>	Describe any sensitivity analyses	7
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32	methods			
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36	<b>Results</b>			
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39	Participants	<a href="#">#13a</a>	Report numbers of individuals at each stage of study—eg	8
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51	Participants	<a href="#">#13b</a>	Give reasons for non-participation at each stage	5
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54	Participants	<a href="#">#13c</a>	Consider use of a flow diagram	6
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57	Descriptive data	<a href="#">#14a</a>	Give characteristics of study participants (eg demographic,	8
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clinical, social) and information on exposures and potential confounders. Give information separately for exposed and unexposed groups if applicable.

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8	Descriptive data	<a href="#">#14b</a>	Indicate number of participants with missing data for each
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13	Outcome data	<a href="#">#15</a>	Report numbers of outcome events or summary measures.
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21	Main results	<a href="#">#16a</a>	Give unadjusted estimates and, if applicable, confounder-
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23			adjusted estimates and their precision (eg, 95% confidence
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31	Main results	<a href="#">#16b</a>	Report category boundaries when continuous variables were
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36	Main results	<a href="#">#16c</a>	If relevant, consider translating estimates of relative risk into
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38			absolute risk for a meaningful time period
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42	Other analyses	<a href="#">#17</a>	Report other analyses done—e.g., analyses of subgroups and
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47	<b>Discussion</b>		
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50	Key results	<a href="#">#18</a>	Summarise key results with reference to study objectives
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53	Limitations	<a href="#">#19</a>	Discuss limitations of the study, taking into account sources of
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55			potential bias or imprecision. Discuss both direction and
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57			magnitude of any potential bias.
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1	Interpretation	<a href="#">#20</a>	Give a cautious overall interpretation considering objectives,	12
2			limitations, multiplicity of analyses, results from similar studies,	
3			and other relevant evidence.	
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8	Generalisability	<a href="#">#21</a>	Discuss the generalisability (external validity) of the study	13
9			results	
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14	<b>Other Information</b>			
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17	Funding	<a href="#">#22</a>	Give the source of funding and the role of the funders for the	13
18			present study and, if applicable, for the original study on which	
19			the present article is based	
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# BMJ Open

## Decision-making autonomy in maternal health service utilization and associated factors among women in Mettu district, southwest Ethiopia: A community-based cross-sectional study

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Secondary Subject Heading:	General practice / Family practice, Epidemiology
Keywords:	EPIDEMIOLOGY, PUBLIC HEALTH, SEXUAL MEDICINE

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4 1 **Decision-making autonomy in maternal health service**  
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13 4 **sectional study**

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## 25 ABSTRACT

26 **Objectives:** Women's autonomy is valued in a range of healthcare settings, from seeking and receiving  
27 care to deciding between treatment options. This study was aimed at assessing the level of decision-  
28 making autonomy women have and associated factors when it comes to using maternal healthcare  
29 services.

30 **Design:** A community-based cross-sectional study was conducted.

31 **Setting:** The study was conducted in Mettu rural district, Iluababor zone, southwest Ethiopia.

32 **Methods:** Data was collected using a pretested interviewer-administered questionnaire from 541 women  
33 selected by a systematic random sampling technique. The collected data was entered into Epi-Data  
34 version 3.1 and exported to SPSS version 22 for analysis. Bivariable and multivariable binary logistic  
35 regression were used to identify factors associated with women's decision-making autonomy on maternal  
36 health service utilization. Variables with a p-value less than 0.05 at 95% CI were declared significant and  
37 the strength of the association was measured by an adjusted odds ratio.

38 **Primary outcome:** level of women's decision-making autonomy on maternal health service utilization

39 **Results:** It was found that 60.5% of women were autonomous in maternal health service utilization (95%  
40 CI: 56.2%–64.7%). Older age group (AOR) =4.27 (95%CI: 1.6–11.4), higher educational level (AOR =3.8  
41 (95%CI: 2.2–6.7), small family size (AOR =2.5 (95%CI: 1.5–4.1), and a short distance from health  
42 facilities (AOR =5.3 (95%CI: 2.5–11.3) were associated factors with healthcare decision-making  
43 autonomy.

44 **Conclusion:** Two-fifths of women have diminished autonomy in decision-making on healthcare service  
45 utilization. Age, level of education, family size, and accessibility of health services were found to influence  
46 women's autonomy. Special attention should be given to education and access to health services to  
47 improve women's autonomy.

48 **Keywords:** autonomy, maternal health service utilization, women, Ethiopia

### 49 Article Summary

#### 50 Strengths and limitations of the study

- 51 ➤ This community-based study provided preliminary data that would support future research.
- 52 ➤ The key components of maternal healthcare services were used to quantify women's autonomy.

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3 53 ➤ Since husbands were not included in the study, there remains a potential for discordance on the level  
4 of women's autonomy.  
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7 55 ➤ A cross-sectional study design cannot affirm any causal inference or direction of the association.  
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## 9 56 INTRODUCTION

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12 57 Autonomy is self-determination and the power to obtain information and arrive at decisions about one's  
13 concerns [1]. Women's autonomy refers to their ability and freedom to make decisions and act  
14 autonomously, including their ability to explain strategic choices, access to and control over resources [2].  
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16 59 It is the control women have over their own lives and the extent to which a woman has an equal voice  
17 with her husband in all matters affecting themselves and their families, control over resources, access to  
18 information, authority to take independent decisions, and freedom of mobility [2, 3]. According to the  
19 United Nations International Conference on Population and Development (UNICPD) [4], increased gender  
20 equality among families is a necessity for making progress in all areas of development. Its action plan  
21 emphasized the importance of increasing women's standing to improve their decision-making capacity at  
22 all levels and in all areas of life [5].  
23  
24 63 Many societies, particularly those in developing or low-income nations, restrict women's autonomy and  
25 ability to make decisions about many aspects of their lives [6]. The societies in developing countries have  
26 strong social structures that rigorously define men's and women's roles, which are frequently encoded in  
27 religious, tribal, and social traditions [7]. These limits frequently characterize the circumstances in which  
28 women have or do not have the autonomy to make health-related decisions for themselves [8].  
29  
30 72 Women's autonomy to achieve their choices, which includes a larger preference for preserving their  
31 health, is linked to their decision-making autonomy and the utilization of maternal health services [9].  
32  
33 74 Evidence shows that sufficient healthcare utilization and women's empowerment in healthcare decision-  
34 making has a favorable impact on maternal healthcare use and are critical to reducing mother and child  
35 morbidity and mortality [10].  
36  
37 77 Studies have also shown that women with high autonomy are assumed to have high self-esteem, not accept gender  
38 inequalities in power, and disagree with any justification for wife-beating. Many studies elsewhere have  
39 shown that a woman's decision-making ability and attitudes toward domestic violence are valid measures  
40 for assessing a woman's autonomy [8, 9].  
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3 81 The World Health Organization has specifically stated that meeting the maternal health goal requires  
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5 82 guaranteeing universal healthcare coverage for sexual, reproductive, and maternity healthcare, as well as  
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7 83 eliminating inequities in access and quality of sexual, reproductive, and maternal health care by  
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9 84 addressing all causes of maternal mortality, illness, and disability, as well as enhancing healthcare  
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11 85 systems to meet the needs and priorities of women [13].

12  
13 86 Various studies have shown that women's flexibility in decision-making in healthcare is crucial to better  
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15 87 outcomes in maternal and child health [3,14,15]. Moreover, they sometimes have unequal access to  
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17 88 nutrition, education, and healthcare, yet as a limited opportunity to earn income and have control over  
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19 89 resources, as well as few effective legal rights particularly in Africa [16].

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21 90 In addition, according to the demographic and health survey (DHS) Kenyan report, 39% of women are the  
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23 91 primary decision-makers in their health care, while 40% of women decide jointly with their husbands and  
24  
25 92 21% decide primarily with their husbands [17]. Less than a quarter of women (23%) are the primary  
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27 93 decision-makers for visits to family or relatives and only 20% on major household purchases (12).

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29 94 Other studies have found no link between women's participation in decision-making and their use of  
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31 95 antenatal and delivery care services (13). However, such investigations in the context of African countries  
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33 96 have been few. The use of maternal health care was linked to women's autonomy in household decision-  
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35 97 making in one study based on the Ethiopian demography and health survey (EDHS) from 2005 (14).  
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37 98 Other characteristics that have been linked to maternal healthcare utilization include age, education,  
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39 99 employment or labor force involvement, and wealth quintile (15–18). Evidence from the Ethiopian  
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41 100 demographic, health survey (EDHS) indicated that Ethiopian women's autonomy in healthcare decision-  
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43 101 making was generally declining from 2005 to 2016 [25]. According to the 2016 Ethiopian Demographic  
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45 102 Health Survey (EDHS), only 15.4% of Ethiopians were autonomous in household decision-making and  
46  
47 103 used health services to meet reproductive health goals, including safe motherhood. Women who did not  
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49 104 participate in any household decisions and those who did not have freedom of movement were much less  
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51 105 likely to receive antenatal care, delivery care from a skilled provider, and postnatal checkups [26].

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53 106 More than 80% of Ethiopian women live in rural areas, where they are treated as subordinates by their  
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55 107 husbands which would harm women's autonomy to properly exercise their reproductive health rights [27].  
56  
57 108 Women's decision-making power appears to be the most powerful predictor among many others for  
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109 increasing maternal health service utilization [28]. Overall, few studies from Ethiopia have examined the  
 110 level of women's decision-making autonomy in maternal healthcare service utilization in rural settings in  
 111 Ethiopia. Thus, studying factors that affect women's decision-making autonomy is very important to  
 112 enhance maternal healthcare service utilization by addressing them. Therefore, this study was designed  
 113 to assess the level of women's decision-making autonomy and associated factors in maternal healthcare  
 114 utilization.

### 115 **Study objectives**

116 This study was designed to determine decision-making autonomy on maternal health service utilization  
 117 and associated factors among reproductive-age women in Mettu district, southwest Ethiopia.

## 118 **METHODS**

### 119 **Study setting and period**

120 A community-based cross-sectional study was conducted in Mettu district, Iluababor zone, southwest  
 121 Ethiopia from June 19 to August 20, 2021. Mettu district is one of 13 rural districts in the Iluababor zone,  
 122 located 600km to the southwest of Addis Ababa, the capital city of Ethiopia. The district has 29 rural  
 123 *kebeles* with an estimated total population of 87,771, of whom 44,448 (50.6%) are females and 43,323  
 124 are male rural dwellers. There are five health centers and 29 health posts in the district. Married women  
 125 who had given birth at least once and lived in the Mettu district for at least 6 months were included in the  
 126 study. The sample size was determined by using a single population proportion formula considering 95%  
 127 confidence level, 5% margin of error [29], and taking 80% of women making autonomous decisions  
 128 regarding their own healthcare needs from a study done in southern Ethiopia [21]. These assumptions  
 129 are substituted in the formula below:

$$130 \quad n = \frac{(Z_{\alpha/2})^2 * p(1-p)}{d^2} = \frac{(1.96)^2 * 0.8(0.2)}{(0.05)^2} = 246$$

131  
 132 Where: n = the initial sample size, Z/2 = the critical value for normal distribution at 95% confidence level,  
 133 which equals 1.96 (z value at =0.05), p = the proportion of women who participate in healthcare decision-  
 134 making, and 80% (0.80) taken from the study conducted in the Wolaita zone, Southern Ethiopia (21) and  
 135 d= is a margin of error, 5% (0.05). The calculated sample size is multiplied by a design effect of 2 and a

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3 136 10% nonresponse rate is added and the final sample size was 541 women. Sample size calculation was  
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5 137 also considered for factors associated with decision making autonomy of women by considering different  
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7 138 factors associated with women's decision making autonomy on maternal health service utilization using  
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9 139 Epi-info version 7 software by the following assumption made, two-sided confidence level of 95%, power  
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11 140 80%, exposed to unexposed ration of 1:1, design effect 2, 10% non-response rate. The factors  
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13 141 considered are taken from studies conducted in different parts of Ethiopia (46, 47, 35). Accordingly, from  
14  
15 142 the magnitude (541) and factors (440) sample sizes, the largest sample size was taken, which was 541.  
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17 143 The district had twenty-nine kebeles (the lowest administrative unit in Ethiopia), and nine kebeles were  
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19 144 selected using a simple random sampling method in the first stage. The total sample size was allocated to  
20  
21 145 each selected kebele using proportional allocation. A systematic random sampling method was used to  
22  
23 146 select eligible married women from households in selected kebele in the second stage. (Figure 1)The  
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25 147 sampling interval was ten, and the first household selected from the list was number 2, by lottery method,  
26  
27 148 and then every tenth household was included in the study. A woman in the reproductive age group was  
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29 149 interviewed from the selected households, and if there were more than one woman in the selected  
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31 150 households, a lottery method was used to select only one.

### 32 33 151 **Data collection**

34  
35 152 A structured, pre-tested, and interviewer-guided questionnaire was used to collect data. The  
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37 153 questionnaire was prepared originally in English and then translated into the local language, Afan Oromo.  
38  
39 154 The questionnaire consisted of four parts. The first two parts (socio-demography and healthcare-related  
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41 155 questions) of the questionnaire were developed by the authors. The other parts (questions related to  
42  
43 156 women's decision-making autonomy in maternal healthcare service utilization and household affairs)  
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45 157 were adapted from previous similar studies in Ethiopia [22, 28, 31] which is validated for use in similar  
46  
47 158 studies. Accordingly, women's autonomy in healthcare decision making was assessed by asking women  
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49 159 about who makes decisions concerning their healthcare using the answers to the following six questions:  
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51 160 on antenatal care, delivery at a health institution, postnatal care services, where to get maternal health  
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53 161 services, family planning, and continuation or stopping of using maternal health services. Accordingly,  
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55 162 their responses were classified into any of the following four choices: "woman alone"; "woman and  
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57 163 husband jointly"; "husband alone"; or "other else". As a result, a woman was considered autonomous in



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3 164 healthcare decision-making if she usually made that decision alone or jointly with her husband. A score of  
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5 165 1 was given if women decided independently or jointly, and a score of zero (0) was given for partners who  
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7 166 decided independently or whose decision was made by others. Likewise, the maximum score was six and  
8  
9 167 the minimum was zero. Women's decision-making autonomy on the utilization of maternal healthcare  
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11 168 services was declared by using the median score. That means those scoring less than three points have  
12  
13 169 diminished or no decision-making autonomy, and those scoring greater than or equal to three points,  
14  
15 170 have decision-making autonomy [22,28]. Finally, women's decision-making autonomy on maternal  
16  
17 171 healthcare service utilization was dichotomous, with having decision-making autonomy if the score was  
18  
19 172 above three and having no decision-making autonomy if the score is below three and three.  
20  
21 173 Women's decision-making autonomy in household affairs was measured using the answers to the  
22  
23 174 following five questions: who decides matters on (a) the woman's health (personal decision-making  
24  
25 175 authority), (b) major purchases (economic decision-making authority), (c) visits to friends or family  
26  
27 176 (mobility decision-making authority), (d) husband's earning, and (e) child healthcare? A woman who  
28  
29 177 made more than two decisions, either alone or jointly with her husband, was categorized as having high  
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31 178 decision-making authority [28]. A woman who made below two decisions was categorized as having low  
32  
33 179 decision-making authority.

### 34 180 **Patient and public involvement**

35  
36 181 Patients or the public were not involved in the design, conduct, reporting, or dissemination plans of our  
37  
38 182 research.

### 39 183 **Data management and analysis**

40  
41 184 The quality of the data was assured through careful design, pretesting of the tools, proper training and  
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43 185 close supervision of the data collectors, and proper handling of the data. The collected data were coded,  
44  
45 186 cleaned, and entered into Epi-data version 3.1 and exported to SPSS version 22 for analysis. The  
46  
47 187 analysis results output of the participants' socio-demographic characteristics and outcome variables were  
48  
49 188 summarized using descriptive summary measures. A mean and standard deviation (SD) were used for  
50  
51 189 normally distributed continuous variables and percent for categorical variables. A variable with a p-value  
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53 190 less than 0.2 in bivariable binary logistic regression was taken as a candidate for further multivariable  
54  
55 191 binary logistic regression analysis after checking for the assumptions (the dependent variable was

192 categorical and dichotomous, multicollinearity between independent variables was checked using linear  
 193 regression 'colinearity diagnostics', and chi-square assumption was checked by using the minimum  
 194 number of 10 observations per independent variable as a rule of thumb). Then, a multivariable binary  
 195 logistic regression analysis was used to identify the presence of an association between the dependent  
 196 and independent variables. The goodness of fitness of the model was checked by Hosmer-Lemeshow's  
 197 goodness of fit test, which indicated a value that was not significant (0.292), indicating that the model was  
 198 doing well. Statistical significance was declared using 95% confidence intervals of adjusted odds ratios  
 199 and a p-value of less than 0.05.

## 200 RESULTS

201 A total of 532 married women were involved in the study, making up 98% of the response rate. Two  
 202 hundred twenty (41.4%) respondents were in the age group of 30–39 years, and the minimum  
 203 respondents from the age group of 15–19 years represented eight (1.5%) with an age range from 17 to  
 204 48 years. The mean (SD) age of women was 32.17 (8.599) years. Regarding the educational status, two  
 205 hundred twelve (39.9%) of women have not attended formal education and 72.2% of the husbands of  
 206 participants have attended primary and higher education. As for the occupation of respondents, two  
 207 hundred sixty-six (50%) of the respondents were housewives, and 60.4% of the respondents' husbands  
 208 were farmers. Regarding the monthly income of the households, 15.8% of the respondents got 2,500–  
 209 10,000 ETB, while forty-eight (9.2%) of the respondents got more than 10,000 ETB per month. Four  
 210 hundred six (76.3%) had family sizes of five or less than five members. (*Table 1*)

211 Table 1. Socio-demographic characteristics of women in Mettu rural district, Southwest Ethiopia, 2021

Variables	Category	Frequency	Percent
Age group	15-19	48	9
	20-29	156	29.5
	30-39	220	41.2
	40-49	108	20.3
Educational level	No formal education	212	39.8

	Primary level(1-8)	224	42.1
	Secondary and above	96	18
Husband's education	No formal education	148	27.8
	Primary level(1-8)	240	45.1
	Secondary and above	144	27.1
Occupation of the respondent	Housewife	266	50
	Farmer	84	15.8
	Merchant	98	18.4
	Government employee	56	10.5
	Daily laborer	28	5.3
Husband's occupation	Farmer	320	60.2
	Daily laborer	60	11.3
	Merchant	80	15.0
	Government employee	60	2.3
	Others	12	3.0
Monthly income of the household	< 2,500	399	75
	2,500-10,000	84	15.8
	> 10,000	49	9.2
Family size	Small (below 5 members)	406	76.3
	Large ( more than five members)	126	23.6

212 Five hundred twenty-five (98.7%) of the study participants reported having attended antenatal care during  
 213 pregnancy. However, only 46.7% of them had attended the recommended ANC4+ visits per pregnancy. A  
 214 majority of the participants, 71.3%, go to health facilities by public transportation. Regarding postnatal  
 215 care services, 14.8% of the mothers reported getting checkups while they were in the health institutions.  
 216 Ninety-eight (18.4%) of the participants were less than or equal to 30 minutes away from the health  
 217 facility (by foot). (*Table 2*)

218 **Table 2.** Maternal health service utilization among women in Mettu district, Iluababor Zone, Southwest  
 219 Ethiopia, 2021 (n =532)

Variables	Category	Frequency	Percent
Antenatal care (ANC) follow up	Yes	525	98.7
	No	7	1.3

Number of antenatal care visits	Less than four visits	280	53.3
	More than four visits	245	46.7
Time to start antenatal care	Before 4 <sup>th</sup> month	294	56
	After the 4 <sup>th</sup> month	231	44
Means of transportation	On foot	153	28.7
	By public transportation	379	71.3
Distance from health facility	Less than 30 minutes	98	18.4
	More than 30 minutes	434	81.6
Postnatal checkup	Yes	105	19.7
	No	427	80.3
First postnatal check up	< 24 hours	79	14.8
	24- 48 hours	26	4.9
Number of postnatal	One times	69	14
	Two times	23	4.3
	Three times	13	2.4
Reasons for not seeking postnatal care (n= 427)	Too much cost	43	8.1
	Too far	185	34
	No trust/poor quality	100	18.8
	No transportation	99	18

Overall, three hundred eight (57.9%) married women have decision-making autonomy in household decision-making. Concerning women's decision-making autonomy in household decisions, two hundred eighty (52.7%) and two hundred sixty six (60%) had decision-making autonomy on husband's earnings and major household purchases, respectively. About fifty-six (10.5%) of participants made decisions related to visiting family, friends, or relatives alone and one hundred sixty-eight (31.6%) with their husbands. Also, concerning women's decision-making autonomy about their healthcare, 5.3% of them usually make decisions themselves. In 42.1% of the study participants, women's healthcare decisions are made by their husbands or partners. Two hundred fifty-two (47.4%) of the respondents reported that they decided to visit a health facility jointly, as indicated in [Table 3](#). Three hundred eight (57.9%) of women have high autonomy regarding decision-making on household affairs. ([Figure 2](#))

**Table 3.** Women's autonomy in household decision-making in Mettu rural district, Oromia region, southwest Ethiopia 2021, n=532

Variables	Category	Frequency	Percent
Decision made on husband earning	Husband/other else	252	47.4
	Jointly	252	47.4

	Woman alone	28	5.3
Decision made on major household purchase	Husband/other else	266	50
	Jointly	238	44.7
	Woman alone	28	5.3
Decision made on visiting family or friends	Husband/other else	168	31.6
	Jointly	308	57.9
	Woman alone	56	10.5
Decision made on woman's healthcare	Husband/other else	224	42.1
	Jointly	280	52.6
	Woman alone	28	5.3
Decision made on child healthcare	Husband/other else	196	36.8
	Jointly	308	57.9
	Woman alone	28	5.3
Women's decision-making power in household	Low autonomy	224	42.1
	High autonomy	308	57.9

### 232 Level of women's decision-making autonomy on maternal health service utilization

233 Three hundred twenty two (60.5%) of women who had decision-making autonomy in maternal health  
 234 service utilization. (Figure 3) Accordingly, concerning women's decision-making autonomy regarding  
 235 family planning, 5.3% of them made decisions by themselves, whereas 60.9% made decisions jointly with  
 236 their husbands. In addition, more than half (51.1%) of women made decision regarding antenatal care  
 237 service jointly. Similarly, 50.3% of participants had joint decision on postnatal care service utilization.  
 238 About 42 (7.9%) of participants made decisions on whether to continue or stop using intended maternal  
 239 health services alone, and 296 (55.6%) with their husbands. (Table 4)

240 Table 4: Women's decision-making autonomy on maternal health service utilization in Mettu rural district,  
 241 Oromia region, southwest Ethiopia, 2021 (n = 532)

Variable	Category	Frequency	Percent
Decision-making on antenatal care (ANC)	Husband/other else	218	41
	Jointly	272	51.1
	Women alone	42	7.9
Decision-made giving birth at health Institution	Husband/other else	220	41.3
	Jointly	284	53.4
	Women alone	28	5.3
Decision made to seek PNC services	Husband/other else	236	44.4

	Jointly	268	50.3
	women alone	28	5.3
Decision made on family planning	Husband/other else	180	33.8
	Jointly	324	60.9
	Woman alone	28	5.3
Decision made on where to get maternal health services	Husband/other else	212	39.8
	Jointly	292	54.9
	Women alone	28	5.3
Decision made on whether to continue/stop using the maternal health services	Husband/other else	194	36.5
	Jointly	296	55.6
	Woman alone	42	7.9
Decision-making autonomy on maternal healthcare services	Not autonomous	210	39.5
	Autonomous	322	60.5

243 In bivariable binary logistic regression, the respondent's age, educational status, household income,  
 244 family size, women's occupation, number of ANC visits, and distance to the health facility were found to  
 245 be significantly associated with women's decision-making autonomy, and variables with p-values of 0.2  
 246 were used in multivariable binary logistic regression analysis.

247 After controlling for confounding using backward stepwise multivariable binary logistic regression  
 248 analysis, women's age, women's education, family size, and distance from the health facility were  
 249 identified as independent predictors of women's healthcare decision-making autonomy. Accordingly, the  
 250 odds of women aged 40–49 years old having decision-making autonomy on maternal health services  
 251 were four times higher compared to women aged 15–29 (AOR = 4.3, 95%CI: 1.6–11.41). Also, the odds  
 252 of participating in healthcare decision-making among women who have a primary education are around  
 253 four times higher than compared to women who have no formal education (AOR = 3.8, 95%CI: 2.1– 6.7).

254 In addition, the odds of women who had a family size of less than or equal to five were 75% less likely to  
 255 have decision-making autonomy on maternal healthcare services compared to women who had more  
 256 than five members (AOR = 0.2, 95%CI: 0.1-0.4). Furthermore, women who spent less than thirty minutes  
 257 on the way to a health facility had a higher likelihood of having decision-making autonomy for maternal

258 health services than women who spent more than thirty minutes (AOR = 5.3, 95%CI: 2.5–11.31). (Table  
259 5)

260 Table 5. Multivariable binary logistic regression showing factors associated with women's decision-making  
261 autonomy on maternal health services utilization in Mettu rural district, Oromia region, Southwest  
262 Ethiopia, 2021, n=532

Variable	Autonomy on maternal health service utilization		COR (95% C.I.)	AOR (95% C.I.)
	Autonomous	Not autonomous		
<b>Age of women</b>				
15-19	26	22	1	1
20-29	96	60	0.5 (0.2 – 1.4)	1.9(0.7– 5.0)
30-39	130	90	0.2 (0.08 – 0.6)	1.2(0.3 -4.7)*
40-49	70	38	0.8 (0.2 – 3.0)	4.3(1.6 -11.41)
<b>Women education</b>				
No formal education	168	44	1	1
Primary level (grade1-8)	110	114	0.3(0.1-0.4)	3.8(2.1- 6.7)*
Secondary and above	44	52	0.2(0.1-0.4)	0.8(0.5-1.6)
<b>Household monthly income</b>				
≤ 2,500 ETB	226	171	1	1
2,500- 10,000 ETB	48	34	1.1(0.6 – 1.7)	0.4(0.1 – 1.0)
>10,000 ETB	48	5	7.3(2.8 – 18.6)	0.4(0.1 – 1.2)
<b>Family size</b>				
Small (less than 5 members)	280	126	1	1
Large (above five members)	42	84	4.4(2.9- 6.8)	0.25(0.15- 0.41)*
<b>Woman's occupation</b>				
Housewife	186	80	1	1
Farmer	56	28	0.9(0.5 – 1.5)	3.6(1.4 - 8.7)
Government employ	42	56	0.3 ( 0.25 - 0.5)	2.4( 0.9 - 6.3)
Merchant	28	28	0.46( 0.25 - 0.8)	0.9( 0.3 - 2.6)
Daily laborer	10	18	0.46( 0.211 - 1.0)	0.2 (0.12 - 1.5)
<b>Distance to a health facility</b>				
≤ 30 min	70	28	0.5( 0.3 – 0.9)	5.6 (2.7-11.31)*
>30 min	252	182	1	1
<b>Number of ANC visits</b>				
< four times	154	126	1	1
≥ four times	163	82	1.6 (1.1- 2.3)	0.7(0.5 – 1.15)

263 \* p- Value < 0.05 C.I.: confidence interval COR: crude odds ratio AOR: adjusted odds ratio

## 264 DISCUSSION

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2  
3 265 Women's autonomy is likely to vary according to characteristics at the individual, interpersonal,  
4  
5 266 community, and macro-political and societal levels. In this study, it is found that 322 (60.5%) (95% CI:  
6  
7 267 56.2%–64.7%) of study participants have autonomy in making healthcare decisions either alone or jointly.  
8  
9 268 This finding was higher than that of a study conducted in Dawro, Southern Ethiopia [22], and lower than  
10  
11 269 that of Adwa, Northern Ethiopia [33], and of an Ethiopian demographic and health survey [20]. This  
12  
13 270 finding is also higher than the study conducted in the Bale zone (21). This finding is also somewhat higher  
14  
15 271 compared to the study conducted in Ghana (22) which found that nearly half of the maternal health  
16  
17 272 service utilization is independently decided by husbands, and women have very little autonomy in  
18  
19 273 deciding about health service utilization. This difference might be the result of a discrepancy in the scope  
20  
21 274 of the studies, as the current study only involved rural women while the former studies incorporated both  
22  
23 275 rural and urban women. It is known that urban women have relatively better education, the economy, and  
24  
25 276 information access. Hence, the current study found a relatively lower rate of healthcare decision-making  
26  
27 277 autonomy than the aforementioned study. Women's autonomy in this study could be attributed to the fact  
28  
29 278 that in Ethiopia, over a period of time, there has been a strong commitment and effort made by the  
30  
31 279 Ethiopian government on maternal health, women's education (more than 60% of women in this study  
32  
33 280 had attended primary and higher education), and the expansion of health service to kebele level. Besides,  
34  
35 281 the current focus of the Ethiopian government and other stakeholder efforts to increase women's  
36  
37 282 empowerment in decision-making is related to maternal health [34]. In addition, in rural parts of Ethiopia,  
38  
39 283 many women have received informal health education interventions like a family conversation at health  
40  
41 284 posts for basic maternity care, which tends to increase the health knowledge of women, thereby  
42  
43 285 increasing their autonomy in maternal healthcare service utilization.  
44  
45 286 Furthermore, the possible difference might be due to a difference in the education and socioeconomic  
46  
47 287 status of study participants, as evidenced by the presence of low participation in the decision-making  
48  
49 288 autonomy of maternal health services in the current study. About two hundred ten study participants in  
50  
51 289 the current study thought decision-making was the responsibility of the husband. This suggests that  
52  
53 290 women did not exercise their decision-making autonomy sufficiently to obtain maternal health services  
54  
55 291 and freedom from household decision-making in their lives. Additionally, the differences in the socio-



1  
2  
3 292 economic characteristics and geographical contexts across countries and the period of studies might also  
4  
5 293 explain the observed inconsistencies of the findings.

6  
7 294 This study shows that women's age was significantly associated with women's decision-making autonomy  
8  
9 295 regarding maternal healthcare services. Accordingly, it is found that women's autonomy to make their  
10  
11 296 own health-related decisions increases with age, which is in line with a study done using the EDHS [25].  
12  
13 297 Several studies in developing nations have also indicated that women's increasing age has a favorable  
14  
15 298 impact on their autonomy to make health-related decisions on their own [2]. Other studies have also  
16  
17 299 demonstrated the influence of age on women's autonomy [22,24,35].

18  
19 300 This could be because women's positions in society are socially constructed, and their status varies  
20  
21 301 depending on their age and role in society [36], and in many African societies including Ethiopia, as a  
22  
23 302 woman gets older she becomes more autonomous since self-esteem increases with age [37].

24  
25 303 Education also affects women's autonomy to make their own decisions. The odds of women's decision-  
26  
27 304 making autonomy on maternal healthcare were higher among those who had received primary or higher  
28  
29 305 education than their illiterate counterparts. This finding is in line with the study conducted in Nepal (25)  
30  
31 306 and also consistent with a study from Ethiopia (26) in which women who have received primary or higher  
32  
33 307 education were four times more likely to make decisions on seeking healthcare than uneducated women.  
34  
35 308 This is because education empowers women, providing them with increased autonomy and resulting in  
36  
37 309 almost every context of maternal health service utilization [38]. This might be because the more a woman  
38  
39 310 is educated, the more she will accept gender equality and believe in equal participation in decision-  
40  
41 311 making with her husband. This means that improving education has a significant impact on later-life  
42  
43 312 decision-making participation in maternal healthcare services.

44  
45 313 Women with a family size greater than or equal to six were 75% less likely to have decision-making  
46  
47 314 autonomy over maternal healthcare services than women with a family size less than or equal to five. This  
48  
49 315 finding is supported by a study conducted in southern Ethiopia [22] and Addis Ababa, Ethiopia [30], which  
50  
51 316 stated that having fewer children was associated with better reproductive health decision making [30]. As  
52  
53 317 a result, having a smaller family would help women exercise freedom of healthcare decision-making and  
54  
55 318 end male dominance in a family. The study conducted in southern Ethiopia also revealed that the  
56  
57 319 probability of autonomy in healthcare decision-making in women with a family size of five to six people

1  
2  
3 320 was lower than compared to women with a family size of fewer than five people (16). This could be due to  
4  
5 321 the size and character of the family members, who may or may not be connected to the mother, but who,  
6  
7 322 in any event, support her in household decision-making, where her autonomy is sometimes jeopardized  
8  
9 323 and her mind occupied with different family issues. According to an Indian study, women who did not live  
10  
11 324 with their mothers-in-law were more involved in the decision-making process [39]. In addition, women's  
12  
13 325 autonomy confers total fertility reduction, higher child survival rates, and allocation of resources in favor of  
14  
15 326 children in the household [40].

16  
17 327 Also, the odds of decision-making autonomy on maternal healthcare services among women who live a  
18  
19 328 distance from the health facility of fewer than thirty minutes are higher compared with those who live at a  
20  
21 329 distance of greater than thirty minutes from a nearby health facility. The study conducted in Nigeria  
22  
23 330 revealed that the further a patient lives from a health facility, the less likely they can utilize the services  
24  
25 331 [41]. A study in Kenya [42] also identified distance and physical proximity to healthcare facility as barriers  
26  
27 332 to the use of skilled attendance. This is because the preferred care source was often the closest one. In  
28  
29 333 the African context, the principal barriers to accessibility are transport and cost, so distance is mostly  
30  
31 334 reported as a single obstacle to the utilization of healthcare services.

32  
33 335 The cross-sectional design of this study precluded drawing causal inferences between explanatory  
34  
35 336 factors and women's decision-making autonomy in maternal healthcare service utilization. As the  
36  
37 337 participants in this study were only women, there remains a potential for bias or discordance regarding  
38  
39 338 the level of autonomy enjoyed by women, as this is to a large extent a subjective phenomenon. In  
40  
41 339 addition, women's autonomy is a complex concept and difficult to quantify, and there is no universally  
42  
43 340 agreed definition or tool for measurement. Despite this limitation, this study demonstrated important  
44  
45 341 factors influencing women's decision-making autonomy in maternal healthcare service utilization in a rural  
46  
47 342 setting.

## 48 343 **CONCLUSION**

49  
50 344 Even though every woman has the right to participate in her healthcare decision-making, two in five  
51  
52 345 women have diminished autonomy in decision-making regarding their health service utilization. This study  
53  
54 346 concludes that higher educational level, age, small family size, and short distance from the health facility  
55  
56 347 could lead to women's decision-making autonomy on maternal health service utilization. Health service  
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3 348 accessibility, educating women, and family planning activities might increase women's decision-making  
4  
5 349 autonomy in maternal healthcare service utilization. Of note, educating women about their rights and  
6  
7 350 health service expansion to the community level is recommended to raise the level of autonomy in  
8  
9 351 maternal health service utilization.

### 10 352 **Generalizability**

11  
12 353 The study was conducted with a random selection of participants obtained after a random selection of a  
13  
14 354 representative number of kebeles (35%) in the district. Hence, the results can be generalized for the  
15  
16 355 district as well as the respective zone.

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18  
19  
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21  
22 358 participants, data collectors, supervisors, and respective kebele administrators for their contributions and  
23  
24 359 cooperation in this study.

25  
26 360 **Author statement:** AK and AZ were involved in the conception of the study, methodological design, data  
27  
28 361 acquisition, analysis, and interpretation. AZ wrote the first draft of the manuscript by revising it critically for  
29  
30 362 important intellectual content. Both authors are involved in the final approval of the version to be  
31  
32 363 published and agreement to be accountable for all aspects of the work in ensuring that questions related  
33  
34 364 to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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37  
38 366 not-for-profit sectors.

39  
40 367 **Competing interests:** The authors declared no conflicts of interest in this work.

41  
42 368 **Data availability statement:** The data sets used and/or analyzed during this study are available from the  
43  
44 369 corresponding author on reasonable request.

### 45 370 **Ethics statement**

46  
47  
48 371 Ethical clearance was obtained from Ethical Review Committee of College of Health Science, Mettu  
49  
50 372 University by approval number RCS/036/2020 and presented to Mettu district administration and health  
51  
52 373 office. Official letter was obtained from Mettu district Administration and Health office and presented to the  
53  
54 374 respective Kebeles. The purpose of the study was explained and women were interviewed after verbal  
55  
56 375 consent was obtained and the privacy and confidentiality of participants was maintained at all levels.

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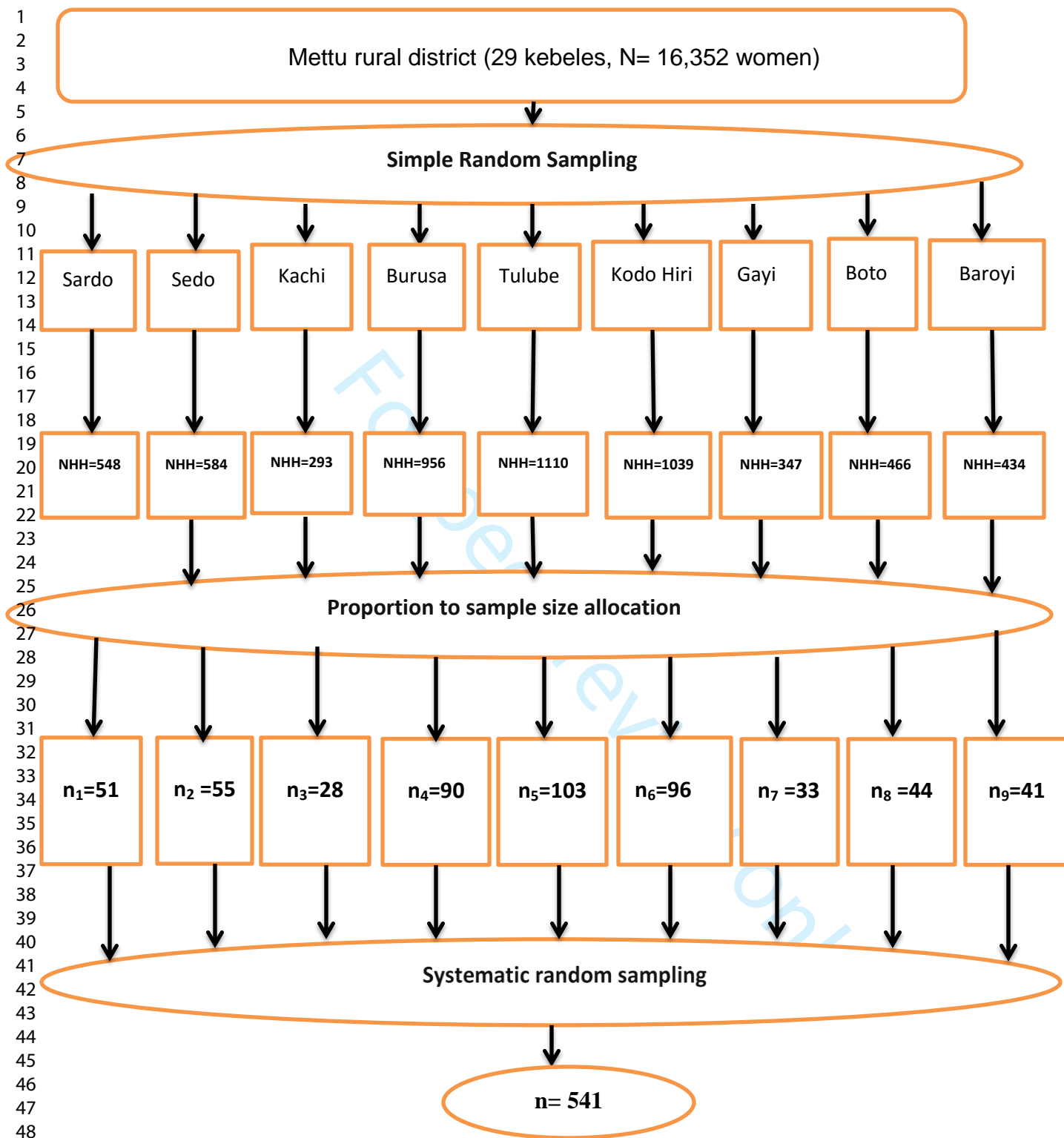
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**Figure legends**

- 490 Figure 1. Schematic presentation of the sampling procedure
- 491 Figure 2. Women’s autonomy in household decision making in Mettu district, southwest Ethiopia, 2021
- 492 Figure 3. Women's decision making autonomy on maternal health service utilization in Mettu district,  
493 southwest Ethiopia, 2021
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NHH= number of households in each kebele

$n_i$ = sample size from each kebele

Figure 1. Schematic presentation of the sampling procedure

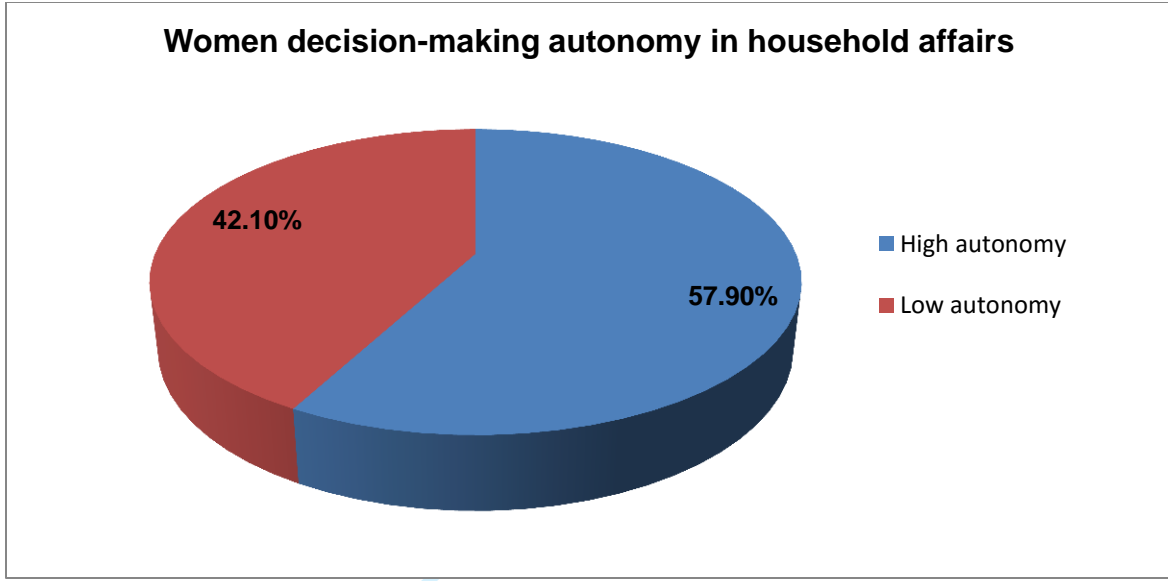
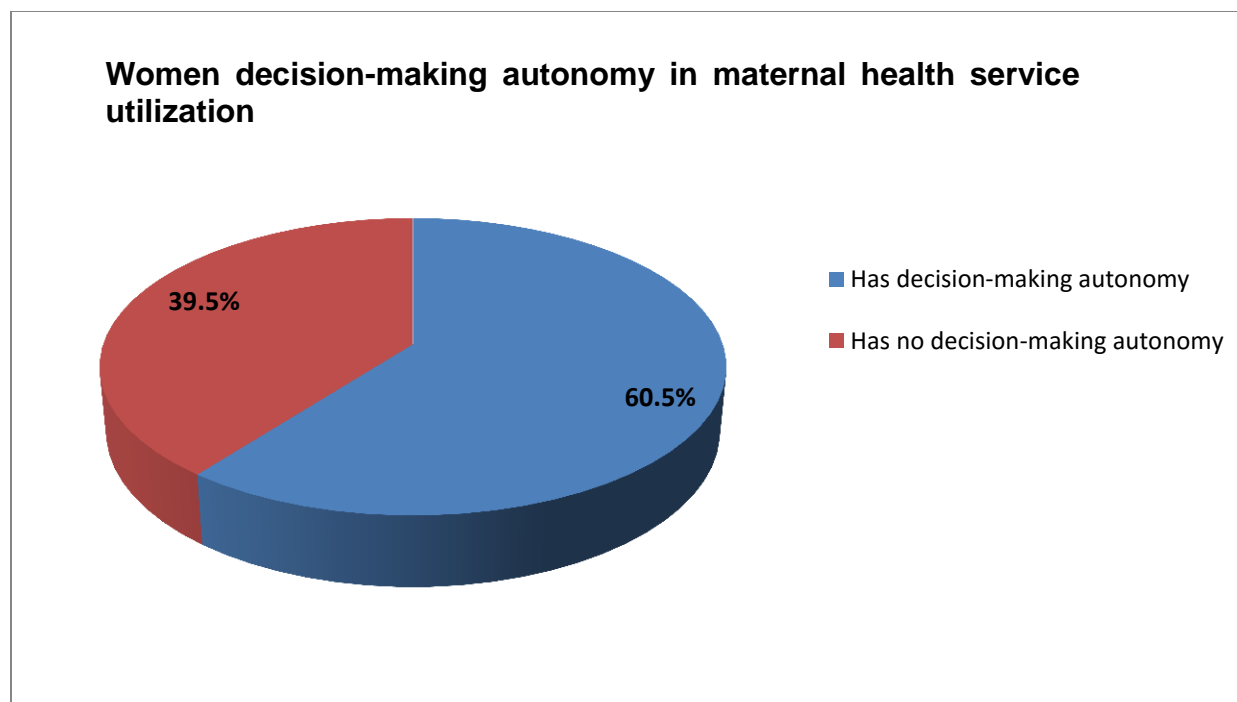


Figure 2. Women's autonomy in household decision making in Mettu district, southwest Ethiopia, 2021

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26 Figure 3. Women's decision making autonomy on maternal health service utilization in Mettu district,  
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# Reporting checklist for cross sectional study.

Based on the STROBE cross sectional guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the STROBE cross sectional reporting guidelines, and cite them as:

von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies.

Reporting Item	Page Number
<b>Title and abstract</b>	
Title <a href="#">#1a</a> Indicate the study's design with a commonly used term in the title or the abstract	1
Abstract <a href="#">#1b</a> Provide in the abstract an informative and balanced summary of what was done and what was found	1
<b>Introduction</b>	
Background / <a href="#">#2</a> Explain the scientific background and rationale for the investigation being reported	2
rationale	
Objectives <a href="#">#3</a> State specific objectives, including any prespecified hypotheses	4
<b>Methods</b>	
Study design <a href="#">#4</a> Present key elements of study design early in the paper	4
Setting <a href="#">#5</a> Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4

1	Eligibility criteria	<a href="#">#6a</a>	Give the eligibility criteria, and the sources and methods of selection of participants.	4
2				
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4		<a href="#">#7</a>	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give	5
5			diagnostic criteria, if applicable	
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8	Data sources /	<a href="#">#8</a>	For each variable of interest give sources of data and details of methods of assessment (measurement).	5
9				
10	measurement		Describe comparability of assessment methods if there is more than one group. Give information separately	
11			for for exposed and unexposed groups if applicable.	
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14	Bias	<a href="#">#9</a>	Describe any efforts to address potential sources of bias	6
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17	Study size	<a href="#">#10</a>	Explain how the study size was arrived at	4
18				
19	Quantitative	<a href="#">#11</a>	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings	6
20			were chosen, and why	
21	variables			
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24	Statistical methods	<a href="#">#12a</a>	Describe all statistical methods, including those used to control for confounding	6
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27	Statistical methods	<a href="#">#12b</a>	Describe any methods used to examine subgroups and interactions	6
28				
29	Statistical methods	<a href="#">#12c</a>	Explain how missing data were addressed	7
30				
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32	Statistical methods	<a href="#">#12d</a>	If applicable, describe analytical methods taking account of sampling strategy	6
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35	Statistical methods	<a href="#">#12e</a>	Describe any sensitivity analyses	7
36				
37	<b>Results</b>			
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40	Participants	<a href="#">#13a</a>	Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for	7
41			eligibility, confirmed eligible, included in the study, completing follow-up, and analysed. Give information	
42			separately for for exposed and unexposed groups if applicable.	
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46	Participants	<a href="#">#13b</a>	Give reasons for non-participation at each stage	7
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49	Participants	<a href="#">#13c</a>	Consider use of a flow diagram	5
50				
51	Descriptive data	<a href="#">#14a</a>	Give characteristics of study participants (eg demographic, clinical, social) and information on exposures	7
52			and potential confounders. Give information separately for exposed and unexposed groups if applicable.	
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56	Descriptive data	<a href="#">#14b</a>	Indicate number of participants with missing data for each variable of interest	7
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1	Outcome data	<a href="#">#15</a>	Report numbers of outcome events or summary measures. Give information separately for exposed and	8
2			unexposed groups if applicable.	
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5	Main results	<a href="#">#16a</a>	Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95%	8
6			confidence interval). Make clear which confounders were adjusted for and why they were included	
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10	Main results	<a href="#">#16b</a>	Report category boundaries when continuous variables were categorized	8
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12	Main results	<a href="#">#16c</a>	If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	8
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15	Other analyses	<a href="#">#17</a>	Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses	9
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18	Discussion			
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20	Key results	<a href="#">#18</a>	Summarise key results with reference to study objectives	9
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23	Limitations	<a href="#">#19</a>	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both	11
24			direction and magnitude of any potential bias.	
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27	Interpretation	<a href="#">#20</a>	Give a cautious overall interpretation considering objectives, limitations, multiplicity of analyses, results from	12
28			similar studies, and other relevant evidence.	
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31	Generalisability	<a href="#">#21</a>	Discuss the generalisability (external validity) of the study results	12
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34	Other Information			
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37	Funding	<a href="#">#22</a>	Give the source of funding and the role of the funders for the present study and, if applicable, for the original	12
38			study on which the present article is based	
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# BMJ Open

## Decision-making autonomy in maternal health service utilization and associated factors among women in Mettu district, southwest Ethiopia: A community-based cross-sectional study

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4 1 **Decision-making autonomy in maternal health service**  
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7 2 **utilization and associated factors among women in Mettu**  
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10 3 **district, southwest Ethiopia: A community-based cross-**  
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13 4 **sectional study**

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## 24 ABSTRACT

25 **Objectives:** Women's autonomy is valued in a range of healthcare settings, from seeking and receiving  
26 care to deciding between treatment options. This study was aimed at assessing the level of decision-  
27 making autonomy women have and associated factors when it comes to using maternal healthcare  
28 services.

29 **Design:** A community-based cross-sectional study was conducted.

30 **Setting:** The study was conducted in Mettu rural district, Iluababor zone, southwest Ethiopia.

31 **Methods:** Data was collected using a pretested interviewer-administered questionnaire from 541 women  
32 selected by a multistage sampling technique. The collected data was entered into Epi-Data version 3.1  
33 and exported to SPSS version 22 for analysis. Bivariable and multivariable binary logistic regression were  
34 used to identify factors associated with women's decision-making autonomy on maternal health service  
35 utilization. Variables with a p-value less than 0.05 at 95% CI were declared significant and the strength of  
36 the association was measured by an adjusted odds ratio (AOR).

37 **Primary outcome:** level of women's decision-making autonomy on maternal health service utilization

38 **Results:** It was found that 60.5% of women were autonomous in maternal health service utilization (95%  
39 CI: 56.2%–64.7%). The older age group (AOR =4.27; 95%CI: 1.6–11.4, p = 0.034), higher educational  
40 level (AOR =3.8; 95%CI: 2.2–6.7, p = 0.042), small family size (AOR =2.5; 95%CI: 1.5–4.1, p = 0.01), and  
41 proximity to health facilities (AOR =5.3; 95%CI: 2.5–11.3, p = 0.004) were all associated factors with  
42 healthcare decision-making autonomy.

43 **Conclusion:** Two-fifths of women have diminished autonomy in decision-making on healthcare service  
44 utilization. Age, level of education, family size, and accessibility of health services were found to influence  
45 women's autonomy. Special attention should be given to education and access to health services to  
46 improve women's autonomy.

47 **Keywords:** autonomy, maternal health service utilization, women, Ethiopia

### 48 Article Summary

#### 49 Strengths and limitations of the study

- 50 ➤ The key components of maternal healthcare services were used to quantify women's autonomy.
- 51 ➤ Husbands were not included in the study.

- 52 ➤ Qualitative data weren't used to support the findings.
- 53 ➤ Only time to conceive was used to assess women's autonomy regarding family planning.
- 54 ➤ A cross-sectional study design cannot affirm any causal inference or direction of the association.

## 55 INTRODUCTION

56 Autonomy is self-determination and the power to obtain information and arrive at decisions about one's  
57 concerns [1]. Women's autonomy refers to their ability and freedom to make decisions and act  
58 autonomously, including their ability to explain strategic choices, access to and control over resources [2].  
59 It is the control women have over their own lives and the extent to which a woman has an equal voice  
60 with her husband in all matters affecting themselves and their families, control over resources, access to  
61 information, authority to take independent decisions, and freedom of mobility [2,3]. According to the  
62 United Nations International Conference on Population and Development (UNICPD) [4], increased gender  
63 equality among families is a necessity for making progress in all areas of development. Its action plan  
64 emphasized the importance of increasing women's standing to improve their decision-making capacity at  
65 all levels and in all areas of life [5].

66 Many societies, particularly those in developing or low-income nations, restrict women's autonomy and  
67 ability to make decisions about many aspects of their lives [6]. The societies in developing countries have  
68 strong social structures that rigorously define men's and women's roles, which are frequently encoded in  
69 religious, tribal, and social traditions [7]. These limits frequently characterize the circumstances in which  
70 women have or do not have the autonomy to make health-related decisions for themselves [8].

71 Women's autonomy to achieve their choices, which includes a larger preference for preserving their  
72 health, is linked to their decision-making autonomy and the utilization of maternal health services [9].

73 Studies have showed that women with high autonomy are assumed to have high self-esteem, not accept  
74 gender inequalities in power, and disagree with any justification for wife-beating. Many studies elsewhere  
75 have shown that a woman's decision-making ability and attitudes toward domestic violence are valid  
76 measures for assessing a woman's autonomy [8, 9]. Evidence also shows that sufficient healthcare  
77 utilization and women's empowerment in healthcare decision-making has a favorable impact on maternal  
78 healthcare use and are critical to reducing mother and child morbidity and mortality [10–12].

1  
2  
3 79 The World Health Organization has specifically stated that meeting the maternal health goal requires  
4  
5 80 guaranteeing universal healthcare coverage for sexual, reproductive, and maternity healthcare, as well as  
6  
7 81 eliminating inequities in access and quality of sexual, reproductive, and maternal health care by  
8  
9 82 addressing all causes of maternal mortality, illness, and disability, as well as enhancing healthcare  
10  
11 83 systems to meet the needs and priorities of women [13].  
12  
13 84 Various studies have shown that women's flexibility in decision-making in healthcare is crucial to better  
14  
15 85 outcomes in maternal and child health [3,14,15]. Moreover, they sometimes have unequal access to  
16  
17 86 nutrition, education, and healthcare, yet as a limited opportunity to earn income and have control over  
18  
19 87 resources, as well as few effective legal rights particularly in Africa [16].  
20  
21 88 In addition, according to the demographic and health survey (DHS) Kenyan report, 39% of women are the  
22  
23 89 primary decision-makers in their health care, while 40% of women decide jointly with their husbands and  
24  
25 90 21% decide primarily with their husbands [17]. Only less than a quarter of women (23%) are the primary  
26  
27 91 decision-makers for visits to family or relatives and only 20% on major household purchases [18]. Other  
28  
29 92 characteristics that have been linked to maternal healthcare utilization include age, education,  
30  
31 93 employment or labor force involvement, and wealth quintile [15–18].  
32  
33 94 Other studies have found no link between women's participation in decision-making and their use of  
34  
35 95 antenatal and delivery care services [19]. However, such investigations in the context of African countries  
36  
37 96 have been few [20]. Some of the direct measures of women's autonomy identified by different  
38  
39 97 researchers include access to and control over resources, participation in economic decisions, self-  
40  
41 98 esteem, and mobility [21–23]. The use of maternal healthcare was linked to women's autonomy in  
42  
43 99 household decision-making in studies based on the Ethiopian demography and health survey (EDHS)  
44  
45 100 from 2005 [24]. Evidence from the Ethiopian demographic, health survey (EDHS) indicated that Ethiopian  
46  
47 101 women's autonomy in healthcare decision-making was generally declining from 2005 to 2016 [25].  
48  
49 102 According to the 2016 Ethiopian Demographic Health Survey (EDHS), only 15.4% of Ethiopians were  
50  
51 103 autonomous in household decision-making and used health services to meet reproductive health goals,  
52  
53 104 including safe motherhood. Women who did not participate in any household decisions and those who did  
54  
55 105 not have freedom of movement were much less likely to receive antenatal care, delivery care from a  
56  
57 106 skilled provider, and postnatal checkups [26].  
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60

1  
2  
3 107 More than 80% of Ethiopian women live in rural areas, where they are treated as subordinates by their  
4  
5 108 husbands which would harm women's autonomy to properly exercise their reproductive health rights [27].  
6  
7 109 Women's decision-making power appears to be the most powerful predictor among many others for  
8  
9 110 increasing maternal health service utilization [24]. Overall, few studies from Ethiopia have examined the  
10  
11 111 level of women's decision-making autonomy in maternal healthcare service utilization in rural settings in  
12  
13 112 Ethiopia. Thus, studying factors that affect women's decision-making autonomy is very important to  
14  
15 113 enhance maternal healthcare service utilization by addressing them. Therefore, this study was designed  
16  
17 114 to assess the level of women's decision-making autonomy and associated factors in maternal healthcare  
18  
19 115 utilization.

## 20 116 **Study objectives**

21  
22 117 This study was designed to determine decision-making autonomy on maternal health service utilization  
23  
24 118 and associated factors among reproductive-age women in Mettu district, southwest Ethiopia.

## 25 119 **METHODS**

### 26 120 **Study setting and period**

27  
28  
29 121 A community-based cross-sectional study was conducted in Mettu district, Iluababor zone, southwest  
30  
31 122 Ethiopia from June 19 to August 20, 2021. Mettu district is one of 13 rural districts in the Iluababor zone,  
32  
33 123 located 600km to the southwest of Addis Ababa, the capital city of Ethiopia. The district has 29 rural  
34  
35 124 *kebeles* with an estimated total population of 87,771, of whom 44,448 (50.6%) are females and 43,323  
36  
37 125 are male rural dwellers. There are five health centers and 29 health posts in the district. Married women  
38  
39 126 who had given birth at least once, age above 18 years and lived in the Mettu district for at least 6 months  
40  
41 127 were included in the study.

42  
43 128 The sample size was determined by using a single population proportion formula considering 95%  
44  
45 129 confidence level, 5% margin of error [28], and taking 80% of women making autonomous decisions  
46  
47 130 regarding their own healthcare needs from a study done in southern Ethiopia [20]. These assumptions  
48  
49 131 are substituted in the formula below:

$$50 132 n = \frac{(Z_{(\alpha/2)})^2 * p (1-p)}{d^2} = \frac{(1.96)^2 * 0.8(0.2)}{(0.05)^2} = 246$$

$$51 133 \quad \quad \quad d^2 \quad \quad \quad (0.05)^2$$

1  
2  
3 134 Where:  $n$  = the initial sample size,  $Z/2$  = the critical value for normal distribution at 95% confidence level,  
4  
5 135 which equals 1.96 (z value at  $\alpha=0.05$ ),  $p$  = the proportion of women who participate in healthcare decision-  
6  
7 136 making, and 80% (0.80) taken from the study conducted in the Wolaita zone, Southern Ethiopia [20] and  
8  
9 137  $d$  = is a margin of error, 5% (0.05). The calculated sample size is multiplied by a design effect of 2 and a  
10  
11 138 10% nonresponse rate is added and the final sample size was 541 women. Sample size calculation was  
12  
13 139 also considered for factors associated with decision making autonomy of women by considering different  
14  
15 140 factors associated with women's decision making autonomy on maternal health service utilization using  
16  
17 141 Epi-info version 7 software by the following assumption made, two-sided confidence level of 95%, power  
18  
19 142 80%, exposed to unexposed ratio of 1:1, design effect 2, 10% non-response rate. The factors  
20  
21 143 considered are taken from studies conducted in different parts of Ethiopia [20,24,29,30]. Accordingly,  
22  
23 144 from the magnitude (541) and factors (440) sample sizes, the largest sample size was taken, which was  
24  
25 145 541. The district had twenty-nine kebeles (the lowest administrative unit in Ethiopia), and nine kebeles  
26  
27 146 were selected using a simple random sampling method in the first stage. The total sample size was  
28  
29 147 allocated to each selected kebele using proportional allocation. A systematic random sampling method  
30  
31 148 was used to select eligible married women from households in selected kebele in the second stage.  
32  
33 149 ([Figure 1](#)) The sampling interval was ten, and the first household selected from the list was number 2, by  
34  
35 150 lottery method, and then every tenth household was included in the study. A woman in the reproductive  
36  
37 151 age group was interviewed from the selected households, and if there were more than one woman in the  
38  
39 152 selected households, a lottery method was used to select only one.

### 40 153 **Data collection**

41  
42 154 A structured, pre-tested, and interviewer-guided questionnaire was used to collect data. The  
43  
44 155 questionnaire was prepared originally in English and then translated into the local language, Afan Oromo.  
45  
46 156 The questionnaire consisted of socio-demography, and healthcare-related questions which were  
47  
48 157 developed by the authors, and questions related to women's decision-making autonomy in maternal  
49  
50 158 healthcare service utilization and household affairs which were adapted from previous similar studies in  
51  
52 159 Ethiopia [20,24,29] which is validated for use in similar studies. Accordingly, women's autonomy in  
53  
54 160 healthcare decision making was assessed by asking women about who makes decisions concerning their  
55  
56 161 healthcare using the answers to the following six questions: on antenatal care, delivery at a health

1  
2  
3 162 institution, postnatal care services, where to get maternal health services, family planning, and  
4  
5 163 continuation or stopping of using maternal health services. Accordingly, their responses were classified  
6  
7 164 into any of the following four choices: "woman alone"; "woman and husband jointly"; "husband alone"; or  
8  
9 165 "other else". As a result, a woman was considered autonomous in healthcare decision-making if she  
10  
11 166 usually made that decision alone or jointly with her husband. A score of 1 was given if women decided  
12  
13 167 independently or jointly, and a score of zero (0) was given for partners who decided independently or  
14  
15 168 whose decision was made by others. Likewise, the maximum score was six and the minimum was zero.  
16  
17 169 Women's decision-making autonomy on the utilization of maternal healthcare services was declared by  
18  
19 170 using the median score. That means those scoring less than three points have diminished or no decision-  
20  
21 171 making autonomy, and those scoring greater than or equal to three points, have decision-making  
22  
23 172 autonomy [20,24]. Finally, women's decision-making autonomy on maternal healthcare service utilization  
24  
25 173 was dichotomous, with having decision-making autonomy if the score was above three and having no  
26  
27 174 decision-making autonomy if the score is below three.

28 175 Women's decision-making autonomy in household affairs was measured using the answers to the  
29  
30 176 following five questions: who decides matters on (a) the woman's health (personal decision-making  
31  
32 177 authority), (b) major purchases (economic decision-making authority), (c) visits to friends or family  
33  
34 178 (mobility decision-making authority), (d) husband's earning, and (e) child healthcare? A woman who  
35  
36 179 made more than two decisions, either alone or jointly with her husband, was categorized as having high  
37  
38 180 decision-making authority [24]. A woman who made below two decisions was categorized as having low  
39  
40 181 decision-making authority.

#### 41 182 **Patient and public involvement**

42  
43 183 Patients or the public were not involved in the design, conduct, reporting, or dissemination plans of our  
44  
45 184 research.

#### 46 47 185 **Data management and analysis**

48  
49 186 The quality of the data was assured through careful design, pretesting of the tools, proper training and  
50  
51 187 close supervision of the data collectors, and proper handling of the data. The collected data were coded,  
52  
53 188 cleaned, and entered into Epi-data version 3.1 and exported to SPSS version 22 for analysis. The  
54  
55 189 analysis results output of the participants' socio-demographic characteristics and outcome variables were  
56  
57  
58  
59

190 summarized using descriptive summary measures. A mean and standard deviation (SD) were used for  
 191 normally distributed continuous variables and percent for categorical variables. A variable with a p-value  
 192 less than 0.2 in bivariable binary logistic regression was taken as a candidate for further multivariable  
 193 binary logistic regression analysis after checking for the assumptions (the dependent variable was  
 194 categorical and dichotomous, multicollinearity between independent variables was checked using linear  
 195 regression 'colinearity diagnostics', and chi-square assumption was checked by using the minimum  
 196 number of 10 observations per independent variable as a rule of thumb). Then, a multivariable binary  
 197 logistic regression analysis was used to identify the presence of an association between the dependent  
 198 and independent variables. The goodness of fitness of the model was checked by Hosmer-Lemeshow's  
 199 goodness of fit test, which indicated a value that was not significant (0.292), indicating that the model was  
 200 doing well. Statistical significance was declared using 95% confidence intervals of adjusted odds ratios  
 201 and a p-value of less than 0.05.

## 202 RESULTS

### 203 Socio-demographic characteristics of the participants

204 A total of 532 married women were involved in the study, making up 98% of the response rate. Two  
 205 hundred twenty (41.4%) respondents were in the age group of 30–39 years. The mean (SD) age of  
 206 women was 32.17 (8.599) years. Regarding the educational status, two hundred twelve (39.9%) of  
 207 women have not attended formal education and 72.2% of the husbands of participants have attended  
 208 primary and higher education. As for the occupation of respondents, two hundred sixty-six (50%) of the  
 209 respondents were housewives, and 60.4% of the respondents' husbands were farmers. Regarding the  
 210 monthly income of the households, 15.8% of the respondents got 2,500–10,000 ETB, while forty-eight  
 211 (9.2%) of the respondents got more than 10,000 ETB per month. Four hundred six (76.3%) had family  
 212 sizes of five or less than five members. (*Table 1*)

213 Table 1. Socio-demographic characteristics of women in Mettu rural district, Southwest Ethiopia, 2021

Variables	Category	Frequency	Percent
Age group	Under 20	48	9



	20-29	156	29.5
	30-39	220	41.2
	40-49	108	20.3
Educational level	No formal education	212	39.8
	Primary level(1-8)	224	42.1
	Secondary and above	96	18
Husband's education	No formal education	148	27.8
	Primary level(1-8)	240	45.1
	Secondary and above	144	27.1
Occupation of the respondent	Housewife	266	50
	Farmer	84	15.8
	Merchant	98	18.4
	Government employee	56	10.5
	Daily laborer	28	5.3
Husband's occupation	Farmer	320	60.2
	Daily laborer	60	11.3
	Merchant	80	15.0
	Government employee	60	2.3
	Others	12	3.0
Monthly income of the household	< 2,500 ETB*	399	75
	2,500-10,000 ETB	84	15.8
	> 10,000 ETB	49	9.2
Family size	Small (below 5 members)	406	76.3
	Large ( more than five members)	126	23.6

214 \*ETB: Ethiopian birr

### 215 Health service utilization among participants

216 Five hundred twenty-five (98.7%) of the study participants reported having attended antenatal care during  
 217 pregnancy. However, only 46.7% of them had attended the recommended ANC4+ visits per pregnancy. A  
 218 majority of the participants, 71.3%, go to health facilities by public transportation. Regarding postnatal

219 care services, 14.8% of the mothers reported getting checkups while they were in the health institutions.  
 220 Ninety-eight (18.4%) of the participants were less than or equal to 30 minutes away from the health  
 221 facility (by foot). (*Table 2*)

222 **Table 2. Maternal health service utilization among women in Mettu district, Iluababor Zone, Southwest**  
 223 **Ethiopia, 2021 (n =532)**

Variables	Category	Frequency	Percent
Antenatal care (ANC)* follow up	Yes	525	98.7
	No	7	1.3
Number of antenatal care visits	Less than four visits	280	53.3
	More than four visits	245	46.7
Time to start antenatal care	Before 4 <sup>th</sup> month	294	56
	After the 4 <sup>th</sup> month	231	44
Means of transportation	On foot	153	28.7
	By public transportation	379	71.3
Distance from health facility	Less than 30 minutes	98	18.4
	More than 30 minutes	434	81.6
Postnatal checkup	Yes	105	19.7
	No	427	80.3
First postnatal check up	< 24 hours	79	14.8
	24- 48 hours	26	4.9
Number of postnatal	One times	69	14
	Two times	23	4.3
	Three times	13	2.4
Reasons for not seeking postnatal care (n= 427)	Too much cost	43	8.1
	Too far	185	34
	No trust/poor quality	100	18.8
	No transportation	99	18

224 \*ANC: antenatal care

### 225 **Women's autonomy in household decision-making**

226 Overall, three hundred eight (57.9%) married women have decision-making autonomy in household  
 227 decision-making. Concerning women's decision-making autonomy in household decisions, two hundred  
 228 eighty (52.7%) and two hundred sixty six (60%) had decision-making autonomy on husband's earnings  
 229 and major household purchases, respectively. About fifty-six (10.5%) of participants made decisions  
 230 related to visiting family, friends, or relatives alone and one hundred sixty-eight (31.6%) with their  
 231 husbands. Also, concerning women's decision-making autonomy about their healthcare, 5.3% of them  
 232 usually make decisions themselves. In 42.1% of the study participants, women's healthcare decisions are

233 made by their husbands or partners. Two hundred fifty-two (47.4%) of the respondents reported that they  
 234 decided to visit a health facility jointly, as indicated in [Table 3](#). Three hundred eight (57.9%) of women  
 235 have high autonomy regarding decision-making on household affairs. ([Figure 2](#))

236 **Table 3. Women's autonomy in household decision-making in Mettu rural district, Oromia region, southwest**  
 237 **Ethiopia 2021, n=532**

Variables	Category	Frequency	Percent
Decision made on husband earning	Husband/other else	252	47.4
	Jointly	252	47.4
	Woman alone	28	5.3
Decision made on major household purchase	Husband/other else	266	50
	Jointly	238	44.7
	Woman alone	28	5.3
Decision made on visiting family or friends	Husband/other else	168	31.6
	Jointly	308	57.9
	Woman alone	56	10.5
Decision made on woman's healthcare	Husband/other else	224	42.1
	Jointly	280	52.6
	Woman alone	28	5.3
Decision made on child healthcare	Husband/other else	196	36.8
	Jointly	308	57.9
	Woman alone	28	5.3
Women's decision-making power in household	Low autonomy	224	42.1
	High autonomy	308	57.9

### 238 **Women's decision-making autonomy on maternal health service utilization**

239 Three hundred twenty two (60.5%) of women who had decision-making autonomy in maternal health  
 240 service utilization. ([Figure 3](#)) Accordingly, concerning women's decision-making autonomy regarding  
 241 family planning, 5.3% of them made decisions by themselves, whereas 60.9% made decisions jointly with  
 242 their husbands. In addition, more than half (51.1%) of women made decision regarding antenatal care  
 243 service jointly. Similarly, 50.3% of participants had joint decision on postnatal care service utilization.

244 About 42 (7.9%) of participants made decisions on whether to continue or stop using intended maternal  
 245 health services alone, and 296 (55.6%) with their husbands. (*Table 4*)

246 **Table 4: Women's decision-making autonomy on maternal health service utilization in Mettu rural district,**  
 247 **Oromia region, southwest Ethiopia, 2021 (n = 532)**  
 248

Variable	Category	Frequency	Percent
Decision-making on antenatal care (ANC)	Husband/other else	218	41
	Jointly	272	51.1
	Women alone	42	7.9
Decision-made giving birth at health Institution	Husband/other else	220	41.3
	Jointly	284	53.4
	Women alone	28	5.3
Decision made to seek PNC services	Husband/other else	236	44.4
	Jointly	268	50.3
	women alone	28	5.3
Decision made on family planning	Husband/other else	180	33.8
	Jointly	324	60.9
	Woman alone	28	5.3
Decision made on where to get maternal health services	Husband/other else	212	39.8
	Jointly	292	54.9
	Women alone	28	5.3
Decision made on whether to continue/stop using the maternal health services	Husband/other else	194	36.5
	Jointly	296	55.6
	Woman alone	42	7.9
Decision-making autonomy on maternal healthcare services	Not autonomous	210	39.5
	Autonomous	322	60.5

### 249 **Factors associated with decision-making autonomy of women**

250 In bivariable binary logistic regression, the respondent's age, educational status, household income,  
 251 family size, women's occupation, number of ANC visits, and distance to the health facility were found to  
 252 be significantly associated with women's decision-making autonomy, and variables with p-value of less  
 253 than 0.2 were used in multivariable binary logistic regression analysis.

254 After controlling for confounding using backward stepwise multivariable binary logistic regression  
 255 analysis, women's age, women's education, family size, and distance from the health facility were  
 256 identified as independent predictors of women's healthcare decision-making autonomy. Accordingly, the  
 257 odds of women aged 40–49 years old having decision-making autonomy on maternal health services  
 258 were four times higher compared to women aged under 20 years (AOR = 4.3, 95%CI: 1.6–11.4,  $p =$   
 259 0.034). Also, the odds of participating in healthcare decision-making among women who have a primary  
 260 education are around four times higher compared to women who have no formal education (AOR = 3.8,  
 261 95%CI: 2.1–6.7,  $p = 0.042$ ). In addition, the odds of women who had a family size of less than or equal to  
 262 five were 2.5 times more likely to have decision-making autonomy on maternal healthcare services  
 263 compared to women who had more than five members (AOR = 2.5; 95%CI: 1.5–4.1,  $p = 0.01$ ).  
 264 Furthermore, women who spent less than thirty minutes on the way to a health facility had a higher  
 265 likelihood of having decision-making autonomy for maternal health services than women who spent more  
 266 than thirty minutes (AOR = 5.3, 95%CI: 2.5–11.3,  $p = 0.004$ ). (*Table 5*)

267 Table 5. Multivariable binary logistic regression showing factors associated with women's decision-making  
 268 autonomy on maternal health services utilization in Mettu rural district, Oromia region, Southwest  
 269 Ethiopia, 2021, n=532

Variable	Autonomy on maternal health service utilization		COR (95% C.I)	AOR (95% C.I)
	Autonomous	Not autonomous		
<b>Age of women</b>				
Under 20	26	22	1	1
20-29	96	60	0.5 (0.2 – 1.4)	1.9(0.7– 5.0)
30-39	130	90	0.2 (0.08 – 0.6)	1.2(0.3 -4.7)
40-49	70	38	0.8 (0.2 – 3.0)	4.3(1.6 -11.4)*
<b>Women education</b>				
No formal education	168	44	1	1
Primary level (grade1-8)	110	114	0.3(0.1-0.4)	3.8(2.1- 6.7)*
Secondary and above	44	52	0.2(0.1-0.4)	0.8(0.5-1.6)
<b>Household monthly income</b>				
≤ 2,500 ETB	226	171	1	1
2,500- 10,000 ETB	48	34	1.1(0.6 – 1.7)	0.4(0.1 – 1.0)
>10,000 ETB	48	5	7.3(2.8 – 18.6)	0.4(0.1 – 1.2)
<b>Family size</b>				
Small (less than 5 members)	280	126	4.4(2.9- 6.8)	2.5(1.5- 4.1)*
Large (above five members)	42	84	1	1
<b>Woman's occupation</b>				
Housewife	186	80	1	1
Farmer	56	28	0.9(0.5 – 1.5)	3.6(1.4 - 8.7)
Government employ	42	56	0.3 ( 0.25 - 0 .5)	2.4( 0.9 - 6.3)
Merchant	28	28	0.46( 0.25 - 0.8)	0.9( 0.3 - 2.6)

Daily laborer	10	18	0.46( 0.211 - 1.0)	0.2 (0.12 - 1.5)
<b>Distance to a health facility</b>				
≤ 30 min	70	28	0.5( 0.3 – 0.9)	5.6 (2.7-11.31)*
>30 min	252	182	1	1
<b>Number of ANC visits</b>				
< four times	154	126	1	1
≥ four times	163	82	1.6 (1.1- 2.3)	0.7(0.5 – 1.15)

270 \* Significant at p- value < 0.05 C.I: confidence interval COR: crude odds ratio AOR: adjusted odds ratio

## 271 DISCUSSION

272 Women's autonomy is likely to vary according to characteristics at the individual, interpersonal,  
 273 community, and macro-political and societal levels. In this study, it is found that 322 (60.5%) (95% CI:  
 274 56.2%–64.7%) of study participants have autonomy in making healthcare decisions either alone or jointly.  
 275 This finding was higher than that of a study conducted in Dawro, Southern Ethiopia [20], and lower than  
 276 that of Adwa, Northern Ethiopia [31], and of an Ethiopian demographic and health survey [32]. This  
 277 finding is also higher than the study conducted in the Bale zone (21). This finding is also somewhat higher  
 278 compared to the study conducted in Ghana (22) which found that nearly half of the maternal health  
 279 service utilization is independently decided by husbands, and women have very little autonomy in  
 280 deciding about health service utilization. This difference might be the result of a discrepancy in the scope  
 281 of the studies, as the current study only involved rural women while the former studies incorporated both  
 282 rural and urban women. It is known that urban women have relatively better education, the economy, and  
 283 information access. Hence, the current study found a relatively lower rate of healthcare decision-making  
 284 autonomy than the aforementioned study. Women's autonomy in this study could be attributed to the fact  
 285 that in Ethiopia, over a period of time, there has been a strong commitment and effort made by the  
 286 Ethiopian government on maternal health, women's education (more than 60% of women in this study  
 287 had attended primary and higher education), and the expansion of health service to kebele level. Besides,  
 288 the current focus of the Ethiopian government and other stakeholder efforts to increase women's  
 289 empowerment in decision-making is related to maternal health [33]. In addition, in rural parts of Ethiopia,  
 290 many women have received informal health education interventions like a family conversation at health

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3 291 posts for basic maternity care, which tends to increase the health knowledge of women, thereby  
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5 292 increasing their autonomy in maternal healthcare service utilization.  
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7 293 Furthermore, the possible difference might be due to a difference in the education and socioeconomic  
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9 294 status of study participants, as evidenced by the presence of low participation in the decision-making  
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11 295 autonomy of maternal health services in the current study. About two hundred ten study participants in  
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13 296 the current study thought decision-making was the responsibility of the husband. This suggests that  
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15 297 women did not exercise their decision-making autonomy sufficiently to obtain maternal health services  
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17 298 and freedom from household decision-making in their lives. Additionally, the differences in the socio-  
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19 299 economic characteristics and geographical contexts across countries and the period of studies might also  
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21 300 explain the observed inconsistencies of the findings.

22 301 This study shows that women's age was significantly associated with women's decision-making autonomy  
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24 302 regarding maternal healthcare services. Accordingly, it is found that women's autonomy to make their  
25  
26 303 own health-related decisions increases with age, which is in line with a study done using the EDHS [25].  
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28 304 Several studies in developing nations have also indicated that women's increasing age has a favorable  
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30 305 impact on their autonomy to make health-related decisions on their own [2]. Other studies have also  
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32 306 demonstrated the influence of age on women's autonomy [20,22,34].

33  
34 307 This could be because women's positions in society are socially constructed, and their status varies  
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36 308 depending on their age and role in society [35], and in many African societies including Ethiopia, as a  
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38 309 woman gets older she becomes more autonomous since self-esteem increases with age [36].

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40 310 Education also affects women's autonomy to make their own decisions. The odds of women's decision-  
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42 311 making autonomy on maternal healthcare were higher among those who had received primary or higher  
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44 312 education than their illiterate counterparts. This finding is in line with the study conducted in Nepal (25)  
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46 313 and also consistent with a study from Ethiopia (26) in which women who have received primary or higher  
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48 314 education were four times more likely to make decisions on seeking healthcare than uneducated women.

49 315 This is because education empowers women, providing them with increased autonomy and resulting in  
50  
51 316 almost every context of maternal health service utilization [37]. This might be because the more a woman  
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53 317 is educated, the more she will accept gender equality and believe in equal participation in decision-  
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3 318 making with her husband. This means that improving education has a significant impact on later-life  
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5 319 decision-making participation in maternal healthcare services.

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7 320 Women with a small family size (less than five members) were more likely to have decision-making  
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9 321 autonomy in maternal healthcare services than women with a large family size. This finding is supported  
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11 322 by a study conducted in southern Ethiopia [20] and Addis Ababa, Ethiopia [38], which stated that having  
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13 323 fewer children was associated with better reproductive health decision making [38]. As a result, having a  
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15 324 smaller family would help women exercise freedom of healthcare decision-making and end male  
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17 325 dominance in a family. The study conducted in southern Ethiopia also revealed that the probability of  
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19 326 autonomy in healthcare decision-making in women with a family size of five to six people was lower than  
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21 327 compared to women with a family size of fewer than five people (16). This could be due to the size and  
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23 328 character of the family members, who may or may not be connected to the mother, but who, in any event,  
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25 329 support her in household decision-making, where her autonomy is sometimes jeopardized and her mind  
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27 330 occupied with different family issues. According to an Indian study, women who did not live with their  
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29 331 mothers-in-law were more involved in the decision-making process [39]. In addition, women's autonomy  
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31 332 confers total fertility reduction, higher child survival rates, and allocation of resources in favor of children  
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33 333 in the household [40].

34 334 Also, the odds of decision-making autonomy on maternal healthcare services among women who live a  
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36 335 distance from the health facility of fewer than thirty minutes are higher compared with those who live at a  
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38 336 distance of greater than thirty minutes from a nearby health facility. The study conducted in Nigeria  
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40 337 revealed that the further a patient lives from a health facility, the less likely they can utilize the services  
41  
42 338 [41]. A study in Kenya [42] also identified distance and physical proximity to healthcare facility as barriers  
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44 339 to the use of skilled attendance. This is because the preferred care source was often the closest one. In  
45  
46 340 the African context, the principal barriers to accessibility are transport and cost, so distance is mostly  
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48 341 reported as a single obstacle to the utilization of healthcare services.

49 342 The cross-sectional design of this study precluded drawing causal inferences between explanatory  
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51 343 factors and women's decision-making autonomy in maternal healthcare service utilization. As the  
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53 344 participants in this study were only women, there remains a potential for bias or discordance regarding  
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55 345 the level of autonomy enjoyed by women, as this is to a large extent a subjective phenomenon. In



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3 346 addition, women's autonomy is a complex concept and difficult to quantify, and there is no universally  
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5 347 agreed definition or tool for measurement. Despite this limitation, this study demonstrated important  
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7 348 factors influencing women's decision-making autonomy in maternal healthcare service utilization in a rural  
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9 349 setting.

## 10 11 12 350 **CONCLUSION**

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15 351 Even though every woman has the right to participate in her healthcare decision-making, two in five  
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17 352 women have diminished autonomy in decision-making regarding their health service utilization. This study  
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19 353 concludes that higher educational level, age, small family size, and short distance from the health facility  
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21 354 could lead to women's decision-making autonomy on maternal health service utilization. Health service  
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23 355 accessibility, educating women, and family planning activities might increase women's decision-making  
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25 356 autonomy in maternal healthcare service utilization. Of note, educating women about their rights and  
26  
27 357 health service expansion to the community level is recommended to raise the level of autonomy in  
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29 358 maternal health service utilization.

### 30 359 **Generalizability**

31  
32 360 The study was conducted with a random selection of participants obtained after a random selection of a  
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34 361 representative number of kebeles (35%) in the district. Hence, the results can be generalized for the  
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36 362 district as well as the respective zone.

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38  
39  
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41  
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43  
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45  
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47  
48 368 acquisition, analysis, and interpretation. AZ wrote the first and revised drafts of the manuscript. Both  
49  
50 369 authors are involved in the final approval of the version to be published and agreement to be accountable  
51  
52 370 for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the  
53  
54 371 work are appropriately investigated and resolved.

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374 **Competing interests:** The authors declared no conflicts of interest in this work.

375 **Data availability statement:** The data sets used and/or analyzed during this study are available from the  
376 corresponding author on reasonable request.

### 377 **Ethics statement**

378 Ethical clearance was obtained from Ethical Review Committee of College of Health Science, Mettu  
379 University by approval number RCS/036/2020 and presented to Mettu district administration and health  
380 office. Official letter was obtained from Mettu district Administration and Health office and presented to the  
381 respective Kebeles. The purpose of the study was explained and women were interviewed after verbal  
382 consent was obtained and the privacy and confidentiality of participants was maintained at all levels.

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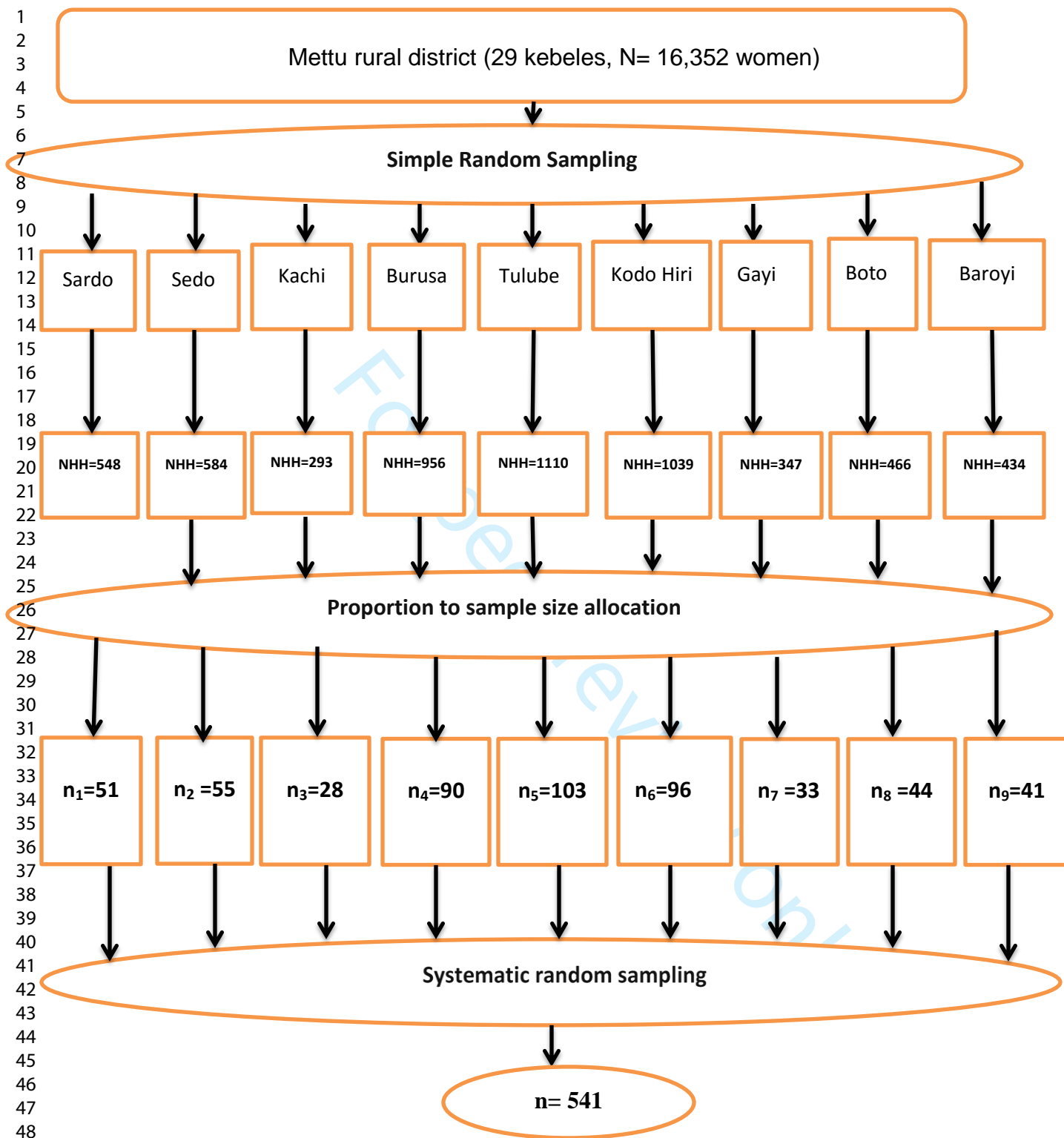
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9 486 **Figure legends**10  
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13 487 Figure 1. Schematic presentation of the sampling procedure14  
15 488 Figure 2. Women's autonomy in household decision making in Mettu district, southwest Ethiopia, 202116  
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18 489 Figure 3. Women's decision making autonomy on maternal health service utilization in Mettu district,  
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NHH= number of households in each kebele

$n_i$ = sample size from each kebele

Figure 1. Schematic presentation of the sampling procedure

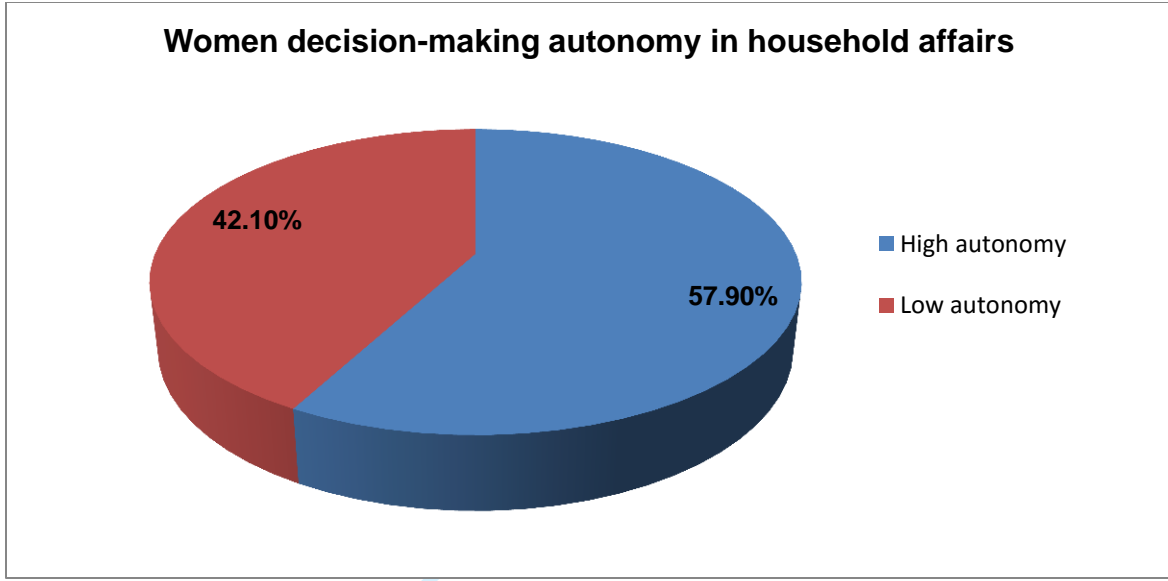
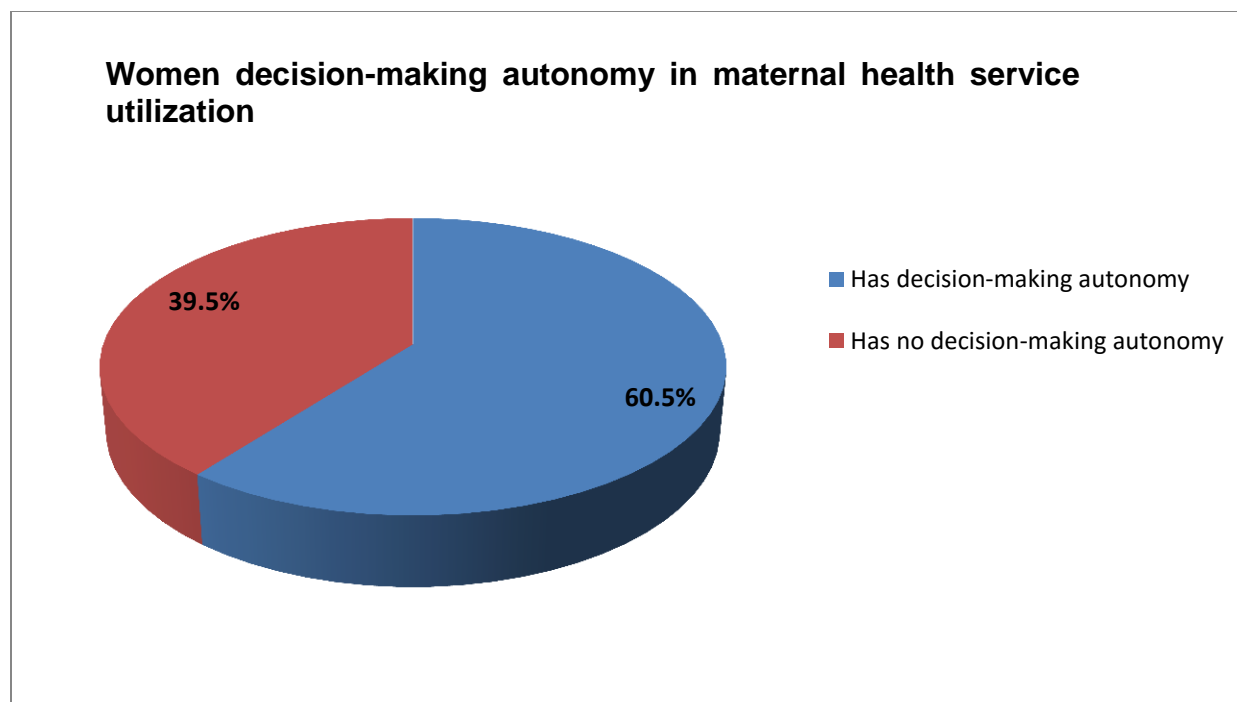


Figure 2. Women's autonomy in household decision making in Mettu district, southwest Ethiopia, 2021

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26 Figure 3. Women's decision making autonomy on maternal health service utilization in Mettu district,  
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# Reporting checklist for cross sectional study.

Based on the STROBE cross sectional guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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In your methods section, say that you used the STROBE cross sectional reporting guidelines, and cite them as:

von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies.

			Page Number
<b>Title and abstract</b>			
Title	<a href="#">#1a</a>	Indicate the study's design with a commonly used term in the title or the abstract	1
Abstract	<a href="#">#1b</a>	Provide in the abstract an informative and balanced summary	1

of what was done and what was found

## Introduction

Background / rationale	<a href="#">#2</a>	Explain the scientific background and rationale for the investigation being reported	2
Objectives	<a href="#">#3</a>	State specific objectives, including any prespecified hypotheses	4
<b>Methods</b>			
Study design	<a href="#">#4</a>	Present key elements of study design early in the paper	4
Setting	<a href="#">#5</a>	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Eligibility criteria	<a href="#">#6a</a>	Give the eligibility criteria, and the sources and methods of selection of participants.	5
	<a href="#">#7</a>	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5
Data sources / measurement	<a href="#">#8</a>	For each variable of interest give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group. Give information separately for for exposed and unexposed groups if applicable.	6
Bias	<a href="#">#9</a>	Describe any efforts to address potential sources of bias	6
Study size	<a href="#">#10</a>	Explain how the study size was arrived at	5

1	Quantitative	<a href="#">#11</a>	Explain how quantitative variables were handled in the	6
2				
3	variables		analyses. If applicable, describe which groupings were chosen,	
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5			and why	
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9	Statistical	<a href="#">#12a</a>	Describe all statistical methods, including those used to control	7
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11	methods		for confounding	
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14	Statistical	<a href="#">#12b</a>	Describe any methods used to examine subgroups and	7
15				
16	methods		interactions	
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19	Statistical	<a href="#">#12c</a>	Explain how missing data were addressed	7
20				
21	methods			
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25	Statistical	<a href="#">#12d</a>	If applicable, describe analytical methods taking account of	7
26				
27	methods		sampling strategy	
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30	Statistical	<a href="#">#12e</a>	Describe any sensitivity analyses	7
31				
32	methods			
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36	<b>Results</b>			
37				
38				
39	Participants	<a href="#">#13a</a>	Report numbers of individuals at each stage of study—eg	7
40				
41			numbers potentially eligible, examined for eligibility, confirmed	
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43			eligible, included in the study, completing follow-up, and	
44				
45			analysed. Give information separately for for exposed and	
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47			unexposed groups if applicable.	
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51	Participants	<a href="#">#13b</a>	Give reasons for non-participation at each stage	5
52				
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54	Participants	<a href="#">#13c</a>	Consider use of a flow diagram	5
55				
56				
57	Descriptive data	<a href="#">#14a</a>	Give characteristics of study participants (eg demographic,	7
58				
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clinical, social) and information on exposures and potential confounders. Give information separately for exposed and unexposed groups if applicable.

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8	Descriptive data	<a href="#">#14b</a>	Indicate number of participants with missing data for each
9			variable of interest
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13	Outcome data	<a href="#">#15</a>	Report numbers of outcome events or summary measures.
14			Give information separately for exposed and unexposed
15			groups if applicable.
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21	Main results	<a href="#">#16a</a>	Give unadjusted estimates and, if applicable, confounder-
22			adjusted estimates and their precision (eg, 95% confidence
23			interval). Make clear which confounders were adjusted for and
24			why they were included
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31	Main results	<a href="#">#16b</a>	Report category boundaries when continuous variables were
32			categorized
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36	Main results	<a href="#">#16c</a>	If relevant, consider translating estimates of relative risk into
37			absolute risk for a meaningful time period
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42	Other analyses	<a href="#">#17</a>	Report other analyses done—e.g., analyses of subgroups and
43			interactions, and sensitivity analyses
44			
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46			
47	<b>Discussion</b>		
48			
49			
50	Key results	<a href="#">#18</a>	Summarise key results with reference to study objectives
51			
52			
53	Limitations	<a href="#">#19</a>	Discuss limitations of the study, taking into account sources of
54			potential bias or imprecision. Discuss both direction and
55			magnitude of any potential bias.
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1	Interpretation	<a href="#">#20</a>	Give a cautious overall interpretation considering objectives,	16
2			limitations, multiplicity of analyses, results from similar studies,	
3			and other relevant evidence.	
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8	Generalisability	<a href="#">#21</a>	Discuss the generalisability (external validity) of the study	16
9			results	
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14	<b>Other Information</b>			
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16				
17	Funding	<a href="#">#22</a>	Give the source of funding and the role of the funders for the	16
18			present study and, if applicable, for the original study on which	
19			the present article is based	
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27 tool made by the [EQUATOR Network](#) in collaboration with [Penelope.ai](#)  
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