Rural-Urban Women's Decision-Making Autonomy on Contraceptive Use in Indonesia

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Submitted: 5 February 2024. Accepted: 10 August 2024. Published: 4 September 2024
Volume 33, 2025. pp. 361–379. http://doi.org/10.25133/JPSSv332025.019

Abstract

This study examined the relationship between women's decision-making autonomy and contraceptive use in Indonesia, using data from the 2014 Indonesia Family Life Survey (IFLS) on 9,153 married women aged 15–49. Ordered logistic regression was used to assess the relationship between women's participation in four household decisions and their decision-making autonomy. These decisions include food purchases, household purchases, freedom to visit family and relatives, and contraceptive use. The findings indicate that women in urban areas have higher levels of decision-making autonomy than those in rural areas. The autonomy index generally increases with age, but rural women consistently show lower autonomy levels across all age groups compared to their urban counterparts. A positive relationship between decision-making autonomy and contraceptive use was observed in both rural and urban settings. The marginal effect of autonomy on contraceptive use is more pronounced for short-acting reversible contraception (SARC) than for long-acting reversible contraception (LARC). Behavioral economic factors, such as distorted perceptions of excessive risk information about LARC, upfront costs, potential discomfort, and traditional social norms, influence contraceptive attitudes and behaviors. These findings underscore the importance of addressing gendered power dynamics and societal norms that restrict women's autonomy.

Keywords

Autonomy; contraceptive; decision-making; Indonesia

Introduction

The global need for family planning remains significant, with over 1.1 billion women of childbearing age lacking access to essential services (Sully et al., 2020; United Nations Population Fund [UNFPA], 2022b). This reality highlights a shortfall in basic healthcare and underscores the importance of family planning in achieving sustainable development across multiple goals. The unmet need for family planning directly hinders progress on two crucial Sustainable Development Goals (SDGs): good health and well-being and gender equality (United Nations, 2019; United Nations Development Programme [UNDP], 2023). Limited access to contraception increases the risk of maternal mortality and unintended pregnancies while also restricting women's educational and economic opportunities (World Health Organization Department of Sexual and Reproductive Health and Research [WHO/SRH], & Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs [CCP], 2022). Inequalities in access, especially in rural and marginalized communities, further emphasize the need for equitable interventions to bridge these gaps (Hawkes et al., 2020).

Each year, an estimated 121 million unintended pregnancies contribute to population growth, straining vital resources and impeding sustainable development (Singh et al., 2009; UNFPA, 2022a). Family planning empowers women with knowledge and access to modern contraception, enabling informed reproductive choice and improving maternal health outcomes (UNFPA, 2022c; World Health Organization [WHO], 2023). This empowerment promotes gender equality in social and economic development and allows women to pursue education and careers, breaking the cycle of poverty (UN Women, 2012; UN Women & United Nations Department of Economic and Social Affairs, 2023).

Family planning and contraceptive use are vital to managing sustainable population growth (Singh et al., 2009; UNFPA, 2022a). In Indonesia, the prevalence of modern contraceptive use is 57%, which is below the 2030 Sustainable Development Goals target (Maharani et al., 2023). However, Indonesia's diverse landscape, encompassing both rural and urban areas, presents potential disparities in women's autonomy regarding contraceptive use. As an archipelagic country with significant cultural and geographical diversity, Indonesia exhibits considerable variation in contraceptive behavior among women in different regions (Gayatri, 2023; Laksono et al., 2023). Several factors, including access to reproductive health services, educational level, social norms, and economic independence, influence these differences in both rural and urban settings (Gafar et al., 2020; Rohmah et al., 2021; Wulandari et al., 2021). In rural areas, this gap is exacerbated by a lack of access to information and family planning services (Tareke et al., 2023), while in urban areas, rapid urbanization exacerbates (Harpham et al., 2022).

The level of women's autonomy in making decisions about their reproductive health is one of the essential factors influencing contraceptive use and achieving desired health outcomes (Belachew et al., 2023; Hameed et al., 2014; Wollum et al., 2023). Studies from Ethiopia, Indonesia, Uganda, and South Africa highlight various factors that affect women's autonomy in contraceptive decisions. In Ethiopia, factors such as age, education, religion, residence, and media exposure affect women's autonomy in making decisions about contraceptive use (Mare et al., 2022). A study from Indonesia found that promoting joint decision-making could increase the use of long-acting and permanent contraception methods. Enhancing women's participation in decision-making is essential for respecting their reproductive autonomy (Mahendra et al., 2019; Naibaho et al., 2022). Additionally, research in Uganda shows that

many adolescent girls and young women lack autonomy in contraceptive decisions, highlighting the need for empowerment and education (Kabir et al., 2022). In South Africa, women with greater decision-making power were more likely to engage in HIV preventive measures, illustrating the broader impact of autonomy on reproductive health decisions (Mare et al., 2022).

Previous studies have focused on specific settings. This study aims to explore whether decision-making autonomy significantly influences contraceptive use among married women in different geographical contexts, comparing rural and urban areas. The findings will assist the government in developing more effective strategies to increase the accessibility of reproductive health services among married women.

Method

Participants and procedures

This research examined the relationship between decision-making autonomy and contraceptive use among married women in Indonesia. We utilized data from the fifth wave of the Indonesia Family Life Survey (IFLS) conducted in 2014, published by the RAND Corporation and publicly accessible via the website www.rand.org. The outcome variable for this study was "contraceptive use" among married women aged 15–49 years. The Independent variable in this model was women's decision-making autonomy concerning expenses for food consumed at home, daily household expenses, the amount of time spent socializing outside the home with friends or neighbors, and contraceptive use.

We estimated five models using different proxies of married women's decision-making autonomy. In the first model, the focus was on women's autonomy in making decisions about spending on food eaten at home. The second model examined their decision-making regarding daily household expenses. The third model considered autonomy in deciding the time spent outside the home socializing with friends or neighbors. The fourth model analyzed decision-making concerning contraceptive use. Finally, the fifth model employed a composite index that integrated the abovementioned variables to provide a comprehensive measure of decision-making autonomy. Decision-making regarding spending on food and daily household expenses indicates women's influence on routine household activities, while the time spent socializing reflects their social autonomy. The decision to use contraception reflects joint decision-making with a partner.

Control variables in the model included women's age, employment status, educational level, number of children, internet access, per capita expenditure (divided into quintiles), and region of residence. Each model explored differences in the relationship between decision-making autonomy and contraceptive use based on whether the women lived in rural or urban areas. The definitions and measurements of the variables are provided in Table 1.

Table 1: Variable Description

Variable	Definition and measurement
Contraceptive use	Status of contraceptive use among married women of childbearing age between 15 and 49 years old. 0 = not using modern contraception (Coitus Interruptus, Rhythm/calendar, Traditional Herbs, Traditional Massage, and Other), 1 = using Short-Acting Reversible Contraception (Pill, 1 Month Injection, 2 Month Injection, 3 Month Injection, Condom, Female Condom/Femidom, and Intravag) (SARC), and 2 = using Long-Acting Reversible Contraception (IUD/AKDR/Spiral, Norplant/Implant, Female Sterilization/Tubectomy, and Male Sterilization)
Age	Age of the respondent at the time of the survey, grouped into 0 = 15–19 years, 1 = 20–24 years, 2 = 25–29 years, 3 = 30–34 years, 4 = 35–39 years, 5 = 40–44 years, and 6 = 45–49 years.
Number of children	Number of children the respondent has, whether they live in the same household or not. 0 = no children, 1 = has 1–2 children, and 2 = has more than 2 children.
Employment status	The respondents' employment status at the time of the survey was grouped into 0 = not working and 1 = working.
Educational level	The highest educational level of the respondents at the time of the survey was 0 = primary education or less, 1 = middle education, and 2 = higher education.
Internet access	Use of the Internet by the respondent, 0 = no and 1 = yes.
Living area	Area of residence, 0 = rural and 1 = urban.
Per capita expenditure	Per capita expenditure is a proxy for average monthly expenditure on food and non-food consumption, grouped into 0 = quintile 1, 1 = quintile 2, 2 = quintile 3, 3 = quintile 4, and 4 = quintile 5.
Decision-making about food expenditures	Autonomy of the respondent's decision-making about food expenditures for food eaten at home. 0 = entirely decided by other parties, and 1 = entirely the respondent's decision or influenced by other parties.
Decision-making about daily household expenditures	Autonomy of the respondent's decision-making about daily household expenditures other than food expenditures. 0 = entirely decided by other parties, and 1 = entirely the respondent's decision or influenced by other parties.
Decision-making about time allocation for socializing	Autonomy of the respondent's decision-making about the time spent outside the home socializing with friends/neighbors. 0 = entirely decided by other parties, and 1 = entirely the respondent's decision or influenced by other parties.
Decision-making about contraceptive use	Autonomy of the respondent's decision-making about contraceptive use, whether made independently or with the intervention of their spouse and family. 0 = entirely decided by other parties, and 1 = entirely the respondent's decision or influenced by other parties.
Decision-making autonomy index	A composite variable is measured from the respondent's participation in making four decisions: daily household expenditures, food expenditures, time allocation for socializing, and contraceptive use. The index range is 0–4, where 0 indicates no participation at all, 1 indicates participation in one dimension, 2 indicates participation in two dimensions, 3 indicates participation in three dimensions, and 4 indicates participation in four dimensions.

Note: Data from IFLS 2014, compiled by authors 2023

Data analysis

This study employed a cross-sectional design to investigate 9,153 married women. Data were analyzed using Stata14. First, descriptive statistics were used to describe the characteristics of the study respondents. Second, chi-square tests (x^2) were conducted to examine the bivariate association between the outcome variable and independent variables. Variables with a significant association with the outcome variable were then entered into a logistic regression model, with adjusted odds ratios (OR) and *p* values reported. The ordinal logistic regression model uses the OR to evaluate the influence of a predictor variable on the outcome variable (Garnett et al., 2021).

We also calculated marginal effects (ME) to assess the impact of small changes in certain variables, including decision-making autonomy, on contraceptive use among married women. The same analysis was conducted separately for rural and urban areas to identify differences in the probability of contraceptive use associated with a one-unit change in the independent variables. Marginal effects were calculated using post-estimation commands following the logistic regression models. Specifically, we computed the average marginal effects (AMEs) to capture the average change in the predicted probability of contraceptive use for each independent variable across the sample.

Ordered logistic regression was employed to leverage the ordinal nature of the contraceptive use data, which reflects methods of delaying pregnancy or stopping fertility used by married women. Based on the cumulative logit model, this approach meets the proportional odds assumption, as the estimated effects do not vary across the dependent variable categories (Agresti, 2010). It also provides relatively easy-to-interpret estimates. The regression results were interpreted by examining the average marginal effect of each independent variable on the dependent variable. Marginal effects are used to analyze elasticity, measuring the change in a dependent variable due to a one-unit change in an independent variable.

Results

Table 2 presents the distribution of the study sample by various socioeconomic characteristics. The autonomy of married women in decision-making about food expenditures at home was higher in urban areas (84.77%) compared to rural areas (81.22%). Similarly, women's autonomy in deciding on daily household purchases, such as cleaning supplies and other items, was slightly higher in urban areas (87.43%) than in rural areas (86.75%). The autonomy to socialize outside the home, such as visiting friends or neighbors, was also higher in urban areas (88.30%) than in rural areas (86.93%). However, when it came to decision-making about contraceptive use, autonomy was higher among women in rural areas (78.52%) compared to those in urban areas (77.31%).

Table 2: Frequency Distribution of Study Samples

Variable	All (*N* = 9,153)		Rural (*N* = 3,887)		Urban (*N* = 5,266)	
	Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**
Dependent variable						
Contraceptive use						
Not using modern contraception	3,782	41.32	1,484	38.18	2,298	43.64

Variable	All (*N* = 9,153)		Rural (*N* = 3,887)		Urban (*N* = 5,266)	
	Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**
SARC	4,337	47.38	2,041	52.53	2,295	43.58
LARC	1,034	11.30	361	9.29	673	12.78
Independent Variables						
Decision-making about food expenditures						
Decided by other parties	1,532	16.74	730	18.78	802	15.23
Respondent's decision or influenced by other parties	7,621	83.26	3,157	81.22	4,464	84.77
Decision-making about daily household expenditures						
Decided by other parties	1,177	12.86	515	13.25	662	12.57
Respondent's decision or influenced by other parties	7,976	87.14	3,372	86.75	4,604	87.43
Decision-making about time allocation for socializing						
Decided by other parties	1,124	12.28	508	13.07	616	11.70
Respondent's decision or influenced by other parties	8,029	87.72	3,379	86.93	4,650	88.30
Decision-making about contraceptive use						
Decided by other parties	2,030	22.18	835	21.48	1,195	22.69
Respondent's decision or influenced by other parties	7,123	77.82	3,052	78.52	4,071	77.31
Age						
15–19	344	3.76	212	5.45	132	2.51
20–24	1,249	13.65	612	15.74	637	14.60
25–29	1,815	19.83	812	20.89	1,003	19.05
30–34	2,074	22.66	828	21.30	1,246	23.66
35–39	1,637	17.88	640	16.47	997	18.93
40–44	1,182	12.91	441	11.35	741	14.07
45–49	852	9.31	342	8.80	510	9.68
Number of children						
0	4,878	53.29	2,045	52.61	2,833	53.80
1–2	3,656	39.94	1,567	40.31	2,089	39.67
> 2	619	6.76	275	7.07	344	6.53
Employment status						
No	4,116	44.97	1,689	43.45	2,427	46.09
Working	5,037	55.03	2,198	56.55	2,839	53.91
Educational level						
Primary education or less	2,872	31.38	1,618	41.63	1,254	23.81
Middle education	5,077	55.47	1,955	50.30	3,122	59.29
Higher education	1,204	13.15	314	8.08	890	16.90
Internet access						
No	6,943	75.85	3,341	85.95	3,602	68.40
Yes	2,210	24.15	546	14.05	1,664	31.60
Per capita expenditure						
Quintile 1	1,834	20.04	1,013	26.06	821	15.59
Quintile 2	1,824	19.93	906	23.31	918	17.43
Quintile 3	1,836	20.06	785	20.20	1,051	19.96
Quintile 4	1,847	20.18	672	17.29	1,175	22.31
Quintile 5	1,812	19.80	511	13.15	1,301	24.71
Living area						
Rural	3,887	42.47	-	-	-	-
Urban	5,266	57.53	-	-	-	-

Note: Data from IFLS 2014, analyzed 2023

Table 3 shows the decision-making autonomy index for married women across different age groups and areas, measuring a woman's ability to make decisions about her own life. The index generally increased with age, with the 15–19 age group having an average index of 4.36% and the 45–49 age group having an average index of 30.63%. These findings suggest that women gain more control over their lives as they age. Additionally, women in rural areas consistently had a lower autonomy index than those in urban areas across all age groups. For instance, rural women in the 15–19 age group had an average index of 6.13%. In contrast, urban women had an average index of 1.52%, indicating that rural women may have less control over their lives.

Several factors could explain these differences in the decision-making autonomy index between age groups and areas. Older women have more experience and confidence in making decisions, leading to a higher index. In contrast, younger women might be more obedient to their husbands or other family members, resulting in a lower index. Cultural norms and expectations about gender roles, which may vary between rural and urban areas, also contribute to the observed differences in the index.

Table 3: Married Women's Decision-Making Autonomy Index by Age

Age	Area	Decision-making autonomy index (%)				
		0	1	2	3	4
15–19	All	4.36	13.66	20.93	28.20	32.85
	Rural	6.13	14.15	18.87	27.83	33.02
	Urban	1.52	12.88	24.24	28.79	32.58
20–24	All	1.76	7.37	16.17	29.14	45.56
	Rural	1.31	7.68	14.71	26.63	49.67
	Urban	2.20	7.06	17.58	31.55	41.60
25–29	All	0.61	4.35	12.18	27.66	55.21
	Rural	0.74	3.33	11.82	28.82	55.30
	Urban	0.50	5.18	12.46	26.72	55.13
30–34	All	0.96	2.27	8.39	24.35	64.03
	Rural	1.09	2.66	8.82	24.52	62.92
	Urban	0.88	2.01	8.11	24.24	64.77
35–39	All	0.73	2.44	7.15	25.05	64.63
	Rural	0.47	1.88	7.97	25.31	64.38
	Urban	0.90	2.81	6.62	24.87	64.79
40–44	All	0.85	2.79	8.54	27.07	60.74
	Rural	1.59	4.08	9.30	24.72	60.32
	Urban	0.40	2.02	8.10	28.48	61.00
45–49	All	0.70	3.05	9.04	30.63	56.57
	Rural	0.88	2.92	10.53	32.16	53.51
	Urban	0.59	3.14	8.04	29.61	58.63

Note: Data from IFLS 2014, analyzed 2023

Table 4 presents the significant associations between contraceptive use and various independent variables across the overall, rural, and urban samples. Decision-making about contraceptive use and the decision-making autonomy index were consistently highly significant in all areas, emphasizing their critical role. Variables such as age, number of children, employment status, educational level, and per capita expenditure also show strong significance, highlighting the importance of demographic and socioeconomic factors.

However, significant differences between rural and urban areas for certain variables, such as decision-making about food expenditures and internet access, suggest varying influences based on locality. These findings underscore the complex interplay between decision-making autonomy and economic factors in determining contraceptive use, with notable distinctions between rural and urban contexts.

Table 4: Association between Contraceptive Use and Independent Variables

Variable	All (N = 9,153)		Rural (N = 3,887)		Urban (N = 5,266)	
	x^2	*p* value	x^2	*p* value	x^2	*p* value
Decision-making about food expenditures	9.31	0.010	5.00	0.082	3.99	0.135
Decision-making about daily household expenditures	18.62	0.000	12.30	0.002	10.20	0.006
Decision-making about time allocation for socializing	10.50	0.005	9.62	0.008	3.29	0.193
Decision-making about contraceptive use	947.42	0.000	364.34	0.000	581.83	0.000
Decision-making autonomy index	377.40	0.000	160.36	0.000	227.59	0.000
Age	340.19	0.000	205.20	0.000	162.58	0.000
Number of children	203.14	0.000	133.43	0.000	85.68	0.000
Employment status	64.75	0.000	36.69	0.000	33.29	0.000
Educational level	152.89	0.000	20.54	0.000	123.55	0.000
Internet access	83.52	0.000	4.95	0.084	59.08	0.000
Per capita expenditure	179.04	0.000	56.45	0.000	110.05	0.000
Living area	78.11	0.000	-	-	-	-

Note: chi-squared (x^2)

We estimated five models using different proxies for the autonomy of married women's decision-making (Table 5). Firstly, autonomy in food expenditures was significantly associated with higher odds of contraceptive use overall (OR = 1.135, $p < .05$). The effect was slightly more pronounced in rural areas (OR = 1.159, $p < .10$) compared to urban areas (OR = 1.114, $p > .1$), Suggesting that autonomy in food expenditures had a more notable influence on contraceptive use in rural settings. Similarly, autonomy in daily household expenditures showed a significant association with higher odds of contraceptive use across all contexts (OR = 1.243, $p < .01$), with stronger associations observed in rural areas (OR = 1.330, $p < .01$) than in urban areas (OR = 1.181, $p < .05$). This highlights the particular importance of household financial autonomy in rural areas.

Autonomy in time allocation for socializing was also significantly associated with higher odds of contraceptive use overall (OR = 1.154, $p < .05$), with a stronger effect in rural areas (OR = 1.278, $p < .01$) and a non-significant effect in urban areas (OR = 1.066, $p > .1$). This indicates that social autonomy plays a critical role in rural contraceptive use. Autonomy in contraceptive use showed the strongest association with contraceptive use, with significantly higher odds across all contexts: overall (OR = 4.357, $p < .01$), rural (OR = 3.881, $p < .01$), and urban (OR = 4.746, $p < .01$). This emphasizes the substantial association between autonomy in contraceptive decision-making and its actual use.

The decision-making autonomy index, which combines multiple dimensions of autonomy, shows varied effects. Autonomy in one dimension did not show a significant association with

contraceptive use. However, autonomy in two dimensions was positively and significantly associated with contraceptive use in rural areas (OR = 1.724, $p < .10$), indicating a threshold effect. Autonomy in three dimensions did not show a significant association, suggesting that the relationship is not linear. In contrast, autonomy in all four dimensions was significantly associated with higher odds of contraceptive use overall (OR = 2.785, $p < .01$), in rural areas (OR = 3.015, $p < .01$), and in urban areas (OR = 2.519, $p < .01$). This highlights the cumulative effect of comprehensive decision-making autonomy on contraceptive use.

Table 5: Results of Ordered Logistic Regression of Married Women's Decision-Making Autonomy on Contraceptive Use

Variables	Model 1			Model 2			Model 3			Model 4			Model 5		
	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban
Decision-Making about Food Expenditures															
Decided by other parties (ref.)															
Respondent's decision or influenced by other parties	1.135**	1.159*	1.114												
	(0.054)	(0.080)	(0.074)												
Decision-Making about Daily Household Expenditures															
Decided by other parties (ref.)															
Respondent's decision or influenced by other parties				1.243***	1.330***	1.181**									
				(0.059)	(0.092)	(0.078)									
Decision-Making about Time Allocation for Socializing															
Decided by other parties (ref.)															
Respondent's decision or influenced by other parties							1.154**	1.278***	1.066						
							(0.059)	(0.088)	(0.080)						
Decision-making about contraceptive use															
Decided by other parties (ref.)															
Respondent's decision or influenced by other parties										4.357***	3.881***	4.746***			
										(0.058)	(0.088)	(0.078)			
Decision-making autonomy index															
No Autonomy at all (ref.)															
Autonomy in one dimension													1.037	0.936	1.086
													(0.234)	(0.323)	(0.338)
Autonomy in two dimensions													1.416	1.724*	1.162
													(0.219)	(0.299)	(0.320)
Autonomy in three dimensions													1.334	1.485	1.177
													(0.214)	(0.290)	(0.313)
Autonomy in all four dimensions													2.785***	3.015***	2.519***
													(0.212)	(0.287)	(0.311)

Variables	Model 1			Model 2			Model 3			Model 4			Model 5		
	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban	All	Rural	Urban
Age															
15–19 (ref.)															
20–24	1.440***	1.791***	1.124	1.430***	1.745***	1.132	1.451***	1.820***	1.127	1.291**	1.596***	1.026	1.337***	1.619***	1.071
	(0.107)	(0.147)	(0.163)	(0.107)	(0.146)	(0.163)	(0.108)	(0.147)	(0.163)	(0.112)	(0.154)	(0.166)	(0.107)	(0.148)	(0.161)
25–29	1.452***	1.866***	1.125	1.438***	1.815***	1.130	1.472***	1.904***	1.137	1.236*	1.604***	0.957	1.257**	1.598***	0.974
	(0.105)	(0.143)	(0.160)	(0.105)	(0.143)	(0.160)	(0.105)	(0.143)	(0.161)	(0.110)	(0.150)	(0.165)	(0.105)	(0.145)	(0.158)
30–34	1.858***	2.158***	1.553***	1.832***	2.090***	1.554***	1.891***	2.212***	1.578***	1.504***	1.778***	1.250	1.512***	1.759***	1.258
	(0.106)	(0.147)	(0.160)	(0.106)	(0.147)	0.159)	(0.106)	(0.147)	(0.160)	(0.111)	(0.154)	(0.164)	(0.107)	(0.150)	(0.158)
35–39	1.941***	2.252***	1.611***	1.917***	2.178***	1.618***	1.980***	2.309***	1.641***	1.582***	1.862***	1.306	1.570***	1.817***	1.297
	(0.110)	(0.156)	(0.164)	(0.111)	(0.156)	(0.164)	(0.111)	(0.156)	(0.164)	(0.115)	(0.162)	(0.168)	(0.111)	(0.159)	(0.162)
40–44	1.653***	1.950***	1.346*	1.631***	1.888***	1.350*	1.686***	1.999***	1.372*	1.462***	1.746***	1.188	1.374***	1.627***	1.117
	(0.120)	(0.173)	(0.174)	(0.120)	(0.173)	(0.173)	(0.120)	(0.173)	(0.174)	(0.123)	(0177)	(0.0178)	(0.120)	(0.174)	(0.172)
45–49	0.763**	0.809	0.664**	0.754**	0.788	0.666**	0.776**	0.825	0.675**	0.670***	0.745	0.568***	0.638***	0.689*	0.547***
	(0.128)	(0.194)	(0.182)	(0.129)	(0.193)	(0.181)	(0.129)	(0.193)	(0.182)	(0.134)	(0.201)	(0.187)	(0.129)	(0.197)	(0.180)
Number of children															
0 (ref.)															
1–2	1.426***	1.611***	1.320***	1.428***	1.611***	1.322***	1.422***	1.602***	1.137***	1.251***	1.420***	1.156**	1.388***	1.555***	1.292***
	(0.0466)	(0.074)	(0.061)	(0.0466)	(0.074)	(0.061)	(0.0466)	(0.074)	(0.061)	(0.0480)	(0.075)	(0.063)	(0.0469)	(0.074)	(0.061)
> 2	2.032***	2.138***	1.985***	2.025***	2.125***	1.982***	2.038***	2.158***	1.986***	1.953***	2.135***	1.846***	2.042***	2.191***	1.970***
	(0.0923)	(0.145)	(0.120)	(0.0923)	(0.144)	(0.120)	(0.0923)	(0.145)	(0.120)	(0.0918)	(0.142)	(0.121)	(0.0922)	(0.145)	(0.120)
Employment status															
No (ref.)															
Working	0.894***	0.898*	0.899**	0.892***	0.893*	0.898**	0.896***	0.899	0.901*	0.904**	0.909	0.906*	0.889***	0.884*	0.898**
	(0.0412)	(0.064)	(0.054)	(0.0412)	(0.064)	(0.054)	(0.0412)	(0.064)	(0.054)	(0.0420)	(0.065)	(0.055)	(0.0414)	(0.065)	(0.054)
Educational status															
Primary education or less (ref.)															
Middle education	0.974	0.966	0.969	0.977	0.968	0.973	0.977	0.969	0.973	0.967	0.972	0.955	0.945	0.949	0.935
	(0.0454)	(0.069)	(0.062)	(0.0454)	(0.069)	(0.062)	(0.0454)	(0.069)	(0.062)	(0.0468)	(0.071)	(0.064)	(0.0459)	(0.070)	(0.062)
Higher education	0.743***	0.685***	0.754***	0.749***	0.694***	0.759***	0.744***	0.683***	0.756***	0.805***	0.712**	0.831*	0.760***	0.709*	0.769***
	(0.0821)	(0.141)	(0.101)	(0.0821)	(0.141)	(0.101)	(0.0822)	(0.141)	(0.101)	(0.0840)	(0.141)	(0.105)	(0.0823)	(0.140)	(0.102)
Internet Access															
No (ref.)															
Yes	0.813***	0.880	0.794***	0.811***	0.877	0.794***	0.817***	0.892	0.797***	0.836***	0.881	0.826***	0.810***	0.867	0.792***
	(0.0543)	(0.095)	(0.065)	(0.0543)	(0.095)	(0.065)	(0.0542)	(0.095)	(0.065)	(0.0551)	(0.096)	(0.066)	(0.0546)	(0.095)	(0.066)

Variables	Model 1			Model 2			Model 3			Model 4			Model 5		
	All	**Rural**	**Urban**	**All**	**Rural**	**Urban**	**All**	**Rural**	**Urban**	**All**	**Rural**	**Urban**	**All**	**Rural**	**Urban**
Per capita expenditure															
Quintile 1 (ref.)															
Quintile 2	1.180***	1.209**	1.193**	1.183***	1.211**	1.196**	1.180***	1.202**	1.197**	1.092	1.122	1.095	1.141**	1.176*	1.148
	(0.0585)	(0.085)	(0.085)	(0.0585)	(0.085)	(0.085)	(0.0585)	(0.085)	(0.085)	(0.0596)	(0.086)	(0.086)	(0.0588)	(0.085)	(0.338)
Quintile 3	1.303***	1.431***	1.273***	1.313***	1.449***	1.279***	1.305***	1.429***	1.275***	1.184***	1.321***	1.140	1.269***	1.374***	1.256***
	(0.0632)	(0.097)	(0.086)	(0.0631)	(0.098)	(0.086)	(0.0631)	(0.098)	(0.086)	(0.0645)	(0.099)	(0.088)	(0.0635)	(0.098)	(0.320)
Quintile 4	1.356***	1.271**	1.448***	1.365***	1.278**	1.458***	1.356***	1.265**	1.450***	1.201***	1.137	1.267***	1.317***	1.245**	1.404***
	(0.0645)	(0.101)	(0.086)	(0.0644)	(0.101)	(0.086)	(0.0644)	(0.101)	(0.086)	(0.0649)	(0.101)	(0.087)	(0.0642)	(0.100)	(0.313)
Quintile 5	1.531***	1.184	1.732***	1.544***	1.194	1.743***	1.529***	1.184	1.728***	1.356***	1.065	1.511***	1.465***	1.101	1.685***
	(0.0725)	(0.124)	(0.092)	(0.0724)	(0.124)	(0.092)	(0.0723)	(0.123)	(0.092)	(0.0734)	(0.126)	(0.093)	(0.0722)	(0.124)	(0.311)
Living Area															
Rural (Ref.)															
Urban	0.895***	-	-	0.898***	-	-	0.896***	-	-	0.925*	-	-	0.903**	-	-
	(0.0412)			(0.0412)			(0.0412)			(0.0421)			(0.0415)		
/ Cut 1	0.448***	0.319***	0.510***	0.367***	0.612***	0.384***	0.406***	0.623***	0.302***	1.152***	1.202***	1.148***	0.746***	0.949***	0.604***
	(0.116)	(0.172)	(0.153)	(0.113)	(0.158)	(0.178)	(0.118)	(0.164)	(0.176)	(0.119)	(0.163)	(0.177)	(0.230)	(0.312)	(0.345)
/ Cut 2	2.925***	2.554***	3.359***	2.843***	3.643***	2.620***	2.882***	3.474***	2.538***	3.744***	4.160***	3.502***	3.282***	3.861***	2.897***
	(0.120)	(0.174)	(0.164)	(0.116)	(0.169)	(0.180)	(0.121)	(0.173)	(0.178)	(0.124)	(0.177)	(0.182)	(0.233)	(0.319)	(0.347)
Observation	9,153	3,887	5,266	9,153	3,887	5,266	9,153	3,887	5,266	9,153	3,887	5,266	9,153	3,887	5,266

*Note: Inside brackets is the robust standard error; *** p < .01, ** p < .05, * p < .10; data from IFLS 2014, analyzed 2023*

Table 6: Marginal Effect of Married Women's Decision-Making Autonomy on Contraceptive Use

Variables	Contraceptive use								
	All			Rural			Urban		
	Non	SARC	LARC	Non	SARC	LARC	Non	SARC	LARC
Decision-making about food expenditures									
Decided by other parties (ref.)									
Respondent's decision or influenced	-0.029**	0.017**	0.012**	-0.033*	0.021*	0.012*	-0.026	0.014	0.012
by other parties	(0.0125)	(0.007)	(0.005)	(0.018)	(0.011)	(0.007)	(0.018)	(0.010)	(0.008)
Decision-making about daily household expenditures									
Decided by other parties (ref.)									
Respondent's decision or influenced	-0.051***	0.029***	0.021***	-0.064***	0.041***	0.024***	-0.040**	0.021**	0.018**
by other parties	(0.014)	(0.008)	(0.006)	(0.021)	(0.013)	(0.008)	(0.018)	(0.010)	(0.009)
Decision-making about time allocation for socializing									
Decided by other parties (ref.)									
Respondent's decision or influenced	-0.033**	0.019**	0.014**	-0.055***	0.035***	0.020***	-0.015	0.008	0.007
by other parties	(0.014)	(0.008)	(0.006)	(0.020)	(0.012)	(0.007)	(0.019)	(0.010)	(0.009)
Decision-making about contraceptive use									
Decided by other parties (ref.)									
Respondent's decision or influenced	-0.317***	0.175***	0.142***	-0.290***	0.175***	0.110***	-0.337***	0.170***	0.167***
by other parties	(0.011)	(0.007)	(0.006)	(0.016)	(0.011)	(0.008)	(0.014)	(0.008)	(0.009)
Decision-making autonomy index									
No Autonomy at all (ref.)									
Autonomy in one dimension	-0.009	0.007	0.002	0.016	-0.013	-0.003	-0.20	0.014	0.006
	(0.055)	(0.043)	(0.012)	(0.076)	(0.063)	(0.013)	(0.080)	(0.058)	(0.022)
Autonomy in two dimensions	-0.084	0.062	0.021*	-0.130*	0.102*	0.028**	-0.036	0.025	0.010
	(0.052)	(0.40)	(0.012)	(0.071)	(0.058)	(0.013)	(0.076)	(0.055)	(0.021)
Autonomy in three dimensions	-0.070	0.052	0.017	-0.095	0.076	0.019	-0.039	0.028	0.011
	(0.051)	(0.039)	(0.011)	(0.068)	(0.057)	(0.012)	(0.074)	(0.054)	(0.021)
Autonomy in all four dimensions	-0.242***	0.157***	0.085***	-0.255***	0.182***	0.074***	-0.220***	0.131**	0.089***
	(0.050)	(0.039)	(0.012)	(0.068)	(0.056)	(0.012)	(0.074)	(0.053)	(0.021)

*Note: Controlled estimation results with variables of age, number of children, educational status, employment status, internet access, per capita expenditure, and living area (for all areas). Inside the brackets is the robust standard error; *** p < .01, ** p < .05, * p < .10; data from IFLS 2014, analyzed 2023*

The marginal effects of married women's decision-making autonomy on contraceptive use, presented in Table 6, provided valuable insights into how different dimensions of autonomy influence the likelihood of using SARC, LARC, or not using contraception at all. The analysis distinguishes between rural and urban settings to highlight contextual differences.

Autonomy in food expenditures is modestly but significantly associated with contraceptive use. Women who decide or influence decisions about food expenditures were less likely not to use contraception (ME = 2.9%, $p < .05$) and more likely to use both SARC (ME = 1.7%, $p < .05$) and LARC (ME = 1.2%, $p < .05$). This effect is slightly stronger in rural areas, where the likelihood of non-use decreased by 3.3% ($p < .10$). The probability of using SARC and LARC increased by 2.1% ($p < .10$) and 1.2% ($p < .10$), respectively. In urban areas, the effects are not statistically significant, suggesting that autonomy in food expenditures is more critical in rural contexts.

Autonomy in daily household expenditures has a more substantial effect. Women who make or influence these decisions were significantly less likely not to use contraception (ME = 5.1%, $p < .01$) and more likely to use SARC (ME = 2.9%, $p < .01$) and LARC (ME = 2.1%, $p < .01$). The effects were pronounced in rural areas, where non-use decreased by 6.4% ($p < .01$), and the likelihood of using SARC and LARC increased by 4.1% ($p < .01$) and 2.4% ($p < .01$), respectively. In urban areas, the effects are slightly smaller but still significant, indicating that household expenditure autonomy is a crucial determinant across different settings.

Autonomy in socializing decisions also affects contraceptive use, though the effects are less pronounced. Overall, this autonomy reduced the likelihood of non-use (ME = 3.3%, $p < .05$) and increased the probability of using SARC (ME = 1.9%, $p < .05$) and LARC (ME = 1.4%, $p < .05$). In rural areas, the negative effect on non-use (ME = 5.5%, $p < .01$) and positive effects on SARC (ME = 3.5%, $p < .01$) and LARC (ME = 2.0%, $p < .01$) were stronger, suggesting that social autonomy is more influential in rural settings. These insignificant effects imply that social autonomy might be less critical in urban contraceptive decisions.

Autonomy, specifically in contraceptive decision-making, shows the most substantial effects. Women with this autonomy were significantly less likely not to use contraception (ME = 31.7%, $p < .01$) and more likely to use both SARC (ME = 17.5%, $p < .01$) and LARC (ME = 14.2%, $p < .01$). These effects were slightly stronger in urban areas for non-use (ME = 33.7%, $p < .01$) and LARC use (ME = 16.7%, $p < .01$), while in rural areas, the likelihood of using SARC was higher (ME = 17.5%, $p < .01$). This highlights the critical importance of autonomy in contraceptive decisions across all contexts.

In the last model, autonomy in three dimensions does not show a significant association with contraceptive use in any context. Full autonomy across four dimensions significantly reduced the likelihood of non-use overall (ME = 24.2%, $p < .01$) and increased the probabilities of using SARC (ME = 15.7%, $p < .01$) and LARC (ME = 8.5%, $p < .01$). The effects were slightly stronger in rural areas for SARC use (ME = 18.2%, $p < .01$) and in urban areas for LARC use (ME = 8.9%, $p < .01$).

Discussion

The study found that women with decision-making autonomy in the household are more likely to use contraception. According to the behavioral economics approach, individuals act

rationally to maximize utility (Stevens & Berlan, 2014; Yair, 2008). Autonomy in decision-making enhances women's utility by allowing them the freedom to choose what is best for themselves (Heil et al., 2016; Idris et al., 2023; Nussbaum, 2000). This autonomy improves individual utility, dismantling gendered power imbalances, and promoting social justice. With autonomy, women can decide the number of children they want, the spacing of births, and the timing of childbirth (Forty et al., 2022; Htay et al., 2024; Senderowicz, 2020). These decisions have broad implications for various aspects of women's lives, including health, education, and economic outcomes (Onarheim et al., 2016; Stenberg et al., 2014).

The study also highlights that women's autonomy in contraceptive decision-making positively influences contraceptive use in both rural and urban areas, with a stronger effect observed for SARC than for LARC. Women's sensitivity to the rare risks associated with LARC (Fischhoff & Eggers, 2013; Grunloh et al., 2013), often exacerbated by sensationalized media and societal portrayals rooted in patriarchal norms, can undermine their confidence in making autonomous health decisions (Chelva et al., 2022; Stevens & Berlan, 2014). These portrayals reinforce traditional views of female modesty and control, making SARC methods more socially acceptable (Amraeni et al., 2021; Nussbaum, 2000). To address these challenges, promoting autonomy and providing balanced and accurate information is essential to empowering women.

Although the study did not directly measure time preferences, present bias may influence contraceptive choices, especially in rural areas where access to healthcare (Hopkins et al., 2023; Lerch, 2019; Sserwanja et al., 2022) and financial resources (Heil et al., 2016; Lerch, 2019) are limited. Present bias in contraceptive choices often reflects deeper gender inequalities, particularly in rural areas where traditional gender roles may restrict women's access to education and economic resources, leading them to favor short-term solutions over long-term benefits (Harpham et al., 2022; Sserwanja et al., 2022; Tareke et al., 2023). This environment reinforces women's reliance on more accessible and less costly contraceptive methods, even if they are less effective or more expensive in the long run (McKenna et al., 2014). In urban areas, where healthcare, education, and financial resources are more readily available, present bias may be less pronounced, but gendered barriers persist (Chelva et al., 2022; Tesha et al., 2023). Women's reproductive health decisions are often influenced by societal expectations and gender norms that emphasize immediate reproductive roles over long-term health planning (Ouahid et al., 2023). Even in resource-rich environments, women may still face pressures and misinformation that lead them to choose SARC methods over LARC.

Women's decision-making autonomy across multiple dimensions, particularly in rural areas, significantly enhances their contraceptive use. This cumulative relationship highlights how autonomy and social norms strongly influence gender roles in reproductive choices (Stevens & Berlan, 2014; Sunstein, 2013). In rural settings, traditional expectations and social pressure can severely limit women's autonomy in family planning, even when they have control over other aspects of their lives (Colbourn et al., 2013; Dingeta et al., 2019). While the influence of traditional social norms may be weaker in urban areas, these areas still face social expectations and pressures surrounding family planning and gender roles (Amraeni et al., 2021; Lahiri et al., 2023; Poerwandari et al., 2018). Although these expectations may not be as rigid as those in rural settings, they can still impact women's autonomy, especially in relationships with partners and family dynamics. Additionally, peer groups and social circles in urban societies can influence contraceptive attitudes and behaviors.

Autonomy in multiple dimensions impacts contraceptive use more than autonomy in just one dimension. Women who have autonomy in areas such as food expenditure, household

finances, socialization, and contraception show the most significant increase in contraceptive use. These findings suggest that autonomy is cumulative; the more areas of decision-making that women control, the more likely they are to use contraception (Nadeem et al., 2021). The higher a woman's autonomy in various aspects of her life, the greater her likelihood of using contraception. This approach aligns with the principle of sustainable development by focusing on the multidimensional aspects of women's empowerment, including maternal health and population growth.

Conclusion

This study found a strong positive relationship between women's decision-making autonomy and contraceptive use, consistent across rural and urban areas. These findings highlight the importance of women's empowerment in achieving reproductive health goals. The study also identified key challenges to increasing contraceptive use among women. First, while LARC offers long-term benefits, its uptake is hindered by present bias, concerns about side effects, and limited access in rural areas. Second, traditional social norms can significantly restrict women's autonomy in rural settings.

To address these challenges, policymakers and practitioners should focus on promoting women's decision-making autonomy in all aspects of their lives, including contraception; providing accurate and balanced information about LARC methods to dispel misconceptions and empower women to make informed choices; ensuring equitable access to healthcare, including LARC methods, especially in rural areas; challenging harmful social norms that restrict women's reproductive choices. By taking these steps, we can create an environment where women are empowered to make informed decisions about their reproductive health, contributing to sustainable development goals.

Acknowledgments

The authors thank Ratna Widyasari for sharing her knowledge and expertise.

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