



Maternal Characteristics Associated with LARC Adoption: A National Analysis from the 2023 Indonesian Health Survey

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Abstrak

Meskipun angka prevalensi kontrasepsi di Indonesia mencapai 62,4%, pemanfaatan Metode Kontrasepsi Jangka Panjang (MKJP) masih sangat rendah, yaitu hanya sebesar 25,5%. Penelitian ini bertujuan untuk menganalisis hubungan antara karakteristik ibu dengan pemilihan metode kontrasepsi pada wanita usia subur di Indonesia. Menggunakan desain cross-sectional, studi ini menganalisis data sekunder Survei Kesehatan Indonesia (SKI) tahun 2023 dengan sampel sebanyak 33.054 responden. Analisis bivariat menggunakan uji Chi-Square menunjukkan bahwa usia berisiko (OR=1,604), pendidikan tinggi (OR=2,069), bekerja di sektor formal (OR=1,946), dan status multipara (OR=1,532) berhubungan signifikan secara statistik dengan peningkatan adopsi MKJP ($p<0.001$). Hasil ini membuktikan bahwa faktor sosiodemografi dan riwayat reproduksi secara konsisten menjadi prediktor utama dalam menentukan stabilitas metode kontrasepsi yang dipilih oleh ibu. Dapat disimpulkan bahwa karakteristik maternal yang mencakup usia, pendidikan, pekerjaan, dan paritas memiliki hubungan yang signifikan dengan keputusan ibu dalam memilih metode kontrasepsi jangka panjang di Indonesia

Abstract

While the national contraceptive prevalence rate in Indonesia has reached 62.4%, the utilisation of Long-Acting Reversible Contraception (LARCs) remains remarkably low at only 25.5%. The present study sought to analyse the relationship between maternal characteristics and the selection of contraceptive methods among women of childbearing age in Indonesia. The present study utilised a cross-sectional design and analysed secondary data from the 2023 Indonesian Health Survey (IHS), which comprised a sample of 33,054 respondents. Bivariate analysis using the Chi-Square test revealed that risk reproductive age (OR=1.604), higher education (OR=2.069), formal sector employment (OR=1.946), and multiparous status (OR=1.532) were statistically significantly associated with higher LARC adoption ($p<0.001$). The findings indicated that sociodemographic factors and reproductive history consistently emerged as primary predictors in determining the stability of the chosen contraceptive method. The findings of this study indicate that maternal characteristics, encompassing age, educational attainment, occupational status, and parity, exert a substantial influence on maternal decisions regarding the adoption of long-acting contraception in Indonesia.

INTRODUCTION

The maternal and child health agenda remains a top priority in global public health, with postpartum family planning programmes serving as a key pillar. The effective utilisation of contraceptives plays a pivotal role in the prevention of unwanted pregnancies, while also ensuring adequate birth spacing, a critical factor in minimizing maternal and neonatal morbidity (Gebremariam et al., 2025; Moller et al., 2025). Despite the evident benefits offered by long-acting contraceptive methods, which include superior efficacy and very low failure rates due to their non-dependence on consistent adherence, a considerable gap remains between the utilisation of highly effective long-acting contraceptive methods and the temporary use of short-acting methods (Schummers et al., 2025).

In low- and middle-income Asian countries, approximately 42% of the 519 million users still rely on short-acting methods, highlighting a significant gap in the choice of more stable contraceptive methods (Jessica Rosenberg et al., 2025; World Health Organization, 2025). This situation is analogous to the situation in Indonesia. Recent data from the National Population and Family Planning Agency (2024) indicates that while the national contraceptive prevalence rate has reached 62.4%, signifying that approximately six out of ten couples of childbearing age are actively utilising family planning methods, it is noteworthy that long-acting reversible contraceptives account for a mere 25.5% of this total. This indicates that only three out of ten users in Indonesia opt for long-acting methods, while the remaining users continue to rely on short-acting methods

(Kementerian Kependudukan dan Pembangunan Keluarga, 2025).

The pervasive utilisation of short-term contraceptive methods has been demonstrated to exert a significant influence on a wide range of reproductive health concerns. Short-term contraceptive methods depend to a great extent on user compliance; their extensive utilisation results in elevated rates of discontinuation and suboptimal family planning outcomes (Alamdo et al., 2026; Atoyebi et al., 2025). When women who are breastfeeding rely on contraceptive methods such as pills or injections, common obstacles such as mild side effects, forgetfulness, or delivery delays often lead them to discontinue use abruptly. This loss of protection has been demonstrated to indirectly contribute to a surge in unplanned pregnancies and excessively close birth spacing. In the long term, these unwanted pregnancies have the potential to increase maternal and newborn morbidity and hinder national efforts to reduce maternal mortality and prevent stunting due to poor birth spacing. It is therefore vital to ascertain the factors associated with contraceptive choice among women of childbearing age in Indonesia to bridge this gap (Coulibaly et al., 2025; Santosa et al., 2021).

It is hypothesised that maternal characteristics, including but not limited to age, place of residence, educational attainment, occupation, and parity, are associated with the selection of contraceptives. The age of a woman is often indicative of her current phase in her reproductive life cycle, thus resulting in the categorisation of users into discrete behavioural groups. It is hypothesised that younger mothers are more likely to be in the child-rearing phase and may view

contraception as merely a temporary measure (Muharomah & Zimmerman, 2025; Triebner et al., 2020). This may lead them to rely on short-term options despite their higher failure rates. Conversely, older women who have already had their desired number of children are more likely to experience obstetric risks in the event of pregnancy. This makes them more likely to prioritise high-reliability, long-term methods to bridge this risk gap and ensure continued protection (Barbuscia et al., 2024; Bitzika et al., 2026).

Apart from age, a woman's level of education is perhaps the most obvious indicator of her health literacy and mental independence in fertility decisions. The more educated the woman, the more likely she is to critically appraise health information and understand the longer-term benefits and protective mechanisms of a stable method versus a temporary method. Furthermore, women with lower educational levels often encounter cognitive barriers in navigating healthcare, which engenders a greater reliance on short-term solutions that are readily accessible but are characterised by a lack of comprehensive counselling (Diamond-Smith et al., 2025; Wang & Dang, 2025).

In addition to maternal age and education level, socioeconomic dynamics, particularly employment status, are also hypothesised to influence contraceptive choices because they are related to a certain degree of financial independence in women (Kazibwe et al., 2024; Mwandama et al., 2025). Furthermore, a woman's reproductive history, particularly parity, serves as a compass of experience in navigating the gap between short-term and long-term protection. In essence, the quantity of deliveries a woman has

undergone is a contributing factor to her perception of contraception, derived from first-hand clinical experience (Ajong et al., 2025; Başaran & Duru, 2025; Lyngbye et al., 2022). In consideration of the manner in which these discrete characteristics interact, analysis that is exclusively focused on the collective influence of maternal age, education, employment, and parity is imperative in order to assist stakeholders in the planning of coordinated family planning interventions in Indonesia. The present study has been designed to analyse the relationship between maternal characteristics and the choice of contraceptive methods in women of childbearing age in Indonesia.

METHOD

This cross-sectional study utilised secondary data from the 2023 Indonesian Health Survey (IHS), which was conducted by the Ministry of Health. In the course of a nationwide survey, a specific sample of 33,054 respondents was selected on the basis of the completeness of data regarding maternal characteristics and contraceptive choices. The dependent variable in this study was the contraceptive method, which was dichotomised into two categories: Long-Acting Reversible Contraception (LARC) and non-LARC. Concurrently, the independent variables concentrated exclusively on maternal characteristics, encompassing four key domains: maternal age, formal education level, employment status, and parity. The present study complies with national ethical procedures and received official approval from the Health Research Ethics Review Committee of Poltekkes Jakarta II under letter No. LB.02.01.I/KE/L/287/2023.

The statistical analysis was conducted with the utilisation of statistical software, commencing with descriptive statistics to calculate frequencies and percentages for all the variables that were studied. Subsequently, bivariate analysis was conducted using the Chi-Square test to evaluate the relationship between each maternal characteristic (age, education, occupation, and parity) and the chosen contraceptive method. The statistical significance for all associations in this bivariate model was determined at a threshold of $p < 0.05$, serving as the final analytical step to identify the demographic factors linked to LARC adoption.

RESULT AND DISCUSSION

A descriptive analysis was conducted, incorporating maternal characteristics including age, formal education level, employment status, and parity. The baseline characteristics of the respondents are detailed in Table 1.

Table 1. Frequency distribution of contraceptive method selection, sociodemographic characteristics, health insurance ownership and reproductive history (n = 33,054)

Variable	Categories	Frequency	Percent age (%)
Contraceptive Method	Non LARCs	22,882	69.2
	LARCs	10,172	30.8
Age	Reproductive Age	17,470	30.8
	Risk Age	15,584	47.1
Residence	Rural	17,470	52.9
	Urban	568	1.7
Education	No Formal Education	6,969	21.1
	Primary Education	19,980	60.4
	Secondary Education	5,537	16.8
Occupation	Primary Education	20,151	61.0
	Secondary Education	9,048	27.4
	Higher Education	3,855	11.7
Parity	Primipara	6774	20.5
	Multipara	26280	79.5

Variable	Categories	Frequency	Percent age (%)
Unemployed	Informal Sector		
	Formal Sector		
Primipara			
Multipara			

As illustrated in Table 1, the descriptive statistics pertaining to the respondents' baseline characteristics are presented, with a particular emphasis on contraceptive choices and specific maternal characteristics (N = 33,054). With regard to contraceptive methods, the majority of respondents (69.2%) utilised non-LARCs, while only 30.8% opted for LARCs. With respect to maternal age, a significant proportion of the respondents were classified as being within the healthy or low-risk reproductive age category (69.2%), while the remaining 30.8% were categorised within the high-risk reproductive age group.

With respect to socioeconomic characteristics, the distribution of formal education indicates that the majority of respondents (60.4%) completed secondary education, followed by primary education (21.1%) and higher education (16.8%), while a negligible proportion reported no formal education (1.7%). With respect to employment status, it was found that more than half of the respondents were unemployed (61.0%), while 27.4% and 11.7% were employed in the informal and formal sectors, respectively. Finally, an examination of the reproductive history of the sample revealed a notable predominance of multiparous women, accounting for 79.5% of the total.

Table 2. The relationship between sociodemographic factors, health insurance

ownership and reproductive history in relation to the selection of contraceptive methods in Indonesia.

Variable	Contraceptive Method				P _{value}	OR (95% CI)
	Non LARCs		LARCs			
	n	%	n	%		
Usia						
Reproductive Age	16,5	72	6,3	27	<0.001	ref 1.60
Risk Age	5	.1	65	.9	<0.001	4 (1.52-7)
Residence						
Rural	11,1	71	4,4	28	<0.001	1.68 (1.52-5)
Urban	75	.7	09	.3		
Education						
No Formal Education	11,7	67	5,7	33	<0.001	ref 1.248 (1.190-1.308)
Primary Education	418	73	15	26	<0.001	1.308
Secondary Education	5,21	.6	0	.4	<0.001	0.937 (0.772-1.138)
Higher Education	5	74	1,7	25	<0.001	1.170 (0.969-2.511)
Occupation						
Unemployed	14,0	.8	54	.2	<0.001	1.414 (1.279-1.551)
Formal Sector	71	70	5,9	29	<0.001	1.279 (1.213-1.350)
Informal Sector	3,17	.4	09	.6	<0.001	1.946 (1.813-2.089)
Parity						
Primipara	8	57	2,3	42	<0.001	ref 1.532 (1.440-1.629)
Multipara	14,5					

As demonstrated in Table 2, the Chi-Square test indicated that all the maternal attributes analysed were statistically significant predictors of

contraceptive method selection in Indonesia ($p < 0.001$). Rather than acting in isolation, these sociodemographic and reproductive factors uniquely shape a woman's decision-making process.

The bivariate analysis demonstrates that women in the high-risk reproductive age group (<20 or >35 years old) have a higher preference for Long-Acting Reversible Contraception (LARCs) (37.9%) compared to those of healthy reproductive age (27.6%). Bivariate logistic regression indicated that women of high-risk reproductive age were 1.6 times more likely to adopt LARCs than their younger counterparts (OR=1.604; 95% CI=1.527–1.685). This finding is consistent with the conclusions of numerous preceding studies, which have demonstrated that older reproductive-aged women, or those who have attained their desired family size, are more likely to opt for long-term and highly effective methods of preventing high-risk pregnancies.

Theoretically, this phenomenon is driven by perceived reproductive risk and shifting family planning goals. Women in the high-risk age bracket, particularly those over 35, are highly aware of the escalated maternal and neonatal complications associated with advanced maternal age, such as gestational hypertension, diabetes, and chromosomal abnormalities (Glick et al., 2021; Yaman et al., 2025). In accordance with health behaviour theories, this heightened risk perception has been demonstrated to motivate individuals to adopt a greater number of secure protective health behaviours. Consequently, women in this group shift their contraceptive goals from spacing births (which typically utilise short-acting methods like pills or injections) to limiting childbearing permanently or

semi-permanently through LARCs (Eeckhaut et al., 2021; Glick et al., 2021).

The present study lends further support to the hypothesis that increased levels of formal education are significantly correlated with greater adoption of long-acting reversible contraceptives (LARC). In the present study, it was demonstrated that women with a higher level of education exhibited the highest utilisation of LARCs (42.6%) and were twice as likely to opt for long-term methods in comparison to women with no formal education (OR=2.069; 95% CI=1.704–2.511). It is noteworthy that women with a primary education exhibited marginally reduced odds of opting for LARCs in comparison to those with no formal education, although this association did not attain statistical significance. This overall pattern is consistent with global and domestic literature, which confirms that education is a pivotal determinant of modern contraceptive choices. This is due to the fact that more enlightened women possess better health literacy.

From a socio-cognitive perspective, formal education enhances a woman's capacity to acquire, process, and understand health information. It is evident that highly educated women possess the intellectual capacity to evaluate the long-term cost-efficiency and superior efficacy of LARCs in comparison to non-LARCs (Ghayur et al., 2025; Shrestha et al., 2025). Furthermore, education has been shown to dispel common myths, misconceptions, and excessive fears regarding the side effects of IUDs or implants (such as the belief that devices can migrate inside the body). Furthermore, higher education has been shown to engender greater autonomy among women, thereby enabling them to

exercise independent decision-making with regard to matters of their reproductive health and body sovereignty, and to a greater extent than might otherwise have been the case, to function without excessive reliance on traditional or patriarchal norms (Kirubarajan et al., 2022; Massay et al., 2024).

The employment status of women has been shown to have a significant impact on their choice of contraceptive method. A study of LARC usage revealed that women employed in the formal sector had the highest rate of LARC usage (42.6%) and exhibited nearly double the odds of adopting LARCs compared to unemployed women (OR=1.946; 95% CI=1.813–2.089). Furthermore, a significantly higher prevalence of LARC utilisation was observed among women engaged in informal sector activities when compared to the unemployed population (OR=1.279; 95% CI=1.213–1.350). This finding corroborates earlier research in the socio-economic domain, which posits that employment has been demonstrated to engender enhanced healthcare access and to influence contraceptive behaviour. This influence is attributed to the financial autonomy and structured environments that employment can engender.

The mechanism underlying this relationship can be elucidated through the prisms of financial stability and time-opportunity costs. Despite the Indonesian government's provision of subsidies for select family planning initiatives, residual expenses, such as transportation costs and private clinical fees, frequently persist. It is evident that women who have previously been in gainful employment tend to have superior financial access and are more likely to have health insurance coverage

that provides subsidies for LARC insertion. From an opportunity cost perspective, the employment of women in the formal sector is characterised by stringent work schedules. The unplanned pregnancy of such women can therefore have a substantial impact on their career continuity and income. Consequently, individuals rationally opt for LARCs due to their high efficacy and "get-it-and-forget-it" convenience, which eliminates the need for frequent visits to healthcare facilities, in contrast to the monthly injections or daily pills required by other methods (Barfield, 2021; Phonkacha & Pholphirul, 2026; Rosenberg, 2026).

Finally, reproductive history, as indicated by parity status, has been demonstrated to be significantly associated with contraceptive behaviour. Multiparous women demonstrated a higher utilisation rate of LARCs (32.5%) compared to primiparous women (23.9%). The analysis demonstrated that multiparous women exhibited 1.5 times higher odds of opting for LARCs in comparison to primiparous women (OR=1.532; 95% CI=1.440–1.629). This outcome corroborates a substantial corpus of demographic literature, which establishes that the number of living children is one of the strongest predictors of transitioning from short-acting to long-acting contraception.

The theoretical underpinning of this finding pertains to the shifting paradigm of family planning intent, which has evolved from "birth spacing" to "birth limiting." Primiparous women (i.e. women who have only given birth to one child) typically intend to have more children in the near future; hence, they opt for short-acting methods that offer an immediate return to fertility, despite higher failure rates (Green

et al., 2022). Conversely, multiparous women have frequently attained or surpassed their desired family size. For these women, the primary objective is to cease childbearing entirely. It is evident that LARCs provide a highly logical, reliable and stress-free solution for multiparous mothers seeking to establish their completed family structure (Fantaye et al., 2025; Laksono et al., 2022).

CONCLUSION

In conclusion, the present study demonstrates that maternal characteristics play a pivotal role in shaping contraceptive method selection among Indonesian women. All of the examined variables – maternal age, formal education level, employment status, and parity – show a statistically significant relationship with the adoption of Long-Acting Reversible Contraception (LARCs). A higher proportion of women of high-risk reproductive age, those with higher formal educational attainment, individuals working in the formal sector, and multiparous mothers opt for long-term contraceptive methods compared to their respective counterparts. These findings successfully address the research objective by highlighting that the shift toward long-acting reversible contraceptives (LARCs) is strongly driven by increased health literacy, financial autonomy, high opportunity costs of unplanned pregnancies, and the transition from birth spacing to permanent birth limiting.

In light of these findings, it is recommended that practical actions be directed towards healthcare policymakers and future researchers, with the aim of optimising family planning strategies. It is recommended that the Ministry of Health

and local community health centres devise bespoke counselling programmes, with a particular focus on younger, less-educated, unemployed, and primiparous women, who currently have a high reliance on short-acting methods that exhibit higher failure rates. Nevertheless, a principal limitation of this study is its reliance on secondary cross-sectional data, which prevents the establishment of causal relationships and leaves out crucial qualitative determinants. This study did not examine behavioural and relational factors, such as husband's support, cultural beliefs, and structural access to health facilities. It is therefore recommended that future researchers investigate these unmeasured variables using mixed-methods or qualitative approaches, such as Focus Group Discussions (FGDs) with both wives and husbands. This would allow a deeper, more holistic understanding of contraceptive decision-making in Indonesia to be gained.

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