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RESEARCH ARTICLE

Sociodemographic and psychosocial factors influencing Long-Term Contraceptive Method (LTCM) uptake among Indonesian women: A mixed-methods study

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Abstract

Despite the high effectiveness of long-term contraceptive methods (LTCM), participation rates in Indonesia–particularly in Mamuju–remain well below national targets, highlighting an urgent public health gap. This study addresses this issue by investigating the interplay of sociodemographic and psychosocial determinants shaping women's decisions to adopt LTCM, using a sequential explanatory mixed-methods design. A total of 120 women of reproductive age were purposively sampled for quantitative analysis, followed by in-depth interviews with 10 diverse informants. Quantitative findings identified parity as the most influential factor: women with three or more children were over nine times more likely to use LTCM, followed by age over 3 5, knowledge, and husband's support, while higher education showed an inverse association. Psychosocial variables such as value of children and perception of the ideal family, though culturally significant, did not independently predict LTCM use. Qualitative insights revealed that husband's approval and practical economic or health concerns often outweighed cultural ideals. These results suggest that interventions must prioritize tailored IEC for high-parity and older women, empower male partners, and strengthen service accessibility. Family planning programs in similar contexts should integrate couple-based counseling and community engagement to drive LTCM uptake and address persistent gaps in reproductive health outcomes.

Keywords: Long-Term Contraceptive Methods, Sociodemographic, Psychosocial, Mixed-Methods, Indonesia

Abstrak. Meskipun metode kontrasepsi jangka panjang (MKJP) memiliki efektivitas tinggi, tingkat partisipasi di Indonesia–khususnya di Mamuju–masih jauh di bawah target nasional, menyoroti adanya kesenjangan kesehatan masyarakat yang mendesak. Studi ini membahas isu tersebut dengan meneliti interaksi faktor sosiodemografi dan psikososial yang membentuk keputusan perempuan dalam menggunakan MKJP, melalui rancangan mixed-methods sequential explanatory. Sebanyak 120 perempuan usia reproduksi dipilih secara purposif untuk analisis kuantitatif, kemudian dilanjutkan dengan wawancara mendalam terhadap 10 informan yang beragam. Temuan kuantitatif mengidentifikasi paritas sebagai faktor paling berpengaruh: perempuan dengan tiga anak atau lebih lebih dari sembilan kali lipat kemungkinan menggunakan MKJP, diikuti oleh usia di atas 35 tahun, pengetahuan, dan dukungan suami; sedangkan pendidikan tinggi justru menunjukkan asosiasi negatif. Variabel psikososial seperti nilai anak dan persepsi keluarga ideal, meskipun bermakna secara budaya, tidak terbukti secara independen memengaruhi penggunaan MKJP. Temuan kualitatif menunjukkan bahwa persetujuan suami serta pertimbangan ekonomi dan kesehatan praktis seringkali lebih menentukan dibandingkan nilai budaya. Hasil ini menyarankan agar intervensi memprioritaskan KIE yang terarah untuk perempuan dengan paritas tinggi dan usia lanjut, memberdayakan pasangan laki-laki, serta memperkuat akses layanan. Program KB di konteks serupa perlu mengintegrasikan konseling berbasis pasangan dan keterlibatan komunitas untuk meningkatkan cakupan MKJP dan menutup kesenjangan kesehatan reproduksi yang masih ada.

Kata kunci: Metode Kontrasepsi Jangka Panjang, Sosiodemografi, Psikososial, Mixed-Methods, Indonesia

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INTRODUCTION

Family planning (FP) remains one of the most critical strategies for improving maternal and child health, managing population growth, and advancing women's rights globally (Cleland et al., 2012; United Nations, 2022). Long-Term Contraceptive Methods (LTCM)—including intrauterine devices (IUDs), implants, and sterilization—are highly effective, have low failure rates, and offer fewer complications compared to short-term or traditional contraceptive options (WHO, 2021). Nevertheless, the uptake of LTCM continues to be suboptimal in many developing regions, including Indonesia, where its coverage remains significantly below both the national average and established targets (BPS, 2021; Kemenkes RI, 2021).

Despite significant investments in FP programs, Indonesia still faces substantial disparities in contraceptive prevalence and method mix. In particular, Mamuju District in West Sulawesi has recorded an LTCM participation rate of just 12.1%, far beneath the national average of 23.1% and the government's 2021 target of 25.93% (Dinas Kesehatan Kabupaten Mamuju, 2022; BKKBN, 2020). This low coverage is concerning given that the Contraceptive Prevalence Rate (CPR) in Mamuju is already among the lowest in the province, potentially increasing the risk of unplanned pregnancies and adverse maternal outcomes.

A substantial and growing body of literature demonstrates that the decision to adopt long-term contraceptive methods (LTCM) is shaped not merely by the physical availability or accessibility of services, but by a dynamic and complex interplay of sociodemographic and psychosocial determinants (Herbert, 2015; Hameed et al., 2014; Sulistyiawati, 2013). Key sociodemographic factors—such as age, educational attainment, employment status, household income, parity, and place of residence—have repeatedly been shown to influence women's contraceptive behavior. Generally, women who are older, better educated, and have higher parity are more inclined to select LTCM options over short-term or traditional methods (Triyanto & Indriani, 2019; Jasa & Listiana, 2021; Rosidah, 2020). Studies from diverse settings confirm that education empowers women to seek health information, interact more effectively with providers, and make autonomous choices about reproductive health (Bongaarts et al, 2012; Wulifan et al., 2016). Similarly, higher parity is often associated with increased willingness to limit or space childbirth, thus motivating the adoption of more effective and durable contraceptive options (Idris et al., 2025).

Beyond these sociodemographic determinants, psychosocial variables play a pivotal, though often underexplored, role in shaping contraceptive decision-making. Factors such as knowledge about contraceptive methods, perceptions of method efficacy and side effects, attitudes toward family planning, subjective norms within social networks, perceived value of children, and especially spousal or familial support are frequently cited as crucial (Setiasih et al., 2016; Yuanti, 2018; Darteh et al., 2014; Mutumba et al., 2018). A systematic review by Blackstone et al. (2017) highlights that women's autonomy in reproductive decision-making is often conditioned by their relationships and the support—or opposition—received from husbands, extended family, and community leaders. In many low- and middle-income countries, including Indonesia, a woman's intention or ability to use LTCM is frequently mediated by her husband's approval or involvement in contraceptive counseling (Anindita et al., 2022; Blanc, 2001; Withers et al., 2015). Moreover, community norms regarding the ideal family size, the value placed on sons versus daughters, and religious or cultural interpretations of contraception can either reinforce or undermine women's agency (Altindag, 2016; Hindin et al., 2014).

In the local context of Mamuju, these factors may be further compounded by unique cultural and structural influences. Mamuju is marked by strong traditional and religious values, pervasive patriarchal family structures, and limited access to comprehensive reproductive health information and counseling, which together contribute to distinct patterns of contraceptive use (Kasnodihardjo, 2014; Ihsani et al., 2019; Kusnali et al., 2024). Cultural expectations regarding the ideal family size, gender preferences for children, and intergenerational transmission of values often serve as powerful social scripts that can discourage the uptake of LTCM, especially when large families or male offspring are highly prized (Kiranantika, 2016; Santrock, 2007; Dinas Kesehatan Kabupaten Mamuju, 2022). Furthermore, weaknesses in the health system—such as shortages of skilled providers, lack of privacy, and periodic stock-outs of contraceptive commodities—create practical barriers to access and the continued use of LTCM, disproportionately affecting women in rural or underserved areas (Gayatri, 2023; Gayatri, 2022).

Theoretical models offer essential frameworks for interpreting these complex dynamics. This study adopts both the Theory of Planned Behavior (TPB; Ajzen, 1991) and the Health Belief Model (HBM; Rosenstock, 1974), which have proven valuable in reproductive health research across cultures (Carpenter, 2010; Fentie et al., 2023). The TPB posits that behavioral intentions—such as the choice to use LTCM—are influenced by attitudes toward the behavior, perceived social norms (including support from spouses, family, and peers), and perceived behavioral control (Ajzen, 1991). The HBM complements this by emphasizing how perceived susceptibility, perceived severity of unintended pregnancy, perceived benefits of LTCM, and perceived barriers (including fears of side effects or cultural disapproval) collectively shape health behavior (Rosenstock, 1974; Glanz et al., 2015). By integrating these frameworks, the present study seeks to not only identify which factors most strongly predict LTCM use, but also to understand the underlying social, cultural, and psychological mechanisms that drive or hinder adoption—particularly in a setting where local norms and system-level challenges may exert powerful influences.

Despite numerous studies investigating the determinants of contraceptive use in Indonesia, several gaps remain. First, there is limited empirical research that simultaneously examines both sociodemographic and psychosocial factors—particularly in culturally unique and underserved areas such as Mamuju. Second, few studies have integrated quantitative and qualitative approaches to elucidate not only "what" factors matter but also "how" and "why" these factors influence women's decisions in real-world settings (Dewi & Notobroto, 2014; Syahidah et al., 2024). Third, there is a lack of evidence about the relative importance of these factors and how local cultural norms and policy environments mediate their effects.

Based on these considerations, this study aims to (1) identify the most influential sociodemographic (age, education, parity) and psychosocial (knowledge, attitude, perception of the ideal family, value of children, husband's support) factors affecting LTCM participation among women of reproductive age in Mamuju Subdistrict, and (2)

explore how these factors interact within the local cultural context to shape contraceptive choices. The research addresses the following questions: Which sociodemographic and psychosocial determinants are most predictive of LTCM use among women of reproductive age in Mamuju? How do local cultural, familial, and health system factors mediate these relationships? The findings are expected to inform evidence-based interventions, policy development, and targeted family planning strategies to increase LTCM uptake in similar low-coverage contexts.

METHODS

This study adopted a mixed-methods sequential explanatory design to comprehensively examine the sociodemographic and psychosocial factors influencing women's participation in Long-Term Contraceptive Methods (LTCM) programs in Mamuju Subdistrict. This approach allowed for quantitative data to provide breadth and generalizability, while qualitative data added depth and contextual understanding (Creswell & Plano Clark, 2018).

Setting and Participants

The research was conducted in Mamuju Subdistrict, West Sulawesi, Indonesia—a region characterized by diverse sociodemographic backgrounds and varied access to family planning services. The target population comprised women of reproductive age (15–49 years) who were married or living with a partner and eligible for participation in family planning programs. Inclusion criteria included women who: (1) resided in Mamuju for at least one year; (2) were not currently pregnant; and (3) consented to participate. Exclusion criteria were women with cognitive impairment or serious health conditions that could hinder participation.

Sampling Technique and Sample Size

A total of 120 respondents participated in the quantitative phase. Participants were selected using a purposive sampling technique to ensure that those included had relevant experiences with family planning decisions, particularly regarding LTCM (Sugiyono, 2015). The minimum required sample size was estimated using a power analysis for logistic regression, with $\alpha = 0.05$, power $(1-\beta) = 0.80$, and an expected medium effect size (Cohen's $d \approx 0.5$), based on previous studies on contraceptive uptake (Triyanto & Indriani, 2019). This ensured adequate statistical power to detect meaningful associations between key variables.

For the qualitative phase, participants for in-depth interviews were purposively drawn from the quantitative sample to represent a range of ages, educational backgrounds, parities, and experiences with LTCM. Informants were selected until thematic saturation was achieved, resulting in 10 key informants. Selection was guided by diversity in LTCM participation and willingness to share personal insights.

Data Collection Procedures

Quantitative data were collected using a structured questionnaire developed based on validated instruments from previous research (Setiasih et al., 2016; Jasa & Listiana, 2021). The questionnaire included items on sociodemographic variables (age, education, parity, occupation) and psychosocial factors (knowledge, attitudes, value of children, husband's support, perception of the ideal family). Content validity was established through expert review by two public health and family planning specialists. A pilot test was conducted with 20 respondents outside the main study area to assess clarity, reliability, and internal consistency (Cronbach's alpha for main scales > 0.75).

Qualitative data were collected through in-depth, semi-structured interviews. Each interview lasted between 45–60 minutes and was audio-recorded with participants' consent. The interview guide explored: (1) personal and familial motivations for contraceptive choices, (2) experiences and perceptions regarding LTCM, (3) perceived barriers and facilitators, and (4) the influence of cultural and gender norms. All interviews were conducted in the local language by trained interviewers and transcribed verbatim.

Data Analysis

Quantitative data were analyzed using SPSS version 26. Univariate analysis described respondent characteristics. Bivariate associations between independent variables (sociodemographic and psychosocial factors) and LTCM participation were examined using chi-square tests. Variables with $p < 0.25$ were entered into a multivariate logistic regression model to identify independent predictors of LTCM use, with results presented as odds ratios (OR) and 95% confidence intervals.

Qualitative data were analyzed through thematic analysis (Braun & Clarke, 2006). The process involved: (1) familiarization with transcripts; (2) coding of meaning units; (3) identification of key themes; and (4) synthesis of findings. Coding was conducted independently by two researchers and discrepancies were resolved by discussion.

Integration of Quantitative and Qualitative Data

Integration was achieved during the interpretation and discussion phase using joint display analysis (Fetters et al., 2013), allowing for side-by-side comparison of quantitative and qualitative findings. Key quantitative results informed areas of qualitative inquiry, and qualitative themes were used to contextualize and explain patterns observed in the survey data. This triangulation enhanced the validity and comprehensiveness of the study's conclusions.

Ethical Considerations

The study protocol received ethical approval from the Institutional Review Board of Health Polytechnics of Mamuju. Written informed consent was obtained from all participants prior to data collection. Participants were assured of confidentiality, the voluntary nature of participation, and the right to withdraw at any time without consequence. All personal data were de-identified and securely stored in compliance with data protection standards.

RESULTS OF STUDY

Quantitative Data Analysis Result

A total of 120 women of reproductive age in Mamuju Subdistrict participated in this study. The descriptive statistics revealed a diverse sample (see Table 1). Most

participants (58.3%) belonged to the low-risk reproductive age group (20–35 years), while the remainder (41.7%) were above 35 years old. Regarding educational attainment, nearly half (49.2%) had only basic education, 33.3% had higher education, and 17.5% had completed secondary education. Parity was also varied, with 43.3% of respondents having three or more children, and 56.7% having two or fewer children. In terms of psychosocial variables, 63.3% of women demonstrated good knowledge about LTCM, and 60.8% reported receiving support from their husbands. Bivariate analysis using chi-square tests demonstrated significant associations between LTCM participation and several variables, including age (p = 0.001), education (p = 0.040), parity (p = 0.000), knowledge (p = 0.013), and husband's support (p = 0.038). However, no significant association was observed for behavior (p = 0.129), perception of the ideal family (p = 0.182), or value of children (p = 0.179).

To further examine independent predictors of LTCM participation, a multivariate logistic regression analysis was performed (see Table 2). Parity emerged as the most influential factor, with women having three or more children being 9.17 times more likely to use LTCM than those with fewer children (Exp(B) = 9.172, 95% CI: 3.39–24.84, p < 0.001), indicating a very strong effect size. Age was also a significant predictor, as women over 35 years were 2.58 times more likely to adopt LTCM (Exp(B) = 2.579, 95% CI: 1.00–6.65, p = 0.05). In contrast, higher education was associated with a lower likelihood of LTCM use (Exp(B) = 0.48, 95% CI: 0.26–0.88, p = 0.017), which may reflect a tendency for more educated women to consider a broader range of contraceptive options or exercise greater autonomy in decision-making. Good knowledge about LTCM proved to be a strong protective factor against non-use (Exp(B) = 0.041, 95% CI: 0.002–0.711, p = 0.028), suggesting that well-informed women are significantly more likely to participate in LTCM programs. Moreover, husband's support significantly increased the likelihood of LTCM participation (Exp(B) = 0.301, 95% CI: 0.107–0.850, p = 0.023). On the other hand, behavior, perception of the ideal family, and value of children did not reach statistical significance in the multivariate model, and the wide confidence intervals for some of these non-significant predictors indicate greater heterogeneity and less consistent effects within the sample.

Table 1 Characteristics of respondents and bivariate analysis results

Variabel	Family Planning (FP) Acceptor				Total		P
	Non-LTCM		LTCM				
	f	%	f	%	f	%	
Year							
High Risk (>35 years)	19	38,0	31	62,0	50	100	0,001
Low Risk (20–35 years)	48	68,6	22	31,4	70	100	
Education							
Higher/Advanced	36	45,0	44	55,0	80	100	0,040
Basic	17	42,5	23	57,5	40	100	
Parity							
Number of Children ≥3	33	63,4	19	36,6	52	100	0,000
Number of Children 0-2	20	29,4	48	79,6	68	100	
Knowledge							
Poor	12	27,3	32	72,7	44	100	0,013
Good	41	53,9	35	40,1	76	100	
Behavior							
Less Supportive	10	55,6	8	44,4	18	100	0,129
Supportive	43	42,1	59	57,9	102	100	
Perception of Ideal Family							
Poor	11	40,7	16	59,3	27	100	0,182
Good	42	45,2	51	54,8	93	100	
Value of Children							
Low	13	27,7	34	72,3	47	100	0,179
High	20	27,4	53	72,6	73	100	
Husband Support							
Less Supportive	18	38,3	29	61,7	47	100	0,038
Supportive	35	47,9	38	42,1	73	100	

Table 2 Multivariate Analysis Results

Variabel	B	*P*	*Exp (B)*	*95% CI for Exp (B)*	
				Lower	*Upper*
Age	.947	0,050	2.579	1.001	6.646
Education	-.736	0,017	.479	.262	.875
Parity	2.216	0,000	9.172	3.386	24.841
Knowledge	-3.185	0,028	.041	.002	.711
Behavior	.682	0,227	1.978	.654	5.981
Perception of Ideal Family	1.041	0,582	2.831	.070	115.238
Value of Children	-2.023	0,353	.132	.002	9.456
Husband Support	-1.200	0,023	.301	.107	.850
Constant	6.779	0,045	878.925		

Overall, these findings emphasize that among all factors analyzed, parity exerts the strongest effect on LTCM adoption, followed by age, knowledge, and husband's support. The large odds ratio for parity highlights that women with more children are much more likely to choose LTCM, likely due to an increased motivation to limit or space births in response to perceived or experienced reproductive risks. Statistically significant associations were supported by narrow confidence intervals, especially for parity, which attests to the robustness and reliability of these results. Meanwhile, the lack of significant effects for behavior, value of children, and perception of the ideal family indicates that, within this population, structural and interpersonal factors are more decisive in influencing LTCM participation than individual attitudes or traditional family values.

Qualitative Data Analysis Results

To enrich and contextualize the quantitative results, in-depth interviews were conducted with ten informants (coded as P1–P10) selected to reflect diversity in age, parity, educational background, and experience with LTCM. Thematic analysis was conducted following Braun and Clarke (2006), yielding insights on perception of the ideal family, value of children, and the crucial role of husband's support.

Perception of the Ideal Family

Although the perception of an ideal family size was not a significant quantitative predictor, qualitative data revealed its nuanced role in participants' decision-making. Most informants described an ideal family as having two or three children, aligning with current government family planning messaging. For example, P2 stated, "*For me, two children is enough, a boy and a girl if possible, so life is not too heavy.*" Similarly, P5 said, "*I think three is ideal, but sometimes things happen. We just follow what God gives.*" However, decisions about LTCM were often shaped less by abstract ideals and more by economic or health considerations. As P7 shared, "*I used to want two children, but when the third came, I realized I needed to prevent another, so I asked the midwife for an implant.*" This supports the Theory of Planned Behavior (TPB), in which attitudes alone are not sufficient unless accompanied by strong intentions, normative approval, and perceived control.

Value of Children

While the statistical analysis found that the value of children was not a significant predictor of LTCM use, qualitative interviews revealed the layered and multidimensional ways in which children are valued within families. Informants described children as sources of social status, economic security, cultural continuity, religious blessing, and psychological fulfillment.Socially, several women emphasized how having children increased their sense of belonging and social capital. P7 reflected, "*I'm no longer embarrassed to talk with other mothers–I can relate to the conversation now that I have a child, it gives me more confidence.*" For some, children also reinforced marital stability, as P1 stated, "*A child can strengthen the bond with my husband–it makes you think twice before separating.*"

Economically, children were often seen as long-term investments and a form of old-age security. P3 expressed, "*That's the hope–they can help their parents once they start working.*" Similarly, P10 added, "*Of course we hope so (that they will support us in old age), but it also depends on the child's situation–still, as parents, we'd be happy to receive help.*" The division of roles was also noted, as P4 observed, "*Daughters can help with housework, sons can help their father.*" The expectation that "someone will take care of us when we're old" (P2) was a recurring theme. Culturally, the importance of lineage and heritage shaped perceptions of child value. As P6 explained, "*The children's father is Batak, so there must be someone to carry on the lineage.*" This was echoed by P3: "*To continue the family line, to have descendants.*" Religiously, children were understood as both a blessing and a trust from God, with implications for family planning. P3 articulated, "*I believe every child comes with their own blessings–even if I'm using FP and get pregnant again, I'll see it as a blessing and a responsibility.*" For others, religious norms were an encouragement for having offspring: "*Children are a trust from God–and it's also a religious encouragement to have offspring*" (P6).

Psychologically, children were described as sources of profound joy and meaning in life. As P7 shared, "*Life feels complete after having a child,*" while P9 noted, "*They're the cure to exhaustion.*"

Despite these strong cultural, economic, and emotional valuations, practical realities and spousal opinion frequently overrode the abstract value of children in actual contraceptive choices. As P6 stated, "Of course, children are important, but I have to think about our financial ability and my own health first." This pragmatic attitude demonstrates that, while the value of children is high, it is often subordinated to considerations of maternal health, financial readiness, and–crucially–the husband's support. In summary, although the value of children is culturally and emotionally significant, it was not a decisive factor for LTCM use among women in this setting. Instead, the decision was more directly shaped by practical concerns–economic ability, health considerations, completed family size–and especially by the opinion and support of the husband. This suggests that effective family planning interventions must go beyond value-based messaging and address the interpersonal and structural realities that more directly influence contraceptive behavior.

Husband's Support and Subjective Norms

The most consistently strong theme was the influence of husband's support. Informants widely described how their spouse's attitude determined the possibility and type of contraceptive method adopted. P3 shared, "*I only started using the IUD after my husband agreed and took me to the clinic.*" P8 recounted, "*Before, my husband did not agree. I felt worried and waited until he gave his permission.*" Conversely, P10 revealed the challenge of covert use, stating, "*I used birth control injections without my husband knowing because he refused at first, but after some time he accepted.*" This centrality of the husband's role demonstrates how subjective norms and power dynamics operate, aligning with the TPB framework: intentions are shaped not only by personal attitudes, but also by perceived social pressures and the approval of significant others.

The interviews provided nuanced explanations for why variables such as perception of the ideal family and value of children were not significant predictors in the regression model–practical concerns and interpersonal support often override ideals and values in actual contraceptive choices. Moreover, qualitative insights confirm and elaborate on the strong effect of husband's support, as found in the

statistical analysis, and highlight the complex negotiation women undertake within their social and familial contexts. Thus, the qualitative findings reinforce that interventions to promote LTCM need to address not only knowledge and attitudes, but also the involvement and empowerment of male partners and broader family norms.

DISCUSSION

This study provides important empirical evidence on the determinants of participation in Long-Term Contraceptive Methods (LTCM) among women of reproductive age in Mamuju, integrating sociodemographic and psychosocial dimensions within a local cultural context. Consistent with previous research in Indonesia and other low- and middle-income countries, our findings demonstrate that parity, age, knowledge, and husband's support are the strongest predictors of LTCM uptake, while educational attainment shows a more nuanced, context-dependent effect (Triyanto & Indriani, 2019; Jasa & Listiana, 2021; Dewi & Notobroto, 2014; Hameed et al., 2014; Blackstone et al., 2017).

From a conceptual standpoint, the strong association between higher parity and LTCM adoption reflects a broader pattern in which women with more children perceive greater need for limiting or spacing births, primarily due to health risks and the desire to secure economic stability (Triyanto & Indriani, 2019; Prawirohardjo & Wiknjosastro, 2014). Our results indicate that women with three or more children are over nine times more likely to choose LTCM, underscoring the relevance of parity as a key trigger for transitioning from short-term to long-term methods. This is further explained by qualitative findings, where respondents frequently cited both exhaustion from repeated pregnancies and the wish to avoid additional health and financial burdens as motivating factors. These insights reinforce the importance of targeted counseling for high-parity women, particularly in settings where multiparity remains common.

The effect of age was also significant: women over 35 years old were more likely to choose LTCM, supporting evidence that contraceptive preferences evolve across the reproductive lifespan (Dewi & Notobroto, 2014; Idris et al., 2025). Older women in our sample expressed greater concern about the risks associated with further pregnancies and viewed LTCM as a safer, more convenient solution for achieving their fertility intentions. This finding aligns with the Health Belief Model, which posits that perceived susceptibility to health risks increases motivation to engage in protective behaviors (Glanz et al., 2015; Rosenstock, 1974).

Education's influence on LTCM use was complex. While higher education generally increases access to health information and autonomy in reproductive decision-making (Bongaarts et al, 2012; Wulifan et al., 2016), our study found an inverse association in the multivariate model. This may reflect the possibility that more educated women in Mamuju have wider access to diverse contraceptive options or may postpone or space births for career reasons, thus not always opting for LTCM as their first choice (Rosidah, 2020; Carpenter, 2010). Qualitative data suggest that education empowers women to evaluate contraceptive methods critically but that final decisions are shaped by practical considerations, including family planning service availability and partner involvement.

Knowledge about LTCM emerged as a decisive factor, corroborating a large body of literature that links accurate, comprehensive reproductive health knowledge with higher rates of contraceptive adoption and satisfaction (Setiasih et al., 2016; Dewi & Notobroto, 2014). Women who possessed detailed understanding of LTCM's benefits and side effects expressed greater confidence and willingness to adopt these methods, often attributing their decision to prior counseling or peer recommendations. This underlines the value of effective information, education, and communication (IEC) strategies as a core component of family planning programs.

Perhaps the most striking finding of both quantitative and qualitative analysis was the pivotal role of husband's support. In line with previous research (Yuanti, 2018; Anindita et al., 2022; Blanc, 2001), our study confirms that spousal approval, encouragement, and practical involvement are fundamental enablers for LTCM uptake. Many women reported that their contraceptive choices depended on explicit approval or encouragement from their husbands, while a few described covert use or negotiation when support was lacking. This highlights the centrality of subjective norms, as theorized by the Theory of Planned Behavior (Ajzen, 1991), and the ongoing importance of engaging men and couples–rather than solely targeting women–in family planning interventions (Withers et al., 2015).

Conversely, psychosocial factors such as perceived value of children and perception of the ideal family, while culturally salient, did not show significant statistical association with LTCM use in this context. Our qualitative analysis revealed that, despite deep emotional and cultural attachment to children as sources of social status, economic support, and religious blessing (Kasnodihardjo, 2014; Santrock, 2007), most women's contraceptive decisions were ultimately pragmatic–driven by health, economic, and interpersonal factors. This finding provides nuance to previous literature that sometimes overstates the power of values and ideals, illustrating the value of mixed-methods designs in illuminating how theoretical influences may be mediated or overridden by contextual realities (Syahidah et al., 2024).

Cultural, gender, and family structure remain highly relevant in shaping both opportunities and constraints for LTCM adoption. In Mamuju, traditional patriarchal norms and limited access to reproductive health services create barriers, especially for women with low autonomy or inadequate support (Ihsani et al., 2019; Kusnali et al., 2024). Women's narratives highlighted both the empowering and restrictive aspects of family planning negotiations within couples and families. These insights echo global findings that social context–including male involvement, family consensus, and culturally sensitive counseling–must be central in designing interventions to increase LTCM uptake (Herbert, 2015; Altindag, 2016; Hameed et al., 2014).

This study's novelty lies in its use of a mixed-methods sequential explanatory design, which enables an integrated understanding of the mechanisms through which sociodemographic and psychosocial factors shape LTCM participation. By triangulating survey and interview data, the research highlights not only what matters most, but also how and why women make contraceptive choices in a setting where both structural and cultural barriers persist. The findings strongly support the need for couple-focused IEC approaches, ongoing training for health providers in culturally competent counseling, and system-level policies

to address supply-side constraints (Gayatri, 2023; Gayatri, 2022).

Despite its contributions, the study has limitations that should be acknowledged. The use of self-reported data may introduce recall or social desirability bias. The cross-sectional design restricts causal inference, and the purposive sampling in one district limits generalizability to other contexts with different cultural or service environments. Future research should consider longitudinal and multi-site designs to validate and extend these findings, as well as interventions targeting male involvement and the use of digital health tools for family planning education. In summary, the results of this study deepen understanding of LTCM participation by showing that parity, age, knowledge, and husband's support are critical determinants—shaped by, but not reducible to, cultural and psychosocial contexts. The integration of theory, mixed-methods analysis, and contextual reflection provides robust evidence for the design of more effective, culturally responsive family planning policies and interventions.

CONCLUSION

This study demonstrates that parity is the most dominant factor influencing women's participation in Long-Term Contraceptive Method (LTCM) programs, followed by age, knowledge, and husband's support. Women with three or more children were substantially more likely to choose LTCM, reflecting a high perceived need to limit or space births due to economic and health considerations. Age also played a significant role, with women over 35 years demonstrating a higher tendency to adopt LTCM, consistent with increased perceived reproductive risks in later years. Knowledge about LTCM and the presence of husband's support both emerged as critical enabling factors, confirming that effective decision-making in family planning is not only an individual process but one strongly embedded in social and relational contexts.

A novel contribution of this research lies in its integration of quantitative and qualitative methods to provide a holistic understanding of the factors affecting LTCM use. The qualitative findings deepened insight into the mechanisms underlying non-significant predictors in the statistical model—such as value of children and perceptions of the ideal family—showing that practical concerns, interpersonal negotiations, and cultural norms often supersede idealized family values. The findings underscore the value of adopting both the Theory of Planned Behavior and the Health Belief Model to understand the interplay of attitudes, subjective norms, perceived control, and knowledge in shaping contraceptive behavior.

Based on these findings, several actionable recommendations can be proposed. First, family planning programs should prioritize high-parity and older women for targeted counseling and outreach, as they are most likely to benefit from LTCM adoption. Second, strengthening knowledge about LTCM—through culturally sensitive information, education, and communication (IEC) activities—should be a core programmatic strategy. Third, actively engaging husbands and other key family members in counseling sessions and IEC campaigns can create supportive environments for women's autonomous decision-making and sustained LTCM use. Community-based education that addresses gender norms and the practical realities of family life can enhance both male involvement and couple-based decision-making, in line with best practices identified in global literature.

Additionally, training health workers to provide nonjudgmental, client-centered counseling that considers women's life stages, fertility intentions, and social realities is vital. To address structural barriers, local governments and stakeholders must ensure the availability and accessibility of LTCM services, especially in underserved areas like Mamuju. The approaches and interventions developed in this study are potentially generalizable to similar cultural and service settings elsewhere in Indonesia and other low- and middle-income countries facing comparable challenges.

Future research should explore longitudinal designs and multi-site studies to validate and extend these findings, investigate the dynamics of couple communication, and test interventions that directly address male engagement and digital health innovations in family planning education. In summary, improving LTCM participation requires an integrated approach that combines evidence-based IEC, couple-focused counseling, and systemic support to empower women in making informed, autonomous, and sustainable contraceptive choices. These efforts are essential to achieving national and global goals for reproductive health, gender equity, and sustainable development.

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DECLARATIONS

Ethics Approval and Consent to Participate

This study was conducted in accordance with ethical principles for research involving human participants. All respondents were provided with comprehensive explanations regarding the study's objectives, procedures, benefits, and potential risks. Verbal and written informed consent was obtained from each participant prior to their involvement. Participants were informed of their right to withdraw at any time without penalty, and confidentiality of personal data was strictly maintained for research purposes only.

Competing Interests

The authors declare that they have no competing interests.

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Availability of Data and Materials

All relevant data supporting the findings of this study are presented within the manuscript. Additional raw data can be made available by the corresponding author upon reasonable request.

Use of Artificial Intelligence-Assisted Technology

During the drafting of this paper, the author used AI assistive technologies, namely Grammarly, DeepL, and Gemini to help develop initial ideas, improve grammar, spelling, and writing style. All analysis, ideas, and arguments in this paper are the original work of the author.

Author Contributions

Ajeng Hayuning Tiyas: Conceptualization, study design, data collection, data analysis, manuscript drafting, and critical revision of the manuscript. Erna Amin: Supervision, methodological guidance, data interpretation, and critical review of the manuscript for important intellectual content. Yulianti Anwar: Data collection, literature review, preparation of tables and figures, and contribution to the writing of the discussion and conclusion sections.

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