



Implementation of the TENANG Method as a Participatory Educational Approach in Self-Monitoring of IUD Strings

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Abstract

The intrauterine device (IUD) is a highly effective long-term contraceptive; however, failure still occurs, often due to limited acceptor involvement in routine self-monitoring. Existing educational approaches tend to focus on information delivery and lack structured, participatory components that support consistent self-monitoring practices. This study aims to analyze the effectiveness of the TENANG (Find the Thread) method as a participatory educational approach to improve knowledge and the application of IUD string self-monitoring among contraceptive acceptors. A quasi-experimental design with a one-group pre-test and post-test was used with 336 IUD acceptors in Banjarsari District. The intervention was conducted over three months using structured education and monitoring tools. The results showed a significant increase in knowledge after the intervention ($\chi^2 = 325.000$; $p < 0.001$), with 94.9% of respondents attaining a high level of knowledge. In addition, 75.3% of participants applied the TENANG method. Educational level was identified as a significant factor influencing implementation ($p = 0.002$). The study highlights the novelty of integrating participatory education with structured self-monitoring tools in improving contraceptive-related behavior. The TENANG method demonstrates potential as a practical and scalable approach to strengthen acceptor involvement and enhance the effectiveness of long-term contraceptive use.

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Introduction

The Family Planning (FP) program is an essential strategy for controlling population growth while simultaneously enhancing the quality of life of communities. The concept of family planning aligns with religious values, as emphasized in the Quran: specifically, Surah An-Nisa verse 1, which underscores the importance of safeguarding lineage, and Surah Al-Baqarah verse 233, which addresses the responsibilities of parents in child-rearing. Consequently, the FP program is not merely

a government policy but is also underpinned by a robust normative foundation. The Indonesian government, through the National Population and Family Planning Board, consistently encourages society to raise awareness of the importance of family planning as a means to improve reproductive health and family welfare (United Nations Population Fund, 2021; WHO, 2020).

One of the most widely used contraceptive methods is the intrauterine device (IUD), which is recognized for its high effectiveness in preventing long-term pregnancies. Nevertheless, the failure rate of IUD use is still recorded in various regions, including Surakarta. Data from the Surakarta Health Office indicate that in 2022, there was a 15% failure rate of IUDs among total acceptors, resulting in unwanted pregnancies, an increased risk of pregnancy complications, and an additional economic burden on families (Wahyuningsih et al., 2022). This phenomenon is consistent with findings that IUD expulsion risk may vary by insertion timing, delivery type, and IUD type, thereby highlighting the importance of adequate counseling, follow-up, and acceptor involvement in monitoring the device's position after insertion (Averbach et al., 2020).

Previous studies indicate that IUD failure is not solely due to technical factors related to insertion or device maintenance. Instead, several non-technical factors also contribute to this problem, including limited understanding of how the IUD works, inadequate access to relevant education, and low acceptor participation in routine monitoring activities (Zeal et al., 2022). Therefore, the active involvement of acceptors in the monitoring process is essential to reduce the risk of IUD failure, particularly when counseling tools are designed to be patient-centered and responsive to users' contraceptive needs and preferences (Meekers et al., 2024).

To address this issue, this study proposes implementing the TENANG Method, or Find the Thread, as an innovation in the management of IUD contraceptive acceptors. Self-examination of IUD threads is a crucial step to ensure that the contraceptive device remains in the correct position and can be positioned as part of reproductive health self-care, because self-care interventions support individuals' active role in monitoring and managing sexual and reproductive health needs (Sundewall et al., 2025). Prior to conducting this examination, women are advised to wash their hands with soap and running water to reduce the risk of infection and maintain hygiene during the assessment (WHO, 2022). Subsequently, adopting a comfortable body position, such as squatting, sitting on the toilet, or standing with one leg raised, can facilitate palpation. The index finger should then be gently inserted into the vagina until it reaches the cervix, which feels round and firm, resembling the tip of the nose. The IUD threads are typically discernible as thin strands extending from the cervix, and changes in thread palpability or length should be considered as signs that require further assessment according to intrauterine contraception guidance (Faculty of Sexual & Reproductive Healthcare, 2023). Normal conditions are indicated by threads that feel soft and consistent in length. However, if the threads are not palpable, feel longer or shorter, or if a hard part of the IUD is felt, this may suggest possible displacement and requires further assessment by healthcare professionals (Centers for Disease Control and Prevention, 2024). This examination should be conducted routinely, particularly after menstruation or at least once a month. The primary objective is to ensure that the position of the IUD remains stable, thereby maintaining contraceptive effectiveness, since IUDs are considered safe and highly effective long-acting reversible contraceptive methods that prevent pregnancy without requiring daily user action (Kupoluyi, 2025). If any abnormal conditions are detected, such as absent or altered IUD strings, suspected expulsion, abdominal pain, unusual bleeding, or foul-smelling vaginal discharge, patients are advised to consult healthcare professionals promptly because missing or changed strings may indicate IUD displacement, expulsion, or other device-related complications (Myo & Nguyen, 2023).

Thus, education regarding self-examination of IUD threads is an integral part of safe long-term contraceptive services, as it enhances early detection of device displacement and prevents future complications. This approach emphasizes the importance of structured education for acceptors to ensure the IUD's presence and position, using simple technology in the form of a self-recording

control sheet. This approach emphasizes the importance of structured education for acceptors to ensure the presence and position of the IUD using simple self-monitoring tools, as educational media for long-acting contraceptive methods have been shown to improve women's knowledge of implants and IUDs (Amna et al., 2026).

The TENANG method is expected not only to reduce the failure rate of intrauterine devices but also to increase acceptors' engagement in family planning programs overall. This is relevant to the World Health Organization report, which emphasizes that participatory involvement of acceptors can increase the effectiveness of contraception (WHO, 2020). Rahayu (2023) further states that consistent self-monitoring can improve acceptor adherence to routine follow-up visits, a key factor supporting the successful use of IUDs. Several studies conducted in Indonesia reinforce the urgency of this approach. Kusumaningrum et al. (2020) found that the use of long-acting reversible contraception, including IUDs, is associated with positive attitudes and interpersonal communication, indicating that educational and communication-based strategies are important for strengthening acceptor engagement in contraceptive use. Meanwhile, the National Population and Family Planning Board underscores the necessity of a participatory model in family planning programs. Similar findings have been reported by Narasimhan et al. (2024) and the United Nations Population Fund (2021), highlighting the importance of self-care-based interventions to strengthen women's participation, autonomy, and access to reproductive health support within contraceptive services.

In addition to monitoring factors, the success of self-control methods is also influenced by sociodemographic factors. Education, age, socioeconomic status, access to information, and media exposure are significant variables that influence women's knowledge, attitudes, and intentions regarding contraceptive use (Harzif et al., 2023). Therefore, the novelty of this study lies in integrating educational aspects, simple technology, and sociodemographic factors within a comprehensive framework. Consequently, the implementation of the TENANG Method is expected to significantly contribute to the development of new strategies for family planning programs in Indonesia. This approach not only emphasizes medical aspects but also encourages active community involvement. The findings of this study are expected to serve as a foundation for developing more participatory, effective, and sustainable reproductive health policies.

Materials and Methods

Research Design

This study employed a quasi-experimental design with a one-group pretest-posttest. The independent variable in this study was the application of the TENANG method over three months, while the dependent variable was knowledge of the TENANG method before and after the educational intervention. Data on the characteristics of IUD contraceptive acceptors, including age, educational level, and contraceptive participation status, were also collected. This study comprises four stages: pre-test, intervention, post-test, and implementation. In Stage I, a pre-test assessing knowledge of the TENANG Method is conducted among IUD contraceptive acceptors. Stage II involves providing an educational intervention on the TENANG Method. Stage III entails administering a post-test on knowledge of the TENANG Method using a questionnaire. Finally, Stage IV encompasses monitoring the application of the TENANG Method over three months, using a checklist instrument for the contraceptive control card.

Population and Sample

The population in this study comprises all IUD contraceptive acceptors in Banjarsari District in 2024, totaling 2,089 individuals. The sample was determined using Slovin's formula, with a 5% margin of error, resulting in a minimum of 336 respondents. The application of Slovin's formula is deemed appropriate for research involving a large population and limited resources. The selection of

respondents was aligned with the inclusion criteria, which are (1) participants of the Family Planning Safari program, and (2) individuals capable of effective communication, as well as the exclusion criteria, which include (1) independent contraceptive acceptors, and (2) respondents with a history of contraceptive failure.

Data Collection Techniques

The data collected is primary data obtained through questionnaires. At the outset of the study, the characteristics of IUD contraceptive acceptors were determined, encompassing age, educational level, contraceptive participation status, duration of IUD use, the last contraceptive method employed, and adherence to follow-up visits using the Contraceptive Participation Card: K/IV/KB/15. Data on IUD contraceptive acceptors' knowledge of the TENANG method were collected using a questionnaire developed by the researcher. Data on method implementation were collected using a self-administered checklist completed by the IUD contraceptive acceptors.

Research Instruments

The questionnaire was tested for validity using Pearson's product-moment correlation ($r > 0.94$, $p < 0.01$), indicating that all questions are valid. Its reliability was assessed using Cronbach's alpha ($\alpha \pm 0.9$), indicating a very high level of reliability. The knowledge questionnaire comprises 15 statements employing a Guttman scale (with a correct answer scoring 1 and an incorrect answer scoring 0). The intervention was delivered using PowerPoint-based educational materials on the TENANG Method, including a checklist for applying the TENANG Method in tabular form, with columns for number, date, activities, and results. This study has received ethical feasibility recommendations from the Health Research Ethics Committee of Universitas Aisyiyah Surakarta, under reference number: 569/VIII/AUEC/2025.

Figure 1. Respondent characteristics form

No	Pernyataan	Ya	Tidak
1	Saya mengetahui bahwa KB IUD memiliki benang (string) yang dapat dipantau secara mandiri.	☐	☐
2	Saya pernah mendapatkan informasi dari tenaga kesehatan tentang cara memantau benang IUD.	☐	☐
3	Saya mengetahui tujuan pemantauan benang IUD adalah memastikan posisi IUD tetap benar.	☐	☐
4	Saya mengetahui bahwa benang IUD dapat digunakan untuk mendeteksi pergeseran atau keluarnya.	☐	☐
5	Saya pernah melakukan pemeriksaan benang IUD secara mandiri.	☐	☐
6	Saya melakukan pemeriksaan benang IUD secara rutin (misalnya tiap bulan).	☐	☐
7	Saya mengetahui cara meraba benang IUD di dalam vagina.	☐	☐
8	Saya mengetahui cara alternatif memeriksa benang IUD (misalnya dengan cermin).	☐	☐
9	Saya pernah merasa kesulitan menemukan benang IUD saat melakukan pemeriksaan.	☐	☐
10	Saya pernah menemukan benang IUD lebih panjang atau lebih pendek dari biasanya.	☐	☐
11	Saya pernah tidak merasakan benang IUD sama sekali saat memeriksa.	☐	☐
12	Saya pernah merasakan nyeri/perdarahan ketika memeriksa benang IUD.	☐	☐
13	Jika benang IUD tidak teraba, saya segera berkonsultasi ke tenaga kesehatan.	☐	☐
14	Saya merasa ada kendala (takut infeksi, sulit meraba, tidak tahu caranya) saat memantau.	☐	☐
15	Saya membutuhkan edukasi lebih lanjut mengenai cara memantau benang IUD.	☐	☐

Figure 2. TENANG method knowledge questionnaire

Checklist Penerapan Metode Tenang				
Nama	:			
Tgl Pemasangan	:			
Alamat	:			
Pendamping	:			
Bulan	Tgl (Saat Haid)	Pelaksanaan		Hasil
		ya	tidak	
1				
2				
3				

Figure 3. Checklist for the implementation of the TENANG method

Data Analysis

Techniques: All data were processed using both descriptive and analytical methods. Univariate analysis was employed to examine respondents' characteristics, knowledge, and the application of the TENANG Method, using frequency distributions. Bivariate analysis used the McNemar test to assess differences in knowledge before and after the intervention, and the Chi-Square test to examine the relationship between post-intervention knowledge levels and the application of the TENANG Method, as well as participant status. Multivariate analysis was conducted using logistic regression to examine the relationships among age, education, participant status, post-test knowledge, and the application of the TENANG Method.

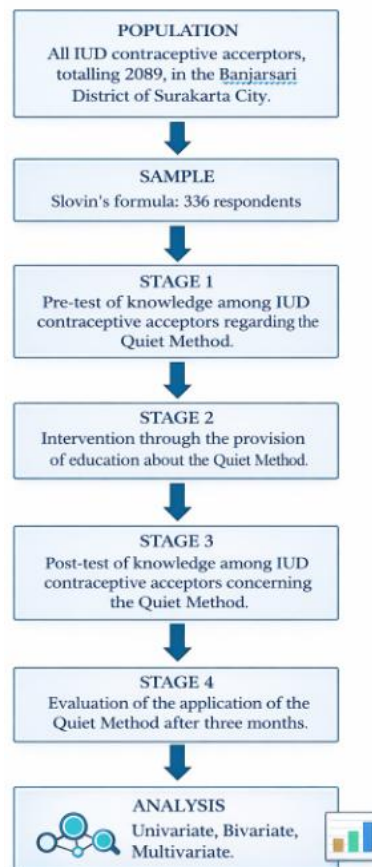


Figure 4. Research flow diagram

Results and Discussions

Sociodemographics of IUD Contraceptive Acceptors

Table 1. Characteristics of IUD Family Planning Acceptors (n = 336)

No	Category	Frequency (n)	Percentage (%)
1.	Age		
	Age < 30 years	85	25,3
	Age ≥ 30-40 years	171	50,9
	Age ≥ 40-50 years	80	23,8
	Total	336	100
2.	Education Level		
	Junior High School	42	12,5
	Senior High School	233	69,3
	Higher Education	61	18,2
	Total	336	100
3.	Contraceptive Use Status		
	New acceptors	150	44,6
	Method switchers	38	11,3

Repeat users	148	44,1
Total	336	100
4. Pre-intervention knowledge		
Low	237	70,5
Moderate	94	28,0
High	5	1,5
Total	336	100
5. Post-intervention knowledge		
Low	3	0,9
Moderate	14	4,2
High	319	94,9
Total	336	100
6. Tenang Method implemented		
Implemented	253	75,3
Not implemented	83	24,7
Total	336	100

Based on Table 1, most IUD acceptors were aged 30–40 years (50.9%) and had secondary educational attainment (69.3%). This age group represents mature reproductive age, during which women are more likely to select effective long-term contraceptive methods. Previous studies indicate that women with secondary or higher education tend to accept family planning interventions more readily and respond more positively to contraceptive education (Amna et al., 2026; Efendi et al., 2023). These findings suggest that age and educational background may influence both contraceptive acceptance and responsiveness to intervention.

Enhancement of Knowledge Following the TENANG Method Intervention

Table 2. McNemar Test Results on Knowledge Before and After the Intervention

Statistical Test	χ^2	df	p-value
McNemar–Bowker	325.000	3	< 0.001

As shown in Table 2, the McNemar–Bowker test demonstrated a highly significant improvement in participants' knowledge after the TENANG method intervention ($\chi^2 = 325.000$; $p < 0.001$). Before the intervention, most respondents had low knowledge levels, whereas post-intervention results showed a substantial shift toward higher knowledge levels.

These findings indicate that the TENANG method effectively improved understanding of contraceptive use and related procedures. Similar studies have reported that structured and client-centered educational approaches improve contraceptive knowledge and participation in family planning services (Hale et al., 2024; Durante et al., 2023). The observed improvement may reflect the effectiveness of combining education with supportive communication to reduce uncertainty and improve understanding.

Family Planning Participation Status and TENANG Method Implementation

Table 3. Chi-Square Test of Post-Intervention Knowledge and Family Planning Status

Independent Variable	Statistical Test	χ^2	df	p-value
Post-intervention knowledge	Pearson Chi-Square	5.933	2	< 0.001
Family planning status	Pearson Chi-Square	6.913	2	0.032

Based on Table 3, family planning participation status was significantly associated with the implementation of the TENANG method ($p = 0.032$). New acceptors and method switchers demonstrated better adherence than repeat acceptors. Meanwhile, post-intervention knowledge showed a relationship approaching significance.

These findings suggest that individuals entering a new contraceptive phase may be more receptive to educational interventions and behavioral guidance. In contrast, repeat acceptors may rely more on prior experience, reducing their responsiveness to new approaches. Therefore, educational strategies should be adapted according to contraceptive participation status to improve intervention effectiveness.

Education as a Determinant of TENANG Method Implementation

Table 4. Logistic Regression Analysis of Factors Influencing the TENANG Method

Variable	B	SE	p-value	Exp(B)
Age	-0.028	0.204	0.892	0.973
Educational level	-0.843	0.267	0.002	0.430
Family planning status	0.300	0.160	0.061	1.350
Post-intervention knowledge	-0.116	0.470	0.805	0.890

As shown in Table 4, logistic regression analysis identified education as the only variable significantly associated with the implementation of the TENANG method ($p = 0.002$). Respondents with higher educational attainment were more likely to apply the method, while age, family planning participation status, and post-intervention knowledge did not demonstrate statistically significant effects.

These findings are consistent with previous studies showing that educational attainment contributes to health literacy and individuals' ability to understand and apply health information effectively (Fitria et al., 2026; Nutbeam & Lloyd, 2021). In practice, implementing the TENANG method should account for educational differences by using simplified communication, visual-based education, and additional support for respondents with lower levels of education.

Conclusion

The TENANG education method significantly improved the knowledge of IUD contraceptive acceptors and supported the implementation of self-monitoring of IUD threads. Educational background was identified as the primary determinant influencing the implementation of the TENANG method, while family planning participation status was associated with adherence levels. These findings indicate that the TENANG method may serve as a practical, participatory, and supportive educational strategy in midwifery and family planning services, particularly to strengthen reproductive health literacy and improve confidence among IUD acceptors. Given the significant improvement observed following the intervention, the TENANG method demonstrates potential for broader integration into family planning programs in Indonesia, especially in community-based contraceptive services. However, further studies involving larger and more diverse populations are needed to evaluate its long-term effectiveness, scalability, and applicability across different healthcare settings.

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