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## Empowering Reproductive Age Women through Interactive Modern Contraception Education for Healthy Families

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### ABSTRAK

**Latar Belakang:** Rendahnya pengetahuan Wanita Usia Subur (WUS) mengenai kontrasepsi modern masih menjadi tantangan dalam program Keluarga Berencana. **Tujuan:** Penelitian ini bertujuan untuk meningkatkan pemahaman WUS tentang metode kontrasepsi modern melalui pendekatan edukasi interaktif berbasis media digital. **Metode:** Kegiatan berbasis masyarakat ini menggunakan desain edukatif dengan melibatkan 28 WUS di wilayah kerja Puskesmas Segiri, Samarinda. Pengumpulan data dilakukan melalui penyuluhan menggunakan video interaktif dan buku saku digital, disertai evaluasi pre-test dan post-test untuk mengukur perubahan pengetahuan. Kegiatan dilaksanakan melalui tahapan persiapan, pelaksanaan, dan evaluasi, dengan analisis data secara deskriptif menggunakan perbandingan nilai rata-rata, persentase, dan standar deviasi. **Hasil:** Hasil penelitian menunjukkan peningkatan pengetahuan peserta secara signifikan, dengan proporsi kategori pengetahuan baik meningkat dari 61% pada pre-test menjadi 100% pada post-test. Nilai rata-rata meningkat dari 85,00 menjadi 97,14, sementara standar deviasi menurun dari 15,396 menjadi 3,951 yang menunjukkan peningkatan konsistensi pemahaman peserta. Buku saku digital juga terbukti efektif sebagai media edukasi berkelanjutan yang dapat diakses kembali oleh peserta. **Kesimpulan:** Edukasi interaktif berbasis digital sangat efektif dalam meningkatkan pengetahuan kontrasepsi pada WUS dan direkomendasikan untuk direplikasi di wilayah lain dengan karakteristik serupa dalam mendukung keberlanjutan edukasi program keluarga berencana.

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### ABSTRACT

**Background:** Limited knowledge among Women of Reproductive Age (WRA) regarding modern contraception remains a challenge in the Family Planning program. **Objective:** This study aimed to improve WRA understanding of modern contraceptive methods through an interactive digital media-based educational approach. **Methods:** This community-based intervention employed an educational design involving 28 WRA in the working area of Puskesmas Segiri, Samarinda. Data collection was conducted using educational counseling supported by interactive video

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and a digital pocketbook, followed by pre-test and post-test assessments to measure knowledge changes. The activity was implemented through preparation, implementation, and evaluation phases, and data were analyzed descriptively using mean, percentage, and standard deviation comparisons. **Results:** The findings revealed a significant improvement in participant knowledge, with the proportion of good knowledge increasing from 61% during the pre-test to 100% in the post-test. The mean score increased from 85.00 to 97.14, while the standard deviation decreased from 15.396 to 3.951, showing improved consistency in participant understanding. The digital pocketbook also proved effective as a sustainable educational medium that participants could access repeatedly. **Conclusion:** Interactive digital education is highly effective in improving contraceptive knowledge among WRA and is recommended for replication in other regions with similar characteristics to support sustainable family planning education.

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## INTRODUCTION

The Family Planning (KB) program is one of the essential pillars in improving maternal and child health quality as well as controlling population growth in Indonesia (Nurjaeni *et al.*, 2021; Santoso *et al.*, 2024). The success of the KB program is determined not only by the availability of contraceptive services but also by the level of understanding and awareness among the community, particularly Women of Reproductive Age (WRA), regarding the importance of using effective and sustainable contraceptive methods. Nevertheless, challenges related to modern contraceptive literacy remain significant. Data from BKKBN (2024) show that injectable contraceptives (44.37%) and pills (22.91%) still dominate contraceptive use in Indonesia, whereas the adoption of long-acting reversible contraceptive methods (LARCs) such as intrauterine devices, implants, and permanent methods remains relatively low. This imbalance suggests that short-term contraceptive choices are still preferred despite the availability of more effective long-term options. Consequently, strengthening educational interventions is necessary to improve informed decision-making among WRA. Improving knowledge is therefore positioned as a strategic pathway to optimize contraceptive method selection and continuity of use (Ayorinde *et al.*, 2021).

This condition is consistent with findings reported by BPS, (2024), which highlight that limited access to accurate information and relevant educational media constitutes a major barrier to improving public understanding of contraceptive options. Many WRA continue to encounter obstacles in the form of myths, fear of side effects, and insufficient evidence-based counseling delivered through engaging approaches. Such barriers contribute to misconceptions and reluctance to adopt long-acting contraceptive methods. In addition, disparities in educational background and digital literacy further complicate information dissemination strategies. These circumstances emphasize the necessity of adaptive and innovative educational approaches capable of reaching productive and middle-aged groups who remain primary targets of family planning initiatives. Therefore, educational innovation becomes a critical component in bridging knowledge gaps and addressing behavioral determinants of contraceptive use (Meherali *et al.*, 2024).

The importance of communicative and accessible educational media has become increasingly crucial in responding to these challenges. Research by Safitri *et al.*, (2025) shows that the use of interactive video media, when combined with discussions and written materials, is more effective in improving participant understanding compared to conventional lecture methods, particularly among

individuals with secondary educational backgrounds. Interactive learning environments encourage active participation and enhance cognitive engagement during educational sessions (Liew *et al.*, 2023). Furthermore, digital media such as electronic pocketbooks and educational videos enable participants to repeatedly access learning materials, thereby strengthening information retention and supporting independent learning beyond formal educational sessions Marizi *et al.*, (2019). The flexibility offered by digital learning resources also supports self-paced learning, which is essential for adult learners with varying schedules and responsibilities. Consequently, integrating multimedia educational tools represents a promising strategy for enhancing contraceptive literacy among WRA.

Based on this background, a community service team from STIKES Guna Bangsa implemented an interactive educational program targeting WRA within the working area of Puskesmas Segiri, Samarinda. The program was designed to improve understanding of modern contraceptive methods through a participatory approach utilizing digital educational media. The intervention emphasized collaborative learning, allowing participants to engage in discussion, reflection, and clarification during educational sessions (Alzubi *et al.*, 2024). The primary focus of the community service activity was the development and distribution of educational videos and digital pocketbooks to participants as sustainable educational tools. This approach ensures that educational exposure is not limited to a single session but continues through repeated independent access to materials. As a result, the intervention was expected to create both immediate and long-term educational impacts among participants.

Despite the growing body of research highlighting the effectiveness of multimedia health education, several gaps remain evident in the family planning promotion at the primary healthcare level. First, many previous studies have focused primarily on knowledge improvement outcomes without integrating sustainable learning media that participants can access beyond intervention sessions. Second, limited research has examined the combined use of interactive video and digital pocketbooks as complementary educational tools within community-based family planning programs. Third, contextual implementation studies in eastern Indonesian urban settings, particularly within community health center service areas, remain scarce. These gaps show the need for intervention models that integrate multimedia learning resources with participatory educational strategies while considering local sociocultural. Addressing these gaps is essential to generate evidence-based practices that are scalable and adaptable across similar healthcare settings.

Accordingly, the novelty of this community service program lies in the integration of interactive video-based education with digital pocketbook distribution as a dual-media participatory learning strategy for WRA within a primary healthcare service area. Unlike conventional single-session educational interventions, this program emphasizes sustained learning through reusable digital materials accessible anytime by participants. The approach also incorporates active discussion sessions to reinforce comprehension and address misconceptions in real time, thereby strengthening behavioral intention toward modern contraceptive adoption. Additionally, the program contributes contextual evidence from an urban primary healthcare setting in East Kalimantan, expanding the geographical representation of multimedia family planning interventions in Indonesia. The combination of participatory methods, multimedia learning resources, and sustained access to educational materials represents an innovative contribution to community-based family planning education models. Ultimately, this initiative is expected to support

improved contraceptive literacy, informed decision-making, and the advancement of healthy family development as a foundation for a future golden generation..

## RESEARCH METHOD

This community-based research was designed as an interactive educational intervention on modern family planning methods targeting Women of Reproductive Age (WRA) within the service area of Puskesmas Segiri, Samarinda. The study aimed to enhance community knowledge and awareness regarding modern contraceptive options through participatory learning strategies (Gelgelo *et al.*, 2023; Silumbwe *et al.*, 2020). The implementation process consisted of three main phases: preparation, implementation, and evaluation. The preparation phase included the development of educational materials, design of learning media, and preparation of evaluation instruments to assess knowledge improvement. This stage ensured that all educational components were contextually appropriate and aligned with participant characteristics.

The implementation phase involved interactive lectures, guided discussions, and the use of multimedia educational tools to facilitate participant engagement. The target population comprised WRA residing within the health center's service area who represented the primary beneficiaries of the intervention. Educational media included interactive videos and a digital pocketbook designed to be simple, visually supported, and easily understood by participants (Reid *et al.*, 2021). The digital pocketbook functioned as a self-learning resource that participants could access independently after the educational session, while the video component was utilized to visually demonstrate various types of modern contraceptive methods. Media design was adapted to participants' educational backgrounds to ensure accessibility and comprehension. This approach aimed to optimize community participation and achieve target coverage exceeding 80% of planned participants.

The evaluation phase focused on measuring knowledge improvement and describing participant characteristics to support comprehensive interpretation of findings. Data were collected using pre-test and post-test instruments administered before and after the educational intervention (Juhong *et al.*, 2022). The collected data were analyzed descriptively using mean values, percentages, and standard deviations to summarize participant responses. Comparisons between pre-test and post-test scores were conducted to determine the magnitude of knowledge improvement following the intervention. Additionally, demographic variables including age, educational level, and prior family planning experience were analyzed to contextualize the results and explore potential influencing factors. Through this evaluation framework, the study emphasized community-centered outcomes and evidence-based assessment of educational effectiveness.

## RESULTS

The community service activity was conducted in the working area of Puskesmas Segiri, Samarinda Ulu District, involving 28 Women of Reproductive Age (WRA) as participants. Based on the age distribution data, the majority of participants were aged >35 years ( $n = 14$ ; 50%), which represents the late reproductive age group. In terms of educational background, most participants had completed senior high school or equivalent (57.1%), followed by those with tertiary education and junior high school graduates.

Table 1. Age Distribution

<b>Age Category</b>	<b>Number</b>
< 20 years	5
20–35 years	9
> 35 years	14
Total	28

The history of contraceptive use showed that the most commonly used methods were injectable contraception (29%) and intrauterine devices (IUD) (29%), followed by pills (21%), implants (14%), and male sterilization methods (MOP) at 4%. Approximately 4% of participants had no history of contraceptive use. This diversity shows participants' varying levels of experience with different modern contraceptive methods and highlights the continued need for comprehensive contraceptive education, particularly for long-term and permanent methods.

Table 2. Types of Contraception Used

<b>Contraceptive Type</b>	<b>Number</b>
Implant	4
IUD	8
MOP	1
Pill	6
Injection	8
No contraception	1
Total	28

Evaluation of the activity outcomes was conducted using pre-test and post-test assessments to measure participants' knowledge of modern contraception. Prior to the educational intervention, 61% of participants were categorized as having good knowledge, 32% moderate knowledge, and 7% low knowledge. Following the interactive educational session utilizing educational videos and digital pocketbooks, all participants (100%) achieved the good knowledge category. The mean pre-test score of 85.00 increased to 97.14 in the post-test. Additionally, the standard deviation decreased from 15.396 to 3.951, showing improved consistency in participants' understanding.

Due to the unavailability of individual paired-level data, inferential statistical analysis (such as paired t-test or Wilcoxon signed-rank test) could not be performed. Therefore, the findings are presented descriptively. Nevertheless, the increase in mean score and the reduction in standard deviation indicate a consistent improvement in participants knowledge following the educational intervention. However, these findings should be interpreted cautiously. The baseline mean score of 85.00 was already within the "good" knowledge category, showing a relatively high initial level of understanding. This condition suggests a potential ceiling effect, as several participants achieved the maximum score (100) in the pre-test. Consequently, the measurable improvement may have been limited by the upper boundary of the scoring scale. Future interventions may consider using assessment instruments with greater item difficulty or wider scoring ranges to better capture knowledge improvement among participants with high baseline scores.

Participants aged >35 years, who constituted the largest group, also demonstrated improvement as showed by increasing in mean post-test scores and the elimination of moderate and poor knowledge categories. In relation to participant characteristics, the predominance of women aged >35 years-many of whom are

approaching the end of their reproductive period shows that contraceptive education remains relevant even in late reproductive age. At this stage, women may require more information regarding long-term and permanent contraceptive methods, as well as clarification about misconceptions related to contraceptive safety and suitability. Therefore, the improvement observed in this group shows the continued importance of targeted educational interventions for women nearing the end of reproductive age.

Table 3. Pre-test and Post-test Results

Score Category	Pre-test	Post-test
Good (85–100)	17	28
Moderate (65–85)	10	0
Poor (< 60)	1	0
Total	28	28

Table 4. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	28	60	100	85.00	15.396
Posttest	28	90	100	97.14	3.951
Valid N (listwise)	28				

## DISCUSSION

Based on results of this community service activity Based on the results of this community service activity, the findings descriptively show an improvement in knowledge of Women of Reproductive Age (WRA) regarding modern contraceptive methods. A substantial increase in the mean knowledge score from 85.00 during the pre-test to 97.14 in the post-test highlights positive trend associated with the use of educational videos and digital pocketbooks as learning media. This improvement is further supported by the shift in knowledge distribution, where 61% of participants were categorized as having good knowledge prior to the intervention, increasing to 100% after the educational session. Additionally, the elimination of moderate (32%) and poor (7%) knowledge categories after the intervention indicates that all participants achieved an adequate level of understanding. The reduction in standard deviation from 15.396 to 3.951 also suggests greater uniformity in participant comprehension. These findings collectively confirm that multimedia-based educational approaches can effectively bridge knowledge gaps among participants with diverse backgrounds (Bernadetha Haule *et al.*, 2024; Hsu *et al.*, 2022). However, because inferential statistical analysis was not conducted, these findings should be interpreted as descriptive evidence of knowledge improvement rather than confirmed effectiveness.

Participant demographic characteristics also contributed to the interpretation of these outcomes. Based on age distribution data, the majority of participants were aged above 35 years ( $n = 14$ ), followed by those aged 20-35 years ( $n = 9$ ) and under 20 years ( $n = 5$ ). This pattern show that most participants belonged to mature reproductive age groups who are typically involved in long-term family planning decisions. Despite their reproductive experience, the persistence of moderate and low knowledge levels prior to intervention suggests that exposure to updated contraceptive information remains limited. Individuals in this age group may still rely

on previous experiences or informal sources of information that do not reflect current evidence-based practices. Consequently, targeted educational interventions remain necessary even among experienced reproductive-age populations (Desrosiers *et al.*, 2020).

The predominance of participants aged 46-59 years further underscores the relevance of continuous reproductive health education across the reproductive lifespan. Women in this age group often face accumulated perceptions shaped by cultural beliefs, myths, and misconceptions regarding contraceptive safety and effectiveness. Concerns related to side effects of intrauterine devices and implants are frequently cited as barriers to adoption, particularly among mature reproductive-age women. Visual and experience-based educational approaches therefore become essential in facilitating attitude change and improving acceptance of modern contraceptive methods (Laily *et al.*, 2024; Purnamasari & Syamsiah, 2025). The integration of audiovisual demonstrations in this program enabled participants to visualize contraceptive procedures and mechanisms, thereby reducing uncertainty and fear. Nevertheless, this study did not directly measure behavioral change, contraceptive switching, or adoption of long-acting methods; therefore, conclusions are limited to knowledge outcomes only.

Educational background also played a significant role in shaping participant learning outcomes. Most participants had completed senior high school education, representing a group that demonstrates adequate cognitive readiness for structured learning but still benefits from supportive instructional media. According to Safitri *et al.*, (2025), individuals with secondary educational backgrounds tend to absorb information more effectively when learning materials incorporate interactive and visual elements. This evidence aligns with the observed outcomes in which all participants achieved good knowledge levels following multimedia-based education. Interactive videos combined with guided discussion allowed participants to clarify misconceptions and actively engage with the learning content. Therefore, tailoring educational design to participant educational characteristics contributed to optimal learning effectiveness within this intervention (Hovingh *et al.*, 2025). However, knowledge acquisition does not automatically translate into empowerment or behavioral transformation, and further evaluation would be required to assess sustained impact on family planning practices.

Another important outcome of this activity was the development and utilization of an interactive digital pocketbook on modern contraception. The pocketbook provided concise and practical information covering contraceptive types, advantages, disadvantages, and guidance for selecting appropriate methods based on individual needs. Its accessibility via personal digital devices allowed participants to revisit learning materials beyond the educational session. Such flexibility supports reinforcement learning, which is essential for sustaining knowledge retention over time. Marizi *et al.*, (2019) emphasize that digital educational media function as portable learning tools capable of extending the impact of health education interventions. However, this study did not include long-term follow-up assessment; therefore, retention of knowledge beyond the immediate post-test cannot be determined.

The combination of audiovisual and digital textual media further strengthened the educational impact observed in this program. Wulandari & Hasmidar, (2025), report that integrating audiovisual materials with digital reading resources enhances information retention and maintains long-term educational effects. Participants who may face time constraints or limited access to health counseling services particularly

benefit from asynchronous learning resources. The digital pocketbook therefore functioned not only as a complementary educational medium but also as a legacy learning material supporting continuous education within the community. Despite these strengths, potential response bias must be acknowledged. Participants may have provided socially desirable answers during the post-test, especially immediately after the educational session. Additionally, short-term evaluation conducted directly after the intervention may overestimate immediate knowledge gains compared to long-term retention.

Analysis of contraceptive use history also provides insight into participant learning needs and contextual relevance of the intervention. Injectable contraception and intrauterine devices were the most frequently used methods (each  $n = 8$ ; 29%), followed by pills ( $n = 6$ ; 21%), implants ( $n = 4$ ; 14%), male sterilization ( $n = 1$ ; 4%), and no contraceptive use ( $n = 1$ ; 4%). This distribution indicates varying levels of familiarity with different contraceptive methods among participants. However, the relatively lower use of long-acting methods such as implants suggests potential informational or perceptual barriers. Educational activities addressing comparative advantages and suitability of long-term methods are therefore critical (Pandey, 2025). Nevertheless, the present study did not assess participants' intention to adopt long-acting reversible contraception (LARC) or measure actual post-intervention contraceptive uptake.

The improvement observed in knowledge score categories further reinforces the program's effectiveness. Prior to intervention, 17 participants were classified in the good knowledge category, while 10 and 1 participants fell into moderate and poor categories respectively. After intervention, all 28 participants achieved good knowledge status, demonstrating complete category transition. This categorical shift reflects not only average score improvement but also equitable learning outcomes across participants. The absence of moderate and poor categories post-intervention suggests that the educational approach successfully reached participants with varying baseline knowledge levels. Such uniform improvement is a desirable outcome in community-based educational programs aiming to reduce health literacy disparities.

The decrease in score variability, indicated by the reduction in standard deviation from 15.396 to 3.951, represents another important finding. Lower variability suggests that participants developed a more consistent understanding of modern contraceptive concepts following the intervention. Consistency in knowledge distribution is particularly important in community settings where peer interaction and information sharing commonly occur. When participants possess comparable levels of understanding, the risk of misinformation propagation is reduced. Furthermore, consistent knowledge levels may facilitate collective decision-making and peer support in family planning practices. However, without longitudinal assessment, it remains unclear whether this consistency would be maintained over time. Therefore, future programs should incorporate follow-up evaluation to measure sustained knowledge retention, behavioral intention, and actual contraceptive adoption outcomes.

## **CONCLUSION AND RECOMMENDATION**

This community service activity showed that an interactive digital media-based educational approach was effective in improving the knowledge of Women of Reproductive Age (WRA) regarding modern contraception within the working area of Puskesmas Segiri, Samarinda. The significant increase in post-test scores

accompanied by greater consistency in participant understanding indicates the success of the implemented educational strategy. Educational media in the form of interactive videos and digital pocketbooks were able to engage participants visually and practically while providing opportunities for independent and continuous learning. The diversity of participant characteristics, including age, educational background, and contraceptive use experience, showed the importance of designing contextual and participatory interventions. The program contributed to strengthening contraceptive literacy and supporting informed decision-making among participants. These outcomes reinforce the role of multimedia-based education as a promising approach for community reproductive health promotion.

It is recommended that the developed educational media be utilized more broadly across primary healthcare facilities to support ongoing family planning education initiatives. Replication of this intervention model in other regions with similar demographic and informational challenges is also encouraged to expand its impact. Future programs should incorporate active involvement of community health volunteers to ensure sustainability and continuity of educational activities at the community level. In addition, engaging partners or spouses of WRA in educational sessions may enhance shared decision-making and strengthen long-term contraceptive adoption. Continuous evaluation and adaptation of digital educational content are also necessary to maintain relevance with evolving contraceptive information and community needs. Through these efforts, community-based digital education can play a strategic role in supporting sustainable family planning programs and the development of healthy families.

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