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## The Efficacy of the 'My Darling' Family Planning App in Reducing Unmet Postpartum

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### Abstract

Unmet need for family planning is highest among women during the first year postpartum, reflecting gaps in access to effective counselling services, particularly during the COVID-19 pandemic. Integrating family planning counselling into antenatal and postnatal care has been proposed as a strategy to improve service efficiency and accessibility. Therefore, this study aimed to identify the family planning counselling needs of pregnant women during the COVID-19 pandemic, develop an online counselling application ("My Darling KB"), and evaluate its effectiveness in reducing postpartum unmet need for family planning. This study employed a quantitative experimental approach using a randomized controlled trial (RCT) design. A total of 150 pregnant women from four selected clinics in Samarinda City were randomly allocated to either the intervention or control group, with 75 participants in each group. The intervention group received counselling through the "My Darling KB" application, while the control group received standard care. The results showed that baseline characteristics between the intervention and control groups were comparable. The use of the "My Darling KB" application significantly reduced postpartum unmet need for family planning. Furthermore, pregnant women who received counselling through the application demonstrated a higher intention to use modern contraceptive methods compared to those in the control group. In conclusion, the "My Darling KB" application is an effective digital intervention for improving family planning counselling and reducing postpartum unmet need for contraception. This approach offers a promising strategy to enhance access to reproductive health services, particularly in contexts with limited face-to-face interaction, such as during the COVID-19 pandemic.

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## 1. INTRODUCTION

Unmet need for family planning in Indonesia remains relatively high and ranks fourth among ASEAN countries (Hastuti et al., 2022; Efendi et al., 2023; Nuryana, Cahyani, & Rahayu, 2023; Htay et al., 2024; Memon et al., 2024; Rizkianti et al., 2024; Utomo et al., 2025). Data from the 2017 Indonesia Demographic and Health Survey (SDKI) indicate that the family planning program has made notable progress, with total unmet need declining from 17% in 1991 to 10.6% in 2017 (National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health (Kemenkes), and ICF, 2018). However, over the past five years, unmet need for modern contraceptives has shown an increasing trend, with an approximate 7% gap between total unmet need and unmet need for modern methods. This condition suggests that, despite overall program achievements, significant challenges remain in ensuring access to and utilization of effective modern contraceptive methods.

The burden of unmet need is particularly pronounced among women in the first year postpartum (Amuzie et al., 2023; Gelagay et al., 2023; Mruts et al., 2023; Alshahrani, Jradi, & Bawazir, 2025). Evidence shows that unmet need for postpartum family planning is highest within the first 0–2 months after childbirth, reaching 75.5% (Wilopo et al., 2017). Moreover, approximately three-quarters of postpartum women resume sexual activity within six weeks after delivery (Edosa Dirirsa et al., 2022), increasing the risk of unintended pregnancy. Previous studies have reported that about 4% of pregnancies occur within 0–5 months postpartum, 22% within 12–17 months, and 32% within 24–59 months after childbirth (Hanley et al., 2017), with the prevalence of unintended pregnancy reaching 47% among postpartum women (Wagan et al., 2018). These findings highlight the urgency of addressing unmet need during the postpartum period as a critical window for intervention.

Efforts to reduce unmet need for postpartum family planning should begin during antenatal care (ANC). Integrating family planning counseling into prenatal and postnatal services has been shown to provide substantial benefits, including increased contraceptive uptake and extended birth intervals (Zapata et al., 2015; Ahmed et al., 2015). Integrated health services offer a strategic platform to address unmet need more effectively (Malarcher and Polis, 2014). In Indonesia, various counseling approaches have been implemented, such as interpersonal communication and counseling (IPC), decision-making tools (DMT), and balanced counseling strategies. Evidence indicates that these approaches can improve client understanding and support informed decision-making regarding contraceptive use (Jones, 2023). However, these strategies largely rely on face-to-face interactions, which may limit their reach under certain conditions.

The COVID-19 pandemic has further exposed these limitations by disrupting access to health services, including family planning counseling. The implementation of health protocols, such as social distancing and restricted mobility, reduced opportunities for in-person counseling and service utilization. As a result, many couples of reproductive age postponed visits to health facilities due to fear of infection, contributing to a decline in family planning program coverage and an increase in unmet need (Triguno et al., 2020). Despite the growing need for alternative service delivery models, existing studies have predominantly focused on conventional counseling approaches, with limited exploration of digital or online interventions tailored to the needs of pregnant women in the Indonesian context. This represents a critical gap in the literature, particularly in understanding how technology-based solutions can address barriers to access and improve contraceptive decision-making during the perinatal period.

This study introduces a novel approach through the development of an online family planning counseling application, “My Darling KB,” designed to provide accessible, user-centered, and context-specific counseling for pregnant women. Unlike previous interventions that rely primarily on face-to-face delivery or focus on single components of counseling, this study integrates digital technology with evidence-based counseling strategies to support informed contraceptive decision-making before childbirth. Therefore, the objective of this study is to explore the family planning counseling needs of pregnant women, develop and pilot the “My Darling KB” application, and evaluate its effectiveness in reducing unmet need for postpartum family planning in Samarinda City.

## **2. METHOD**

This study employed a quantitative experimental design, specifically a randomized controlled trial (RCT), to evaluate the effectiveness of the My Darling KB application in reducing postpartum unmet need for family planning. Eligible participants were randomly allocated into either the intervention group or the control group using a simple randomization procedure to ensure comparability between groups.

Participants in the intervention group received guidance on how to use the My Darling KB application, which was delivered by trained midwives. In contrast, participants in the control group received standard family planning counseling using the Maternal and Child Health (MCH) handbook. To minimize the risk of information contamination between groups, a concealment strategy was applied. Participants in the intervention group were instructed to access the application only with their husbands at home and not to share the application or its contents with others, including neighbors or other participants.

Data collection was conducted in two stages. Baseline data were obtained through interviews conducted during the third trimester of pregnancy, prior to the intervention. Follow-up data were collected at six weeks postpartum. The primary outcomes measured were participants’ intention to use contraceptive methods and the occurrence of postpartum unmet need for family planning in both groups.

The study population consisted of third-trimester pregnant women attending antenatal care services at selected maternity clinics in Samarinda City. The inclusion criteria were: (1) married women, (2) aged 15-49 years, (3) willing to participate, (4) having a normal third-trimester pregnancy, (5) willing to be followed up until six weeks postpartum, and (6) residing in Samarinda City during the study period. The exclusion criteria included: (1) husbands who had undergone permanent contraception (vasectomy/MOP), and (2) residence outside Samarinda City. Participants were withdrawn from the study if they could not be contacted during the follow-up period.

The sample size was calculated using the formula for hypothesis testing of two population proportions, resulting in a total of 150 participants, with 75 assigned to each group. Participants were recruited using a consecutive sampling technique. The study was conducted in four maternity clinics, namely Kusuma, Aminah Amin, Hj Ninik, and Kartika Jaya. Data were collected through structured face-to-face interviews using standardized questionnaires.

Data analysis was performed using the chi-square test to compare differences between the intervention and control groups. A significance level of  $p < 0.05$  was applied. Ethical approval for this study was obtained from the Health Research Ethics Committee of the East Kalimantan Ministry of Health Polytechnic, with approval number: DL.02.03/7.1/002420/2022. Written informed consent was obtained from all participants prior to data collection.

### 3. RESULTS AND DISCUSSION

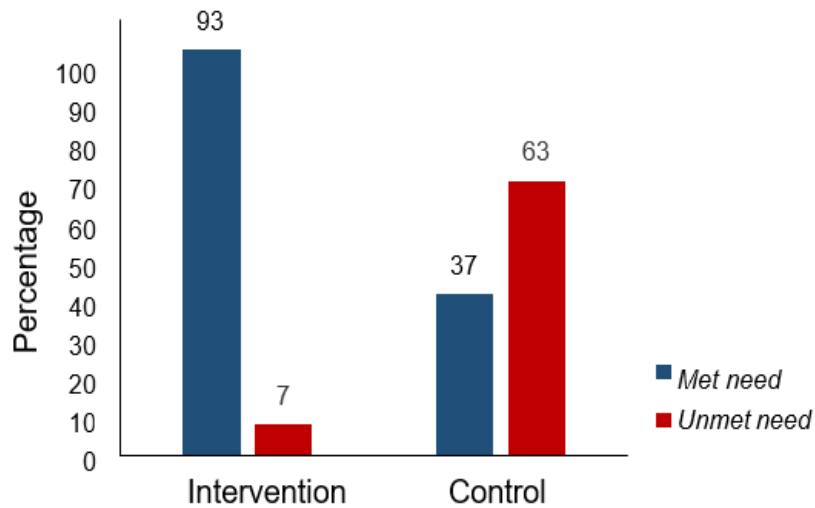
**Table 1.** Characteristics of Study Participants in Phase II.

Variables	Intervention (n = 75) %	Control (n = 75) %	Total (n = 150) %	$\chi^2$	p-value
Age (years)				2.15	0.34
< 20	12.0	5.3	8.7		
20–35	70.7	74.7	72.6		
> 35	17.3	20.0	18.7		
Education Level				0.03	0.98
Primary	36.0	37.3	36.7		
Secondary	49.3	48.0	48.6		
Higher	14.7	14.7	14.7		
Number of Children				0.58	0.74
None	25.3	30.7	28.0		
1–2 children	56.0	50.6	53.3		
≥ 3 children	18.7	18.7	18.7		
Pretest Ideation				0.51	0.47
Moderate	32.0	26.7	29.3		
Good	68.0	73.3	70.7		
Discussion on Family Planning				0.44	0.51
Ever	40.0	45.3	42.7		
Never	60.0	54.7	57.3		

*Note:* n = number of participants;  $\chi^2$  = Chi-square test; p-value = significance level.

Table 1 presents the baseline characteristics of participants in both the intervention and control groups. Overall, the distribution of characteristics between the two groups is comparable. Most participants in both groups were aged 20–35 years (72.6%), indicating that the study population was predominantly within the reproductive age range. The proportion of younger (<20 years) and older (>35 years) participants was relatively small. There was no statistically significant difference in age distribution between groups ( $p = 0.34$ ).

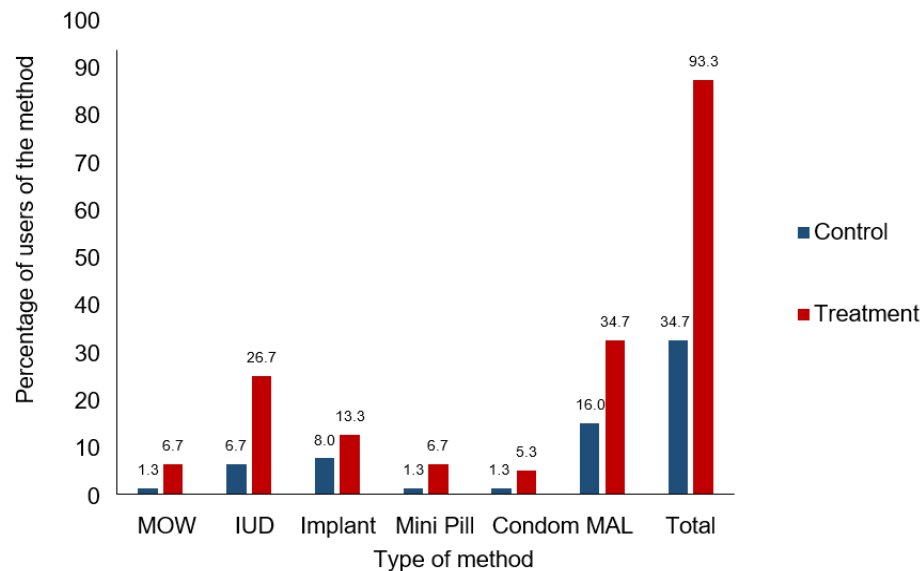
In terms of education, nearly half of the participants had secondary education (48.6%), followed by primary education (36.7%) and higher education (14.7%). The distribution was almost identical between the intervention and control groups, with no significant difference ( $p = 0.98$ ). Regarding parity, most participants had 1–2 children (53.3%), while 28.0% had no children and 18.7% had three or more children. The parity distribution was also similar between groups ( $p = 0.74$ ). For pretest ideation related to family planning, the majority of participants were categorized as having good ideation (70.7%), with no significant difference between the intervention and control groups ( $p = 0.47$ ). Similarly, less than half of the participants reported having previous discussions about family planning (42.7%). The proportion was comparable across both groups, and no statistically significant difference was observed ( $p = 0.51$ ). Overall, all baseline variables showed no statistically significant differences ( $p > 0.05$ ) between the intervention and control groups. This indicates that the two groups were homogeneous and comparable at baseline, suggesting that any observed differences in outcomes are more likely attributable to the intervention rather than pre-existing differences.



**Figure 1.** Presents the proportion of postpartum unmet need for family planning in the intervention and control groups.

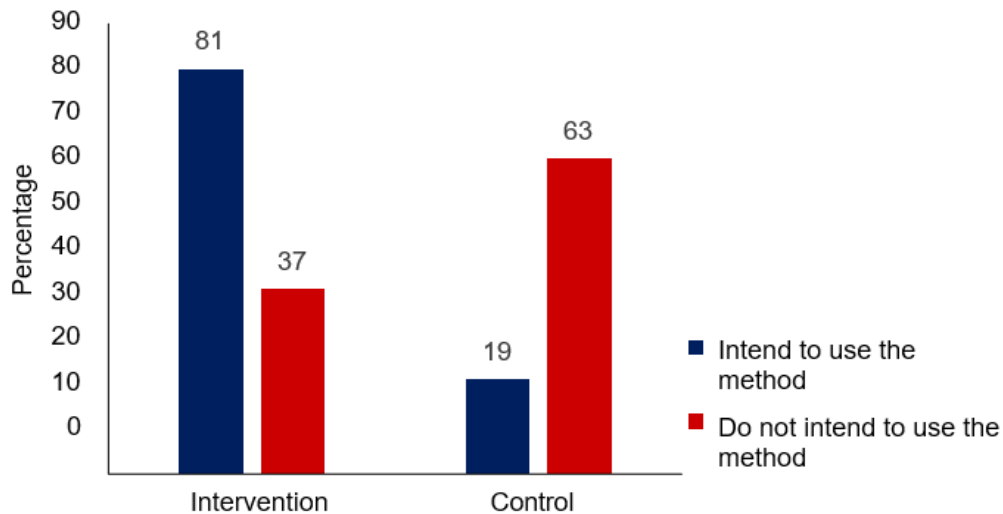
Figure 1 shows that counseling using the My Darling application had a substantial effect in reducing postpartum unmet need for family planning. The difference in the proportion of unmet need between the two groups was 56% (95% CI: 43%–68%). These findings indicate that the My Darling application was effective in reducing postpartum unmet need in the intervention group.

The results also show that respondents classified as having met need used a variety of contraceptive methods. The three most commonly used methods among postpartum women in both the intervention and control groups were the Lactational Amenorrhea Method (LAM), intrauterine device (IUD), and implants.



**Figure 2.** Illustrates the distribution of contraceptive methods used by respondents in both groups.

Figure 2 shows that the six types of contraceptive methods were reported by participants in both the intervention and control groups. The majority of respondents in both groups relied on LAM as their primary method of pregnancy prevention. Only a small proportion of respondents used female sterilization (MOW), condoms, and mini-pills.



**Figure 3.** The proportion of pregnant women intending to use modern contraceptive methods in the intervention and control groups.

Figure 3 shows that the pregnant women who received counseling using the My Darling application were more likely to intend to use modern contraceptive methods compared to those who did not receive the intervention. Statistical analysis revealed a significant difference in the proportion of intention to use modern contraception between the two groups. The difference was 62% (95% CI: 49%–75%). Women who received counseling through the My Darling application had a substantially higher likelihood of intending to use modern contraceptive methods compared to those in the control group. These findings suggest that counseling through the My Darling application is effective in increasing the intention to use modern contraceptive methods among pregnant women.

The My Darling KB counseling intervention implemented in this study represents an adaptive and context-specific approach designed to ensure continuity of family planning services for pregnant women during the COVID-19 pandemic. By integrating digital technology with established counseling strategies, this intervention addresses limitations associated with conventional face-to-face counseling, particularly under conditions of restricted mobility and reduced access to health facilities.

The findings demonstrate that My Darling KB counseling has a statistically significant effect in reducing postpartum unmet need for family planning and increasing the intention to use contraceptive methods. These outcomes may be explained by two principal strengths of the intervention. First, the counseling is delivered in an integrated manner across the continuum of maternal care, spanning antenatal care (ANC) through the postpartum period. Second, the application-based platform provides flexibility and accessibility, allowing users to engage with counseling materials at their convenience, thereby enhancing exposure and comprehension.

The reduction in postpartum unmet need observed in the intervention group is consistent with previous evidence indicating that family planning counseling during ANC is strongly associated with increased postpartum contraceptive use (Mruts et al., 2022; Gebeyehu, Tegegne, & Kassaw, 2023). Furthermore, integration of family planning services into postnatal care (PNC) has been shown to contribute to reducing unmet need for contraception (Ardhika, 2018). In this study, the integration of My Darling KB counseling within both ANC and PNC services appears to have facilitated timely decision-making and contraceptive uptake within six weeks postpartum. These findings align with earlier research demonstrating that continuous counseling across the maternal care continuum enhances contraceptive utilization (Babalola, 2019).

The effectiveness of this intervention may also be attributed to the user-friendly design of the My Darling KB application, which provides comprehensive and structured information regarding contraceptive methods, including effectiveness, mechanisms of action, potential side effects, and their management. Access to accurate and detailed information enables women to develop more informed and positive attitudes toward contraceptive use. In addition, the ability to revisit information through the application reinforces knowledge retention and supports informed decision-making. This repeated exposure likely contributes to increased confidence and certainty in selecting an appropriate contraceptive method after childbirth.

Another important feature of the intervention is its potential to enhance spousal involvement in decision-making. The application includes informational materials that can be reviewed jointly with partners, thereby facilitating communication and shared decision-making within the household. Increased partner involvement has been widely recognized as a critical factor in improving contraceptive uptake. In this study, women in the intervention group were able to discuss contraceptive options with their husbands, which may have strengthened support for contraceptive use and contributed to the observed reduction in unmet need.

The study also found that My Darling KB counseling significantly increased women's intention to use contraceptive methods. This finding is consistent with previous studies indicating that exposure to counseling media is associated with improved knowledge and stronger intentions to adopt contraception (Akoku et al., 2022; Sserwanja et al., 2022). The timing of counseling during pregnancy provided participants with sufficient opportunity to consider available options and make informed decisions prior to childbirth. Moreover, the integration of counseling into standard postpartum care visits within 6 hours to 3 days (KF1), 4–28 days (KF2), and 29–42 days (KF3) ensured continuity of information and reinforcement of key messages.

The inclusion of structured decision-support components, such as six key screening questions and method-specific informational materials, further facilitated the selection of contraceptive methods tailored to individual reproductive needs. The availability of these resources within the application allowed participants to review and discuss options with their partners before making decisions. Thus, the effectiveness of My Darling KB counseling in reducing postpartum unmet need appears to be closely linked to the quality, accessibility, and consistency of the counseling media. These findings are in line with previous studies highlighting the critical role of counseling tools in improving contraceptive uptake.

The robustness of this study is supported by the use of a randomized controlled trial (RCT) design, which enhances internal validity through random allocation and minimizes potential selection bias. Additionally, the intervention was systematically developed through pilot testing, integrated across maternal health services, supported by trained

midwives, and reinforced through follow-up, all of which contributed to its effectiveness. The use of a digital platform further strengthens its relevance in the context of evolving health service delivery models.

From a policy perspective, this intervention aligns with national strategies to reduce unmet need for family planning, as outlined in the Regulation of the National Population and Family Planning Board (BKKBN) Number 24 of 2017 concerning Postpartum and Post-Abortion Family Planning Services (KBPP and PK) (National Population and Family Planning Agency, 2017). The integration of digital counseling tools such as My Darling KB into existing maternal health services may provide a practical and scalable approach to strengthening family planning programs, particularly in settings with limited access to face-to-face services.

However, several limitations should be acknowledged. First, the duration of follow-up was limited to six weeks postpartum, preventing assessment of the long-term sustainability of contraceptive use. Second, the study was conducted in a specific urban setting (Samarinda City), which may limit the generalizability of the findings to other populations with different socio-cultural characteristics. Third, potential information bias may have occurred due to self-reported measures of intention and contraceptive use. Future studies are recommended to include longer follow-up periods, larger and more diverse populations, and objective measures of contraceptive continuation to further validate the effectiveness of this intervention.

#### **4. CONCLUSION**

This study demonstrates that the baseline characteristics of respondents in both the intervention and control groups were relatively homogeneous, supporting the validity of comparisons in evaluating the intervention. The findings indicate that counseling delivered through the My Darling KB application was associated with a significant reduction in postpartum unmet need for family planning and an increased intention to use modern contraceptive methods among pregnant women in the intervention group. These results suggest that application-based counseling can serve as a feasible and effective approach to strengthening family planning services, particularly by improving access to information and supporting informed decision-making during the perinatal period.

From a practical perspective, the integration of digital counseling tools such as My Darling KB into routine antenatal and postnatal care services may enhance the reach and continuity of family planning counseling, especially in settings with limited access to face-to-face services. This approach also has the potential to promote partner involvement and reinforce counseling messages through repeated access to information.

Future research is recommended to examine the long-term sustainability of contraceptive use following this intervention, including continuation rates and method switching patterns. Studies involving larger and more diverse populations are needed to improve generalizability, as well as the inclusion of objective outcome measures such as verified contraceptive uptake. Additionally, further research should explore the integration of digital counseling with broader health system components and assess cost-effectiveness to inform policy implementation.

Overall, this study contributes to the growing evidence on the role of digital health interventions in addressing unmet need for family planning and provides a foundation for the development of scalable, context-appropriate strategies to improve reproductive health outcomes.

## REFERENCES

- Akoku, D. A., Achombwom Vukugah, T., Abena Tihnje, M., & Bigweh Nzubepie, I. (2022). Childbearing intentions, fertility awareness knowledge, and contraceptive use among female university students in Cameroon. *Plos One*, 17(10), e0276270. <https://doi.org/10.1371/journal.pone.0276270>
- Alshahrani, A., Jradi, H., & Bawazir, A. (2025). Prevalence and determinants of unmet need for modern contraception and family planning counseling among postpartum women. *British Journal of Nursing Studies*, 5(2), 14–19. <https://doi.org/10.32996/bjns.2025.5.2.2>
- Amuzie, C. I., Kalu, K. U., Izuka, M., Nkwo, G. E., Nwamoh, U. N., Metu, K., Emma-Ukaegbu, U., Okafor, G. O., & Odini, F. (2023). Unmet need for family planning and predictors among women in the extended postpartum period, southeastern Nigeria: A facility-based cross-sectional study. *The Pan African Medical Journal*, 45, 38. <https://doi.org/10.11604/pamj.2023.45.38.39205>
- Ardhika, M. U. R. (2018). Factors Contributing to Unmet Family Planning Needs Among Couples of Reproductive Age in Labuhan Ratu Subdistrict, Bandar Lampung City. *Thesis*. Faculty of Teacher Training and Education, University of Lampung.
- Babalola, S., Loehr, C., Oyenubi, O., Akiode, A., & Mobley, A. (2019). Efficacy of a Digital Health Tool on Contraceptive Ideation and Use in Nigeria: Results of a Cluster-Randomized Control Trial. *Global health, science and practice*, 7(2), 273–288. <https://doi.org/10.9745/GHSP-D-19-00066>
- Edosa Dirirsa, D., Awol Salo, M., Eticha, T. R., Geleta, T. A., & Deriba, B. S. (2022). Return of sexual activity within six weeks of childbirth among married women attending postpartum clinic of a teaching hospital in Ethiopia. *Frontiers in Medicine*, 9, 865872. <https://doi.org/10.3389/fmed.2022.865872>
- Efendi, F., Sebayang, S. K., Astutik, E., Reisenhofer, S., & McKenna, L. (2023). Women's empowerment and contraceptive use: Recent evidence from ASEAN countries. *Plos One*, 18(6), e0287442. <https://doi.org/10.1371/journal.pone.0287442>
- Gebeyehu, N. A., Tegegne, K. D., & Kassaw, M. W. (2023). The effect of maternal educational status, antenatal care, and resumption of menses on postpartum contraceptive use in Ethiopia: Systematic review and meta-analysis. *Scientific Reports*, 13(1), 12655.
- Gelagay, A. A., Negash, W. D., Belachew, T. B., Bitew, D. A., Fentie, E. A., Worku, A. G., Bashah, D. T., Tebeje, N. B., Gebrie, M. H., Yeshita, H. Y., Cherkose, E. A., Ayana, B. A., Lakew, A. M., & Asmamaw, D. B. (2023). Magnitude of unmet need for family planning and associated factors among women in the extended postpartum period in Dabat district, Northwest Ethiopia. evidence from Dabat demographic health surveys. *BMC public health*, 23(1), 1123. <https://doi.org/10.1186/s12889-023-16046-3>
- Hastuti, A. P., Mufarokhah, H., Kurniawan, A. W., & Putri, E. M. I. (2022). Determinant factors related to the unmet need of family planning program among married women in Indonesia. *Indian Journal of Forensic Medicine & Toxicology*, 16(4), 125–131. <https://doi.org/10.37506/ijfmt.v16i4.18551>
- Htay, Z. W., Kiriya, J., Sakamoto, J. L., & Jimba, M. (2024). Association between women's empowerment and unmet family planning needs in low- and middle-income countries in Southeast Asia: A cross-sectional study. *Women's Reproductive Health*, 11(1), 17–32. <https://doi.org/10.1080/23293691.2023.2174822>
- Jones, E. J., Dehlendorf, C., Kriz, R., Grzeniewski, M., Decker, E., & Eikner, D. (2023). Using the person-centered contraceptive counseling (PCCC) measure for quality

- improvement. *Contraception*, 123, 110040. <https://doi.org/10.1016/j.contraception.2023.110040>
- Memon, Z. A., Tahmeena, Fazal, S. A., Reale, S., Spencer, R., Bhutta, Z., & Soltani, H. (2024). Effective strategies for increasing the uptake of modern methods of family planning in South Asia: A systematic review and meta-analysis. *BMC Women's Health*, 24(1), 13. <https://doi.org/10.1186/s12905-023-02859-2>
- Mruts, K. B., Tessema, G. A., Gebremedhin, A. T., Scott, J. A., & Pereira, G. (2022). The role of family planning counselling during maternal and child health services in postpartum modern contraceptive uptake in Ethiopia: A national longitudinal study. *Plos Global Public Health*, 2(8), e0000563. <https://doi.org/10.1371/journal.pgph.0000563>
- Mruts, K. B., Tessema, G. A., Kassaw, N. A., Gebremedhin, A. T., Scott, J. A., & Pereira, G. (2023). Achieving reductions in the unmet need for contraception with postpartum family planning counselling in Ethiopia, 2019–2020: A national longitudinal study. *Archives of Public Health*, 81(1), 79. <https://doi.org/10.1186/s13690-023-01096-1>
- National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health (Kemenkes), & ICF. (2018). *Indonesia demographic and health survey 2017*. Jakarta, Indonesia: BKKBN, BPS, Kemenkes, and ICF. Retrieved from <https://dhsprogram.com/pubs/pdf/FR342/FR342.pdf>
- National Population and Family Planning Agency. (2017). Regulation of the Head of the National Population and Family Planning Agency No. 24 of 2017 on Postpartum and Post-Miscarriage Family Planning Services. Jakarta: National Population and Family Planning Agency.
- Nuryana, D., Cahyani, R. A., & Rahayu, S. (2023). Unmet need for family planning in Indonesia and its associated factors. *Makara Journal of Health Research*, 27(1), 25–35. <https://doi.org/10.7454/msk.v27i1.1403>
- Rizkianti, A., Kistiana, S., Fajarningtiyas, D. N., Hutasoit, E. F., Baskoro, A. A., Maryani, H., ... & Muthmainnah, M. (2024). Understanding the association between family planning and fertility reduction in Southeast Asia: A scoping review. *BMJ Open*, 14(6), e083241. <https://doi.org/10.1136/bmjopen-2023-083241>
- Sserwanja, Q., Turimumahoro, P., Nuwabaine, L., Kamara, K., & Musaba, M. W. (2022). Association between exposure to family planning messages on different mass media channels and the utilization of modern contraceptives among young women in Sierra Leone: Insights from the 2019 Sierra Leone Demographic and Health Survey. *BMC Women's Health*, 22(1), 376. <https://doi.org/10.1186/s12905-022-01974-w>
- Utomo, B., Rahayu, S., Liyanto, E., Romadlona, N. A., Nuryana, D., Aryanty, R. I., ... & Magnani, R. (2025). The Indonesian national family planning program: Progress and remaining challenges in implementing a rights-based approach. *International Journal of Human Rights in Healthcare*, 18(1), 1–16. <https://doi.org/10.1108/IJHRH-06-2023-0049>
- Triguno, Y., Ayu, P. L., Wardana, K. E. L., Raningsih, N. M., & Arlinayanti, K. D. (2020). Jurnal Peduli Masyarakat. *Jurnal Peduli Masyarakat*, 2 (September), 59–64.
- Wagan, F., Siyal, A. K., Ali, R., & Taqi, T. (2018). Major consequences, determinants, and obstetrical outcomes of unintended pregnancy. *Med Forum*, 29(11), 43–47.
- Wilopo, S. A., Setyawan, A., Pinandari, A. W., Prihyugiarto, T., Juliaan, F., & Magnani, R. J. (2017). Levels, trends and correlates of unmet need for family planning among postpartum women in Indonesia: 2007-2015. *BMC women's health*, 17(1), 120. <https://doi.org/10.1186/s12905-017-0476-x>