

## Effectiveness of the My ADA Application on ANC Visiting Behavior of Pregnant Women in the Cities of Bengkulu and Cilandak, South Jakarta

Yuniarti<sup>1</sup>, Elvi Destariyani<sup>1\*</sup>, Erlin Puspita<sup>2</sup>, Nurhayati<sup>2</sup>

<sup>1</sup> Poltekkes Kemenkes Bengkulu, Bengkulu, Indonesia

<sup>2</sup> Poltekkes Kemenkes Jakarta I, Jakarta, Indonesia

### ARTICLE INFORMATION

Received: 24, October, 2024

Revised: 9, January, 2025

Accepted: 10, January, 2025

### KEYWORD

ANC visit; Behavior; MY ADA Application; Knowledge of women pregnant

### CORRESPONDING AUTHOR

Elvi Destariyani  
Jl. Indragiri no 3 Padang Harapan Bengkulu  
[destariyani@poltekkesbengkulu.ac.id](mailto:destariyani@poltekkesbengkulu.ac.id)  
+6281273565646

### DOI

<https://doi.org/10.36456/edapnh95>

© 2025 The Author(s)

### ABSTRACT

ANC results are usually recorded in the MCH book, but pregnant women often forget to bring the book, the applications are really needed to make it easier. The aim of this research is to analyze the effectiveness of implementing My ADA on ANC visit behavior among pregnant women in the cities of Bengkulu and Cilandak, South Jakarta. This research uses a quasi-experimental design. The research will be carried out at PMB Bengkulu City and Cilandak, South Jakarta, a sample of 106. Purposive sampling technique. There was an increase in the average knowledge about ANC in the MY ADA application group and the KIA book group. Which means there is a difference in the average knowledge score between the My ADA application group and the MCH book group ( $p=0,00$ ), so it can be concluded that the My ADA Application group is more effective in increasing pregnant women's knowledge about ANC.

## Introduction

Service coverage for K4 pregnant women in Indonesia in 2021 decreased compared to 2020, from 88.54% to 84.6%, indicating that Ante Natal Care (ANC) services are still relatively low. Nationally, it is still below the Minimum Service Standards (SPM) target, which is 95% (Taji & Hendrati, 2023). Bengkulu Province in 2019 the coverage of K4 visits for pregnant women was 87% and in 2020 it decreased by 86.6% and in Bengkulu City in 2020 the coverage of K1 visits was 7,399 (79.2%), K4 coverage decreased by 6,267 (84.06%) (Dinas Kesehatan propinsi Bengkulu, 2021).

The MCH book is used in the program to track the development of the mother and fetus during pregnancy. It contains a record of the mother and fetus's development at each visit, which is not ideal in practice due to a number of flaws. One of these is that the recording is still done manually by midwives, and during ANC checks, it is frequently forgotten to bring the KIA book, which makes it impractical. So innovation in Android-based information and communication technology programs is needed providing online-based monitoring of antenatal care (Kurnain et al., 2022).

Based on research, it is stated that applications are one of the effective methods today because everyone uses them smartphones, applications are really needed by pregnant women in monitoring pregnancy (Pouriayevali et al., 2022). "My ADA" is an ANC app designed for expectant mothers based on earlier studies. Four features of the Android-based My ADA application functional appropriateness, usability, dependability, and performance efficiency were determined by the research findings. The My ADA application's development yielded findings that were deemed very appropriate for usage and might be suggested for ANC exams in expectant mothers (Yuniarti et al., 2023).

Various studies on the effect of counseling about antenatal care on increasing ANC visits show significant results, but the media used is still print media, namely books, which do not get maximum results (Raru et al., 2022). The findings of the study demonstrated a connection between ANC visits and knowledge. The more information that can influence or increase knowledge, knowledge will create awareness which will ultimately lead to behavior according to the knowledge they have (Eppang, 2020); (Yenita et al., 2022).

Good knowledge about pregnancy causes mothers to be motivated to maintain their pregnancy, obeying the advice of the prenatal examiner, so that the mother can go through her pregnancy well and produce a healthy baby (Marshall et al., 2022). The health education provided is an activity to convey messages, provide confidence that can make people aware, know and understand, even willing and will carry out recommendations given regarding health. Based on Udoudom et al., (2023) this, the authors are interested in research to analyze the effectiveness of implementing My ADA on ANC visit behavior among pregnant women in the cities of Bengkulu and Cilandak, South Jakarta

## **Method**

This type of quantitative research uses a quasi-experimental design with control group design. The research will be conducted at PMB Bengkulu City and Cilandak, South Jakarta. All pregnant women in the PMB area of Bengkulu City, Cilandak, South Jakarta in 2023 numbered 6,279, a sample of 106, namely the Antenatalcare Application group, 53 people and the KIA book group, 53 people. Sampling: purposive sampling technique with inclusion criteria, namely Willing to be a respondent and having a smartphone. Qualitative data samples by snowball sampling. Primary data collection was assisted by enumerators after perception similarities. ANC behavior data from questionnaires, system quality evaluation, information quality, and user satisfaction were conducted in in-depth interviews. Univariate and bivariate analysis: Wilcoxon and Mann Whitney tests because they were not normally distributed. Qualitative data using content analysis. This study approved by the ethics commite of Poltekkes Kemenkes Bengkulu, Indonesia (Number KEPK. BKL/033 /02/2024).

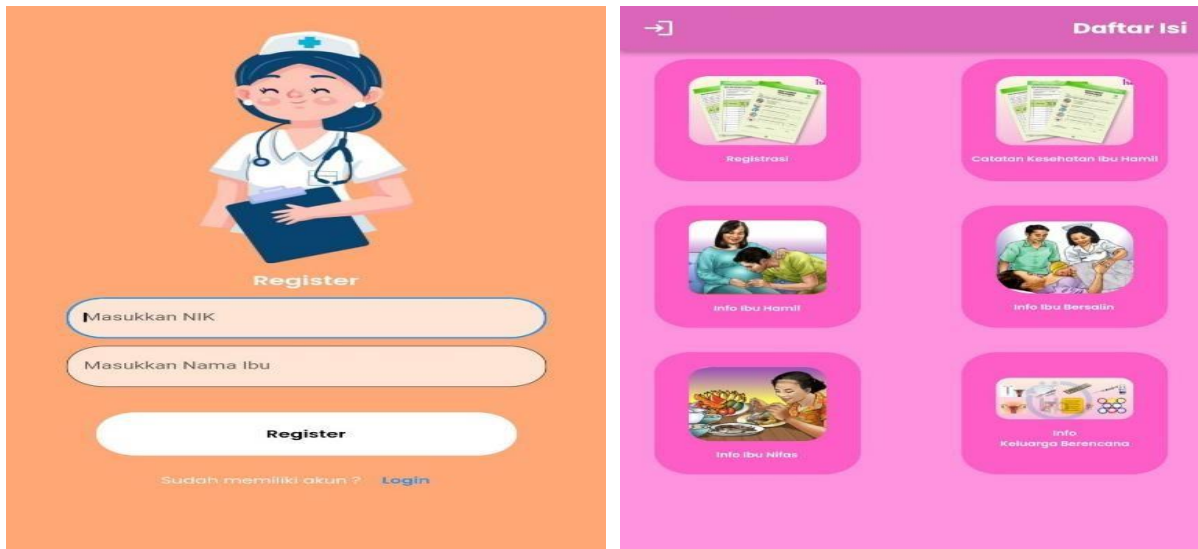


Figure 1. MY ADA Application

Results

Table 1. Average Knowledge of Pregnant Women about ANC

Knowledge	N	$\Delta\bar{x}$	Min	Max	Mean $\pm$ SD	P-Value
<b>MY ADA Appliaction Group</b>						
- Before	53	26,15	40	86	58,94 $\pm$ 11,936	0,000
- After	53		50	100	85,09 $\pm$ 11,553	
<b>MCH Book Group</b>						
- Before	53	5,3	30	67	50,98 $\pm$ 9,166	0,000
- After	53		34	70	56,28 $\pm$ 7,774	

Based on the data, it demonstrates that respondents in the intervention group. Prior to the intervention, the average knowledge score was 58,94, with a standard deviation of 11.936 and a lowest and highest score of 40 and 86, respectively. With a standard deviation of 11.553 and a mean difference of (26.15), the average score after the intervention rose to 85.09, with a minimum score of 50 and a maximum score of 100.

Prior to the execution of the intervention, the control group's average knowledge score was 50.98, with a minimum score of 30 and a maximum score of 67, and a standard deviation of 9.166. With a standard deviation of 7.774 and a mean difference of 5,3, the average score rose to 56.28 after the intervention, with a minimum score of 34 and a maximum score of 70.

The Mann-Whitney statistical test aims to Effectiveness of the My ADA Application on pregnant women's knowledge about ANC. More details are presented in Table 2:

Table 2. the Effectiveness of the My ADA Application on pregnant women's knowledge about ANC

Variable	Sum of Ranks	P-Value
MY ADA Application group	78,41	0,00
MCH Book group	28,59	

The My ADA application is more effective than the MCH book at increasing pregnant women's knowledge about ANC, according to the results of the Mann-Whitney test, which showed that the mean knowledge of the My ADA group was 85.09 and the mean knowledge of the KIA book group was 56.28. The mean difference was 28.81, and the P value was 0.000<0.05.

## Discussion

Effectiveness of application The results of my ADA about pregnant women's attitudes and knowledge toward antenatal care (ANC) were noteworthy. It has been demonstrated that this application can help pregnant women better appreciate the value of routine prenatal care, offer conveniently available teaching materials, and promote changes in attitudes around the use of ANC. In addition to helping pregnant women overcome a lack of information, My ADA's interactive features, pertinent material, and high accessibility raise their understanding of their responsibility for their health throughout pregnancy.

Pregnant women's average knowledge score about ANC rose in the intervention group using the My ADA application and in the control group using the KIA book, according to the study's findings. This is consistent with the My ADA application manual, which states that the goal of the My ADA application is to inform and record Antenatal Care (ANC) appointments for pregnant women. This is also consistent with the goal of the KIA book, which is to improve mothers' awareness of maternal and child health in order to enable them to identify issues early (Risatamaya et al., 2023).

Efforts to increase information that can be made include the use of KIA books by mothers. Information related to between the My ADA application group and the KIA book group. KIA book has become easier for mothers to access through interactions between mothers and health workers and other health information media, thus increasing mothers' understanding and knowledge of maternal and child health information (Herfanda & Subiyatun, 2021).

One of the most crucial domains for the formulation of one's actions is knowledge. Knowing is the outcome of knowing, which happens when humans experience a certain item. A person's knowledge or cognitive abilities play a crucial role in how their actions (overt conduct) are formed (Zebua et al., 2023). In increasing pregnant women's knowledge about ANC, media is needed as a tool, especially Android-based, one of which is the My ADA application in line with research pregnant women's knowledge about ANC, media is needed as a tool, especially Android-based, one of which is the My ADA application in line with research (Yuniarti et al., 2023).

The research results showed that there was a significant effect of the intervention of the My ADA Application and the KIA Book on pregnant women's knowledge about ANC as seen from the significant value smaller than  $\alpha = 0.05$  at the assumed level of 95% in line with Wardiyati & Rifiqoch, (2023) research that there was a relationship between the use of KIA books and the level of knowledge pregnant women, the results of the Kendal's Tau test obtained a P value of 0.000. This is also in line with research by Savitri et al. (2022), there is an influence of intervention through an Android-based application (Bidan-Ku) and the KIA Book on knowledge, attitudes and practices after controlling for the variables of age, parity, education and family income. The Bidan-Ku application has an influence on the readiness of pregnant women to give birth (Savitri et al., 2023). According to research (Mulidah et al., 2023), changes in respondents' knowledge and attitudes fall into the significant category when the significance value is less than  $\alpha (0.05)$ . These findings suggest that pregnant women's knowledge scores and attitudes

before and after treatment differ statistically in the intervention group using smartphone-based media because these devices are more accessible, practical, and nearly everyone has them.

This is in accordance with previous findings that Android-based smartphone technology is a health promotion medium that can be developed because it has a wide reach and increases access to health-related information. The advantages of using smartphone technology are that it is currently widely used at all levels of society (Savitri et al., 2023).

The results of the Mann-Whitney test showed that the mean knowledge of the My ADA group was (85.09) and the mean knowledge of the KIA book group was (56.28) with a mean difference of 28.81 and P-Value =  $0.000 < 0.05$ , which means there is a mean difference. knowledge score between the My ADA application group and the MCH book group, it can be concluded that the My ADA application is more effective in increasing in line with Fahmi et al.'s (2024) research that interaction quality showed the largest gap, with 57.22 for the experimental group and 29.78 for the control, the "PUIS LITA" website proved to be more effective than the KIA Book in all dimensions of WebQual 4.0, which shows its potential as a resource valuable digital resource to increase knowledge of infant and toddler care (Fahmi, 2024).

This is because people's interest in reading is still poor, the researchers hypothesized. According to UNESCO data, Indonesia ranks second from the bottom in the world for literacy, indicating a very low level of interest in reading. UNESCO statistics shows that just 0.001% of Indonesians are interested in reading, which means that only one person out of every 1000 reads regularly.

The study's findings indicate that there is a difference in the effectiveness of the KIA book and the Monsca application for early pregnancy risk factor detection, with a p-value  $< (p=0.05)$ , in terms of convenience ( $p=0.000$ ), speed ( $p=0.006$ ), security ( $p=0.005$ ), and data accuracy ( $p=0.000$ ). Therefore, without discounting the value of the MCH book as a tool for MCH services, it can be said that the Smart Continuity of Care application is more beneficial when used for early identification of pregnancy risk factors. From the effectiveness aspect, it shows that many midwives still think that using the MCH book is not easy to use in midwifery care, it is not fast. In filling out the MCH book, it is not safe to store patient data and is not accurate in carrying out early detection of pregnancy risk factors compared to the Monsca application (Ismayana et al., 2020).

Mobile technology is becoming more and more commonplace worldwide, and it is also being used more and more in training and education. Mobile technology has been shown to have a wide range of educational applications. The use of digital apps and technology in midwifery education has various advantages. However, access to education may be hampered by a lack of technical tools and infrastructure. In addition, there are several advantages of integrating digital applications and technology into midwifery education. However, access to education may be hampered by a lack of technical tools and infrastructure. Besides, the fact that (Tekeş, H., Uluşen, 2023).

This research is supported by research Sudirman, (2016) stating the opinion that applications are an effective method nowadays because everyone uses smartphones, applications are really needed by pregnant women in monitoring pregnancy, pregnant women do not need to carry a KIA book, just an

Android, data on maternal and fetal development can be monitored and viewed via the My ADA application

The My ADA application is an effort to increase pregnant women's knowledge and documentation of Antenatal Care (ANC) visits. This is to adapt to people's lifestyles where cellphones are a necessity and almost all people, including pregnant women, use cellphones to carry out their activities. ANC examination of pregnant women during pregnancy to prevent complications and prepare for a healthy birth (Yuniarti et al., 2023).

The My ADA application can be used by mothers to make it easier to document ANC examinations and make it easier for mothers to get information on the progress of their pregnancy. Additionally, several segments of the app provide need-to-know information during pregnancy, labor, postpartum, and newborn care. The hope is that this can increase knowledge and improve maternal health and baby growth and development for readers so that there are no more worries during pregnancy, childbirth and postpartum, with the My ADA application you can evaluate information on the condition of the mother and fetus, information on pregnancy and childbirth, postpartum and family planning, mothers can read information about pregnancy and family planning at any time (Yuniarti et al., 2023).

## Conclusions

There was an increase in the average knowledge of pregnant women about ANC in the intervention group using the My ADA application and in control, group using the MCH book, there was an influence of the My ADA Application and the MCH Book in increasing mothers' knowledge pregnant women about ANC, the My ADA application is more effective in increasing pregnant women's knowledge about ANC than the KIA books.

Suggestions for further researchers can develop research variables: Research the long-term effects of using the application on changes in behavior, not just knowledge and attitudes, such as compliance in carrying out ANC according to schedule.

## References

- Dinas Kesehatan propinsi Bengkulu. (2021, July 31). *Jumlah Ibu Hamil, Melakukan Kunjungan K1, Melakukan Kunjungan K4, Kurang Energi Kronis (KEK), dan Mendapat Tablet Zat Besi (Fe) di Provinsi Bengkulu, 2017–2020*. Badan Pusat Statistik Propinsi Bengkulu. <https://bengkulu.bps.go.id/id/statistics-table/1/NjA5IzE=/jumlah-ibu-hamil--melakukan-kunjungan-k1--melakukan-kunjungan-k4--kurang-energi-kronis--kek---dan-mendapat-tablet-zat-besi--fe--di-provinsi-bengkulu--20172020.html>
- Eppang, Y. (2020). Pengaruh Konseling Saat Antenatal Care (ANC) Terhadap Pengetahuan Dan Sikap Ibu Hamil Tentang Tanda-Tanda Bahaya Kehamilan Di Wilayah Kerja Puskesmas Kapasa. *Jurnal Keperawatan Muhammadiyah*, 5(2). <https://doi.org/10.30651/jkm.v5i2.6331>
- Fahmi, N. A., Sastramihardja, H. S., Sutisna, M., HR. T. N., Rowawi, R. & Wijayanegara, H. (2024). The effectiveness of the "Puisi Lita" website is seen from the dimensions of usability quality, information quality and interaction quality using Webqual 4.0. *HEALTH CARE: JURNAL KESEHATAN*, 13(1), 104-112. <https://doi.org/10.36763/healthcare.v13i1.448>

- Herfanda, E., & Subiyatun, S. (2021). Gambaran pemanfaatan buku kesehatan ibu dan anak (KIA) oleh ibu hamil trimester iii tentang persiapan persalinan di Puskesmas Tempel 1. *Jurnal Kebidanan*, 10(2), 129-139. <https://doi.org/10.26714/jk.10.2.2021.129-140>
- Ismayana., Nontji, W., Syafruddin, S. (2020). Perbandingan efektivitas aplikasi smart continuity of care (monsca) dan buku kia terhadap deteksi dini faktor risiko kehamilan. *Jurnal Riset Kesehatan Poltekkes Depkes Bandung*, 12(2), 869–876. <https://doi.org/10.34011/juriskesbdg.v12i2.866>
- Kurnain, N. J., Zirmansyah, Z., & Nurfadilah, N. (2022). Implementation of The Use Maternal and Child Health (MCH) Handbook. *Edukasi*, 16(1), 20–26. <https://doi.org/10.15294/edukasi.v16i1.36656>
- Marshall, N. E., Abrams, B., Barbour, L. A., Catalano, P., Christian, P., Friedman, J. E., Hay, W. W., Hernandez, T. L., Krebs, N. F., Oken, E., Purnell, J. Q., Roberts, J. M., Soltani, H., Wallace, J., & Thornburg, K. L. (2022). The importance of nutrition in pregnancy and lactation: lifelong consequences. *American Journal of Obstetrics and Gynecology*, 226(5), 607–632. <https://doi.org/10.1016/j.ajog.2021.12.035>
- Mulidah, S., Asrin, A., & Kuhu, M. M. (2023). Aplikasi Gemas tentang Pencegahan Stunting terhadap Peningkatan Pengetahuan dan Sikap Ibu Hamil. *Jurnal Keperawatan Silampari*, 6(2), 1918–1928. <https://doi.org/10.31539/jks.v6i2.5787>
- Pouriaeyevali, B., Ehteshami, A., Kohan, S., & Saghaeiannejad-Isfahani, S. (2022). Functionality of self-care for pregnancy mobile applications. *Journal of Education and Health Promotion*, 11(1), 415. [https://doi.org/10.4103/jehp.jehp\\_1429\\_21](https://doi.org/10.4103/jehp.jehp_1429_21)
- Raru, T. B., Mamo Ayana, G., Bahiru, N., Deressa, A., Alemu, A., Birhanu, A., Yuya, M., Taye Merga, B., Negash, B., & Letta, S. (2022). Quality of antenatal care and associated factors among pregnant women in East Africa using Demographic and Health Surveys: A multilevel analysis. *Women's Health*, 18. <https://doi.org/10.1177/17455065221076731>
- Risatamaya, Friscila, I., Wijaksono, M. A., Rizali, M., Permatasi, D., Aprilia, E., Hanovani, R Wahyuni, I., Marsela, M., Asri, N. A., Nurlaila, Yuliani, R., Ulfah, R., & Ayudita. (2023). Pengoptimalisasi Penggunaan Buku Kia Pada Era Digital Di Wilayah Kerja Puskesmas Kandui Optimizing the Use of the Kia Handbook in the Digital Era in the Working Area of the Kandui Puskesmas. *Prosiding Seminar Nasional Masyarakat Tangguh*, 2(1), 299–307. <https://ocs.unism.ac.id/index.php/semnaspkm/article/view/1058>
- Savitri, W., Baskah, D. Y., & Nugraheni, D. E. (2023). Pengaruh Penggunaan Aplikasi Bidan-Ku Berbasis Android Terhadap Kesiapan Ibu Hamil Untuk Bersalin Di Pmb Kota Bengkulu. *Journal of Nursing and Public Health*, 11(2), 493–499. <https://doi.org/10.37676/jnph.v11i2.5184>
- Sudirman. (2016). *Aplikasi Panduan monitoring Ibu Hamil Berbasis Android* [Thesis, UIN Alauddin]. Repositori UIN Alauddin Makassar. <https://repositori.uin-alauddin.ac.id/1849/>
- Taji, S. A. S., & Hendrati, L. Y. (2023). Analisis Kecenderungan Cakupan Pemberian Tablet Fe-3 dan Cakupan ANC K4 terhadap Kejadian Komplikasi Kehamilan di Surabaya Tahun 2019. *Amerta Nutrition*, 7(1), 79–87. <https://doi.org/10.20473/amnt.v7i1.2023.79-87>
- Tekeş, H., Uluşen, M. (2023). How Effective Digital Technologies In Midwifery Education. *European Journal of Midwifery*, 7(Supplement 1):A149. <https://doi.org/10.18332/ejm/172484>
- Udoudom, U., Igiri, A., George, K., & Aruku, K. J. (2023). Promoting Health Education through Effective Communication for Development. *ALSYSTECH Journal of Education Technology*, 2(1), 68–88. <https://doi.org/10.58578/alsystech.v2i1.2399>
- Wardiyati, & Rifiqoch, I. (2023). Hubungan Pemanfaatan Buku KIA dengan Tingkat Pengetahuan dan Tingkat Kecemasan Ibu Hamil di RSUD Banyumas. *NersMid : Keperawatan Dan Kebidanan*, 6(1), 77–86. <https://doi.org/10.55173/nersmid.v6i1.147>
- Yenita, R. N., Yanti, R., Febriani, S., & Mulyadi, R. (2022). Analysis of the use of mother and child health (mch) books by pregnant women in controlling stunting in the working area of Koto Baru community health center, Kuantan Singingi District. *Riset Informasi Kesehatan*, 11(2), 201. <https://doi.org/10.30644/rik.v11i2.717>

- Yuniarti., Damarini, S., Destariyani, E., Puspita, E., Kristianto, J. (2023). Model Pengembangan Antenatal Care Berbasis Android “My ADA” Pada Ibu Hamil. *Jurnal Health Sains*, 4(1). 74–89. <https://repository.poltekkesbengkulu.ac.id/2762/>
- Yuniarti, Damarini, S., Destariyani, E., Puspita, E. (2023). *Buku Pedoman Aplikasi My ADA untuk Ibu Hamil*. Retrieved August 2, 2024. [https://books.google.co.id/books/about?id=UZSSEAAAQBAJ&redir\\_esc=y](https://books.google.co.id/books/about?id=UZSSEAAAQBAJ&redir_esc=y)
- Zebua, E. Y., Sinaga, S. N., Tarigan, E. F., & Sitohang, D. (2023). The Relationship of Cadre Knowledge and Attitudes with The Use of Kia Books. *Jurnal Penelitian Kebidanan*, 4(2), 16–23. <https://doi.org/10.54973/jpk.v4i2.341>