The KIA Book's digitalization as a means to educate breastfeeding and postpartum moms on their children's health

Rizki Amalia[1,3]*, Diah Indriani[2],Uliyatul Laili[1],Yunik Windarti[1], Fauziyatun Nisa[1]

[1]*Department of midwifery, Faculty of nursing and midwifery, Universitas Nahdlatul Ulama Surabaya, Indonesia. Email: rizki.amalia-2023@fkm.unair.ac.id*

[2]*Department of Epidemiology, Biostatistics and Health Promotion, Faculty of Public Health, University of Airlangga*

[3]*Departement Doctoral Public health, Faculty Public Health, Universitas Airlangga*

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ABSTRACT

The study aims to develop skilled and empowered human resources, particularly through interventions like strengthening governance and increased availability of services for the health of mothers and children. One major focus is on the postpartum period and breastfeeding, where efforts include providing support through digital tools for new mothers. The study seeks to identify a mentoring model for postpartum and breastfeeding mothers using a digital version of the KIA book. A non-equivalent control group was used in a pretest-posttest setting as part of a quasi-experimental design. The study involved 86 postpartum and breastfeeding mothers, with 43 receiving digital accompaniment through the KIA book as an intervention, while the other 43 served as a control group. Additionally, a qualitative approach was used, involving in-depth interviews with 12 postpartum and breastfeeding mothers, 6 primary healthcare midwives, and health service staff. The study found that digital accompaniment via the KIA book significantly influenced early risk detection, knowledge, and actions among the mothers. The digital assistance provided to postpartum and breastfeeding mothers positively impacted maternal and child health, enabling independent detection of health risks, increasing knowledge, and encouraging proactive behavior, along with family support. The research suggests the effectiveness of a mentoring model for these mothers through the digitization of the KIA book.

1. Introduction

Ensuring the health of pregnant women, new-borns, and toddlers is the cornerstone of human resource development since these formative years are essential for building a robust population. In 2021, east Java had a considerable rise in the maternal mortality rate (MMR), reaching 234.7 per 100,000 live births, alongside 3,354 infant deaths. Neonatal deaths (ages 0-28 days) accounted for 73.87% of these infant deaths [1]. Additionally, there were 3,598 deaths among children under five. Increased access to maternal and child health care, strong governance, community empowerment, and improvements in the standard of health services [6] are all important objectives are just a few of the targeted interventions that must be included in efforts to develop highly qualified and competitive human resources [5]. Moms undergo a variety of physical and psychological changes throughout the postpartum period [2]. While many of these changes are normal, they can develop into complications without proper midwifery care [3]. Therefore, healthcare workers must provide thorough monitoring to prevent potential issues during the recovery period [15]. "Development of an E-Module Book on Maternal and Child Health to Increase Knowledge" is the title of Previous Research Conducted by Asmariana in the Year 2022,

involved distributing a KIA e-module link to pregnant women during the evaluation phase [4]. Out of the 44 respondents who participated, data such as name, age, gravida, gestational age, last menstrual period, and contact information were collected [7]. The study showed a 79.3% increase in knowledge among participants. In contrast, the objective of the present work is to digitize the KIA book to create a model for supporting new moms and breastfeeding mothers [8]. One strategy is to digitalize E MCH to improve governance, empower communities, raise the standard of healthcare, and expand access to maternity and child healthcare [9]. In the digital age, the health sector aims to strengthen partnerships and promote community self-reliance [10]. Health institutions may expedite the work of medical staff and safely retain patient data by using application-based patient data management [11]. However, at present, The Maternal and Child Health Polytechnic (KIA) persists in manually processing data, leading to many challenges for healthcare personnel at the institutions [12]. In an interview with a midwife, it was discovered that manual book processing and recording of Posyandu activities and patient data for expectant mothers still occurs [14]. Manual data processing is prone to mistakes since there are many patients in a relatively big region, including those who are pregnant, giving birth, postpartum, and children. Problems including misplaced record books, hard-to-find data because of patient volume, illegible handwriting, and entering data in the incorrect patient's book have been seen [16]. The Health Office also experiences delays in the delivery of data as a result of these challenges because manual data recapitulation is time-consuming. To address these issues, the researcher plans to develop a digital solution [13]. To improve performance and deliver the required data for decision-making in a timely and correct manner, KIA provides an alternate solution to handle problems with archiving, reporting, and data processing [17]. The objective is to create a support system that would provide high-quality care for new and breastfeeding moms, as well as their families [18]. This includes creating a digitized version of the KIA book to promote self-sufficiency in maternal and child health, as well as digitizing documentation for child and support related to maternity health.

2. Methodology

Materials

This investigation made use of a quasi-experimental design, as it was not possible to strictly regulate and control all variables and experimental conditions. The study used a non-equivalent control group and a pretest-posttest design. Additionally, qualitative research was carried out that included in-depth interviews with several informants to get deeper insights [19].

Data collection procedures

The study involved three main phases: a pre-experimental measurement (assessing conditions before treatment), a post-experimental measurement, which involves evaluating the circumstances that existed after the experiment, and the treatment phase, which involves experimenting. The intervention group consisted of postpartum and breastfeeding mothers who received support through the digitalization of KIA books. Meanwhile, the control group included postpartum mothers who did not receive any for assistance with the KIA guidebook that has been digitized.

Data analysis

In the experimental study, preliminary data collecting (pre-test) execution took place just before the beginning of the mentorship program. Specifically, this collection of quantitative data phase lasted for one month (August), with each region (intervention and control) being assessed over a period of 2 weeks. The intervention, the program, which lasted for a period of four months (September to December), consisted of offering assistance to pregnant women and their families. In a span ranging from September to December, the last data collection, referred to as the post-test, was administered to the women after their delivery. Both the intervention and control groups underwent initial and final data collection. In-depth interviews were done as part of the qualitative study after the mentorship phase. The use of a tape recorder and an interview guide was present to ensure comprehensive data collection and accurate documentation of the discussions. Predisposing variables like knowledge, attitudes, and

behaviours, as well as the distribution of traits like age, profession, and education among postpartum and nursing moms, were the main objectives of the interviews. To ascertain if several variables were regularly distributed, the Kolmogorov-Smirnov test was used. Non-parametric tests were used for bivariate analysis since the majority of the data were not normally distributed. In particular, the education level data were analysed using the Chi-square test, whereas knowledge, attitudes, age, and profession variables were analysed using the Mann-Whitney test.

3. Results and discussion

Analysis univariat

The treatment and control groups' age distribution showed that most responses were in the 20–35 age range, which suggests that this cohort was at reduced risk. Regarding education, compared to the treatment group's 37.0%, the control group's 49.0% had more high school graduates. In the treatment group, 81.0% were housewives, and in the control group, 77.0%.

Table 1. Respondent distribution according to treatment group and control group characteristics

Characteristics	Group				Amount	
	treatment		control			
	N	%	N	%	N	%
Age						
<20 years	7	16,3	5	11,6	12	14,0
20-35 years	33	76,7	34	79,1	67	78,0
>35 years	3	7,0	4	9,0	7	8,0

According to the data shown in Table 1, out of the 86 respondents, there was a greater concentration in the 20–35-year age range in both the treatment and control groups. This age range is thought to have a lower risk.

Analysis Bivariat

Table 2. The effect of digitizing KIA books to support nursing and postpartum care

Group	before	After	
	(Mean±SD)	(Mean±SD)	Nilai
Treatment (n=43)	7,7±1,9	9,8±0,3	*P*=0,000*
Control (n=43)	7,9±1,6	9,0±1,0	*P*=0,000*
	*P**=0,584*	*P**=0,000*	

When comparing the circumstances of the women in the treatment group before and after getting support, the information shown in Table 2 makes it clear that there are substantial variances in their health condition ($p < 0.05$). The treatment group observed a greater improvement in their health condition (mean difference = 2.1) compared to the control group, which experienced a mean difference equivalent to 1.1, even though the control group also exhibited an improvement ($p < 0.05$). Additionally, there was no statistically significant difference between the treatment groups and the control group's initial circumstances for the responders, as shown in Table 2 ($p = 0.584$). In contrast to the control group, a noteworthy improvement in health conditions was seen in the treatment group after the intervention comprising the digitalization of the KIA manual ($p < 0.05$).Table 2 Evaluation parameters.

4. Conclusion and future scope

The KIA manual has been digitalized to enable a postnatal and nursing model, which is part of a standardized strategy. The development of this concept involves many levels of intervention: a) at the

policy level by advocating for and establishing cooperation and commitment; b) at the organizational level by creating an independent joint forum; c) at the local level via the involvement of local health professionals and leaders; d) by integrating family responsibilities on an interpersonal level; and e) at the individual level by enhancing digital literacy among postpartum and breastfeeding mothers. The primary goal is to effect behavioral changes in these mothers.

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Conflict of interest

This paper does not present any conflicts of interest.

Reference

[1] Abidin, MZ (2011) Asuhan Postnatal Care. Yogyakarta: Nuha Medika.

[2] Akhtar, T., Khan, Z., & Raoof, S. (2014). Community participation eludes Pakistan's maternal, newborn and child health programme.

[3] Amiruddin, R., Hasni (2014). Determinan Kesehatan Ibu dan Anak. CV Trans Info Media, 13-17.

[4] Ebina, S et al. (2012). Influence of breastfeeding on maternal blood pressure at one month postpartum. International Journal of Women's Health 2012:4 333–339

[5] Economic, U. N. D. o. (2014). The Millennium Development Goals Report 2014 United Nations Publications.

[6] Kodric, Z., Vrhovec, S., & Jelovcan, L. (2021). Securing edge-enabled smart healthcare systems with blockchain: A systematic literature review. Journal of Internet Services and Information Security, 11(4), 19-32.

[7] Ferrer, B., Aronstein, D., & Conley, L. (2013). Collaboration Between Local Health Authorities, Hospitals, Residents, and Community- Based Organizations in Boston. American journal of public health, 103(3), e1-e2.

[8] Ramana, R.H.V., & Ravisankar, V. (2024). Precision in Prostate Cancer Diagnosis: A Comprehensive Study on Neural Networks. Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA), 15(2), 109-122. https://doi.org/10.58346/JOWUA.2024.I2.008

[9] Lestari, era. 2017. Hubungan Antara Paritas Dengan Tingkat Kecemasan Ibu Pada Masa Postpartum di RS PKU Muhammadiyah Yogyakarta. Universitas Muhammadiyah Yogyakarta.

[10] Laurensia, dkk. 2013. Hubungan Umur Dengan Tingkat Kecemasan Ibu Primipara Pada Masa Nifas Di Wilayah Kerja Puskesmas Kertak Hanyar

[11] Yolvi, J.O.F., Walter, G.G., Luis, A.V.F., Segundo P.V.R., Huguette, F.D.Z., Jackeline R.H.F., & Marco, A.A.B. (2023). A Novel Approach to Predict the Early Childhood Special Education Learning Skills of Autistic Children Using Ensemble Machine Learning. Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications, 14(2), 59-65.

[12] Prost, A., Colbourn, T., Seward, N., Azad, K., Coomarasamy, A., Copas, A., . . . Lewycka, S. (2013). Women's groups practising participatory learning and action to improve maternal and newborn health in low-resource settings: a systematic review and meta-analysis. The Lancet, 381(9879), 1736-1746.

[13] Sonya, A., & Kavitha, G. (2022). A Data Integrity and Security Approach for Health Care Data in Cloud Environment. Journal of Internet Services and Information Security, 12(4), 246-256.

[14] Tangkelangi, M. (2019) "CORRELATION OF MALNUTRITION, WORM INFECTION, PARENTS, INCOME AND KNOWLEDGE ON ANEMIA PREVALENCE AMONG 6-9 YEAR OLD STUDENTS OF LILIBA INPRES ELEMENTARY SCHOOL", Indonesian Journal of Medical Laboratory Science and Technology, 1(1), pp. 8–14. doi: 10.33086/ijmlst.v1i1.896.

[15] Chatterjee, P., Siddiqui, S., Granata, G., Dey, P., & Abdul Kareem, R. S. (2024). Performance Analysis of Five U-Nets on Cervical Cancer Datasets. Indian Journal of Information Sources and Services, 14(1), 17–28.

[16] Yanti, claramita & emilia 2015. Student's Understanding of Womaen- Centered Care Philosophy in Midwifery Care Trough Continuity of Care (CoC) Learning Model: a Quasi Experimental Study. BMC Nursing.

[17] Wiadnyana, m.s. 2011. The Power Of Yoga For Pregnancy And Post Pregnancy: Panduan Praktis Yoga Pada Masa Kehamilan Dan Pascapersalinan. Jakarta: Taruna Grafika

[18] Walyani, E. S. & Purwoastuti, E. 2015. Asuhan Kebidanan Masa Nifas dan Menyusui. Pustaka Baru Press

[19] Jothiaruna, N. (2022). SSDMNV2-FPN: A cardiac disorder classification from 12 lead ECG images using deep neural network. *Microprocessors and Microsystems*, *93*, 104627. https://doi.org/10.1016/j.micpro.2022.104627