Jurnal Kesehatan Prima

http://jkp.poltekkes-mataram.ac.id/index.php/home/index

p-ISSN: 1978-1334 (Print); e-ISSN: 2460-8661 (Online)



The Association of Knowledge And Skills With Accuracy In Using The "Kanak Kocet" Application As An Early Warning System For Low Birth Weight Infants

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Received: September 22, 2025/Accepted: August 31, 2026/Published Online: August 31, 2026
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Abstract

WHO released that in Indonesia the number of deaths caused by LBW reached 22,362 or 1.32 percent of the total deaths in Indonesia. This makes Indonesia ranked 76th out of 183 countries in the TOP 50 Causes Of Death for cases of death due to Low Birth Weight. The average incidence of Low Birth Weight nationally was 12.58% In 2022 in NTB Province, out of 99,120 newborns reported to be weighed, there were 3690 LBW babies. The incidence of LBW in NTB Province was 3.7 of the total newborn complications. One of the districts that contributed to the incidence of LBW was West Lombok Regency with 457 (3.4%) LBW babies. The purpose of the study was to determine the knowledge and skills of cadres' abilities in filling out the "Kanak Kocet" application as an early warning system for LBW. This type of research is an experiment with a One Group Pretest Posttest Design. The sample in this study was 60 cadres who had the highest incidence of LBW in their area in the year of the study in West Lombok Regency, West Nusa Tenggara Province. The results of the correlation test showed that there was a significant influence between the level of knowledge and skills on the accuracy of filling out the kanak kocet application with a value of ρvalue = 0.00. The R value showed 0.843 and the results of the regression line equation obtained the accuracy of filling out the application = 0.68 + 0.39 knowledge + 0.60 skills

Keywords: Knowledge; Skills; Accuracy; Low Birth Weight

INTRODUCTION

Low Birth Weight (LBW), defined as a birth weight of less than 2,500 grams regardless of gestational age, remains a major global public health concern due to its significant contribution to neonatal morbidity and mortality. According to estimates from the World Health Organization (WHO) and UNICEF, approximately 19.8 million babies, representing 14.7% of all live births worldwide, were born with LBW in 2020, equivalent to approximately one in seven newborns. (WHO, 2020)

In Indonesia, the 2023 Indonesian Health Survey (Survei Kesehatan Indonesia/SKI) reported that 6.1% of children aged 0–59 months had a history of LBW based on birth documentation. Meanwhile, data from the 2023 Indonesia Health Profile indicated that 3.9% of newborns weighed at birth were classified as LBW. (SKI,2023)

At the provincial level, the 2023 West Nusa Tenggara (NTB) Health Profile reported 3,176 LBW cases among 89,183 newborns weighed, corresponding to 3.6%. Specifically, West Lombok Regency recorded 600 LBW cases among 12,514 newborns weighed, representing 4.8%, which was higher than the provincial average. This situation highlights the continued burden of LBW in West Lombok Regency

and underscores the need to strengthen early detection, accurate data recording, reporting, and continuous monitoring of LBW infants. Therefore, optimizing the use of digital technology as an *early warning system* is essential to support timely identification, appropriate clinical decision-making, and improvements in the quality of neonatal healthcare services. (Profil Kesehatan NTB, 2023)

Babies born with low birth weight (LBW) are the largest proportion of infant deaths in Indonesia. Babies born with this condition are also more likely to experience morbidity and mortality than babies with normal birth weights. They also have a lower chance of survival and are more vulnerable to disease into adulthood (Novitasari et al., 2020). LBW infants are divided into two categories based on gestational age and small for gestational age. (World Health Organization., 2016) LBW infants born preterm without congenital abnormalities grow very rapidly in their first year, while LBW infants born at term experience slower growth. (Cutland et al., 2017) Currently, observations of infant growth in the community are conducted by volunteers at posyandu. One of the tasks of health workers in posyandu services is to manually write the weighing results on the Health Card (Khairul Hakim et al., 2017). This task is very prone to errors because health workers must be meticulous in drawing lines that correspond to the age and weight of the weighing results. Additionally, the low ability of health workers and parents to understand the meaning of the graph in the Health Card affects the effectiveness of the counselling provided by health workers in explaining the weighing results. (Muludi et al., 2020) The use of manual KMS is also very susceptible to loss due to storage errors, causing parents and cadres to lose previous baby history data. Lost KMS results in parents not receiving complete information about the baby's growth. (Tulloh et al., 2020) To overcome these problems, using the web appstore application will make it easier for cadres to enter weighing data, and subsequently, the examination results will be easier to explain to parents. Additionally, parents can access their baby's data at any time, ensuring the baby's growth history is well-recorded and secure. (Maulidia, 2015) The use of this "kanak kocet" application can also be used as an early warning system in the baby's growth stages; any problems can be detected earlier and immediately addressed (Ika Sari Tobing & Studi Magister Keperawatan Fakultas Ilmu Keperawatan, 2018).The research aims to determine the influence of knowledge and skills on the accuracy of filling out the "Kanak Kocek" application as an early warning system for low birth weight infants. The "Kanak Kocek" application is based on Mobile WebApps and is intended for use by posyandu cadres in areas with low birth weight infants (SMK and KMK) for 1 month, starting from the day the infant is discharged from the health facility. This application has never been created and will be researched in terms of its application. During the research, the researcher provided guidance to the cadres. The expected benefits of this research are that the "Kanak Kocek" application will be used by mothers with (SMK and KMK) and serve as a policy recommendation for programs to reduce stunting incidence thru preventive measures, especially for LBW infants.

METHOD

This type of research is experimental with a one-shot case study design, which is an experimental design using a single sample group. The research subjects are a group given treatment in the form of knowledge and skills in filling out the Konek Kochet application, followed by measuring the accuracy in filling out the Konek Kochet application. The research location is at the Narmada Public Health Center (UPTD Puskesmas Narmada), which is one of the areas contributing to low

birth weight (LBW) cases in the West Lombok Health Service area.

The training program was conducted over a three-month period and focused on providing cadres with knowledge and practical skills in completing the application. The training materials covered procedures for entering infant anthropometric measurements, including body weight, body length, and head circumference, based on the infant's sex and age in weeks. The learning method involved direct explanations and practical demonstrations of the application-filling procedures. Following the training, cadres were evaluated to assess their ability and accuracy in entering the required infant data into the application. The evaluation focused on the accuracy of data entry according to the infant's sex and age in weeks

The sample used in this study consisted of 60 cadres in the working area of the Narmada Public Health Center. The sampling technique used is purposive sampling. Inclusion criteria include cadres with more than 2 years of service and the ability to use Android. The instruments used in this study include the scores from the questions given to assess knowledge and a checklist to assess skills and accuracy in completing the nganak kocet application. Previously, on the first day, the cadres were given an explanation about the application and how to fill it out. On the second day, the cadres simulated filling out the application using their respective Android devices, with cases provided that needed to be filled in the application. After that, the cadres were tasked with filling out the application according to the LBW cases in their working area, and then the results of the filling were evaluated. Data analysis was performed using univariate analysis to describe the results of knowledge, skills, and accuracy of completion assessments. Subsequently, normality tests were conducted for each variable. Then, bivariate tests were performed on the variables using Pearson product-moment correlation tests, followed by the creation of regression line equations.

Data analysis was conducted using SPSS software. Before the research was conducted, respondents were given an explanation of the study, and those who agreed to participate were asked to sign an informed consent form. This research has received ethical approval from the Ethics Commission of the Health Polytechnic of the Ministry of Health Mataram with certificate number DP.04.03/F.XL.26/507/2025 and was funded by the SIMLITTAKES fund of the Health Polytechnic of the Ministry of Health Mataram.

RESULT AND DISCUSSION

Table 1. Frequency Distribution Table of Cadre Knowledge, Skills, and Accuracy in Completing the Kanak Kodek Application

Variable	n	Mean	SD	Min	Max	P value kolmogorov Smirnof
Knowledge	60	70	12	42	93	0,2
Skills	60	49	12	19	75	
Accuracy	60	58	12	30	87	

Based on the results of the descriptive analysis, the average knowledge score was 70, the skill score was 49, and the accuracy score was 58. This indicates that, overall, the respondents' knowledge level was in the fairly good category, but their skills were relatively lower, while the accuracy of filling out the application was in the moderate category.

This average difference indicates that although respondents have a fairly good theoretical understanding, its application in the form of practical skills is still limited, thus affecting the accuracy in filling out the application. Normality tests showed that all three variables were normally distributed, so correlation and regression analysis could proceed. The gap between knowledge (70) and skills (49) indicates a need to improve cadre capacity thru training that emphasizes practical aspects. According to (Handayani et al., 2018), direct practice-based training with digital application simulations has been proven to improve

cadre skills in reporting health data. The knowledge of cadres is important as a basis for understanding, but technical skills are more crucial for the accuracy of filling out digital health applications (Jafree et al., 2021).

This average value shows that although the knowledge of cadres is quite good, their skill level is still low, resulting in less than optimal accuracy in filling out the application. This is consistent with the view that knowledge is an important foundation, but practical skills are more decisive in the implementation of health programs. (Balogun et al., 2020) This is consistent with previous research findings stating that the accuracy of cadre record-keeping is often constrained by limited technical skills in operating digital-based systems, despite their relatively good knowledge levels (Jafree et al., 2021).

Table 2. Correlation and Regression Table of Knowledge and Skills Against Accuracy of Cadres in Filling Out the Kanak Kodek Application

Variabel	r	R^2	P_{Value}	Correlation line
Knowledge and Skills	0.918	0,843	0.00	Accuracy = 0,68 + 0.39 Knowledge + 0.60 Skills

The correlation test results show that there is a significant influence between knowledge and skills on the accuracy of filling out the Kanak Kocet application, with a p-value of 0.00 (<0.05). The influence of knowledge and skills on the accuracy of filling out the Kanak Kocet application shows a strong positive relationship (r = 0.918), meaning that the higher the values of knowledge and skills, the greater the accuracy of filling out the Kanak Kocet application. The coefficient of determination (R2 = 0.843) indicates that the regression line equation we obtained can explain 84.3% of the variation in the accuracy of filling out the Kanak Kocet application.

The results of this study are consistent with study (Ebenso et al., 2021) which states that technical ability has a significant contribution to the use of digital health systems, and (Bogale et al., 2023) which found that the knowledge and skills level of cadres significantly affects the accuracy of reporting in application-based health information systems. Cadres with good knowledge tend to understand procedures better, while technical skills enable them to execute those procedures correctly. Thus, the skills of the cadres play a dominant role in improving the accuracy of application completion. This reinforces the finding that operational technical factors are more determining than just conceptual understanding. (Dinakrisma et al., 2022) This research aligns with studies that found that the technical ability of cadres in using health applications is crucial for data accuracy, even tho their knowledge level is quite high (Jafree et al., 2021).

This gap between knowledge and skills can be caused by a lack of practice-based training. Theoretical knowledge is indeed important, but without operational skills, cadres will struggle to apply the information they possess.

Recent studies also show that repeated training, intensive supervision, and the use of simulations significantly improve the skills of health workers, thus having a direct impact on the quality of health data (Dinakrisma et al., 2022). This finding has practical implications for strengthening public health systems, particularly in the early detection of high-risk low birth weight infants. Accuracy in filling out the Kanak Kocet application is very important, as data entry errors can reduce the effectiveness of the early warning system. Therefore, the capacity building program for cadres should focus more on improving practical skills thru technology-based training, field simulations, and periodic evaluations(Mboera et al., 2021).

Data accuracy in the Kanak Kocet application is very important because this application serves as an early warning system for low birth weight babies. A study by(Duggal et al., 2023) confirms that errors in reporting health data risk delaying necessary

interventions, which can increase infant morbidity and mortality rates. Therefore, a strategy to improve the technical skills of the cadres is a top priority.

Overall, this study proves that knowledge and skills have a significant contribution to the accuracy of filling out the Kanak Kocet application. However, skills are a dominant factor that needs to be improved to support the success of the early warning system program for low birth weight infants. By strengthening the skills of community health workers, it is hoped that the application-based early detection system can function more effectively, thus supporting efforts to prevent and manage infant health risks more optimally.

CONCLUSION

This study concludes that knowledge and skills significantly influence the accuracy of application completion, with skills having a more dominant contribution. Therefore, improving skills thru practical training and technical assistance is highly recommended to optimize the accuracy of application completion. Efforts to improve skills need to be a top priority, even tho their impact is most dominant on the accuracy of application completion.

Training programs, technical assistance, and hands-on practice thru simulations are expected to help users improve their application skills effectively. Additionally, the integration of knowledge with skills needs to be strengthened so that theoretical understanding can be effectively applied in practice. Creating an interactive help feature to support users with limited skills. Periodic evaluations need to be conducted to assess the effectiveness of knowledge and skills improvement strategies so that the accuracy of filling out the Kanak Kocet application can continue to be improved.

DECLARATION

Authors' Contributions

All authors contributed to the development of this study. The first author (AS) was responsible for conceptualization, methodology, data collection, data analysis, and manuscript preparation. The co-authors (IGP, BYFH, ER) contributed to data interpretation, critical revision, and manuscript review. All authors have read and approved the final version of the manuscript.

Funding

This research received grant from Poltekkes Kemenkes Mataram.

Conflict of Interest

The authors declare that there are no conflicts of interest related to the publication of this article.

Ethical Approval

This study was conducted in accordance with applicable ethical principles for research involving human participants. Ethical approval was obtained from the Research Ethics Committee of Poltekkes Kemenkes Mataram, under approval number DP.04.03/F.XL.26/507/2025.

Informed Consent

Informed consent was obtained from all participants involved in this study prior to data collection.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Acknowledgments

The authors would like to express their gratitude to all participating community health cadres, the staff of Narmada Public Health Center, and all parties who supported the implementation of this study.

Use of Artificial Intelligence (AI)

Artificial intelligence (AI)-based tools were used solely to assist with language editing, grammar checking, and improving the clarity of the manuscript. The authors take full responsibility for the accuracy, integrity, originality, and final content of the manuscript.

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