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Competency Improvement Through Digital Basic Skills Training for North Lampung Integrated Health Post Cadres in 2025

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ABSTRACT

Introduction: *The Ministry of Health's primary healthcare transformation emphasizes a promotive and preventive approach through strengthening Integrated Primary Service Posts (Posyandu) throughout the lifecycle. Posyandu cadres play a crucial role in implementing ILP, but still face competency challenges in delivering integrated services. Digital training is one innovation to efficiently increase cadre capacity. This study aims to analyze differences in Posyandu cadre competency in five Core Training Courses (MPI) before and after participating in digital training in North Lampung Regency in 2025.*
Methods: *The study used a one-group pretest-posttest pre-experimental design through the Plataran Sehat Learning Management System (LMS). The sample size was determined using WHO software using a two-sided hypothesis test for a population mean. Bivariate analysis used the Wilcoxon Signed Rank Test.*
Results: *The analysis showed a significant difference in the competency of Posyandu cadres in all five Core Training Courses (MPI 1–MPI 5) before and after the digital training ($p < 0.05$).*
Conclusions: *The digital training on Basic Skills for Posyandu Cadres effectively improved cadre competency and needs to be maintained and developed to support the transformation of primary healthcare services.*

Introduction

Posyandu is the spearhead of community empowerment-based health efforts (UKBM) that plays a strategic role in preventing stunting, reducing maternal and child mortality rates (MMR/AKB), immunization, and controlling non-communicable diseases (NCDs). Posyandu is designated as a Village Community Institution (LKD) based on Minister of Home Affairs Regulation Number 18 of 2018 and serves as a center for promotive-preventive services throughout the life cycle (Ministry of Health of the Republic of Indonesia, 2025). However, the low competence of cadres in administrative management, early risk detection, recording and reporting, and the use of digital technology remains a major obstacle, especially in rural areas such as North Lampung Regency (Damayanti et al., 2024; Lukmana et al., 2025; Putra et al., 2025; Azdyan, 2025). This research is necessary because the prevalence of stunting in Lampung Province has increased to 15.9% in 2024 from 14.9% in 2023 (Indonesian Nutritional Status Survey/SSGI 2024; Ministry of Health of the Republic of Indonesia, 2025), even though the provincial target for 2025 is only 13.2% (Bappenas, 2025). In North Lampung Regency, the study location, the stunting rate reached 23.5% in 2025, one of the highest in the province, far above the national target of 18.8% (Lampung Health Office, 2025).

The Ministry of Health, through the Indonesia Health Services (IHS) Platform and Plataran Sehat, continues to promote data integration and improve digital literacy among primary

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healthcare workers, including cadres (Ministry of Health, 2025a). The Basic Skills Guidebook for Health Cadres (Ministry of Health, 2023) defines 25 basic skills covering five Core Training Courses (MPI): MPI 1: Integrated Health Post Management, MPI 2: Pregnant and Breastfeeding Services, MPI 3: Infants and Toddlers, MPI 4: School Age and Adolescents, and MPI 5: Productive Age and the Elderly. This curriculum has been converted into a digital training course based on a Massive Open Online Course (MOOC) on the LMS KEMKES.GO.ID for 11 days, followed by a one-day field practice guided by the Health Promotion Officer of the Health Office/Community Health Center (Ministry of Health, 2023; 2025b).

Various studies have demonstrated the effectiveness of digital-based training and blended learning for cadres. Anthropometric training increased measurement accuracy by up to 94% (Widiasih et al., 2025; Daru, 2013). IYCF counseling training (Ekayanthi et al., 2022; Rahmawati et al., 2019), local food-based nutrition education (Suwandiman et al., 2025; Husnul et al., 2025), and early detection of pregnancy danger signs (Fitriyani et al., 2024) have been shown to significantly improve knowledge and skills ($p < 0.05$). In the area of non-communicable diseases (NCDs) and the elderly, Posbindu training strengthened screening and counseling skills by up to 80% (Suharto & Rantesigi, 2025; Kolibu et al., 2024). The MOOC approach combined with field practice is also effective in increasing the capacity and participation of cadres (Dagenais et al., 2024; Indriyanti, 2022; Wu et al., 2025; Astutik et al., 2025; Genda et al., 2025). Digital programs such as ELSIMIL and e-PPGBM improve the quality of real-time reporting (Widyo, 2025; Sari & Muhammad, 2018). In North Lampung Regency as the research location, the prevalence of stunting reached 23.5% in 2025, one of the highest in Lampung Province after West Lampung (24.6%), while the prevalence in Lampung Province as a whole rose to 15.9% in 2024 from 14.9% in 2023 (Indonesian Nutritional Status Survey/SSGI 2024; Ministry of Health of the Republic of Indonesia, 2025; Lampung Provincial Health Office, 2025).

In North Lampung Regency, cadre knowledge remains low on anthropometric measurements, stunting prevention, and digital reporting (Putra et al., 2025; Khair et al., 2025). Cadre readiness for Integrated Primary Service (ILP) Posyandu (Integrated Primary Service Post) is relatively high (52%), but still requires practical training and interactive educational media (Azdyan, 2025). Therefore, digital training on basic skills for 25 competencies through the Plataran Sehat MOOC and field practice is a strategic solution to address this gap.

The issue of Primary Service Integration (ILP) in Lampung began with the 2023 national primary health transformation policy (Ministry of Health Decree No. HK.01.07/MENKES/2015/2023; Ministry of Health of the Republic of Indonesia, 2023), where Integrated Health Posts (Posyandu) were not fully integrated as lifecycle service centers, leading to program fragmentation (MCH, nutrition, immunization, NCDs, and elderly care) and low promotive-preventive coverage. In 2024, challenges continued with limited infrastructure, cadre competency, and cross-sector coordination, resulting in suboptimal real-time data reporting, worsening stunting and NCD detection in rural areas (Lampung Provincial Health Office, 2025). Persistent issues continued through 2025, including a lack of digital training and community participation, despite reinforcement through Non-Fiscal Special Allocation Funds (DAK Non-Physical) and Plataran Sehat (Healthy Platform).

One strategy to address this is an 11-day Plataran Sehat MOOC-based digital skills training followed by a one-day field practice session, covering 25 core competencies according to five Core Subjects (MPI) to improve management, early detection, and real-time data integration (Ministry of Health of the Republic of Indonesia, 2023; 2025b). This approach is supported by Community Health Center (Puskesmas) mentoring and Non-Physical Special Allocation Funds (DAK Non-Physical), thus strengthening Posyandu (Integrated Health Post) as a lifecycle service center and supporting stunting reduction in Lampung.

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This study aims to determine the differences in the competencies of Posyandu cadres in five Core Training Subjects (MPI 1 Posyandu Management, MPI 2 Basic Services for Pregnant and Breastfeeding Mothers, MPI 3 Basic Services for Infants and Toddlers, MPI 4 Basic Services for School Age and Adolescents, and MPI 5 Basic Services for Productive Age and the Elderly) before and after participating in digital basic skills training through the Plataran Sehat MOOC in North Lampung Regency in 2025.

Methods

This study used a pre-experimental design with a one-group pretest-posttest design approach to assess differences in competency before and after the training intervention. This design was chosen because it allows for measurement of changes in knowledge before and after the intervention, in accordance with the objective of measuring differences in competency of Posyandu cadres in five MPI (Creswell & Creswell, 2018). The training was implemented based on the conversion of the Posyandu Cadre Basic Skills Training curriculum through the Plataran Sehat KEMKES.GO.ID Learning Management System (LMS) with an 11-day MOOC independently, followed by a 1-day field practice at the Posyandu and home visits guided by the Health Promotion Officer of the Health Office and/or Community Health Center (Ministry of Health of the Republic of Indonesia, 2023). Evaluation of participants was carried out through a post-test with a minimum score of 70 and a weighting of 60%, 100% completion of all assignments with a weighting of 40%, and added field practice, then the results of the three components were combined into a final score. After training, cadres are evaluated by health workers to award Cadre Proficiency Certificates (TKK) with levels such as Purwa Cadre (mastering three skill groups), Madya Cadre (mastering four skill groups), and Main Cadre (mastering five skill groups) (Ministry of Health of the Republic of Indonesia, 2023).

The study population was all active Posyandu cadres in North Lampung Regency who met the criteria as community health service mobilizers, counselors, and recorders, in accordance with the Regulation of the Minister of Home Affairs Number 18 of 2018 concerning Village Community Institutions (LKD). The sample size was calculated using WHO sample size software with a hypothesis test approach for a population mean two-sided test (Lemeshow et al., 1990). Parameters in calculating the minimum sample size based on research (Nadhiroh et al, 2024) that were considered relevant included a significance level (α) of 5%, a test power (1-β) of 90%, a standard deviation (σ) of 7.75, a pre-intervention mean of 74.25 and a post-intervention mean of 78.75. The calculation results obtained a minimum sample of 32 respondents. In its implementation, the number of respondents who met the inclusion criteria was 52 Posyandu cadres exceeding the minimum sample size, thus increasing the power of the research statistical test. Inclusion criteria for this study included active cadres who had served at least one year at an integrated Posyandu, had access to digital devices and an internet connection to participate in the MOOC, were willing to participate in the entire training and evaluation series, and had not participated in similar training in the past six months. Exclusion criteria included cadres who did not complete all assignments 100% of the time and did not participate in field practice.

Data collection was conducted using a pretest and posttest developed based on the Basic Skills Guide for Health Cadres. The pretest and posttest consisted of multiple-choice questions that measured knowledge and understanding of five Core Training Subjects (MPI):

1) MPI 1: Posyandu Management (infrastructure, services before opening days, services outside opening days, recording and reporting, and implementation or flow of home visits).

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2) MPI 2: Basic Posyandu Services for Pregnant and Breastfeeding Mothers (use of KIA books, examinations, benefits of Iron Tablets, monitoring of body weight, upper arm circumference and blood pressure and early detection of risks).
3) MPI 3: Basic Posyandu Services for Infants and Toddlers (including measurement, monitoring of growth and development, immunization, and prevention of stunting).
4) MPI 4: Basic Posyandu Services for School Age and Adolescents (prevention of anemia, reproductive health education, dangers of smoking, drugs, contents of my plate, physical activity and prevention of infectious diseases).
5) MPI 5: Basic Posyandu Services for Productive Age Groups and the Elderly (including prevention of NCDs, elderly health, family planning, and early detection).

Each Core Training Course (MPI) has 10-15 question items with a 0-100 assessment scale, where the minimum passing score is 70 with an assessment weight of 60%. The instrument also includes assignments and field practices assessed by the Provincial Health Office using assignment assessment forms and field practice assessment forms, where the assessment is for integrated health post management skills and basic services for the entire life cycle starting from preparing for the posyandu opening day, using the examination assistance card at the posyandu, preparing for home visits, and using the home visit form, with an assessment weight of 40%. After the cadres participate in the digital training on basic cadre skills, they are contin ued with the awarding of the Cadre Proficiency Mark (TKK) by the North Lampung District Health Office.

The data collection instrument in this study was a pretest and posttest in the form of a multiple-choice questionnaire developed based on the Basic Skills Guide for Health Cadres and the Basic Skills Training Curriculum for Posyandu Cadres from the Ministry of Health of the Republic of Indonesia in 2023. This questionnaire includes 10–15 questions for each Core Subject (MPI), namely MPI 1 on Posyandu management (infrastructure, recording, reporting, and home visits), MPI 2 on services for pregnant and breastfeeding mothers (use of KIA Handbook, weight checks, upper arm circumference, blood pressure, iron tablets, and risk detection), MPI 3 on services for infants and toddlers (anthropometric measurements, growth monitoring, immunization, and stunting prevention), MPI 4 on services for school-age children and adolescents (prevention of anemia, reproductive health, the dangers of smoking/drugs, the contents of my plate, and physical activity), and MPI 5 on services for productive age and the elderly (NCD screening, STD prevention, family planning, and early detection of risk factors). The assessment uses a scale of 0–100 per MPI with a minimum passing score of 70, where 60% of the weighting comes from the pretest-posttest results and 40% from independent assignment assessments and field practice through observation by health workers (Ministry of Health of the Republic of Indonesia, 2023).

Data were analyzed using statistical software. Univariate analysis was presented in the form of median (minimum-maximum), mean , and standard deviation to provide an overview of the distribution based on the research results. The data normality test used the Kolmogorov-Smirnov test to determine whether the data were normally distributed or not. The results of the normality test showed that the data were not normally distributed ($p<0.005$) , so a bivariate analysis was conducted using the Wilcoxon Signed Rank Test with a significance level of $\alpha = 0.05$ to determine the differences in the competencies of Posyandu cadres before and after training.

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Results

Frequency Distribution of Respondent Characteristics Based on Age and Length of Service as a Cadre

Competency improvement through digital training for basic skills for Posyandu cadres in North Lampung Regency involved 52 Posyandu cadres who completed the training. Cadre characteristics are shown in Table 1.

Table 1 Respondent Characteristics

Characteristics	n	%
Age (Years)		
<30	3	5.8%
30-40	23	44.2%
41-50	12	23.1%
>50	14	26.9%
Long Time as a Cadre		
<5 Years	13	25%
5-10 Years	18	34.6%
>10 Years	19	34.6%

Source: secondary data (2025)

Based on Table 1. shows that respondents who participated in the training were mostly aged between 30-40 years (44.2%) and as many as 19 respondents (36.6%) had been cadres for more than 10 years. Based on the results of descriptive analysis of the age range of respondents between 19-59 years, it shows the diversity of age groups and the length of time as a cadre ranged from 1-30 years, indicating a significant difference in experience between respondents.

Univariate Analysis

pretest-posttest analysis of basic digital skills training on 52 Posyandu cadres were conducted using SPSS. The results of the univariate analysis are shown in Table 2.

Table 2 Pretest - Posttest Results of Basic Digital Skills Training for North Lampung Posyandu Cadres in 2025 based on Core Training Subjects (MPI) (n=52)

Variables	Pre-test Median (Min-Max)	Pre-test Mean ±SD	Post-test Median (Min-Max)	Post-test Mean ±SD
MPI1: Integrated Health Post Management	40 (0 – 90)	45.38 ±27.19	80 (80 – 100)	81.54 ±4.60
MPI2: Pregnant & Breastfeeding Mothers	80 (0 – 100)	72.50 ±22.39	90 (80 – 100)	86.54 ±7.89
MPI3: Infants & Toddlers	70 (20 – 86.67)	66.79 ±12.77	80 (80 – 93.33)	81.03 ±3.06
MPI4: School Age & Adolescence	80 (50 – 100)	81.15 ±12.63	90 (80 – 100)	86.35 ±6.58
MPI5: Productive Age & Elderly	70 (20 – 90)	68.08 ±15.22	80 (80 – 90)	81.35 ±3.45

Source: secondary data (2025)

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The results of the analysis in Table 2 show that after the training, there was a significant increase in knowledge in all Core Training Subjects (MPI 1 – MPI 5) based on the median and mean values . The increase in the median post-test value (80-90) was higher than the median pre-test (40-80). MPI 1 (Posyandu Management) recorded the highest median increase with a median pre-test score of 40 and a post-test score of 80 (a score increase of 40) indicating that the training provided was quite significant in increasing cadres' knowledge regarding Posyandu management, while MPI 2 (Basic Services for Pregnant and Breastfeeding Mothers), MPI 3 (Basic Services for Infants and Toddlers), MPI 4 (Basic Services for School Age and Adolescents) and MPI 5 (Basic Services for Productive Age and Elderly) had a uniform median increase of 10, respectively the median increase in pretest-post-test MPI 2 Pregnant Mothers (from 80 to 90), MPI 3 Infants and Toddlers (from 70 to 80), MPI 4 School Age and Adolescents (from 80 to 90) and MPI 5 Productive Age and Elderly (from 70 to 80).

Based on the average, the smallest increase occurred in MPI 4 (Basic Services for School Age and Adolescents) by 6.41%, (from 81.15 ±12.63 to 86.35 ±6.58), possibly because the initial score was already high. The average increase in MPI 2 (Basic Services for Pregnant and Breastfeeding Women) increased by 19.37% (from 72.50 ±22.39 to 86.54 ±7.89) and MPI 5 (Basic Services for Productive Age and the Elderly) increased by 19.49% (from 68.08 ±15.22 to 81.35 ±3.45), indicating that the digital training provided was able to improve respondents' competencies when compared to before the training. Another MPI, namely MPI 3 (Basic Services for Infants and Toddlers), had the lowest post-test average (81.03 ±3.06) , possibly influenced by the respondents' age and less than 5 years of experience as cadres. Overall, there was an increase in all MPIs (MPI 1 – MPI 5), indicating that the training provided was able to significantly improve cadre competency.

Bivariate Analysis

Results of analysis using the Wilcoxon Rank Test on 52 respondents shows that there is a significant difference between the pre-test and post-test scores in all Core Training Subjects (MPI 1-MPI 5) with a p-value <0.05. The results of the Wilcoxon Rank Test are shown in Table 3.

Table 3. Results of the Wilcoxon Rank Test

Variables	N	Negative Ranks		Positive Ranks		Ties	Test Statistics	
		n	Mean Rank	n	Mean Rank		Z	p-value
MPI1: Integrated Health Post Management	52	0	0.00	48	24.50	4	-6,056	0.000
MPI2: Pregnant & Breastfeeding Mothers	52	2	7.50	30	17.10	20	-4,711	0.000
MPI3: Infants & Toddlers	52	2	7	42	23.24	8	-5,652	0.000
MPI4: School Age & Adolescence	52	4	7.50	18	12.39	30	-3,237	0.001
MPI5: Productive Age & Elderly	52	5	10	36	22.53	11	-5,012	0.000

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The results of the Wilcoxon Rank Test in table 3 show the largest increase in MPI 1 (Posyandu Management) Z value -6.056 with a p-value of 0.000 (p <0.05), there was no decrease in pretest-posttest scores and as many as 48 respondents (92.3%) experienced an increase in post-test scores . The pretest-posttest scores that did not experience the most changes (scores remained the same) were shown in MPI 4 (Basic Services for School Age and Adolescents) as many as 30 respondents (57.7%) and only 18 respondents (34.6%) experienced an increase in post-test scores , because the initial pre-test score was already high. Based on the Z value -3.237 with a p-value of 0.001 (p <0.05) in MPI 4 (Basic Services for School Age and Adolescents) shows a significant difference in pretest-posttest scores . In MPI 2 (Basic Services for Pregnant and Breastfeeding Mothers), MPI 3 (Basic Services for Infants and Toddlers) and MPI 5 (Basic Services for Productive Age) there was an increase in post-test scores in 30 respondents (MPI 2), 42 respondents (MPI 3), 36 respondents (MPI 5) and had a uniform p-value (p = 0.000). Overall, the results of the Wilcoxon test on the five MPIs showed that digital training on basic skills for Posyandu cadres had a positive impact on increasing competency which was statistically significant (p < 0.05).

Discussion

The government, through the Ministry of Health, is striving to realize the Transformation of Primary Health Services, through strengthening basic health services (Primary Health Care), one of which is by encouraging increased promotive and preventive efforts . To ensure that promotive-preventive services at Integrated Health Posts (Posyandu) run in an integrated manner according to standards, it is necessary to organize programmatic Posyandu such as Posyandu KIA, Elderly, Adolescent, and Posbindu PTM into an integrated institution serving all life cycle targets. In its implementation, support is needed through improving the basic skills of cadres as activators, counselors, and recorders through training in 25 basic skills, including five Core Training Subjects (MPI) on Posyandu Management, Basic Services for Pregnant and Breastfeeding Mothers, Infants and Toddlers, School Age and Adolescents, and Basic Services for Productive Age and the Elderly (Ministry of Health of the Republic of Indonesia, 2023).

Digital training of 25 basic skills for Posyandu cadres was carried out for 11 days with a period of July 7, 2025 - July 18, 2025 by the Person in Charge of the Health Promotion Program of the North Lampung Regency Health Office, in coordination with the Provincial Health Office and Community Health Centers. Funding for the activity came from the Non-Physical Special Allocation Fund (DAK NF) of North Lampung Regency for the 2025 Fiscal Year. This training uses a digital approach through the Ministry of Health's Learning Management System (LMS) (Plataran Sehat) with a Massive Open Online Course (MOOC), starting with filling out a pre-test , followed by providing material through LMS.KEMKES.GO.ID, then cadres access the MOOC module independently for 7 days (25 JPL). Each module includes learning videos, reading materials, and interactive discussions, according to the curriculum conversion scenario that emphasizes an educational and participatory approach (Ministry of Health of the Republic of Indonesia, 2023). After completing online independent learning, cadres were given assignments for 3 days (9 JPL) and continued with one day of field practice. A post-test was conducted immediately after the cadres completed the field practice, followed by an evaluation of the Cadre Proficiency Mark (TKK) by health workers to determine the level of competency (Purwa, Madya, or Utama). However, this study only aimed to determine the differences in the competency of Posyandu cadres in five Core Training Subjects (MPI) before and after basic digital skills training. The results of the pre-test and post-test training showed a significant increase in competency in all MPI (MPI 1 – MPI 5) based on the Wilcoxon Signed Rank Test (p<0.05). MPI 1 – MPI 5 showed an

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increase in the average score before and after training (from 45.48 – 81.15) to (81.03 – 86.54) and a decrease in the standard deviation value from (15.22 – 27.19) to (3.06 – 7.89).

The highest increase occurred in MPI 1 (Posyandu Management) with an average increase from 45.38 ± 27.19 to 81.54 ± 4.60 (79.68%) and a median increase from 40 (min 0 – max 90) to 80 (min 80 – max 100). The results of the Wilcoxon Signed Rank Test on 52 respondents showed a significant difference (p = 0.000), there was no decrease in scores in all respondents, as many as 48 respondents experienced an increase in scores and 4 respondents experienced no change. According to the Basic Skills Training Curriculum Conversion Scenario for Posyandu Cadres (Ministry of Health, 2025), Posyandu management competencies include register recording, monthly reports, coordination of 5 service desks (KIA, nutrition, immunization, KB, elderly), and cross-sector integration as a Village Community Institution (LKD). The findings indicate that before the training, Posyandu management competencies were relatively low, administrative complexity and age influenced weak cognitive abilities. These findings are supported by (Isir & Duhita, 2025) findings that suggest that cognitive abilities will decrease and further decline with age. Research (Widyo, 2025) indicates that the evaluation of the implementation of the ELSIMIL application demonstrated that the use of the digital platform by the Family Assistance Team (TPK) significantly improved the quality of recording and reporting of assistance data. This application facilitates the process of monitoring and documenting the condition of target families in real time, thereby improving their role and performance, especially in the administration and service management aspects. Furthermore, research by (Daru, 2013) indicates that anthropometric measurement training accompanied by field guidance by Community Health Center health workers significantly reduced recording errors and increased measurement accuracy by Posyandu cadres. These findings emphasize the need to provide assistance to cadres to create uniform work procedures, improve the quality of recording and reporting, and enhance Posyandu management skills.

The second highest increase was in MPI 3 (Basic Services for Infants and Toddlers) with an average increase from 66.79 ± 12.77 to 81.03 ± 3.06 (21.32%) and a median increase from 70 (min 20 – max 86.67) to 80 (min 80 – max 93.33). The results of the Wilcoxon Signed Rank Test showed a significant difference (p = 0.000), as many as 42 respondents experienced an increase in scores, 8 respondents did not experience a change in scores and a decrease in scores in 2 respondents. The difference in competency indicates that respondents initially had relatively low knowledge in the aspects of monitoring and measuring the growth and development of infants and toddlers, which then increased after the intervention. Training through LMS.KEMKES.GO.ID with MOOC ensures that cadres are able to identify and explain the use of the KIA Handbook for toddlers, measuring body weight (BB), body length/height (PB/TB), head circumference, upper arm circumference, interpretation of the Menuju Sehat (KMS) Card, and counseling on Exclusive Breastfeeding and Complementary Breastfeeding Foods (MP-ASI) as well as explaining immunization services in accordance with the expected achievements in the Basic Skills Guide for Health Cadres (Kemenkes, 2023) . Research (Widiasih et al., 2025) proves that anthropometry training increases measurement accuracy by up to 94%, in line with the findings of this study. According to (Nathalia et al., 2025) found that trained cadres increased complete immunization coverage by 12.4%, supporting the role of cadres as immunization educators. Research (Kartika et al., 2024) reported that active cadres detected 78% of early stunting cases, proving that mentoring by health workers at the Community Health Center was successful in increasing early alertness. Thus, basic skills training for Posyandu cadres significantly improves the competency of Basic Services for Infants and Toddlers.

Competency improvement in MPI 5 (Basic Services for Productive Age and Elderly) and MPI 2 (Basic Services for Pregnant and Breastfeeding Women) showed average increase results that

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were not much different, each increasing to 19.49% in MPI 5 and 19.37% in MPI 2. In MPI 5 the average increase before the intervention was (68.08 ± 15.22) to (81.35 ± 3.45) and the median increased from 70 (min 20 – max 90) to 80 (min 80 – max 90). The results of the Wilcoxon Signed Rank Test showed a significant difference (p = 0.000), as many as 36 respondents experienced an increase in score, 11 respondents did not experience a change in score and there was a decrease in score in 5 respondents. The analysis results show that digital training in basic skills for cadres significantly improves their competency in implementing Posbindu PTM (Non-communicable disease prevention and control) programs, early detection of risk factors in productive age groups and the elderly, and providing outreach (Ministry of Health, 2023). Research by (Suharto & Rantesigi, 2025) shows that Posbindu cadre training significantly improves the ability to detect non-communicable diseases (NCDs) early, with an increase in cadre knowledge and skills of approximately 80% after the intervention. These results align with the findings of (Kolibu et al., 2024) who reported an increase in cadre skills from moderate to good after Posbindu training based on field practice. These findings confirm that guided training approaches and direct field practice are effective in strengthening cadre competency in preventing and controlling NCDs in the community.

In MPI 2 (Basic Services for Pregnant and Breastfeeding Mothers) the average increase before the intervention was (72.50 ± 22.39) to (86.54 ± 7.89) and the median increase was from 80 (min 0 – max 100) to 90 (min 80 – max 100). The results of the Wilcoxon Signed Rank Test showed a significant difference (p = 0.000), as many as 30 respondents experienced an increase in score, 20 respondents did not experience a change in score and there was a decrease in score in 2 respondents. The magnitude of the change is relatively small when compared to MPI 1, this indicates that the initial competence of cadres in the basic service component for Pregnant and Breastfeeding Mothers is quite good, namely 79% (score ≥70), but training still provides reinforcement for respondents, especially for respondents who have worked as cadres for less than 5 years (25%). The Training Curriculum for Basic Skills Trainers of Posyandu Cadres (Ministry of Health, 2023) stipulates that cadres must be able to explain the use of the KIA book for pregnant and breastfeeding mothers, provide information on the contents of my plate, explain examinations of pregnant and postpartum mothers, monitoring growth and development, danger signs and be able to provide information on the contents of my plate.

Research by (Rahmawati et al., 2019) showed that intensive IYCF counseling training improved the skills of Posyandu cadres in providing breastfeeding support and providing complementary feeding. The improvement in counseling performance was significant, with the intervention group achieving significantly higher skill scores than the control group, indicating the effectiveness of the training approach. Research by (Husnul et al., 2025) reported that training in making locally-based supplementary feeding (PMT) for mothers and cadres significantly improved nutritional knowledge (mean score increased from 6.17 to 7.06, p = 0.012), thus supporting the implementation of local food-based counseling. Meanwhile, research by (Fitriyani et al., 2024) showed that training Posyandu cadres in Menganti-Kedung Village, Jepara, significantly improved their ability to detect early signs of pregnancy danger, with the average score increasing from 67.40 to 86.73 (p = 0.000). These results support the idea that mentoring during training can improve cadres' skills in detecting pregnancy risks. With this competency, cadres are ready to support the reduction of maternal and child mortality through home visits and early referrals, in accordance with the Minister of Health Regulation Number 8 of 2019 concerning Community Empowerment in the Health Sector.

The lowest increase was in MPI 4 (Basic Services for School Age and Adolescents) with an average increase from (81.15 ± 12.63) to (86.35 ± 6.58) indicating that initial knowledge was high. The Wilcoxon Signed Rank Test results showed a statistically significant difference (p =

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0.001) with a proportion of 30 of the total 52 respondents not experiencing a change in score. (57%) is the highest compared to other MPI programs. This finding indicates that cadres have a good initial understanding of basic services for school-age and adolescents, in accordance with the Basic Skills Training for Posyandu Cadre Trainers curriculum (Ministry of Health, 2023), which includes reproductive health, Clean and Healthy Living Behaviors (PHBS), anemia screening, adolescent nutrition counseling, and infectious disease prevention. Digital training through MOOCs and field practice enables cadres to conduct school education, adolescent counseling, and health screenings. High practice scores reflect the ability to effectively educate in schools and counsel adolescents, in accordance with the Basic Skills Guidelines for Health Cadres. Research (Dagenais et al., 2024) shows that Massive Open Online Course (MOOC)-based training that combines online learning and field mentoring can significantly increase participant engagement. This model emphasizes a participatory approach, where participants are active in the learning process, discussions, and application of knowledge in real-world contexts, demonstrating that the collaborative and experience-based MOOC design effectively increases capacity and participation. Research (Badu et al., 2025) shows that digital- based nutrition education through animation and online literacy media effectively improves the skills of cadres and adolescent girls in the prevention and early detection of anemia. These results align with those (Andini & Agestika, 2022), who found that the use of digital learning platforms increases adolescent participation in iron supplementation and health monitoring programs. These findings support the implementation of the Ministry of Health's LMS as a digital- based training tool to strengthen the capacity of cadres in screening and adolescent health education. This competency supports the Golden Generation of 2045 through early NCD prevention and reproductive health education, in accordance with Minister of Home Affairs Regulation Number 18 of 2018.

Research (Indriyanti, 2022) shows that the use of a Learning Management System (LMS) in health worker training at the Cikarang Health Training Center increased the effectiveness of online learning and participants' readiness to participate in training modules. Evaluation results showed that the majority of participants considered the system easy to use and facilitated independent learning, demonstrating that the Ministry of Health's LMS is effective in supporting the development of health worker competencies among productive age groups. Research (Wu et al., 2025) shows that blended learning- based training combining MOOC modules and field practice significantly improves health counseling skills of community cadres, particularly in rural contexts. These results align with Segal et al., 2025, who found that interactive digital training for community cadres increased the effectiveness of medication adherence support by more than 75%.

The success of the training is not limited to improving theoretical scores; it is necessary to combine assignment achievements and field practice as a final evaluation. Overall, the digital basic skills training for cadres was able to statistically improve cadre competency ($p<0.05$) in all five Core Training Subjects (MPI). This study was limited to 52 cadres, so the results cannot be generalized to the population. Although the instrument was created based on expert review, validity and reliability testing have not been conducted on the five Core Training Subject (MPI) instruments used in the training. The study did not conduct a formal ethics review because the digital basic skills training for cadres is a government program that has obtained research permits.

Conclusion

Based on the results of the Wilcoxon Signed Rank Test, it is known that there are differences in the competency of Posyandu cadres in five Core Training Subjects (MPI 1 Posyandu

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Management, MPI 2 Basic Services for Pregnant and Breastfeeding Mothers, MPI 3 Basic Services for Infants and Toddlers, MPI 4 Basic Services for School Age and Adolescents, and MPI 5 Basic Services for Productive Age & Elderly) before and after digital training in basic skills through the Learning Management System (LMS) Plataran Sehat KEMKES.GO.ID with MOOC in North Lampung Regency in 2025. Digital training in basic skills of cadres significantly with p <0.05 is statistically proven to improve cadre competency.

As the Government's commitment to realizing transformation in the Health sector, this intervention can be maintained by allocating a budget for training Posyandu cadres sourced from the Non-Physical Health Allocation Fund (DAK NF) and it is advisable to increase the number of cadres who participate in the training. In addition, the Health Office can develop training for health workers and village midwives as an extension of the Regency to be able to monitor the knowledge and skills of Posyandu cadres and for respondents who have received training are expected to be able to implement it into Posyandu activities to support the realization of Primary Service Integration (ILP) in the Health Sector.

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