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Knowledge and Skills of Posyandu Cadres Before and After Learning Through Interactive Instructional Videos in Palu City

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ABSTRACT*:* Background: Under Indonesia's primary care transformation, Posyandu serve the whole life cycle, so cadres must master 25 basic skills. Most cadres in Palu City have not been trained in these skills.

Objective: To describe the knowledge and skills of Posyandu cadres before and after learning through interactive instructional videos, in an intervention group and a control group.

Methods: A quantitative descriptive study with pre-test and post-test measurements among 120 cadres in the Mamboro and Birobuli Primary Health Center areas, Palu City: 60 intervention cadres received five instructional videos over six weeks and 60 control cadres received none. Knowledge was measured by questionnaire (good, fair, poor) and skills by a five-station OSCE (pass or fail). Data are presented as frequencies, percentages and percentage-point increases.

Results: In the intervention group, the mean share of cadres with good knowledge across five skill areas rose from 28.0% to 54.0%, against 25.0% to 29.3% in the control group. The mean pass rate rose from 2.3% to 61.0% in the intervention group and from 3.0% to 19.0% in the control group. Increases were larger in the intervention group in all five areas. The largest gaps were in maternal and breastfeeding knowledge (31.7 percentage points) and school-age and adolescent skills (65.0 percentage points). **Conclusion:** Cadres who learned with interactive videos showed larger gains in good knowledge and skill pass rates than cadres without videos. Posyandu management skills still need strengthening.

KEYWORDS*:* Posyandu cadres; instructional video; knowledge; skills; 25 basic skills

INTRODUCTION

Indonesia's Ministry of Health is carrying out a transformation of primary health care. It focuses on strengthening promotive and preventive efforts through a life-cycle approach and on bringing services closer to communities through the Posyandu network, down to the hamlet and neighbourhood level (Kemenkes, 2023). Posyandu now serve every life-cycle target group: pregnant, delivering and postpartum women; infants and toddlers; preschool children; school-age children and adolescents; adults of productive age; and older people.

This wider scope requires Posyandu cadres to act as mobilisers, health educators and record-keepers who master 25 basic skills. These skills fall into five groups: Posyandu management (4 skills), infants and toddlers (7), pregnant and breastfeeding women (6), school-age children and adolescents (3), and productive-age adults and older people (5) (Alvian et al., 2024). The Ministry of Health has also set up tiered cadre certification (purwa, madya, utama) based on mastery of these basic skills (Kemenkes, 2023).

In practice, mastery of these competencies is uneven. A competency assessment of cadres in Integrated Primary Care Posyandu found that cadres had mastered only about half of the competencies on average, with skills for adolescents and older people still low (Muslimin et al., 2025). Palu City has 230 Posyandu across 14 primary health centres (Puskesmas), and most have not yet held training on the 25 basic cadre skills. Mamboro Puskesmas, with 14 Posyandu, had held no such training at all.

Face-to-face training for hundreds of cadres takes considerable time, staff and money. Instructional videos offer an alternative: they show images and sound together, can be replayed, and are easy to share by mobile phone (Sukiman, 2012). Structured education has been shown to improve the knowledge of Posyandu cadres (Manalu et al., 2026).

In 2025, a research team from the Faculty of Medicine, Tadulako University, developed seven instructional videos on the basic skills of Posyandu cadres, which were received positively by Puskesmas staff and cadres. This article continues that work. It aims to describe: (1) cadres' knowledge and skills before and after the intervention in the intervention and control groups; (2) the increase in the proportion of cadres with good knowledge and of those passing the skills assessment in both groups; and (3) a comparison of these increases between the intervention and control groups.

METHODS

Design. This study used a quantitative descriptive design. Descriptive research portrays a variable as it is, without testing cause-and-effect relationships. The variables described were the knowledge and skills of Posyandu cadres in two groups (intervention and control) at two time points (before and after the intervention).

Setting and time. The study was conducted in the working areas of Mamboro Puskesmas (North Palu District) and Birobuli Puskesmas (South Palu District), Palu City, Central Sulawesi, in 2026. The self-learning period lasted six weeks, from 8 August to 19 September 2026.

Respondents. Respondents were all active Posyandu cadres in the selected urban villages (kelurahan), totalling 120 cadres (Table 1).

Table 1. Distribution of respondents by Puskesmas and group

Puskesmas	Intervention group	Control group
Mamboro	Mamboro village (30 cadres)	Mamboro Barat and Taipa villages (30 cadres)
Birobuli	Lolu Utara village (30 cadres)	Lolu Selatan village (30 cadres)
Total	60 cadres	60 cadres

Intervention. The intervention group received five instructional videos through a WhatsApp group, with YouTube links: (1) Posyandu management; (2) infants and toddlers; (3) pregnant and breastfeeding women; (4) school-age children and adolescents; and (5) adults and older people. The research team and medical students visited the intervention group's Posyandu to monitor learning. The control group, through a separate WhatsApp group, received only a reminder to keep practising the 25 basic skills, without videos.

Instruments and measurement. Both groups were measured before the intervention (*pre-test*) and after the six-week learning period (*post-test*).

- Knowledge was measured with a 10-minute questionnaire based on the Ministry of Health's 25 basic Posyandu cadre skills. Results were categorised as good, fair or poor for each skill area.
- Skills were assessed with an OSCE (*Objective Structured Clinical Examination*) model using a 10-minute checklist. There were five stations, one for each skill area. Results were categorised as pass or fail.

Data analysis. Data were analysed descriptively and presented as frequency distributions and percentages. Increases were calculated as the difference between the *post-test* and *pre-test* percentages, in percentage points (pp), for the proportion of cadres with good knowledge and the proportion passing the skills assessment. Groups were compared by calculating the difference between the increase in the intervention group and that in the control group. Results are presented for both Puskesmas combined (Palu City, n = 60 per group), with a breakdown by Puskesmas in the section on increases.

RESULTS

Respondent characteristics

Both groups had similar characteristics. Most cadres were aged 18–40 years, had completed senior high school, had served as cadres for more than five years, and all were active (Table 2).

Table 2. Characteristics of Posyandu cadre respondents, Palu City

Characteristic	Category	Intervention n (%)	Control n (%)
Age	18–40 years	37 (61.7)	36 (60.0)
	41–60 years	23 (38.3)	24 (40.0)
Education	Junior high school	11 (18.3)	12 (20.0)
	Senior high school	39 (65.0)	38 (63.3)
	Higher education	10 (16.7)	10 (16.7)
Length of service as cadre	< 3 years	3 (5.0)	5 (8.3)
	3–5 years	19 (31.7)	24 (40.0)
	> 5 years	38 (63.3)	31 (51.7)
Cadre status	Active	60 (100)	60 (100)

Source: primary data, 2026

KNOWLEDGE AND SKILLS BEFORE AND AFTER THE INTERVENTION

Knowledge. Before the intervention, most cadres in both groups were in the fair category, and the proportions with good knowledge were similar. After the intervention, the proportion with good knowledge in the intervention group rose in all five areas, while in the control group it changed little, stayed the same or fell (Table 3).

Table 3. Cadres' knowledge before and after the intervention, Palu City

Skill area	Category	Intervention pre n (%)	Intervention post n (%)	Control pre n (%)	Control post n (%)
Posyandu management	Good	8 (13.3)	28 (46.7)	6 (10.0)	16 (26.7)
	Fair	32 (53.3)	22 (36.7)	34 (56.7)	30 (50.0)
	Poor	20 (33.3)	10 (16.7)	20 (33.3)	14 (23.3)
Infants and toddlers	Good	23 (38.3)	38 (63.3)	22 (36.7)	23 (38.3)
	Fair	25 (41.7)	15 (25.0)	25 (41.7)	24 (40.0)
	Poor	12 (20.0)	7 (11.7)	13 (21.7)	13 (21.7)
Pregnant and breastfeeding women	Good	19 (31.7)	38 (63.3)	13 (21.7)	13 (21.7)
	Fair	38 (63.3)	21 (35.0)	40 (66.7)	40 (66.7)
	Poor	3 (5.0)	1 (1.7)	7 (11.7)	7 (11.7)
School-age children and adolescents	Good	25 (41.7)	29 (48.3)	21 (35.0)	17 (28.3)
	Fair	22 (36.7)	22 (36.7)	26 (43.3)	34 (56.7)
	Poor	13 (21.7)	9 (15.0)	13 (21.7)	9 (15.0)
Adults and older people	Good	9 (15.0)	29 (48.3)	13 (21.7)	19 (31.7)
	Fair	44 (73.3)	24 (40.0)	38 (63.3)	34 (56.7)
	Poor	7 (11.7)	7 (11.7)	9 (15.0)	7 (11.7)

Source: primary data, 2026

Skills. Before the intervention, almost no cadres passed the OSCE. In the areas of pregnant and breastfeeding women and of school-age children and adolescents, no cadre in either group passed. After the intervention, pass rates ranged from 31.7% to 78.3% in the intervention group and from 6.7% to 26.7% in the control group (Table 4).

Table 4. Cadres passing the skills assessment (OSCE) before and after the intervention, Palu City

Skill area	Intervention pre n (%)	Intervention post n (%)	Control pre n (%)	Control post n (%)
Posyandu management	2 (3.3)	19 (31.7)	2 (3.3)	10 (16.7)
Infants and toddlers	4 (6.7)	37 (61.7)	6 (10.0)	13 (21.7)
Pregnant and breastfeeding women	0 (0.0)	47 (78.3)	0 (0.0)	14 (23.3)
School-age children and adolescents	0 (0.0)	43 (71.7)	0 (0.0)	4 (6.7)
Adults and older people	1 (1.7)	37 (61.7)	1 (1.7)	16 (26.7)
Mean of five areas	2.3%	61.0%	3.0%	19.0%

Source: primary data, 2026

Increase in good knowledge and skill pass rates

The skill pass rate of the intervention group rose in every area at both Puskesmas, and its good knowledge rose in every area except school-age children and adolescents at Mamboro. Increases in good knowledge ranged from 0.0 to 40.0 pp in the intervention group and from −10.0 to 30.0 pp in the control group. Skill pass rates rose by 26.7–93.3 pp in the intervention group and by 0.0–50.0 pp in the control group (Table 5).

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Table 5. Increase in the proportion of cadres (pp) from pre-test to post-test, by Puskesmas

Skill area	Good knowledge : Mamboro I	Mamboro C	Birobuli I	Birobuli C	Skill pass: Mamboro I	Mamboro C	Birobuli I	Birobuli C
Posyandu management	+33.3	+3.3	+33.3	+30.0	+26.7	+10.0	+30.0	+16.7
Infants and toddlers	+30.0	−10.0	+20.0	+13.3	+40.0	0.0	+70.0	+23.3
Pregnant and breastfeeding women	+26.7	−3.3	+36.7	+3.3	+63.3	+23.3	+93.3	+23.3
School-age children and adolescents	0.0	−10.0	+13.3	−3.3	+76.7	+6.7	+66.7	+6.7
Adults and older people	+26.7	+16.7	+40.0	+3.3	+76.7	+50.0	+43.3	0.0

I = intervention group; C = control group; n = 30 per group per Puskesmas.

Source: primary data, 2026

At Mamboro, good knowledge in the control group actually fell in three areas. In the intervention group there, school-age children and adolescents was the only area with no gain in good knowledge, yet its skill pass rate rose by 76.7 pp. At Birobuli, the largest gain in pass rate was in the pregnant and breastfeeding women area of the intervention group (93.3 pp), while the control group's pass rate for adults and older people did not change.

Comparison of increases between the intervention and control groups

Combined, the intervention group's increases exceeded the control group's in all five areas, for both knowledge and skills (Figure 1). The mean increase in good knowledge was 26.0 pp in the intervention group and 4.3 pp in the control group. The mean increase in skill pass rate was 58.7 pp in the intervention group and 16.0 pp in the control group.

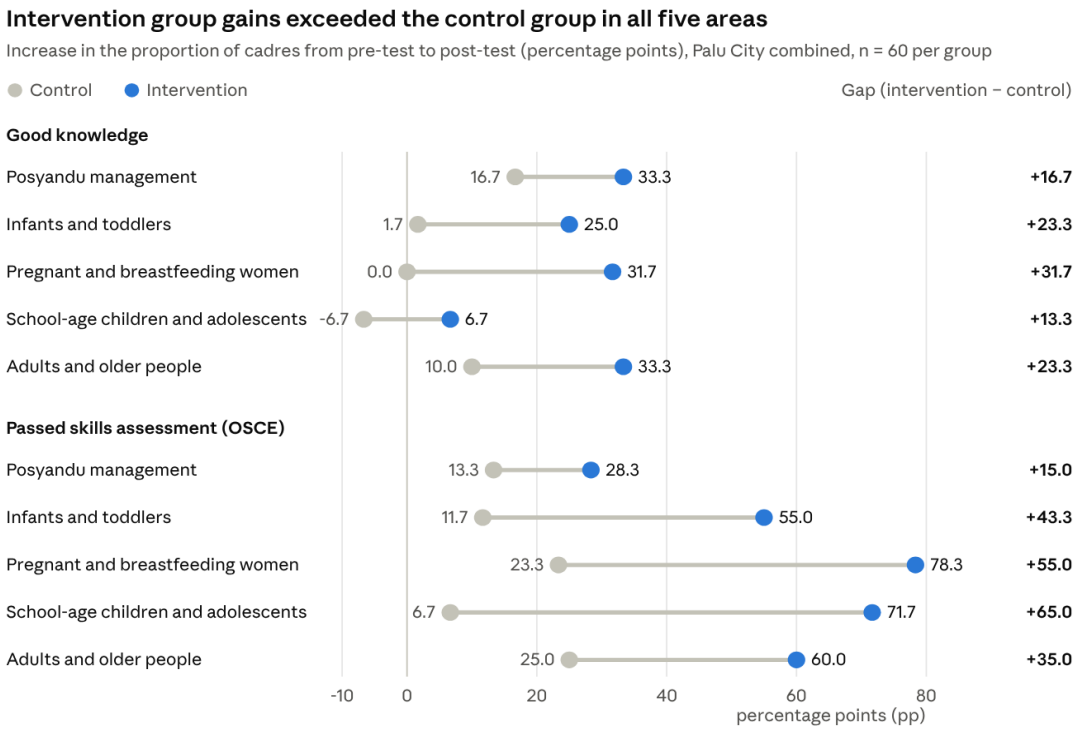


Figure 1. Comparison of increases in good knowledge and skill pass rates. Source: primary data, 2026 (Mamboro and Birobuli Puskesmas)

The largest gap in increases was in knowledge of pregnant and breastfeeding women (31.7 pp) and in skills for school-age children and adolescents (65.0 pp). The smallest gaps were in knowledge of school-age children and adolescents (13.3 pp) and in Posyandu management skills (15.0 pp), so these two areas need more attention.

DISCUSSION

Baseline: fair knowledge, skills not yet formed. Before the intervention, most cadres had fair knowledge, and almost none passed the skills assessment. This gap suggests that cadres had generally heard about Posyandu service content but had not been trained to practise it to the standard of the 25 basic skills. The finding is consistent with Palu City Health Office data showing that most Posyandu had not yet held training on the 25 basic skills. Muslimin et al. (2025) reported a similar picture: cadres had mastered only about half of the competencies on average, with particular weakness for adolescents and older people.

Larger and broader gains in the intervention group. After six weeks, the intervention group showed larger increases than the control group in all five areas. Videos combine images and sound, so practical steps such as weighing, measuring mid-upper arm circumference or taking blood pressure can be seen in full (Sukiman, 2012). Videos can also be replayed at any time on a mobile phone. For cadres with jobs and household duties, self-paced learning in their free time is easier to manage than face-to-face training. Monitoring visits by the research team probably also helped keep cadres motivated to watch and practise. These results are consistent with Manalu et al. (2026), who reported increased knowledge among Posyandu cadres after structured education.

Skill gains were more pronounced than knowledge gains. In the intervention group, the mean increase in skill pass rate (58.7 pp) was more than twice the mean increase in good knowledge (26.0 pp). Skills videos show actions that can be imitated directly, so they may influence practical ability more strongly than the conceptual understanding measured by the questionnaire. The school-age children and adolescents area illustrates this clearly. Good knowledge in this area rose by only 6.7 pp, but the skill pass rate rose by 71.7 pp, a gap of 65.0 pp over the control group.

The control group also improved in some areas. The control group's skill pass rate rose by 16.0 pp on average, mainly in adults and older people at Mamboro (50.0 pp). This increase may reflect the experience of taking the *pre-test*, the reminder to practise, routine Posyandu activities or information sharing between cadres. On the other hand, good knowledge in the control group fell in some areas, such as infants and toddlers at Mamboro (−10.0 pp). This suggests that without learning support, cadres' knowledge tends not to develop.

Posyandu management still needs strengthening. Posyandu management had the lowest pass rate after the intervention, at 31.7% in the intervention group. This area covers recording and reporting, home visits and effective communication. These skills are administrative and interpersonal, and are hard to master by watching videos alone. Direct mentoring, practice in filling in registers and simulated home visits could complement the videos in this area (Muslimin et al., 2025).

Limitations. This study was descriptive, so it did not test statistical significance or cause-and-effect relationships. The intervention and control groups were assigned by urban village rather than at random. The six-week observation period does not show whether knowledge and skills are retained in the long term. In addition, how often cadres watched the videos was not measured quantitatively.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions.

1. Before the intervention, most cadres in both groups had fair knowledge, and almost none passed the skills assessment. After the intervention, the proportions of good knowledge and skill passes in the intervention group rose in all areas, while the control group changed only slightly.
2. The mean proportion of cadres with good knowledge rose by 26.0 pp in the intervention group and 4.3 pp in the control group. The mean skill pass rate rose by 58.7 pp in the intervention group and 16.0 pp in the control group.
3. The intervention group's increases exceeded the control group's in all five areas. The largest gap in knowledge was in pregnant and breastfeeding women (31.7 pp), and in skills in school-age children and adolescents (65.0 pp).

Recommendations.

1. The Palu City Health Office and Puskesmas could use instructional videos to support training on the 25 basic Posyandu cadre skills, especially to reach large numbers of cadres.
2. Videos should be complemented by mentoring and hands-on practice, particularly for Posyandu management, where pass rates remain low.
3. Future studies should use statistical testing, random group allocation, longer follow-up and records of how often cadres watch the videos.

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