

STRENGTHENING THE CAPACITY OF COMMUNITY HEALTH CADRES AND FAMILIES FOR HEART DISEASE PREVENTION THROUGH INTEGRATED COMMUNITY HEALTH POSTS (POSYANDU)

Mercy Joice Kaparang¹, Yuli Admasari^{2*}, Sarliana³
^{1,2,3}Department of Midwifery, Poltekkes Kemenkes Palu, Indonesia
admasariyuli@gmail.com

ABSTRACT

Abstract: Heart disease is one of the leading causes of death and represents a growing public health concern. In Guntarano Village, Tanantovea District, Donggala Regency, hypertension is the most prevalent health problem, accounting for 32.05% of cases, and is a major risk factor for heart disease. This community service program aimed to improve the knowledge and practical skills of health cadres in identifying and screening cardiovascular risk factors and to strengthen family participation in adopting heart-healthy behaviors through Integrated Posyandu services. The program was conducted from June to July 2026 and involved 30 participants, consisting of 20 health cadres and 10 local community members. The main activities were conducted on June 8–9, 2026, and included health education, cadre training, cardiovascular risk screening through blood pressure, body weight, height, waist circumference, and body mass index measurements, as well as heart-healthy exercise. Program evaluation used pre-test and post-test assessments, practical skill assessment, and direct observation during follow-up Integrated Posyandu activities on July 14–15, 2026. The proportion of participants in the good knowledge and skill category increased from 30% before the intervention to 80% after the intervention, while the moderate category decreased from 30% to 10% and the poor category from 40% to 10%. Follow-up observation showed that cadres were able to conduct cardiovascular risk screening, record monitoring results, provide health education, and assist community members in adopting healthy lifestyle behaviors.

Keywords: Health Cadres; Cardiovascular Disease; Integrated Posyandu; Prevention; Family Empowerment.



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A. INTRODUCTION

Heart disease is one of the leading causes of death worldwide, including in Indonesia. According to the World Health Organization (WHO), approximately 17.9 million people die from cardiovascular diseases each year, accounting for around 32% of all global deaths, with 85% of these deaths caused by heart attacks and strokes (Muharram et al., 2024; Sabatina, Handajani, & Widjaja, 2022; WHO, 2021). Based on the 2023 Indonesian Health Survey (*SKD*), the prevalence of heart disease in Indonesia was 0.85%, while in Central Sulawesi it was 0.65% (BPK, 2023). Cardiovascular risk is also closely associated with modifiable factors, including hypertension, unhealthy dietary patterns, insufficient physical activity, and other unhealthy lifestyle behaviors. Therefore, strengthening promotive and preventive interventions at the community level is important to support early identification and control of cardiovascular risk factors (Gupta, Mohan, & Narula, 2016; Kharirie & Andriani, 2020; Kris-Etherton et al., 2022; Sriharibabu, 2016).

Guntarano Village, Tanantovea District, Donggala Regency, faces a substantial cardiovascular health challenge, particularly hypertension. Hypertension is the most frequently reported health problem in the village, affecting 32.05% of the population and representing an important risk factor for cardiovascular disease (Prodi Sarter Kebidanan, 2022). This condition highlights the need for community-based prevention strategies that not only increase public awareness but also strengthen the capacity of local health cadres to identify cardiovascular risk factors at an early stage. Limited health literacy and restricted access to reliable health information may further increase vulnerability to cardiovascular risk factors (Brors et al., 2022; Santos, 2017; Wu & Moser, 2022; Ayu & Adnan, 2020; Jiang & Zhang, 2018; Fernandez-Jimenez et al., 2019).

Although Integrated Posyandu activities have been routinely implemented in Guntarano Village, their function has not been optimally expanded to support early detection and prevention of cardiovascular disease. Initial observations showed that health cadres had not received specific training in basic cardiovascular risk screening, including blood pressure measurement, waist circumference assessment, body mass index determination, and cardiovascular health education. In addition, community members had limited awareness of the importance of regular risk-factor monitoring and healthy lifestyle practices for preventing heart disease. These conditions indicate a clear gap between the availability of community-based Posyandu services and the cadres' capacity to use these services as a platform for cardiovascular risk screening and health promotion. In fact, Posyandu cadres have considerable potential to serve as agents of change by increasing community awareness of healthy lifestyles and facilitating the early identification of cardiovascular risk factors (Insana & Swastikawara, 2023; Rahariyani et al., 2023).

To address this gap, a community service program was developed by integrating cadre capacity-building, health education, cardiovascular risk screening, and heart-healthy lifestyle promotion into Integrated Posyandu activities. The program emphasized practical cadre skills in measuring blood pressure, body weight, height, waist circumference, and body mass index, as well as providing simple health education and supporting healthy lifestyle behaviors among families. This approach was expected to strengthen the role of Posyandu as a community-based platform for promotive and preventive cardiovascular health services and to support the sustainability of early risk detection activities. Accordingly, this community service program aimed to strengthen the knowledge and practical capacity of health cadres in the early detection of cardiovascular risk factors and to empower families to adopt healthy lifestyle behaviors through Integrated Posyandu services.

B. METHOD

From June to July 2026, this community service program was conducted in Guntarano Village, Tanantovea District, Donggala Regency. A total of 30 participants were involved, consisting of 20 Posyandu health cadres and 10 local community members. The main activities were conducted on June 8–9, 2026, at the Guntarano Village Hall, followed by a follow-up evaluation on July 14–15, 2026, during Integrated Posyandu activities. The program involved the community service lecturer team from Poltekkes Kemenkes Palu, students, the village midwife, the Guntarano Village Government, health cadres, and community members.

The community service program was implemented in three main stages: preparation, implementation, and evaluation. The initial stage began with a situation analysis by reviewing secondary data and relevant literature, particularly data on the prevalence of hypertension and heart disease in Central Sulawesi Province. The findings of this analysis served as the basis for coordinating with community partners. Educational materials, including booklets and leaflets, were then developed to support the health education sessions, along with a questionnaire to assess participants' knowledge. The educational materials covered heart disease and its risk factors, hypertension, control of body weight and waist circumference, healthy dietary practices, physical activity, and family-based strategies for heart disease prevention. Coordination and communication were also conducted with the village midwife and local government to determine the schedule, venue, and participants of the community service activities.

The implementation stage was conducted on June 8–9, 2026, and included cardiovascular risk assessment, pre-test administration, health education, cadre training, demonstration and return-demonstration, discussion, post-test administration, and heart-healthy exercise. Initial cardiovascular risk assessments included measurements of blood pressure, body weight, height, waist circumference, and body mass index (BMI). Health education was delivered for three instructional periods (3 JP) and covered heart disease,

cardiovascular risk factors, preventive measures, and healthy lifestyle behaviors. Cadre training focused on identifying cardiovascular risk factors, measuring blood pressure, body weight, height, and waist circumference, calculating and interpreting BMI, recording screening results, providing basic health education, and referring individuals at risk to appropriate health services. The training used demonstration and return-demonstration methods to provide cadres with opportunities to directly practice the skills taught. Digital blood pressure monitors and weighing scales were donated to support continued screening activities at the community level. In addition, heart-healthy exercise sessions were conducted to encourage regular physical activity as part of cardiovascular disease prevention.

The evaluation stage was conducted in two phases. The first evaluation was conducted before and immediately after the educational intervention using a pre-test and post-test to assess participants' knowledge. The knowledge questionnaire consisted of 10 closed-ended true-or-false items covering cardiovascular risk factors and heart disease prevention. Each correct answer was scored 1 and each incorrect answer was scored 0, resulting in a total score ranging from 0 to 10. The total score was converted into a percentage using the proportion of correct answers. Knowledge levels were categorized as good (76 – 100%), moderate (56 – 75%), and poor ($\leq 55\%$). Accordingly, with 10 questionnaire items, scores of 8 – 10 were categorized as good, scores of 6 – 7 as moderate, and scores of 0–5 as poor.

Practical skills were evaluated separately from the knowledge test through direct observation during demonstration and return-demonstration activities. No structured skills checklist was used. The observation focused on the cadres' ability to identify cardiovascular risk factors, measure blood pressure, body weight, height, and waist circumference, calculate BMI, and record the results of cardiovascular risk screening.

The second evaluation was conducted on July 14–15, 2026, during Integrated Posyandu activities through direct observation of the cadres' application of the knowledge and skills acquired during training. The observation focused on their ability to conduct cardiovascular risk screening, record monitoring results, provide health education, and assist community members in adopting healthy lifestyle behaviors. This follow-up evaluation was descriptive and was used to assess whether the cadres were able to apply the acquired skills in routine community-based Posyandu activities.

C. RESULT AND DISCUSSION

This community service program involved the Guntarano Village midwife, 20 health cadres, and local community members and was conducted from June to July 2026 at the Guntarano Village Hall. Health cadres were selected as the main participants because they play a key role in mobilizing community participation and supporting village-based health promotion

activities. The program was primarily aimed at improving participants' knowledge of cardiovascular disease prevention, strengthening cadres' skills in the early detection of cardiovascular risk factors, and promoting regular physical activity as part of a heart-healthy lifestyle within the community.

1. Preparation Stage

The preparation stage of the program, "Strengthening the Capacity of Health Cadres and Families for Heart Disease Prevention through Integrated Posyandu Services," began with a situation analysis to identify existing health problems, cardiovascular risk factors, and available resources that could support program implementation. The situation analysis was conducted by reviewing secondary health data, previous village health reports, and information obtained during initial coordination with community partners. The findings were used to identify priority problems and determine the target participants, educational content, training activities, and follow-up strategy. The analysis showed that hypertension and heart disease remain important public health concerns. In Indonesia, the prevalence of hypertension among adults aged ≥ 18 years was 30.8%, while the prevalence of heart disease was 0.85% (BPK, 2023).

In Central Sulawesi, the prevalence of hypertension reached 30.4% and that of heart disease was 0.65%. Among women aged ≥ 18 years, the prevalence of hypertension was 36.8% and heart disease was 1.6%; in addition, cardiac disorders contributed to 5.97% of maternal deaths (Dinas Kesehatan Provinsi Sulawesi Tengah, 2022). In Donggala Regency, only 14% of hypertension cases were managed by health professionals, while in Guntarano Village, Tanantovea District, hypertension affected 32.05% of the population and was identified as one of the major health problems (Prodi Sarter Kebidanan, 2022). The analysis also identified limited cadre experience in cardiovascular risk screening and the need to strengthen the use of Integrated Posyandu for cardiovascular disease prevention. Health services in the village are supported by two Posyandu and one village maternity post/auxiliary health center (*Polindes/Pustu*). Based on these findings, strengthening the capacity of health cadres and families through Integrated Posyandu services was considered an appropriate strategy to improve early detection of cardiovascular risk factors, promote healthy lifestyle behaviors, and support community-based prevention of heart disease.

Following the situation analysis, the preparation stage continued with the development of educational materials in the form of booklets and leaflets to support health education for cadres and families. The community service team organized the educational content according to the problems identified during the situation analysis so that the materials were directly relevant to the needs of cadres and community members. Booklets were selected because they can provide more comprehensive and systematically organized information and can be reviewed independently after the sessions, whereas leaflets were used to deliver concise, practical, and easily accessible health

messages during Posyandu activities. Previous studies have shown that booklets and leaflets are effective health education media for improving knowledge, attitudes, and adherence, particularly in relation to the prevention and control of hypertension as a major cardiovascular risk factor (Afifah & Iryanti, 2021; Marbun & Hutapea, 2022; Rachmasari & Mardiana, 2022; Ramadhini et al., 2021; Safitri & Sudaryanto, 2024). The educational materials covered an introduction to heart disease and its risk factors, hypertension, body weight and waist circumference control, healthy dietary practices, physical activity, and family-based strategies for preventing heart disease.

A questionnaire was also developed during the preparation stage as an instrument to evaluate the effectiveness of the educational intervention. The questionnaire consisted of 10 closed-ended true-or-false questions based on the educational content related to cardiovascular risk factors and heart disease prevention. The same questionnaire was prepared for administration before and after the educational intervention to allow comparison of participants' knowledge. Each correct answer was assigned a score of 1 and each incorrect answer a score of 0. Knowledge scores were subsequently classified as good (76–100%), moderate (56–75%), and poor ($\leq 55\%$). The closed-ended format was selected because it was simple for participants to complete and allowed knowledge changes to be assessed consistently before and after the intervention (G S et al., 2025; Krause, 2002; Nohra et al., 2022).

The final preparation activity involved coordination between the community service team, the Guntarano Village Government, the village midwife, health cadres, and local residents. A total of 30 participants were identified as the target group, consisting of 20 health cadres and 10 community members. Through this coordination, the team and community partners agreed on the activity schedule, venue, participant involvement, and logistical support. The main activities were scheduled for June 8–9, 2026, at the Guntarano Village Hall, while the follow-up evaluation was scheduled for July 14–15, 2026, during Integrated Posyandu activities. The village government supported implementation by providing the venue, sound system, tables, and chairs, while the village midwife and village authorities assisted in coordinating and mobilizing cadres and community participants. The agreed activity sequence included cardiovascular risk assessment, pre-test, health education, cadre training and skills practice, discussion, post-test, equipment handover, heart-healthy exercise, and follow-up observation during Integrated Posyandu activities.

2. Implementation Stage

The community service activities were conducted on June 8–9, 2026, at the Guntarano Village Hall and involved 30 participants, consisting of 20 health cadres and 10 local community members. The activities were facilitated by the lecturer team from Poltekkes Kemenkes Palu with

assistance from students, the village midwife, and the Guntarano Village Government. At the beginning of the program, all participants underwent cardiovascular risk and fitness assessments, including measurements of blood pressure, body weight, height, waist circumference, and body mass index (BMI). During the assessment, health cadres observed the measurement procedures as an initial introduction to basic cardiovascular risk screening before participating in practical training, as shown in Figure 1.



Figure 1. Health and Fitness Assessment

Figure 1 shows the initial cardiovascular risk assessment conducted among participants. This activity provided baseline information on cardiovascular risk factors and introduced health cadres to basic measurements that could subsequently be applied during routine Integrated Posyandu activities. Following the health assessment, all participants completed a pre-test to assess their baseline knowledge of cardiovascular risk factors and heart disease prevention. The education sessions were then conducted for three instructional periods (3 JP).

The first session covered heart disease, cardiovascular risk factors, hypertension, and preventive measures. Health education is an important strategy for improving community understanding of cardiovascular risk factors. Previous studies have demonstrated that hypertension-related education can improve community knowledge and attitudes toward the prevention and control of cardiovascular risk factors (Andrianto et al., 2022; Kurnia et al., 2022; Upoyo et al., 2024). During the session, participants were encouraged to relate the information provided to health problems commonly encountered in their families and communities. Each participant was also provided with a leaflet as supplementary educational material that could be reviewed independently after the activity. The use of leaflets as health education media has been shown to effectively improve community knowledge regarding hypertension and its prevention (Ramadhini et al., 2021), as shown in Figure 2.



Figure 2. Delivery of the First Educational Session

Figure 2 illustrates the health education process in which participants received information on heart disease, cardiovascular risk factors, and preventive measures. The activity was designed not only to deliver information but also to strengthen participants' understanding of cardiovascular disease prevention and prepare the cadres for the subsequent practical training.

The second educational session focused on heart health at the community level and the role of health cadres in promoting and preventing heart disease. The cadres were guided to understand their roles in identifying cardiovascular risk factors, conducting early detection, recording screening results, providing simple health education, and referring individuals at risk to appropriate health services. The session was followed by practical training using demonstration and return-demonstration methods. The facilitators demonstrated the procedures for measuring blood pressure, body weight, height, and waist circumference and for calculating and interpreting BMI. The cadres then practiced these procedures directly under the observation and guidance of the community service team. Feedback and corrections were provided during practice when necessary.

Although the cadres had previously acquired basic skills in anthropometric measurements, these competencies were reinforced and supplemented with BMI calculation and interpretation. The cadres were also provided with a simple monitoring form to support cardiovascular risk screening during Posyandu activities. Previous studies have shown that structured training for community health workers can improve their knowledge and practical capacity and strengthen their involvement in cardiovascular risk screening and control at the community level (Abdel et al., 2017; Khetan et al., 2017; Mbuthia et al., 2022). In addition to screening skills, the cadres were trained to provide simple education on heart disease prevention and healthy lifestyle behaviors so that these activities could be integrated sustainably into routine Posyandu services.

After the practical session, participants took part in an interactive discussion and question-and-answer session. Participants were encouraged to discuss difficulties encountered during practice, interpretation of screening results, cardiovascular risk factors, healthy lifestyle behaviors, and actions to be taken when individuals at risk were identified. At the end of the session,

all participants completed the same 10-item questionnaire as a post-test to assess changes in knowledge following the educational intervention.

After all education and training sessions had been completed, the program continued with the handover of supporting equipment for cardiovascular risk screening, consisting of three digital blood pressure monitors and digital weighing scales, from the community service team to the Guntarano Village Government. The equipment was provided to support the continued application of cardiovascular risk screening during Posyandu and community health activities. The digital blood pressure monitors were distributed to cadre representatives so that they could continue monitoring blood pressure and other cardiovascular risk factors after the training program. This approach is consistent with the WHO HEARTS technical package, which highlights blood pressure measurement, BMI assessment, risk factor screening, health education, and referral as essential components of community- and primary care-based cardiovascular disease prevention (WHO, 2018). Previous studies have also shown that the involvement of community health workers in cardiovascular risk screening and monitoring can support early detection, blood pressure control, behavioral change, and improved linkage to health services (Khetan et al., 2017; Mbuthia et al., 2022). Therefore, this donation of equipment is expected to strengthen the role of Posyandu as a promotive and preventive platform and to support the sustainability of heart disease prevention efforts in Guntarano Village.

As a follow-up activity, the community service team, health cadres, and community participants conducted heart-healthy exercise together and encouraged its continuation as part of community-based cardiovascular disease prevention. Heart-healthy exercise was selected because it is a form of aerobic physical activity that can be performed in groups and is relatively easy to implement at the community level. Regular physical activity is known to reduce the risk of hypertension and cardiovascular disease and to support blood pressure and body weight control. The World Health Organization recommends that adults perform 150–300 minutes of moderate-intensity aerobic physical activity per week to achieve optimal health benefits (WHO, 2020). Previous studies have also shown that regular heart-healthy exercise can contribute to reducing and stabilizing blood pressure among individuals with hypertension (Daeli, 2022; Febriani et al., 2025). The continuation of the screening, health education, and cardiovascular prevention activities was subsequently observed during Integrated Posyandu activities on July 14–15, 2026.

3. Evaluation Stage

The evaluation stage was conducted in two phases. The first evaluation assessed participants' knowledge before and after the educational intervention using a 10-item true-or-false questionnaire. The results showed that the proportion of participants with a good level of knowledge increased

from 30% before the intervention to 80% after the intervention, while moderate knowledge decreased from 30% to 10% and poor knowledge decreased from 40% to 10%. Practical skills were assessed separately through direct observation during training and follow-up Integrated Posyandu activities, as shown in Table 1.

Table 1. Participants' Knowledge Levels

No	Knowledge Level	Number of Respondents (%)	
		Pre-test (%)	Post-test (%)
1	Good	30	80
2	Moderate	30	10
3	Poor	40	10
Total		100	100

The second evaluation was conducted on July 14–15, 2026, during Integrated Posyandu activities through direct observation of the cadres' roles in the community. The evaluation focused on their ability to screen cardiovascular risk factors, record monitoring results, provide health education, and assist community members in adopting healthy lifestyle behaviors. This follow-up evaluation was intended to ensure that the knowledge and skills acquired during the training were not only understood theoretically but could also be applied effectively and sustainably in supporting promotive and preventive efforts for heart disease at the community level.

The outputs of this community service program included: (a) improved knowledge and practical skills among participants; (b) increased ability of health cadres and community participants to perform early detection of cardiovascular risk factors; (c) publication of an article in the online edition of Radar Palu; (d) publication of a community service activity video on the YouTube channel of the Department of Midwifery, Poltekkes Kemenkes Palu; (e) preparation and publication of a community service article in a journal accredited by the Ministry of Education, Culture, Research, and Technology; (f) publication of an article in the printed edition of Radar Palu on July 21, 2026; and (g) registration of intellectual property rights for the educational booklet developed as part of the program.

D. CONCLUSION AND RECOMMENDATIONS

This community service program improved participants' knowledge of cardiovascular risk factors and heart disease prevention, as shown by an increase in the proportion of participants with a good level of knowledge from 30% before the intervention to 80% after the intervention, while moderate knowledge decreased from 30% to 10% and poor knowledge decreased from 40% to 10%. Direct observation during the follow-up Integrated Posyandu activities showed that health cadres were able to apply the skills introduced during the training, including cardiovascular risk screening, recording

monitoring results, providing health education, and assisting community members in adopting healthy lifestyle behaviors.

To sustain these achievements, cardiovascular risk screening should be conducted routinely during Integrated Posyandu activities through blood pressure, body weight, height, waist circumference, and BMI monitoring, with consistent recording of screening results to support follow-up and referral. Periodic refresher training for cadres, continued mentoring by the village midwife and other healthcare professionals, support from the Guntarano Village Government, and the continuation of heart-healthy exercise and family-based health education are also recommended to strengthen the sustainability of community-based cardiovascular disease prevention efforts..

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