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Innovative Community-Based Strategies in Cadre Empowerment for Toddler Pneumonia Control

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ABSTRACT

Pneumonia is an infectious disease that often occurs in toddlers and causes high morbidity and mortality rates. An infection of the lower respiratory system known as pneumonia attacks one or two lungs, especially in the alveoli, so that it interferes with their function in the exchange of oxygen and carbon dioxide gases (UNICEF, 2024). To overcome the existing problems, a strategy that involves community service activities, such as providing health education, must be implemented. The implementation of activities starts from the preparation stage, starting from making proposals and permits, and the implementation stage is carried out by carrying out two activities, namely activity 1: Providing health education and demonstrations, and activity 2: evaluating the practice of cadres' abilities in providing education to the community and classifying pneumonia in toddlers. The media used are interactive, including pocket books, videos on early detection and treatment of toddlers with pneumonia, presentation slides, and props, which will provide increased attention and ease of understanding the material. The evaluation process was also carried out using knowledge questionnaires and observation sheets. This activity was carried out on 10 cadres in the work area of the Kersanegara Health Center which showed an increase in the level of knowledge of cadres There was an increase in knowledge and skills, where the pretest of knowledge with the good category was 30%, while the posttest was 50%, then there was an increase in skills for the pretest by 10%, while the posttest with the good category was 100%. It is hoped that this education can be carried out interestingly, thereby increasing cadre knowledge and efforts to prevent pneumonia.

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INTRODUCTION

Situation analysis: The age of children under five years old is known as toddler age, i.e., those between 0 and 59 months old, which includes the neonatal age stage 0-28 days, infant 1-12 months, toddler 1-3 years, and preschool 4-5 years (Kementerian Kesehatan Republik Indonesia, 2023). At this age, their bodies are still susceptible to diseases, especially viral and bacterial infections, because the immune system is still not optimally developed (Yang & Feng, 2023). Pneumonia is an infectious disease that often occurs in toddlers and causes high morbidity and mortality rates. An infection of the lower respiratory system, known as pneumonia, attacks one or two lungs, especially in the alveoli, so that it will interfere with their function in the exchange of oxygen and carbon dioxide gases due to the presence of fluid or pus (Yadav & Awasthi, 2023). Data shows that pneumonia is the most common disease that causes death for children under five in the world, with about 739,000 deaths in children under the age of five in 2023. In addition, data show that infants die from pneumonia every 43 seconds, and the number of deaths of children under the age of five from pneumonia every day reaches 2009 children (International Vaccine Access Centre, 2023). Pneumonia in Indonesia causes 0.12% of deaths among toddlers, with the highest mortality rate in infancy, three times that of 1-4 years of age (Kementerian Kesehatan Republik Indonesia, 2023).

The causes of pneumonia in toddlers include the bacteria Streptococcus pneumonia and Haemophilus influenza, as well as fungi (Chen et al., 2023). The entry of bacteria or viruses into the body of toddlers, especially in the respiratory system, will cause signs and symptoms. Toddlers will experience high fever, tachypnea, inward retraction of the chest wall, crackles, and wheezing, which are signs and symptoms in toddlers with pneumonia, in addition to the results of supportive diagnostic examinations are the results of chest X-rays showing infiltrates and there is a decrease in oxygen saturation in severe and very severe pneumonia conditions (Roselany & Surjono, 2023). The risk factors for the incidence of pneumonia in toddlers are incomplete immunisation status, low maternal education, exposure to cigarette smoke, malnutrition, a history of premature birth or BBLR, poor home ventilation, and lack of exclusive breastfeeding (Zebua et al., 2023). Pneumonia in toddlers based on MTBS is divided into three categories, namely cough not pneumonia, indicated by no rapid breathing and no inward pull of the chest wall, pneumonia, indicated by rapid breathing, and severe pneumonia, indicated by the presence of inward pull of the chest wall and oxygen saturation < 92% (Kementrian Kesehatan RI, 2022a).

The incidence rate of pneumonia in West Java was ranked 8th in 2022, accounting for 44.9 per cent of pneumonia cases. In 2023, the number of pneumonia cases under five increased by 0.1 points to 45%. The number of toddlers with pneumonia in Tasikmalaya City found and treated in 2023 was 1,711 cases, up from the previous year. Pneumonia cases found and treated in 2022 were 1,344 cases (Tasikmalaya, 2022). Meanwhile, in 2022, the number of pneumonia cases among toddlers at the Kersanegara Health Centre was 151 people and ranked 11th out of 22 health centres in Tasikmalaya City. In addition, based on the results of interviews with the Health Centre, the community and health cadres urgently need education related to pneumonia in toddlers, which is part of the 25 skills that a health cadre must possess.

The empowerment of health cadres is fundamental in carrying out early detection and treatment of pneumonia under five, because pneumonia is an acute infectious disease of the respiratory system that causes high morbidity and mortality rates in toddlers (under the age of five), especially in younger children. Based on these conditions, it is crucial to develop an effective strategy and a comprehensive

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approach that involves all health workers, families, especially parents, community leaders, and health cadres to manage pneumonia under five (Tariku et al., 2021).

Health cadres have a very decisive role in health services in the community, especially in carrying out efforts to detect early pneumonia in toddlers and providing education to families in the community about the prevention and treatment of toddlers with pneumonia, as well as referring toddlers affected by pneumonia cases to get more intensive care in more adequate health services. Based on these conditions, it is crucial to empower health cadres through training, mentoring, and adequate resources, enabling the successful implementation of planned community programs. Increasing knowledge, skills and motivation in health cadres with continuous training on the concept of pneumonia in toddlers starting from the definition, signs and symptoms, as well as the determination of pneumonia classification by calculating the breathing of toddlers to determine whether or not breathing is fast or not and how to manage it early in the family if there is a toddler with pneumonia using standardized guidelines. The results of the study show that the provision of training and assistance, as well as appropriate support to health cadres, shows that health cadres have a high accuracy of around 81% in determining children classified as pneumonia, especially in terms of conducting breath frequency checks and 78% in determining appropriate care (Sinyangwe et al., 2016).

Partner problems: In 2022, Tasikmalaya City reported 1,711 cases of pneumonia in toddlers found and treated in 2023, an increase from the 1,344 cases reported in 2022. The partners' problems are 1) There are cases of pneumonia under five in the community, but have not been netted to the maximum, 2) Community knowledge and skills are still lacking related to the early detection and management of pneumonia in toddlers, 3) there have never been training activities for health cadres related to early detection and treatment of pneumonia in toddlers. Based on the analysis of the situation and problems, we, as a service provider, carry out community service activities in the form of Cadre Empowerment for Pneumonia Prevention in Toddlers as an Innovative Community-Based Strategy in the Kersanegara Health Centre work area.

The purpose of community service activities is to increase the knowledge, understanding, and skills of cadres about the management of pneumonia under five by:

- Providing Health Education on the concept of pneumonia and pneumonia detection in toddlers
- Provide a demonstration of how to calculate the breathing frequency of toddlers, oxygen saturation, and the determination of the inward pull of the chest wall.
- Providing materials in the form of pocket books and skills videos on early detection and care of toddlers with pneumonia.

METHOD

This community service activity was held in the work area of the Kersanegara Health Centre, providing health education and skill demonstrations to health cadres. The goal was to increase their knowledge and understanding of early pneumonia detection and treatment for toddlers. The area chosen is the one with the highest number of pneumonia cases, involving a total of 10 health cadres. The stages of activities in carrying out community service activities are in the form of: Stage 1 Preparation: Before carrying out community service activities, several steps must be taken. First, conducting a question and answer session with the person in charge of pneumonia and the head of the health centre to determine the topics that are urgently needed by health cadres related to pneumonia in

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toddlers; second, making community service proposals; and third, applying for a permit to the Head of the Tasikmalaya City Health Office to carry out community service activities.

Phase 2 Implementation of activities: Community service activities were carried out 2 times, namely:

- Activity 1: Providing health education to health cadres about pneumonia through lectures, demonstrations, and redemonstrations. Health cadres also get information on how to handle pneumonia in toddlers, such as measuring breathing frequency, oxygen saturation, and the inward pull of the chest wall. Props and audiovisual media are used in the implementation of this activity to make it easy for cadres to receive information and encourage them to learn and practice in action.
- Activity 2: Supervise an evaluation of health cadres' practice in educating parents with toddlers, followed by measuring breath frequency, oxygen saturation, and the inward pull of the chest wall. After that, ask cadres to determine the classification of toddler illness based on MTBS.

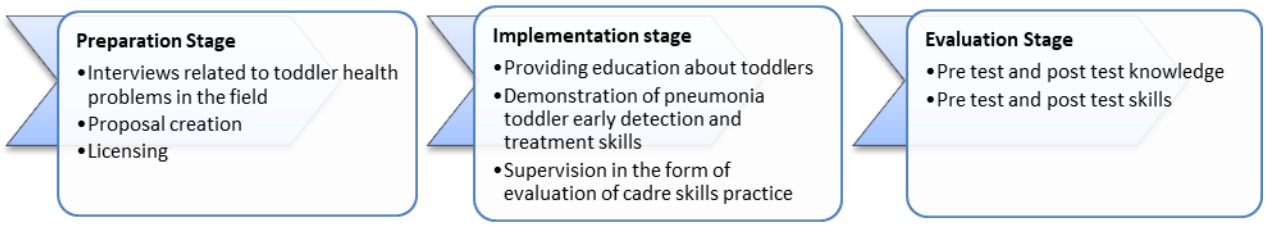

FIGURE 1. Method of activity

The participation of the Kersanegara Health Centre as a partner in community service is in the form of:

- Facilitating training activities in the form of providing pneumonia data
- Selection of regions as places of community service, with many cases of pneumonia
- Extending an invitation to Health cadres to participate in training
- Participate in evaluation activities from the follow-up of training activities

RESULTS AND DISCUSSION

Pneumonia is one of the leading causes of morbidity and mortality in toddlers, especially in developing countries, including Indonesia (Depkes RI, 2019). Early detection and management of pneumonia are crucial at the community level to prevent delays in treatment. In this context, health cadres have a strategic role because they are the spearhead of health services on the front line that interact directly with the community. Cadre empowerment through health education and supervision activities has proven to be effective in improving their knowledge and skills in handling pneumonia cases in toddlers.

The evaluation of community service implementation aims to assess the knowledge and understanding of health cadres in conducting early detection and treatment of pneumonia in children under five, using a knowledge questionnaire as an assessment instrument. Evaluation activities were carried out during activity 1, namely when providing education and demonstrations. Meanwhile, the second evaluation was carried out during the second activity, namely, when health cadres provided

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health education related to early detection of pneumonia and the ability of cadres to determine the classification of pneumonia in toddlers. Regarding the sustainability of the program, the service involves the person in charge of pneumonia creating a refreshing program or evaluating cadre skills when Puskesmas officers conduct home visits or participate in posyandu activities. The service provider conducts a pre-test before carrying out the activity, and after the activity is carried out, a post-test is conducted. The following are the results of the assessment of the knowledge and skills of the cadres, namely:

TABLE 1. Participant's Knowledge Level

No	Category	Pretest		Posttest	
		n	%	n	%
1.	Enough	7	70	5	50
2.	Good	3	30	5	50
Sum		10		100,00	

Source: Primary Data Analytics (2025)

TABLE 2. Participant Skill Level

No	Category	Pretest		Posttest	
		n	%	n	%
1.	Less	7	70	0	0
2.	Enough	2	20	0	0
3.	Good	1	10	10	100
Sum		100		100,00	

Source: Primary Data Analytics (2025)

Table 1 indicates that the pretest results show the cadres' knowledge level is still sufficient, with seven cadres (70%) falling into this category and 3 (30%) into the good category. Meanwhile, the posttest data showed that there was a change in the level of knowledge towards an increase after being given interactive and communicative material, namely, the majority of cadres' knowledge increased, with 5 (50%) cadres in the good knowledge category and 5 (50%) cadres in the category of sufficient knowledge.

Table 2 shows that the skill level of measuring breathing frequency, oxygen saturation, chest wall retraction, and temperature was mainly in the low category, with seven people (70%), the moderate category, with two people (20%), and only one person (10%) in the good category. Following a skill demonstration and redemonstration, there was an increase in skills, with 10 people achieving a good skill category (100%).

The results of these two activities show that the combination of health education and practical evaluation for cadres is an effective strategy in increasing the capacity of health cadres. Good knowledge without skills is insufficient; conversely, skills lacking a foundation in knowledge can also lead to errors. Therefore, the integration of these two approaches results in cadres who not only know theoretically, but are also practically skilled in dealing with toddler pneumonia (Sidiq, 2018). Thus, cadres can contribute to prevention, early detection, and timely referral, which is ultimately expected to reduce the number of illnesses and deaths due to pneumonia in toddlers in the community. The evaluation of community service implementation aims to assess the knowledge and understanding of health cadres in conducting early detection and treatment of pneumonia in children under five, using instruments such as knowledge questionnaires (Agritubella et al., 2025). Evaluation activities were carried out during activity 1, namely when providing education and demonstrations. Meanwhile, the second evaluation was carried out during the second activity, namely, when health cadres carried out

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the practice of providing health education related to early detection of pneumonia and the ability of cadres to determine the classification of pneumonia under five.

The first activity, which provides health education through lectures, demonstrations, and redemonstrations, has been proven to increase the knowledge of health cadres. Through lectures, cadres obtained theoretical information about the definition of pneumonia, signs and symptoms, risk factors, and simple examination steps according to MTBS (Integrated Management of Sick Toddlers) standards. The lecture method functions to convey information in a systematic and structured manner so that cadres obtain a clear theoretical foundation. According to Notoatmodjo (2015), Lectures are a classic method that remains effective in health promotion, as they can reach a large audience in a relatively short time. However, lectures alone are often one-way, so they need to be combined with other methods.

The demonstration method allowed cadres to see firsthand how to measure the breathing rate of toddlers, use a pulse oximeter to measure oxygen saturation, and identify the presence of inward pull of the chest wall. Meanwhile, the redemonstration provides space for cadres to re-practice what has been learned, so that the learning process becomes more interactive and participatory (Kardilah, 2025). The use of audiovisual media and teaching aids also helps to improve understanding because information is conveyed visually, auditorily, and kinesthetically, making it easier for cadres to remember and understand. The use of audiovisual media and teaching is in accordance with the theory of adult learning (andragogy), which emphasises that learning will be more effective when it involves hands-on experience and varied media (Eliza Putri et al., 2022). The real impact of this activity is evident in the cadres' ability to re-explain the signs of pneumonia, examination steps, and their enthusiastic attitude to practice further. With demonstrations, cadres can understand practical steps that are easier to capture than just verbal explanations. The real impact of this activity is in line with Dale's Cone of Experience theory, which states that learning experiences that involve more senses will improve knowledge retention (Rustamana et al., 2023).

Meanwhile, the redemonstration method provides space for cadres to re-practice what has been shown by the facilitator. This process is critical because active learning encourages direct participation, strengthens understanding, and trains skills. In the theory of andragogy, adults learn more effectively when they are actively involved and gain hands-on experience from the material studied. Thus, redemonstration is an important part to ensure that the knowledge gained by cadres is not only passive, but can also be applied practically (Jatmika et al., 2019).

Significant increase in knowledge in health cadres is also supported by the use of audiovisual media and teaching aids in the health education process. The combination of visual, audio, and hands-on practice has been shown to increase the attention and motivation of the cadre's learning, while also helping the process of internalising information into long-term memory (Pramita Sari et al., 2021). Research by Santia et al. (2021) indicates that health promotion using audiovisual media is more effective in improving knowledge and attitudes compared to the lecture method without media. Thus, the first activity, which involved health education through lectures, demonstrations, and redemonstration methods, proved to be an effective strategy in increasing the knowledge of health cadres. These results are in line with previous studies that have emphasised the importance of a combination of interactive learning methods to achieve optimal learning outcomes.

The second activity, a practice evaluation, is conducted to ensure that the knowledge gained by cadres can be applied to fundamental skills. In this activity, cadres were asked to provide education to parents of toddlers about the danger signs of pneumonia and the importance of immediately seeking medical help. Furthermore, cadres conduct direct examinations of toddlers, starting from calculating the

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frequency of breath according to age categories, using a pulse oximeter to assess oxygen saturation, to observing the inward pull of the chest wall. Supervision enables health workers to provide direct guidance and correction when errors or deficiencies are identified during implementation. In addition, cadres are also asked to determine the classification of pneumonia based on MTBS standards (pneumonia, severe pneumonia, or non-pneumonia) and record the results of the examination. This activity has been proven to improve the skills of cadres, as evidenced by the increasing accuracy of cadres in measuring, classifying, and recording pneumonia cases in toddlers (Sari et al., 2022).

The practical evaluation in this study is carried out to ensure that the knowledge obtained by health cadres through health education can be applied in real terms, in the form of skills. Supervision in the form of practical evaluation is one of the continuous learning strategies that aims to direct, guide, and assess the ability of cadres when carrying out tasks in the field. Practice evaluation aims to find out whether knowledge that was previously theoretical can be internalised into practical skills according to the needs of society (Maramis, 2015).

The results of the evaluation showed that health cadres were able to educate parents of toddlers about pneumonia, as well as practice basic examinations such as calculating breathing frequency, measuring oxygen saturation using a pulse oximeter, and observing the inward pull of the chest wall. In addition, cadres can also classify pneumonia in toddlers according to standards (Kementrian Kesehatan RI, 2022b) and perform simple recording. The evaluation shows that supervision not only functions as supervision, but also as a means of improving the competence of cadres at the field level.

According to Maramis (2015), health supervision plays an important role in maintaining the quality of public health services, especially in the first line of service, by providing direct feedback to the implementing staff. In the context of empowering health cadres, supervision provides opportunities to correct mistakes, strengthen correct skills, and foster cadres' confidence in carrying out their duties.

Supervision activities are also in accordance with the theory of learning psychomotor skills by Dave (1970) in (Siregar et al., 2020), which explains that skill learning starts from the imitation stage, then progresses to the implementation stage with manipulation, until finally reaching the level of self-mastery (precision and articulation). The supervision provided to health cadres places them in the manipulation stage, where they develop skills with direct assistance, allowing for immediate correction of mistakes and gradual improvement of competence.

In addition, supervision has also been proven to increase the motivation of cadres in carrying out their roles. According to research by Lestari (2019), Health cadres who receive routine supervision are more consistent in recording, reporting, and early detection of pneumonia cases than cadres who are not supervised. Supervision demonstrates that it serves not only as a form of evaluation but also as a means of coaching, thereby strengthening the capacity of cadres as partners of health workers in the community. Thus, field supervision in this study proved to be effective in ensuring that cadres' knowledge about pneumonia does not stop at the cognitive level, but can be implemented into fundamental skills. Supervision supports the primary goal of empowering health cadres, which is to improve the community's ability to recognise, prevent, and follow up on health problems under five independently while still referring to applicable health service standards.

Regarding the sustainability of the program, the service involves the person in charge of pneumonia in creating a refreshing program or evaluating cadre skills when Puskesmas officers conduct home visits or participate in posyandu activities. This community service is a downstream of the results of the research entitled "Empowerment of Mothers on Alert to the Level of Independence in Prevention and Skills of Pneumonia Toddler Care" (Rosuliana & Nurhayati, 2022)

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CONCLUSION

- Community service for cadre training can increase the knowledge and skills of cadres about pneumonia material and early detection skills for pneumonia treatment for toddlers, the results of the pretest and posttest show that the level of knowledge has increased, namely five people (50%) in the category of sound knowledge, while for the skills of measurement, classification, and recording of pneumonia cases in toddlers 10 people (100%) in the Good Skills category.
- Community service activities proceeded as planned. The service team's education led to an increase in knowledge and skills. Health education for cadres aims to improve the knowledge, understanding, and skills of health cadres about early detection of pneumonia under five and early treatment at home. As leaders in the community, health cadres have accelerated efforts to provide health promotion, thereby reducing the mortality rate of toddlers due to pneumonia at the Kersanegara Health Centre Working Area.

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APPENDIX

FIGURE 2. Implementation of community service activities

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