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Pneumonia as a Life-Threatening Disease among Under-Five Children: A Descriptive Phenomenology Study

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Abstract
Pneumonia is the largest infectious disease in under-five children worldwide, including Indonesia. Comprehensive and integrated approaches are essential to prevent and control childhood pneumonia by involving the community, such as health cadres. Health cadres are the main support for the children's health that liaison between the community and health workers; however, limited exploration of cadres' perspectives about children' health. . This study aimed to explore the perceptions and experiences of health cadres regarding childhood Pneumonia. This descriptive phenomenological approach used semi-structured interviews with 29 cadres in two different districts. Data collection was used in-depth interviews with a semi-structured approach. The data were analyzed using a comparative analysis approach in qualitative research. The study found three main themes; Pneumonia is a life-threatening disease, the characteristic of Pneumonia, and the need for assistance in preventing and controlling Pneumonia. Various perceptions of Pneumonia may affect the cadres' actions in the children's health.This study informed health workers for developing an innovative training and programs, which will maximize the cadres' roles and capabilities in Pneumonia.

Keywords: *children health; health cadres; pneumonia*

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Introduction
Pneumonia in toddlers is a severe problem for child health worldwide, including in Indonesia. Data from the World Health Organization (2019) shows that in 2019 as many as 800,000 children died from pneumonia, and the majority came from low-middle-income countries. In line with these data, pneumonia is Indonesia's first cause of death in infants and toddlers (Kemenkes RI, 2020). In Indonesia, the prevalence of pneumonia in 2018, according to the Indonesian Basic Health Research, was 2.0 (Kemenkes RI, 2018). This disease must be diagnosed and treated effectively to increase a child's chance of survival from Pneumonia. Ending unnecessary fatalities due to Pneumonia and diarrhoea is a top goal to achieve SDG 3.2.1's target; reduce child mortality.

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The WHO and UNICEF's integrated Global Action Plan for Pneumonia and Diarrhea (GAPPD) aims to speed up pneumonia control with a combination of interventions to protect, prevent, and treat pneumonia in children. These actions include: protecting children from pneumonia by encouraging exclusive breastfeeding and adequate complementary feeding; preventing pneumonia with vaccinations, hand washing with soap, reducing household air pollution, HIV prevention, and cotrimoxazole prophylaxis; and treating pneumonia with a focus on ensuring that each sick child has access to the proper care, including the medications and oxygen they require to recover, whether from a community-based health worker or in health institutions if the illness is severe (World Health Organization, 2021). The Government of the Republic of Indonesia through Kemenkes RI (2020) carrying out various efforts to control and prevent morbidity and mortality due to pneumonia in children by increasing access to and quality of health services for toddlers with pneumonia, enhancing community participation in early detection and expansion of Pneumococcus Conjugated Vaccine (PCV) immunization. The involvement of the community, especially health cadres, is essential because they are the representatives of health workers in the community.

Factors causing pneumonia in Indonesia is various including under-five children who are prone to respiratory diseases, birth weight ≥2500 grams, not receiving exclusive breastfeeding, normal-poor nutritional status, not receiving measles immunization, not receiving DPT immunization, not receiving Hib immunization, working mothers, and smoking habits of family members (Hidayani, 2021; Rigustia et al., 2019). Improving family and community members' awareness is needed to eliminate factors causing Pneumonia. Optimal public health is supported by efforts to empower cadres in the community. Salunke dan Lal (2017) proves that forming health cadres is one of the strategic steps to achieving health development goals.

Indonesian Health Cadres' (HC) role is to motivate and facilitate the community to be independent and actively maintain health through disease prevention and health promotion (Ismalia et al., 2023). However, currently, their roles are very complex, including the activities of MCH services (Maternal and Child Health), family planning services (Family Planning), immunization services, nutrition services, and services for dealing with diarrhoea and other infectious diseases, empowering the community and mothers to improve health awareness, and also motivating mothers to visit the Integrated Service Post (Posyandu) regularly (Susanto et al., 2016; Tisnawati & Ilda, 2021; Tisnawati & Muchtar, 2020; Widyaningsih et al., 2020). HCs have a significant role in carrying out Posyandu activities every month; this activity is one of Indonesia's child health monitoring programs, the collaboration between health workers and the community. The cadre's responsibilities in the Posyandu are preparation activities before the Posyandu service schedule, implementation, documenting, and reporting (Handayani et al., 2020). The role of cadres is potential to improve public health, including the prevention and control of Pneumonia.

In addition, HC also have various roles in controlling and preventing pneumonia. Specifically, their role is to undergo early detection and facilitate children suffering from pneumonia to health services. Then, they do documentation and make reports of pneumonia cases at Posyandu. Early detection and intervention to improve children's health are carried out through health education activities, mentoring, and collaboration between parents, child caregivers and professional staff (health, education and social) and the community (health cadres, community leaders, professional organizations, non-governmental organizations) (Kurniasari et al., 2022). Although pneumonia is a dangerous disease for toddlers, and the roles of cadres are very complex and numerous, there is a limited exploration of cadres' views and experiences of this disease that would be useful for health workers as fundamental data to develop pneumonia prevention programs for both children and cadres. Therefore, this study aims to explore deeply the experiences and perspectives of health cadres through pneumonia of under-five children in two different provinces of Indonesia.

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Methodology

The descriptive phenomenological approach is applied in this study to explore the experiences and perspectives of health cadres regarding their roles in preventing and controlling children's health problems in community including under-five children with pneumonia. Participants were selected by purposive sampling technique with inclusion criteria; health cadres recommended by Puskemas staff, being health cadres for at least two years, having attended Posyandu revitalization training, being active in Posyandu services, and domiciled in the research area. Exclusion criteria included having never had training for cadres and rarely attending Posyandu activities monthly. Participants totalled 29 cadres consisting of 22 cadres from 8 West Bandung Regency sub-districts and seven cadres from 7 sub-districts in West Sumba Regency (Table 2). The research sites are in West Bandung Regency, West Java Province, and West Sumba Regency, East Nusa Tenggara Province. The two districts were chosen because of the risk of increasing pneumonia rates. The research was conducted from October 2019 to May 2020. The study design is illustrated in Diagram 1 below.

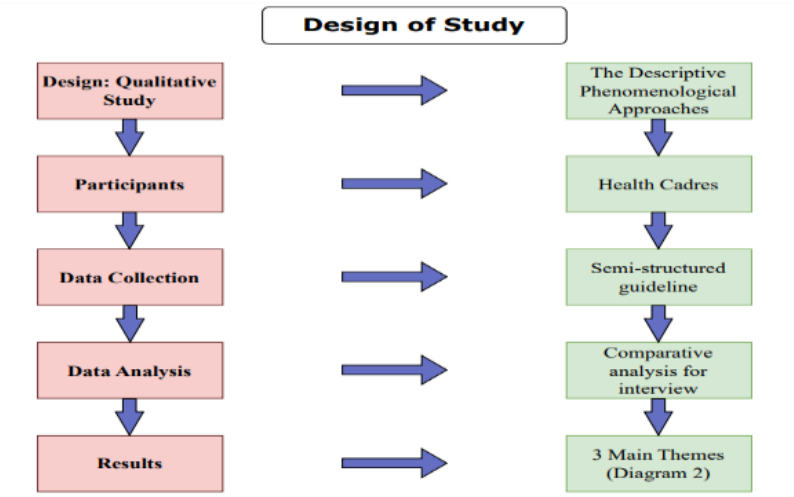

Diagram 1 Design of Study

This study received ethical approval number 797/UN6.KEP/EC/2018. The ethical principles included written consent from participants to be involved in this study voluntarily, participants may withdraw from the research process, participants may refuse to answer questions, and we keep all data provided by participants confidential. We collected data using in-depth interviews with a semi-structured approach. The research team developed questions based on the roles and functions of health cadres listed in the Guidelines for Prevention and Control of Acute Respiratory Infections (Kemenks RI, 2016). Questions include explaining the roles of cadres concerning child pneumonia, the cadres' opinions about pneumonia, programs for managing and preventing the disease, obstacles, challenges faced and expectations of cadres for program achievements. The team held a meeting to share perceptions about the content of the interview schedule and the interview process. We conducted interviews, two in West Java and one in NTT. Interviews were conducted individually and in groups for 30-60 minutes and recorded with a tape recorder. We asked for the informant's contact number and was contacted to confirm and explain the results of the data analysis. All participants agreed with the results of the transcript and results. We gave a thank-you souvenir after the research was completed.

Data analysis began with a verbatim transcript of the interview results. Next, we read the transcript at least three times and summarized the content within the framework of our perspective to understand the participants' messages. Next, code a "meaningful" sentence to answer the question. Continued categorizing, analyzing and finding categorization, comparing data and deciding themes. These stages are part of the Comparative Analysis for Interview (CAI) analysis (Widiasih, 2017). The analysis steps are summarized in Table 1

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Table 1. Qualitative Data Analysis Stage

analysis stage
1. *Precoding* • Reading • Unit of meaning • Narrative interview reports • Review narrative text • Matching the narrative to the interview schedule
2. *Codes* • Coding process using software • Subcategories • Categories
3. Theme formulation
4. Description and integration of results

Results and discussions

Participants who met the inclusion criteria were 29 cadres with details in table 2

Table 2. Characteristic of participants

No	Region Category	Sub-District	Number of participants	Code
1	Health Cadres from West Bandung Regency	Nagreg	22 Health Cadres	CB1-CB2
		Cicalengka		CB3-CB8
		Cileunyi		CB9-CB12
		Solokan Jeruk		CB13-CB14
		Pacet		CB15
		Ciparay		CB16
		Banjaran		CB17-CB18
		Margaasih		CB21-CB22
2	Health Cadres from West Sumba Regency	Lahihuruk	7 Health Cadres	CS1
		Padedewatu		CS2
		Karekanduku		CS3
		Malata		CS4
		Weekarou		CS5
		Tanarara		CS6
		Puweri		CS7

Notes::
CB = Health Cadres from West Bandung Regency
CS = Health Cadres from West Sumba Regency

Data analysis found three main themes regarding the perceptions and experiences of cadres about pneumonia in children. The themes were formed based on sub-themes analysis including perceptions about pneumonia is a life-threatening disease, the characteristics of pneumonia and the need for assistance. Diagram 2 shows the detail of themes.

Pneumonia is a life-threatening disease

The analysis results showed different and varied perceptions about pneumonia, but most stated that this disease was dangerous for children. Although pneumonia still sounds foreign to most cadres, cadres assume that every disease, especially respiratory disease, is dangerous and can be fatal if left untreated, especially infections in children under five prone to various conditions (CS1, CB13, CB16). Perceptions about pneumonia were conveyed by cadres as follows:

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One of the causes of under-five deaths in Indonesia... the second is pneumonia. Pneumonia is a disease that threatens the lives of infants and toddlers. In my opinion, the problem with the symptoms of pneumonia is deadly. Parents must report symptoms and not let their children stay at home. Instead, parents can take their child to the nearest health centre or doctor, and if the symptoms don't subside, they can visit a specialist.(CS3)

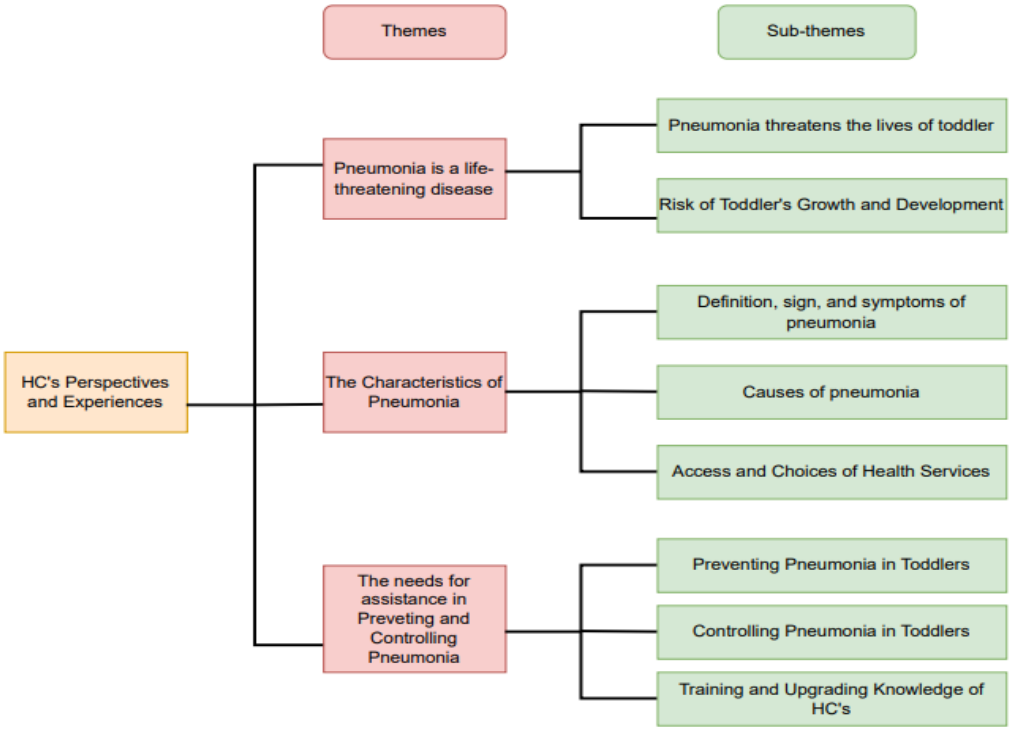

Diagram 2 Detail of Themes

In addition, the analysis results have shown that another view of the threat of pneumonia is the risk of causing impaired growth and development of children and reducing the quality of children in the future (CB6, CB8). Like the following quote:

Yes, if a child coughs, he often doesn't get enough sleep, he eats less, he doesn't breastfeed too, and automatically, his growth isn't optimal either (CB6)

The cadres' perceptions of pneumonia as a dangerous disease varied, but the cadres who were interviewed realized that pneumonia was a disease that could endanger children's lives and could hinder children's development. The cadres believe that pneumonia is a life-threatening disease, and the symptoms of pneumonia, such as coughing, can impair the breastfeeding process and disrupt the child's sleep pattern, which will impact the child's growth and development. Therefore, children with pneumonia need immediate treatment and parents need to take their children to healthcare facilities..

The results show several perceptions related to the dangers of pneumonia in children, namely pneumonia can threaten life and cause growth and development disorders; both of these hazards pose a risk to children's quality of life in the future. This study's results align with the research of Ebeledike & Ahmad (2023), who found that around 3 million children died from pneumonia. Pneumonia is a chronic disease that can affect children's quality of life; Bai et al. (2017) described that children with respiratory diseases such as asthma or pneumonia can affect daily physical activity. Pneumonia tends to recur due to various factors, especially nutrition, environment, and retention of antimicrobial drugs (Kumar & Lodha, 2019; Montella et al., 2017; Noguchi et al., 2017; Takeda et al., 2021). On the other hand, children, especially those under five years of age, are vulnerable to various chronic and acute diseases that threaten

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their lives. Dengue Fever is another disease that threatens children's lives, especially in Indonesia (Kraemer et al., 2015). Dengue fever is a disease that usually occurs in tropical countries; this disease is one of the biggest causes of children being hospitalized (Alejandria, 2015). There were 59,047 cases of dengue fever in Indonesia in 2017, and 444 people died (Harapan et al., 2019). Diseases that are dangerous to threaten a child's life can be chronic, acute, or relapsing. Children, especially those under the age of five years, are an age that is vulnerable to various threats of disease; a comprehensive approach is needed in dealing with children's problems, including the involvement of families and communities.

The results of the analysis found the perception of health cadres that pneumonia is a disease that interferes with the growth and development of children. The age of children up to the first 1000 days of birth is a period of rapid development of neurodevelopment and lifelong mental health (Schwarzenberg & Georgieff, 2018). The threat of child health problems is infectious diseases and developmental problems. Research by Mustakim et al. (2022) stated that out of 300 respondents under five, it was found that 150 were children at risk of stunting, where children have growth and development disorders that threaten future well-being (Maryati et al., 2023). Children with infectious diseases experience nutritional deficits, one of which is caused by a lack of breast milk intake (Susila et al., 2021). Breast milk benefits children's health because it contains complete nutrition and beneficial bacteria to fight disease-causing pathogens (Lyons et al., 2020). Malnourished children will produce weak immunity, so the body cannot fight infections, and children are more susceptible to disease . Pneumonia can also impact children's sleep patterns caused by coughs, colds, and shortness of breath (Oktaviani et al., 2010). Research from Zhao et al. (2022) explained that out of 35 children with bronchopneumonia, 29 experienced changes in sleep patterns. Adequate sleep for children is essential for their health; if optimal sleep quality is not met, it can adversely affect their development (Hosokawa et al., 2022). Prevention of various serious diseases is essential for children because children are at risk of experiencing growth and development disorders that will affect their quality of life.

Identification of Pneumonia Characteristics

The analysis has shown that there are various perceptions about how cadres identify the characteristics of pneumonia. The first characteristic to be discussed is the definition of pneumonia according to cadres. Cadres said that, in general, they mixed up the terms pneumonia, Acute Respiratory Infection (ARI) and lung disease (CS3, CS5, CB4, CB22). The statements made by the cadres are as follows.

> *For pneumonia and ARI, …, the diagnoses are still different because the nurses use MTBS, they are not correct, but there are no doctors, so patients come here for treatment; maybe they write pneumonia diagnoses, ARI, and ARI again because human resources are limited. The majority don't know about pneumonia; the majority know it's tuberculosis or bronchitis; the point is just common diseases. As for pneumonia, it's pretty foreign; even though they are both respiratory diseases, the causes are different. So, so far, there is no such term*

In addition, the signs and symptoms of pneumonia are also not well known by the cadres; the cadres believe that people often interpret the signs and symptoms of pneumonia as symptoms of an ordinary cough (CS3, CS6, CB8, CB10, CB11, CB12, CB18, CB21). For example, this is the following quote.

> *I never knew there were four symptoms of pneumonia; I knew I had a persistent cough or just coughing up a cold. Even though the symptoms had been felt for a long time, you didn't see that it turned out to be a cough that was a symptom of pneumonia. It's difficult in society, so they think it's just an ordinary cough; sometimes, it's the family factor, right?*

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The third characteristic shows different perceptions about the causes of pneumonia in children. Cadres argue that the leading cause of pneumonia is family smoking indoors so that children inhale cigarette smoke, and another cause is sore throat due to coughing for too long (CS3, CS4, CB13). The following cadre statements support this

> *Yes, that was said earlier; if there are a lot of people in their family who smoke, right… One of the leading causes, for example, is smoking indoors and inhaling a lot of cigarette smoke; that's how children get the disease. Yes, maybe because over time, the cough automatically becomes a sore throat, then it becomes acute and cannot be treated anymore so that the throat swells, and there are ulcers because of the prolonged coughing*

The fourth thing that was found from the analysis results regarding the identification of pneumonia characteristics was how cadres chose a place to get help when they found cases of pneumonia in the community. Cadres revealed that if a child has pneumonia, it is better to take it to a health service facility, especially the Puskesmas as a place to get first aid, then if it still doesn't improve, the child is taken to the nearest doctor (CS4, CB17)

> *Parents should report if there are signs and symptoms like that in children, so they shouldn't be left alone at home. The cadres already know the signs of pneumonia, so they can detect it and take it immediately to the Puskesmas. After that, we go to the nearest health centre, doctor, or health centre for first aid. And if it hasn't healed yet, you can go to a specialist too...*

The analysis results show that the average cadre has varied knowledge, some are right, and some need more pneumonia information, starting from the definition, signs and symptoms, causes, and what kind of health service facilities can be used to treat children with pneumonia. Most cadres could not distinguish between pneumonia and other lung diseases; cadres thought that the term pneumonia was foreign and not widely known, so cadres found it challenging to differentiate pneumonia. In addition, the cadres could not recognize the signs and symptoms of pneumonia accurately and quickly. The cadres believed that pneumonia cough was often interpreted as an ordinary cough so that it would not endanger the child's health. The cadres explained that the causes of pneumonia were divided into two, including exposure to cigarette smoke and swelling of the throat due to prolonged coughing. More profoundly, the cadres said that children with pneumonia need treatment at health service facilities such as the Puskesmas, the closes health service facility.

The characteristics of Pneumonia still needs to be corrected from various perspectives, both in terms of definition, signs and symptoms, causes, and how to seek help. The results of this study are in line with the results of qualitative research conducted by Bakare et al. (2020) in a developing country in Nigeria; this study found that people who were respondents had low knowledge about signs and symptoms and risk factors for Pneumonia. Research from Abbey et al. (2016) conducted in Ghana stated that more than half of the participants had never heard of the term pneumonia and did not know the signs and symptoms. The results of another study conducted on health workers and the Indian community showed that there was a lack of knowledge about Pneumonia where the community, especially health workers, had not comprehensively recognized the signs and symptoms of Pneumonia (Awasthi et al., 2015). Learning about the characteristics of Pneumonia in children still needs to be improved, especially in developing countries. Programs to increase knowledge about Pneumonia need to be developed, especially for community groups directly related to children's health, such as parents and health cadres, so that children will receive appropriate, effective and efficient care and assistance.

The analysis results found that health cadres were aware of the importance of health service assistance to children with pneumonia symptoms, for example, taking the child to a health centre or other health services such as a hospital. Health facilities are a factor that has a

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major influence on the survival of sick children (Hajarisman et al., 2015). However, not all people can access adequate healthcare facilities, especially in remote areas (Coombs et al., 2022). Results of interviews from research conducted by Pajuelo et al. (2018) stated that parents did not bring their children to healthcare facilities due to several factors, for example, the inability to recognize the symptoms of pneumonia and the inability to perform first aid. Another study explained that research participants found it difficult to reach health facilities due to inadequate transportation, personal safety issues, and economic constraints (Muro et al., 2017). Delays in bringing children with pneumonia symptoms to health facilities are influenced by other factors, such as parents preferring to take their children to paramedics, using traditional medicine, and the need for prior discussion with the family (Awasthi et al., 2015). The ability to seek health assistance still needs to be improved, especially in rural areas of Indonesia. Besides that, sick children also face obstacles related to the referral system, especially for children who are sick but are outside their area of residence, easy access to essential health for children's health.

The need for assistance and training about pneumonia

The interviews showed that cadres needed the help of health workers in dealing with pneumonia cases in the community. The cadres conveyed that they did not understand the prevention of pneumonia cases (CB4). The following statement illustrated HCs' opinion**.**

> *Not all of the cadres in the RW know that, right? So we hope that both the PHC and the health office will have an explanation for the community and the cadres in the RW so they know how to prevent it*

The analysis also showed that cadres did not know how to deal with pneumonia in the community; cadres expressed confusion about what to do when cadres found cases of pneumonia in children in the community (CS4, CB21). This statement is validated through the following information

> *Not yet; we need to learn how to treat pneumonia. If you have found symptoms like that, then what should we do? Just take it right away?*

In addition, the results showed that the cadres said socialization about pneumonia was lacking. Outreach about pneumonia has not been carried out comprehensively, and even some cadres said they had not received any socialization about pneumonia; cadres assumed that socialization and training would increase the knowledge of cadres (CS3, CS4, CB10, CB12, CB18).

> *Until now, there has been no socialization regarding pneumonia in comprehensive; only information about prevention has been disseminated. The obstacle is that there may have yet to be socialization from several parties, not even from the Puskesmas. Therefore, it might be challenging to explain to the people. If we already know, that's great. Training is essential, so cadres' knowledge can increase and they can be informed again to the community.*

Assistance in the treatment of pneumonia is needed to prevent the recurrence of the disease and ensure children get proper treatment. However, the Health Office has yet to socialize and provide training on pneumonia to cadres, mainly on how to prevent and treat it. Cadres think that outreach and training regarding pneumonia are essential to increase their knowledge of cadres so that cadres can convey accurate information to the community and will increase the readiness of cadres in dealing with pneumonia cases in the community. Health workers still need more assistance and socialization about Pneumonia in children. Several pneumonia prevention programs, such as breastfeeding promotion, provision of zinc

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supplements, promotion of community-based case management, basic immunization, and treatment of Pneumonia, are considered effective in reducing child mortality (Yadav & Awasthi, 2016). In addition to prevention programs, the right way of handling Pneumonia also needs to be applied by health workers, one of whom is a nurse. Nurses have roles, including educating patient families about Pneumonia, performing airway clearance measures, providing psychological support, promoting healthy lifestyles, and family and community empowerment (Liu et al., 2021). In order to prevent and treat Pneumonia in children, it is necessary to have the participation of health workers and teams close to the community, namely health cadres. Cadres must be prepared with optimal knowledge because the success of development and coaching, especially regarding health in the community, is in their hands (Ismalia et al., 2023). Pneumonia is one of the diseases that contributes the most to child mortality worldwide, so early prevention efforts need to be done properly, and contributions from all parties are needed. These are essential steps that can reduce the prevalence of Pneumonia in children.

Socialization is essential to increase cadre knowledge about health problems; this is evidenced by research conducted by Rosa & Duana (2022), where the results state that socialization can increase cadre knowledge about a disease. Socialization based on low-cost Android tablets, which were carried out on 127 cadres, was proven to be able to increase the knowledge of cadres, and some cadres were satisfied with this socialization model (O'Donovan et al., 2018). Another study conducted by Escribano-Ferrer et al. (2017), with a population of 1356 caregivers for toddlers, proved that community-based health education could identify at least two severe symptoms of Pneumonia and improve health-seeking behaviour. Dissemination of Pneumonia to the community and cadres is felt to be still not optimal. The development of innovative methods based on the latest technology and close to the community needs to be developed optimally, including nurses, to increase the socialization of early detection, home treatment and emergency indications so that children will get immediate and appropriate help.

The limitation of this study is that socio-cultural differences are very likely to arise from different perspectives, including child health. On the other hand, these differences add insight into conditional information related to aspects of health, such as knowledge, attitudes, behaviour, and access to health services. The implications of the results of this study for health services, especially nursing, are an active part of innovating their roles and duties in improving health, especially children's health.

Conclusion

Pneumonia is a dangerous disease that threatens a child's life and risks interfering with the child's development. Children, especially those under the age of five years, are an age that is vulnerable to various threats of disease that will affect their quality of life in the future. A comprehensive approach to dealing with children's problems is needed, including family and community involvement. Programs to increase knowledge about Pneumonia need to be developed, especially for community groups that are directly related to children's health, such as parents and health cadres, so that children will be detected quickly if there is a threatening health problem and get proper, effective and efficient treatment and first aid. Access to health services, especially for sick children who need referrals, must be made easier wherever the child is. Developing innovative programs based on the latest technology, easy and close to the community is important as part of efforts to empower families and communities so that children are detected quickly and will get immediate help if they have health problems.

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