

Community Empowerment in Environmental Health Education, OHS and Balanced Nutrition in Rural Areas

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ABSTRACT

Community empowerment is one of the main strategies in addressing the challenges faced by rural communities. However, rural empowerment efforts are often faced with various barriers, including low health literacy, dependence on external assistance, and lack of sustainable policy support. This study aims to explore the potential and constraints of community empowerment in environmental health education, occupational safety and health (OSH), and balanced nutrition in rural areas. Data collection was conducted through in-depth interviews with community leaders, health workers, and village government, as well as focus group discussions with local communities. In addition, field observations were made to identify environmental conditions, community behaviours, and practices related to environmental health, OSH, and nutrition consumption patterns. The results of the research will be analysed using a thematic approach to identify patterns and relationships between community participation and the success of empowerment programmes. The findings suggest that community empowerment supported by participatory approaches, local needs-based education, and inter-sectoral synergies can be an effective strategy to address environmental health and OSH issues, and realise the sustainability of community development programmes.

Keywords : *Environmental Health, Occupational Safety and Health (OHS), Balanced Nutrition*

INTRODUCTION

Community empowerment is one of the main strategies in addressing the challenges faced by rural communities. Rural communities, which often have limited education and access to information, require inclusive and participation-based approaches (Devi Deswimar, 2014). Environmental health education, occupational safety and health (OSH), and balanced nutrition are important issues that require special attention, given their significant impact on people's quality of life and productivity (Al Qorni et al., 2021).

Environmental Health Education in rural areas, the lack of awareness about environmental health can lead to significant public health challenges. Education initiatives that focus on environmental issues—such as waste management, water sanitation, and pollution control—

empower community members to make informed decisions that enhance their living conditions. Participatory approaches, such as Participatory Action Research (PAR), have proven effective in engaging community members in identifying local environmental issues and developing tailored educational programs to address them (Amri, Asfahani, Kadeni, Arif, & Jamin, 2024)

Environmental health in rural areas is often overlooked despite having a major influence on public health. Problems such as lack of access to proper sanitation, limited clean water, and lack of domestic waste management are still challenges that must be resolved (Puskomedia, 2024). Data from the Central Bureau of Statistics (BPS) shows that more than 25% of rural communities in Indonesia do not have access to proper sanitation, which results in high rates of environment-based diseases such as diarrhoea and skin diseases (BPS, 2023).

Occupational safety and health (OSH) in rural environments is also often neglected, especially in the agricultural sector, which is the main source of livelihood. According to a report from the Ministry of Agriculture, the use of tools and chemicals in agriculture without adequate knowledge increases the risk of workplace accidents and exposure to hazardous materials. Educational approaches on safe work practices and the use of personal protective equipment (PPE) are needed to reduce these risks (Ramadani, 2023).

Balanced nutrition is a significant challenge in rural areas, where consumption patterns often do not fulfil nutritional needs. Riskesdas data shows the prevalence of stunting in rural areas is higher than in urban areas, reflecting the imbalance in children's nutritional intake. Economic factors, limited nutrition knowledge, and local culture contribute to unhealthy diets. Community empowerment can be a solution by involving them as agents of change and tailoring programmes to local needs. This participation-based approach has been shown to be effective in improving public health in developing countries. (Gedeona, 2015; Nugroho & Putri, 2020; Riyanto & Kovalenko, 2023).

Efforts to empower rural communities are often faced with challenges such as low health literacy, dependence on external assistance, and lack of sustainable policy support. This condition requires synergy between the government, non-governmental organisations, academics, and the private sector to create an integrative and sustainable programme. In this context, this study aims to explore the potential and constraints of community empowerment in environmental health education, OSH, and balanced nutrition in rural areas.

By using a data-driven and participatory approach, this research is expected to provide strategic recommendations for the development of policies and programmes that are relevant to the needs of rural communities. In addition, this study aims to evaluate the effectiveness of the approaches used in community empowerment, as well as identify best practices that can be applied in other areas. Through in-depth analyses, this research will uncover strategic measures to improve community capacity to address health and nutrition issues.

The results of this research are expected to create an empowerment model that not only increases community awareness, but also triggers real changes in their behaviour and quality of life. This model is expected to become a reference for similar programmes in other areas, so that it can support sustainable public health development efforts.

METHODS



This study used a qualitative method with a participatory approach to assess community empowerment in environmental health education, OSH, and balanced nutrition in rural areas. The research was conducted in several villages that were purposively selected based on characteristics such as the level of access to health education, environmental conditions, and the potential and challenges in implementing empowerment programmes. Data collection was conducted through in-depth interviews with community leaders, health workers, and village government, as well as focus group discussions with local communities. In addition, field observations were made to identify environmental conditions, community behaviours, and practices related to environmental health, OSH, and nutrition consumption patterns.

Relevant secondary data, such as local health reports, BPS data, and Riskesdas, were used to support the analysis. The results of the study will be analysed using a thematic approach to identify patterns and relationships between community participation and the success of empowerment programmes. With this method, it is expected that the research can provide an in-depth understanding of the needs, potentials, and constraints in rural community empowerment, as well as offer strategic recommendations for the development of relevant and sustainable programmes.

RESULTS

1. Environmental Health

Table 1. Community Empowerment in Environmental Health Education

Research Aspects	Key Findings	Description
Environmental Health	60% of households do not have access to proper sanitation	It was found that lack of knowledge and funds were the main barriers.
	High rate of environment-based diseases such as diarrhoea (35%)	Lack of awareness of the importance of water and environmental hygiene was also a factor.
	Waste management initiatives by community groups, but participation is still low (20%)	Waste management programmes need capacity building and technical support.

Table 1 shows that environmental health issues remain a significant challenge in rural areas. As many as 60% of households do not have access to proper sanitation, resulting in high rates of environment-based diseases, such as diarrhoea, with a prevalence of 35%. The main constraints in improving sanitation quality are the lack of community knowledge on the importance of environmental hygiene and limited funds to build adequate sanitation facilities. Despite waste management initiatives by community groups, the participation rate is still low at only 20%, signalling the need for a more inclusive approach and comprehensive training programmes to increase community participation.

2. Occupational Safety and Health (OHS)

Table 2. Community Empowerment in Occupational Safety and Health (OHS) Education

Research Aspects	Key Findings	Description
Occupational Safety and Health (OHS)	70% of agricultural workers do not use personal protective equipment (APD).	Low understanding of the importance of OHS leads to a high risk of occupational accidents.
	Uncontrolled exposure to pesticides caused health problems in 45% of respondents.	Training on the safe use of pesticides is urgently needed.
	OHS training in the village only reached 15% of the population.	Limited resources and trainers are a major challenge.

Table 2 shows that rural communities' awareness of occupational safety and health is still low, especially in the agricultural sector. As many as 70% of workers do not use personal protective equipment (PPE) during work, increasing the risk of work accidents and health problems due to exposure to chemicals, such as pesticides. The study also found that 45% of respondents experienced health problems related to uncontrolled pesticide exposure. OHS training that has been implemented only reaches 15% of the population, reflecting the limited resources and accessibility of training. Systematic efforts are needed to improve community understanding of OSH through counselling and direct assistance in the field.

3. Balanced Nutrition

Table 3. Community Empowerment in Balanced Nutrition Education

Research Aspects	Key Findings	Description
Balanced Nutrition	Prevalensi stunting pada anak balita mencapai 35%, lebih tinggi dari rata-rata nasional.	Economic factors, lack of access to nutritious food, and low nutrition knowledge are the main causes.
	Konsumsi protein hewani rendah, hanya 2-3 kali seminggu pada 55% responden.	Education on local-based food diversification needs to be improved.
	Sebanyak 40% ibu rumah tangga belum memahami prinsip gizi seimbang.	Intensive training and counselling can help improve this knowledge.

Table 3 shows that balanced nutrition is also a major concern in this study. The high prevalence of stunting among children under five, at 35%, indicates a chronic problem in the consumption patterns and nutritional intake of rural communities. The low consumption of animal protein, with 55% of respondents consuming it only 2-3 times a week, reflects economic limitations and the underutilisation of local food sources. In addition, as many as 40% of housewives do not understand the principles of balanced nutrition, indicating the need for intensive nutrition



education. Education that utilises easily accessible and affordable local food ingredients can be an effective solution to address this issue.

4. Effectiveness of the Empowerment Programme

Table 4. Effectiveness of the Empowerment Programme

Research Aspects	Key Findings	Description
Effectiveness of the Empowerment Programme	The level of community participation in empowerment programmes is low (35%). 80% of communities who participated in empowerment programmes reported increased knowledge, but only 40% implemented it. Collaboration between the village government and local community groups increases programme success by 65%.	Key barriers include time, trust in the programme, and accessibility of the training. There is a need for post-training monitoring and mentoring to ensure knowledge application. The collaboration was effective in increasing ownership of the programme.

Table 4 shows that community participation in empowerment programmes is still at a low level, at 35%. The main barriers identified include lack of free time, low trust in the programme, and limited accessibility. However, while 80% of programme participants reported increased knowledge after the training, only 40% actually implemented the knowledge. This shows the importance of post-training mentoring to ensure sustainable behaviour change. In addition, collaboration between the village government and local community groups was shown to increase the success of the programme by 65%, confirming that synergy between stakeholders is crucial to support the success of empowerment programmes.

DISCUSSION

1. Environmental Health

Environmental health theory asserts that access to proper sanitation is a key element in preventing environment-based diseases. The finding that 60% of households do not have access to proper sanitation and the high prevalence of diarrhoeal diseases (35%) shows the close relationship between environmental hygiene and public health.

Research conducted by Amirus et al., 2022 on Residential Sanitation and Environmental Disease Prevalence in Bandar Lampung found a relationship between sanitation risks (wastewater, solid waste, clean living behaviour) and environment-based diseases. Improvement of sanitation infrastructure and clean living behaviour was suggested to prevent diarrhoeal diseases (Amirus et al., 2022).

Low public awareness of the importance of sanitation is caused by lack of access to information and education. This assumption underlies the need for direct counselling involving local community leaders to increase trust and programme effectiveness. Limited funding for the

construction of sanitation facilities is assumed to be overcome by community-based financing models, such as local fundraising or assistance from the private sector. Low participation (20%) in waste management indicates a lack of community ownership. This assumption suggests that programmes that integrate economic incentives (such as processing waste into organic fertiliser for sale) can increase community motivation and participation.

2. Occupational Safety and Health (OSH)

In the risk management approach, the use of personal protective equipment (PPE) and OHS training are key strategies in reducing occupational accidents. Data shows that 70% of agricultural workers do not use PPE, and 45% of respondents experience health problems due to pesticide exposure.

Research conducted by Wahyuni et al., 2020 regarding Individual Characteristics and the Use of PPE when Spraying Pesticides conducted in Tegallalang Village, Bali, showed that none of the farmers used PPE completely according to the guidelines. Factors such as low education, health perceptions, and lack of coordination between health and agricultural institutions influence this behaviour (Wahyuni et al., 2020). Research conducted by Aina & Idris, 2021 on the Use of PPE and the Incidence of Contact Dermatitis in Bogor showed a significant relationship between the behaviour of using PPE and the incidence of contact dermatitis due to pesticides. Education and counselling on the importance of PPE is needed (Aina & Idris, 2021).

The main assumption is that the low use of PPE is not only due to ignorance but also limited access and cost. Therefore, subsidised PPE distribution or free distribution programmes are effective solutions. OHS training, which only covers 15% of the population, is assumed to be expanded by the 'training of trainers' method, where trained local leaders will become facilitators in their communities. Education on pesticide hazards and safe use can be disseminated through simple digital media such as videos or apps that are easily accessible to villagers.

3. Balanced Nutrition

The problem of stunting in children under five (35%) and low animal protein consumption (55%) reflects the combined impact of economic deprivation, lack of access to nutritious food, and poor education.

Research conducted by Otoluwa & Azmi, 2023 on the Nutritional Intake of Stunted Toddlers in Coastal Areas found that most of the stunted toddlers had very deficient intakes of protein, iron, calcium, and vitamin D. Further socialisation is needed to parents and caregivers. Further socialisation to parents is needed to meet the nutritional needs of toddlers (Otoluwa & Azmi, 2023). This is supported by research by Sindhughosa et al., 2023 on Animal Protein Intake Associated with Stunting in Toddlers showing that children with animal protein consumption patterns less than twice a week have a higher risk of stunting compared to more frequent consumption (Sindhughosa & Sidiartha, 2023).

Housewives who do not understand the principles of balanced nutrition (40%) can have their knowledge improved through cooking classes or workshops based on local food. This programme is assumed to be more effective when it involves locally available and affordable ingredients. Utilisation of local food potential such as river fish, beans and tubers is assumed to increase animal protein consumption and overall nutrition. Community-based interventions, such as training in making processed local food products, can increase community acceptance. Economic access issues



are assumed to be addressed by engaging the private sector to provide subsidised support for nutritious food or create jobs in related sectors.

4. Effectiveness of the Empowerment Programme

Low community participation (35%) and only 40% implementation of knowledge despite 80% reporting increased knowledge, suggests a gap between education and practice.

Research conducted by Paunno & Janwarin, 2022 on Improving the Role of Posyandu Cadres in Five Table Services in Central Maluku showed that cadre training increased their knowledge by 95%, but consistency in the implementation of the five tables in Posyandu still needs to be evaluated to ensure optimal implementation (Paunno & Janwarin, 2022). A similar study was also conducted by Budianti, 2018 Factors Affecting Posdaya Services and Community Participation in Bekasi City showed that community participation is a major factor in the success of health services. However, the implementation of human resources and policies is still an obstacle, although community knowledge has increased through family empowerment posts (Budianti, 2018).

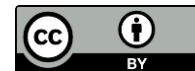
The researcher assumed that the lack of trust in the programme could be improved by involving the community from the planning stage. This model allows communities to design programmes that are relevant to their needs. Post-training mentoring is important to ensure knowledge is applied. This assumption is supported by behaviour change theory, which emphasises the importance of reinforcement to form new habits. Collaboration between the village government, community groups and the private sector is assumed to create community ownership of the programme. This can be achieved through formalised division of responsibilities and recognition of community contributions.

CONCLUSIONS

Based on the research results, it was found that community empowerment in environmental health education, occupational safety and health (OSH), and balanced nutrition faces various challenges, but has significant potential to improve the quality of life of rural communities. In environmental health, the 60% of households that do not have access to proper sanitation and the high prevalence of environment-based diseases, such as diarrhoea, indicate the need for education and infrastructure-based interventions. In OHS, the low use of personal protective equipment (70%) and high exposure to pesticides causing health problems in 45% of workers, emphasise the need for more inclusive training and distribution of affordable PPE. Meanwhile, the prevalence of stunting among children under five at 35% and the low consumption of animal protein among the community reflect the need for intensive education on the principles of balanced nutrition and the utilisation of local food. The effectiveness of the empowerment programme is also affected by low community participation (35%) and limited application of knowledge (40%), which underlines the importance of monitoring, continuous assistance and collaboration between stakeholders. In conclusion, community empowerment supported by participatory approaches, local needs-based education, and inter-sectoral synergies can be an effective strategy to address environmental health, OSH, and balanced nutrition issues, and realise the sustainability of community development programmes.

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