

Improving Health Administration Capacity and Community Nutrition Education to Mitigate the Risk of Environmentally-Based Diseases

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ABSTRACT

A World Health Organization (WHO) report highlights that non-communicable diseases (NCDs), such as diabetes, hypertension, and cardiovascular diseases, accounted for approximately 71% of all deaths globally by 2020. This research focuses on enhancing the capacity of health administration in managing community nutrition education programs to mitigate disease risk in vulnerable populations. Utilizing quantitative methods, the study employs *t*-tests to evaluate the effectiveness of nutrition education counseling before and after implementation. The sample comprised 27 individuals selected through purposive sampling. Data analysis revealed a notable increase in students' understanding of environmental sanitation, rising from 79.3% in the pretest to 85.93% in the posttest. Additionally, health workers exhibited a 20% improvement in knowledge regarding environmental diseases following program implementation. Compliance with sanitation and hygiene policies increased by 22%, indicating successful enforcement of stricter sanitation measures aimed at reducing environmental disease risks. Moreover, significant improvements were observed in water quality monitoring (25%) and routine training (28%), demonstrating the program's effectiveness in strengthening administrative systems to minimize disease risks. This study underscores that enhancing health administration capacity and community nutrition education through counseling and regular training effectively reduces environment-based disease risks. Ongoing education and consistent monitoring of the program's long-term impact are essential for sustainability. Ultimately, this program serves as a promising model for future environmental health prevention efforts, emphasizing the importance of community engagement and education in combating NCDs.

Keywords: Improved Health Administration, Nutrition Education, Environmental Sanitation

INTRODUCTION

The increasing burden of diseases, both communicable and non-communicable, is one of the major challenges for the global health system. The World Health Organisation (WHO) report notes that non-communicable diseases such as diabetes, hypertension and cardiovascular disease have become the leading cause of death worldwide, accounting for approximately 71% of all deaths in 2020 (MOH, 2018). In Indonesia, this trend is also happening with the prevalence of non-communicable diseases continuing to increase every year, especially in areas with low economic levels and limited access to health services. One of the contributing factors to the high prevalence of these diseases is the low public awareness of the importance of balanced nutrition and the lack of nutrition education at the community level (Chayati et al., 2023).

Effective nutrition education has been shown to prevent many diseases related to unhealthy diets, such as malnutrition, obesity and heart disease. However, efforts to raise awareness of the importance of nutrition in communities are often constrained by a lack of health administration capacity, especially in remote areas (Zulaekah, 2009). Effective health administration plays an important role in designing and managing disease prevention programmes, but is challenged by a lack of adequate resources, training and policy support. As a result, many nutrition education programmes do not run optimally and are unable to have a long-term impact on public health (Adinda, 2024; Wardah, 2023).

Low public knowledge about balanced nutrition and its important role in preventing disease also contributes to the high rate of non-communicable diseases. According to Riskesdas (Basic Health Research) data in 2018, around 27.7% of the Indonesian adult population had high cholesterol levels, and 21.8% suffered from hypertension caused by poor eating habits and lack of physical activity (Kadir, 2019; Sya'id et al., 2023). This indicates that more systematic efforts are still needed to increase public awareness about the importance of a healthy and balanced diet.

On the other hand, the capacity of health administration in Indonesia, especially at the local level such as health centres and clinics, is often limited in terms of human resources and infrastructure. Health administrators who play a role in managing basic health services still face various challenges, ranging from poor data management to lack of training for health workers. A strong administration is needed to ensure that nutrition education programmes are well implemented and meet the needs of local communities.

Community nutrition education is not just about providing information, but also involves comprehensive strategies to improve people's knowledge and skills in implementing healthy eating patterns in their daily lives. This education should include counselling on the importance of nutritious food consumption, healthy food management, and prevention of diseases associated with malnutrition (Sumoro, 2022; LinkSehat Team, 2020). In addition, nutrition education must be accompanied by adequate policy support and resources, including training for health workers to provide accurate and relevant information to the community.

A healthy environment plays an important role in supporting public health. However, poor sanitation, limited access to clean water, and lack of adequate health facilities in certain areas can increase the risk of environmentally-based infectious diseases. For example, communities living in areas with inadequate sewage systems are often vulnerable to outbreaks of diarrhoea, cholera or typhoid, caused by contamination of drinking water. In addition, in areas with uncontrolled



stagnant water due to poor drainage, the risk of transmitting diseases such as dengue fever and malaria increases as the stagnant water becomes a breeding ground for mosquitoes. Lack of access to proper health facilities also exacerbates the situation, as people cannot get immediate treatment or education to prevent the spread of disease. These conditions create a cycle that is difficult to break, where an unhealthy environment continues to affect the overall well-being of the community (Hapsari, 2024). Therefore, an integrated approach involving nutrition education and health administration capacity building is needed to create an environment that supports the overall health of the community.

Improving the capacity of health administration at the community level is crucial to ensuring the success of nutrition education programmes. Good administration ensures that programmes are planned, implemented and evaluated appropriately, and reach the people who need them most. In addition, effective administration allows nutrition education programmes to be tailored to local conditions, making them more relevant and impactful for the target population. This is supported by research (Guntarayana et al., 2024), where a balanced nutrition administration and extension programme was implemented in Kesamben Village, Kesamben Sub-district, Blitar District. This activity involved identifying nutrition problems, developing appropriate educational materials, and implementing the programme by involving posyandu cadres and the local community. The results showed an increase in community awareness and knowledge about the importance of balanced nutrition.

This research will focus on strengthening the capacity of health administration in managing community nutrition education programmes as an effort to reduce the risk of disease in vulnerable environments. Improving administrative capacity will include training health workers, developing better health information management systems, and providing policy support for the sustainability of nutrition education programmes. The research will also explore how nutrition education programmes can be more effective through integration with other disease prevention efforts, such as environmental health and sanitation campaigns.

With improved health administration capacity and more structured nutrition education programmes, it is expected that the community will be more aware and able to adopt a healthy diet. In addition, these programmes are expected to reduce the growing burden of non-communicable diseases in Indonesia. This research seeks to provide evidence-based recommendations for better health policy development in the future.

METHODS

Junior high school students of Madrasah Tsanawiyah 1 Public City Of Padang, Koto Tengah Padang sub-district, were the main target of this work programme, with a total of 27 students participating in the activity. The programme aimed to improve students' understanding of environmental sanitation, which is the main topic of this research. To evaluate the participants' initial understanding, a pre-test was conducted to measure their level of knowledge before attending the training session.

In the implementation of the activity, the material on environmental sanitation was delivered directly to the participants through a presentation using the Salindia tool. The presentation was supported by a two-way discussion session, which allowed participants to ask questions and interact with the presenters, thus deepening their understanding. The material delivery process also

integrated group discussions to further explore the understanding of concepts related to environmental sanitation.

To measure changes in participants' understanding after the programme, a post-test was conducted at the end of the session. This post-test aims to evaluate how much the participants' knowledge of environmental sanitation has increased after participating in the programme. The variables used in this study include participants' knowledge measured through pre-test and post-test scores, as well as interactions and discussions conducted during the delivery of the material. Measurement of these variables provides an overview of the effectiveness of the method used in improving participants' understanding of environmental sanitation.

The study will be conducted in areas with a high prevalence of non-communicable diseases and limited access to health services, such as health centres or health clinics in semi-urban or rural areas. This study will use *purposive sampling* technique to select research subjects. This technique is used to ensure that the sample is drawn from individuals who are relevant and have direct experience with the health administration capacity building and nutrition education programmes. For the quantitative approach, a simple random sampling technique will be used to select households or individuals to participate in the survey, so that the results can be generalised. For the quantitative data, questionnaires, interview guidelines and observation sheets will be used to survey the community and health workers who are the subjects of the study.

Data analysis techniques for quantitative analysis of data obtained from questionnaires were analysed using spss. The analysis includes descriptive tests to see the distribution of data, as well as inferential tests (eg t-test). This research will be carried out in several stages of preparation, data collection, data analysis and preparation of research reports, this research was carried out for 3 months.

RESULTS

1. Differences between Before and After Nutrition Education on Reducing Environmental Sanitation Risks

Table 1. Nutrition Education Before and After Environmental Sanitation Risk Counselling

Evaluation aspect			Before counselling	After counselling
Average	understanding	of	79,3 %	85,93%
sanitation				

Based on the data in table 1, it is known that there is an increase in understanding of environmental sanitation: The table above shows an increase in students' understanding of environmental sanitation materials, from 79.3% in the *pretest* to 85.93% in the *posttest*. This indicates that the counselling and education on environmental sanitation had a positive effect on students' understanding.

With a significant increase in understanding, this sanitation education programme can be considered successful in raising awareness of the importance of sanitation to prevent the risk of stunting. These results support the need for continued education, both through school and community programmes, to maintain and improve understanding of good sanitation practices in school and community settings.



2. Differences in Health Administration Aspects Before and After Counselling with Environmental Sanitation Risks

Table 2: Health administration before and after counselling with environmental sanitation risks

Aspects of Health Administration Capacity	Before counselling	After counselling
Health worker knowledge	65%	85%
Availability of sanitation standard operating procedures (SOPs)	70%	90%
Compliance with sanitation and hygiene policies	60%	82%
Monitoring of water quality and environmental hygiene	55%	80%
Regular training for health staff and communities	50%	78%

Table 2 shows that there was a 20% increase in health workers' knowledge of environmental diseases after programme implementation. This suggests that regular education and training played an important role in improving knowledge capacity. A 22% increase in compliance with sanitation and hygiene policies indicates success in implementing stricter sanitation procedures, which is expected to reduce the risk of environmental diseases.

Significant increases in water quality monitoring (25%) and regular training (28%) indicate that the programme is effective in strengthening better administrative systems, thereby minimising potential disease risks in the environment.

DISCUSSION

1. Improved Understanding of Environmental Sanitation in Students

Students' understanding of environmental sanitation increased from 79.3% to 85.93% after the counselling. The counselling provided had a significant impact in improving students' understanding of good sanitation practices, such as maintaining environmental hygiene and the importance of sanitation to prevent disease. This improvement not only reflects the effectiveness of the counselling method but also indicates that students are more prepared and able to apply this knowledge in their daily lives.

This programme is expected to produce students who are more concerned about the environment and have good habits in maintaining sanitation, which in turn will have an impact on reducing the risk of environment-related diseases. For example, sanitation and environmental health programmes that can be implemented include several activities, such as: awareness raising on waste management, counselling on personal and environmental hygiene, construction or maintenance of sanitation facilities, counselling campaigns on clean water users. By implementing these sanitation and environmental health programmes, it is hoped that students will not only gain knowledge about the importance of maintaining cleanliness and sanitation, but also apply it in their daily lives, which in turn will help lower the risk of diseases associated with unsanitary environments.

Health education aims to improve individuals' or groups' understanding of the factors that affect their health. With good health education, people are expected to be better able to implement sanitation practices that can reduce the risk of environmental diseases (Suryani Jamin et al., 2024).

The researcher assumed that increased understanding of sanitation would have a long-term impact on their awareness of the importance of cleanliness and sanitation in their neighbourhood. Students who understand the importance of sanitation are expected to implement these habits in their daily lives and potentially become agents of change who support hygiene practices in their neighbourhoods.

2. Improved Knowledge of Health Workers on Environmental Diseases

Health workers' knowledge increased from 65% before the programme to 85% after the programme. This increase indicates that the education and training programme was successful in providing more in-depth information about environment-based diseases, including their prevention and management. More knowledgeable health workers will be better equipped to educate the community, monitor environmental health conditions, and respond quickly to situations that require intervention. As such, these improvements can directly contribute to the readiness and effectiveness of health workers in maintaining the environmental health of the community.

This theory explains that behaviour change in health is influenced by knowledge, attitudes and skills. Increased understanding of sanitation and hygiene will affect people's behaviour in maintaining environmental hygiene (Panda.id, 2024).

We assume that increased knowledge of health workers will have an impact on the effectiveness of preventive health services in the community. With more in-depth knowledge, health workers are expected to be better able to provide relevant education to the community about the risks of environmental diseases and how to prevent them. Better knowledge is also expected to increase community trust in health workers.

3. Availability of Standard Operating Procedures (SOPs) for Sanitation

The availability of sanitation SOPs in Anak Air village, Koto Tangah sub-district of Padang, increased from 70% to 90% after the implementation of this programme. Clear and structured SOPs are critical to the success of sanitation efforts in this area. With more readily available SOPs, each officer in the village can better understand the steps to take to keep the neighbourhood clean and safe. Recent programmes implemented in this area, such as Waste Management Counselling and Sanitation Facility Quality Improvement, aim to ensure that hygiene procedures and standards are well implemented by all parties involved.

Clear SOPs serve as a guide for officers in carrying out actions in accordance with predetermined standards, such as waste management, maintenance of sanitation facilities, and maintenance of clean water sources. The availability of good SOPs also creates accountability in carrying out hygiene policies in Anak Air Village, which plays a major role in preventing the spread of environmental diseases. This programme, which focuses on community and student outreach, with an emphasis on understanding and implementing SOPs, will make a positive contribution to improving environmental health in the village.

The researcher assumed that better availability of SOPs would result in consistent and standardised sanitisation actions. SOPs serve as a working guideline for staff, assisting them in



carrying out sanitisation procedures correctly and ensuring optimal hygiene quality. This will also improve service quality and reduce the risk of disease.

4. Compliance with Sanitation and Hygiene Policy

Compliance with sanitation and hygiene policies increased from 60% to 82%. This increase demonstrates the success of the programme in raising the awareness of health workers and communities on the importance of compliance with sanitation policies. High compliance with this policy is crucial, as any non-compliance can potentially lead to health risks. This increase is also expected to motivate the community to better maintain environmental hygiene in accordance with applicable policy standards, thus creating a safer and healthier environment.

According to this theory, improving health administration capacity requires good management of the components in the system, such as health workers, policies, resources, and supporting facilities. Regular training and intensive monitoring are forms of intervention in the health system that can improve service quality and prevent disease risk (S. Wulandari, 2020).

The researcher assumed that increased compliance with sanitation policies would be sustainable, not only during the programme but also afterwards. Higher compliance is expected to lower the risk of spreading environmental diseases, as well-maintained hygiene standards will reduce sources of contamination and improve public environmental health safety.

5. Improved Water Quality Monitoring and Environmental Hygiene

Monitoring of water quality and environmental hygiene increased from 55% to 80%. More intensive monitoring allows health workers to detect potential sources of contamination early and prevent the spread of disease due to contaminated water or an unclean environment. This improvement in water quality monitoring indicates that staff are more proactive in identifying and addressing health risk factors. This is an important preventive measure to reduce the potential for diseases caused by an unhealthy environment.

The main focus of this theory is disease prevention through interventions that prevent the onset of disease risk. By improving knowledge and health administration capacity, it is expected to create a more responsive health system in the face of environmental-based disease threats.

The researchers assumed that better monitoring of water quality and environmental hygiene would be a strong preventive measure to prevent environmental diseases. With continuous monitoring, the risk of water contamination or a dirty environment can be detected and addressed before it affects the community.

6. Improved Routine Training for Health Staff and Communities

Regular training for staff and communities increased from 50% to 78%. Regular training plays an important role in strengthening the knowledge and skills of health workers and communities in maintaining a healthy environment. With continuous training, health workers and communities can continuously update their knowledge on sanitation and disease prevention. This increased training not only prepares health workers and communities for today's health challenges, but also strengthens the health system for the future.

The researcher assumed that regular training for health staff and communities would have a long-term effect in improving their knowledge capacity and skills. Ongoing training ensures that

they always have the latest information and skills needed to prevent and address environmental health issues, thus contributing to a more resilient health system.

CONCLUSIONS

This study showed that improving health administration capacity and community nutrition education through counselling, regular training, and the implementation of sanitation SOPs effectively contributed to reducing the risk of environment-based diseases. Improvements in students' understanding of sanitation, health workers' knowledge, policy compliance, water quality monitoring, and the availability of sanitation SOPs prove that comprehensive interventions can strengthen environmental health systems. The researcher's assumption that continuous education and consistent monitoring would create long-term impact also proved relevant. This programme has the potential to be an effective model for more sustainable preventive environmental health efforts.

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