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Analysis of stunting prevention through communication, information, and education with empowerment

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ABSTRACT

Introduction: Stunting is a chronic health problem characterized by a child's height being lower than their age standard, often caused by poor nutritional intake and recurrent infections. This research focuses on stunting prevention through Communication, Information, and Education (KIE) with a community empowerment approach.

Research Methodology: This type of research is observational analytics with a cross-sectional approach. The research sample consisted of mothers under five who met the inclusion criteria. Data were collected through questionnaires and interviews and then analyzed using the Wilcoxon statistical test. The intervention was carried out by providing education through digital-based KIE media, developed using the Borg & Gall model.

Result: The analysis showed a significant improvement in the knowledge and attitude of mothers under five after the intervention. Before the intervention, 74% of mothers had low knowledge about stunting, but after the intervention, this figure dropped to 2%, with 98% of mothers having good knowledge. The mother's attitude also increased from 2% good to 96% good after the intervention. The results of the Wilcoxon test showed a p-value of 0.001 for knowledge and 0.005 for attitude, showing a significant influence of KIE media on stunting prevention.

Conclusion: The provision of digital-based KIE with a community empowerment approach has proven to be effective in increasing the knowledge and attitude of mothers under five towards stunting prevention. Implementing KIE is expected to be a sustainable strategy to support the national program in reducing stunting rates. Further research is suggested to compare the effectiveness between the intervention and control groups.

Keywords: educational information communication, digital media, stunting

INTRODUCTION

Stunting is a condition of abnormal height of children because nutritional needs from birth to age 2 years are unmet. Stunting, defined by the WHO as growth disorders due to lack of nutrition, recurrent infections, and inadequate psychosocial stimulation, remains a major challenge in global Health (Lognos *et al.*, 2024). Although the number of stunted children under the age of five has decreased, more than 150 million children still experience this condition, reflecting inequities in access to nutrition and essential health services (N. Kumar *et al.*, 2024). The main cause of stunting often occurs during pregnancy or even before conception, emphasizing the importance of interventions that focus on the health of adolescent girls and pregnant women as the key to prevention. The incidence of short toddlers, or stunting, is a condition where toddlers have less height than their age. This condition is measured by length or height, which is less than minus two standard deviations of the WHO child growth standard median (Hatijar, 2023). Nutritional status is a significant thing that parents must know, especially those with toddlers because it is a golden age related to growth and development in the future (Arda, Lalla, and Suprapto, 2023).

Stunting is a serious public health problem, especially in children under five. The causes of stunting are complex and involve a variety of factors, but health education, feeding practices, attention, stimulation, and access to health services have been identified as major contributors (Herlianty *et al.*, 2023). Communication, Information, and Education (KIE) prevent stunting. This approach provides knowledge to the public about optimal feeding practices, the importance of immunization, and sanitation and promotes healthy behaviours (Escher *et al.*, 2024). In addition, community empowerment, including capacity building for women and local communities, can create an environment that supports children's Health in a sustainable manner. Although programs such as breastfeeding promotion and supplemental feeding are helpful, their effects on stunting prevalence are often limited. Therefore, a paradigm shift in interventions is needed, focusing on efforts to improve the environment, nutrition, and women's access to education and health services. In this regard, a holistic approach that involves the entire community is critical to ensuring the sustainability of the program and its wider impact (Domguia *et al.*, 2023).

Stunting prevention through communication, information, and education with empowerment can begin by explaining the importance of a holistic approach that involves the community and individuals in preventing nutritional problems in children (Sichalwe *et al.*, 2023). Stunting, or short stature due to chronic malnutrition, is a major concern in many developing countries, including Indonesia, because of its serious impact on children's physical and cognitive development and their long-term productivity (Moghimi Dehkordi *et al.*, 2024). One approach that has proven effective is Social and Behavior Change Communication (SBCC), which uses a variety of media to convey information about healthy eating patterns and good feeding practices. SBCC includes interpersonal communication, social media, and community mobilization to change people's attitudes and behaviors towards stunting prevention, especially in the first 1000 days of life (from pregnancy to the first two years). Studies show that this combination of communication approaches is more effective than a single approach and that interventions involving more contact with the target can magnify the impact of behavior change (Bose *et al.*, 2024).

Community empowerment through technology applications is also increasingly relevant. In Indonesia, the use of Android-based apps to increase adolescents' knowledge about stunting prevention has shown a positive impact on changing their attitudes and behaviours (Tambo *et al.*, 2023). The use of audiovisual and digital media allows for the dissemination of information that is wider and easily accessible, increasing public understanding of the importance of good nutrition, both for pregnant women, breastfeeding mothers, and early childhood. With an integrated approach between communication, education, and technology-based empowerment, the stunting rate is hoped to be significantly reduced, positively impacting future generations'

quality of life. Effective communication and community empowerment can help overcome barriers to health policy implementation. In the context of stunting prevention, this strategy aims to change mindsets and behaviors and strengthen people's capacity to manage health problems independently. Empowerment programs that involve active community participation can encourage greater engagement, create a sense of collective responsibility, and ensure the sustainability of the intervention. Stunting prevention models involving community-based education, training, and increasing access to nutrition and child health information significantly reduce stunting rates. This approach emphasizes the importance of parents, health cadres, and policymakers in building awareness and supporting behavior change at the community level. The analysis of stunting prevention through KIE and community empowerment is becoming increasingly relevant. This study explores how communication and empowerment strategies can improve the effectiveness of stunting prevention efforts and identify challenges and opportunities in their implementation.

RESEARCH METHODOLOGY

The type of research used in this study is observational analysis with a cross-sectional approach. Data collection was carried out from July to December 2024. The population of this study is toddlers. The sample in this study is mothers of toddlers at the Mangasa Health Center who meet the inclusion criteria: toddlers aged 24-59 months who live and settle in the research site and mothers of toddlers willing to be respondents. Data collection techniques are the most strategic step in research because the primary purpose of research is to obtain data. Without knowing the data collection techniques, researchers will not get data that meets the set data standards. The techniques used in this study are interviews and document studies. Data presentation is creating a report based on the research results the researcher has carried out. It is easy to understand and analyze as desired so that the data is presented concisely and easily understood by readers. The data presented in this study is in the form of tables and texts. Data analysis techniques, such as univariate and bivariate analysis, can be used to analyze two variables. A chi-square test can be carried out with the help of SPSS. This research has received a recommendation for a research permit with the number 077/07.0991056/X/2024.

RESULT

Table 1. Identify the characteristics of toddler mothers

Variable	Frequency	Presented (%)
Age		
≤ 20 years	0	0
20-30 years	32	69.6
≥ 30 years	14	30.4
Education		
Elementary School	5	10.9
Junior High School	19	41.3
High School	22	47.8
Diploma	0	0
Bachelor	0	0
Work		
Housewife	32	69.6
Self-Employed	14	30.4
Civil Servant	0	0

Based on Table 1. shows that the average number of respondents was 20-30 years old (69.6%), with the average of the respondents' last education being high school/equivalent (47.8%) with the mother's employment status, namely as a housewife (IRT) of (69.6%) respondents.

Table 2. The result of the kie (communication information, education) group (n=46)

Aspects	Minimum	Maximum	Mean	Median
Ease of IEC (Communication. Information, Education)	4	5	4.44	4.25
Benefits of IEC (Communication. Information, Education)	4	5	4.48	4.00
User Trust of IEC (Communication. Information, Education)	4	5	4.28	4.00
User Attitude	4	5	4.39	4.00

Based on table 2 shows that from the perception of the ease aspect of KIE (Communication. Information, Education), the average score of respondents answered was 4.44, which means the ease of KIE (Communication. Information, Education) stunting education is very good because the average score of 4.44 is greater than the median score of 4.25. Based on the aspect of KIE Benefits (Communication. Information, Education), the average score of the respondents was 4.48, which means very good because the average score was greater than the median value of 4.00. Based on the aspect of user trust KIE (Communication. Information, Education), the average score of the respondents' answers was 4.28, which means it was very good because the average score was greater than the median value of 4.00. Meanwhile, if you look at the aspect of user attitude, it shows an average of 4.39, which means very good because the average value is greater than the median value, 4.00.

Table 3. Knowledge distribution before and after giving kie (communication, information, education) towards preventing stunting by community empowerment. (n=46)

Knowledge	Average				p-value
	Good	Enough	Less		
Pre	0	12 (26%)	34 (74%)	42%	0.001
Post	45 (98%)	1 (2%)	0	87%	

Based on the results of Table 3 show that the knowledge of mothers under five before the intervention is categorized as lacking knowledge with an average score of 42%, and after the intervention is carried out in the form of KIE (Communication. Information, Education) stunting education, the knowledge of mothers under five has increased to good with an average score of 87%. The results of the statistical test p-value 0.001 < p-value 0.05 means that there is a significant influence on the respondents' knowledge after being given education in the form of KIE (Communication. Information, Education) stunting education.

DISCUSSION

The researcher revealed a significant influence on respondents' knowledge after being given education in the form of KIE (Communication, Information, Education) stunting education. There is a significant influence on the improvement of respondents' knowledge after education in the form of Communication, Information, and Education (KIE) regarding stunting. This finding is in line with various previous studies that state that KIE is a practical approach to increasing public understanding of health issues, especially related to stunting prevention. Education is carried out by conveying information in a structured manner based on local needs, and interactive methods can change the mindset and behavior of respondents in a more positive direction. KIE combines interpersonal communication approaches and information media to convey relevant and easy messages for the public to understand (Grabowski *et al.*, 2024). Education about stunting through KIE helps the public understand the causes, impacts, and ways to prevent it, such as the importance of exclusive breastfeeding, fulfilling balanced nutrition, and monitoring children's growth and development. This is in accordance with the theory of social learning, which states that individual understanding and behavior can change through observation, information, and direct experience (Tewodros *et al.*, 2024).

Although its effectiveness is proven, implementing KIE is inseparable from challenges, such as diversity of education levels, limited resources, and specific cultural barriers that affect the reception of information. Therefore, it is important to ensure that educational materials are tailored to local needs and characteristics and involve various parties, such as health cadres, community leaders, and local governments, in their implementation (Md Nawawi *et al.*, 2024). To increase the success of the KIE program, a more holistic approach is needed, such as integration with digital technology to expand the reach of education, regular training for health cadres, and periodic evaluations to measure the impact of the program (Li, Mohamed Nor and Kaliappan, 2024). In addition, policy support and adequate budget allocation are also critical to ensure the sustainability of the KIE program in stunting prevention. These results confirm the importance of KIE as one of the strategic approaches to overcome stunting. With proper development and implementation, KIE can be an effective tool to increase public knowledge, encourage behavior change, and accelerate the reduction of stunting prevalence in the future (Roshania *et al.*, 2023).

The increase in respondents' knowledge after participating in KIE educational activities can be explained through communication and learning theory. KIE, as a means of two-way communication, allows active participation from the audience in absorbing information, which is then translated into better understanding. Educational programs based on the KIE approach using various media such as direct counseling, brochures, educational videos, and group discussions can adjust learning styles and people's preferences so that information is more straightforward to receive and understand. In the context of stunting, effective communication plays a very important role in changing behavior (Gonzalez Cruz and Johnson, 2024). The knowledge gained through KIE education allows the public to understand the importance of exclusive breastfeeding, the fulfillment of balanced nutritional needs, and the importance of monitoring children's growth and development from an early age. For example, education about healthy diets for pregnant women and newborns can help raise awareness about how crucial the first 1000 Days of Life (HPK) period is in preventing stunting. In addition, increasing knowledge also plays a role in changing people's attitudes and behaviors. As revealed by several studies, a better understanding of stunting and its impact on children's future can encourage parents to be more concerned about their children's nutrition and change risky habits, such as unhealthy diets or lack of access to health services (Zangerl *et al.*, 2024). Through KIE, the public can better understand the factors that cause stunting and practical solutions that can be applied daily. Considerable evidence supports the effectiveness of nutritional supplementation with or without nutrition education in preventing stunting in developing countries (Soofi *et al.*, 2024).

Despite the increase in knowledge, remember that knowledge alone is not enough to overcome stunting. Other factors, such as limited access to health services, availability of nutritious food, and social and economic conditions, also play an important role (Lilavanichakul and Pathak, 2024). Therefore, KIE education needs to be followed by broader efforts, such as community empowerment, increasing access to health services, and policies supporting stunting prevention programs' sustainability. The results of this study confirm that KIE is an effective strategy for improving public knowledge about stunting (Nikita, Anatole, and Gildas, 2024). However, for the impact to be broader and sustainable, education needs to be supported by programs that facilitate more concrete behavior change and the creation of an environment that promotes stunting prevention. Through the KIE (Communication, Information, and Education) approach, education has effectively increased public knowledge about stunting (Widiastuti *et al.*, 2024). These findings show that KIE can provide a better understanding of the importance of fulfilling balanced nutrition, exclusive breastfeeding, and monitoring children's growth and development during the first 1000 days of life (HPK). This increase in knowledge is an essential basis for motivating behavior change that supports the prevention of stunting (V. Kumar *et al.*, 2024). The effectiveness of KIE requires comprehensive support through multisectoral collaboration to address inhibiting factors, such as limited access to health services, socio-economic conditions, and the availability of nutritious food. With an integrated and sustainable

approach, KIE can be one of the main strategies for reducing stunting rates and improving the quality of life of future generations.

CONCLUSION

Providing education through the KIE (Communication, Information, and Education) approach has been proven to influence the increase in public knowledge about stunting significantly. This method effectively conveys the importance of a healthy diet, exclusive breastfeeding, care for pregnant women, and stunting prevention during the First 1000 Days of Life (HPK). This increase in knowledge is an important first step in encouraging behavior change and preventing stunting at the community level. Recommendations for Improving KIE Education Programs: Health agencies, governments, and non-governmental organizations need to expand the scope and quality of KIE education programs by using various media that are easily accessible to the public, such as interactive modules, social media, and direct counseling. Suggestions For the community, it is recommended that they actively participate in educational activities held in their respective regions and apply the knowledge gained in daily life. It is hoped that researchers can continue their research with a more comprehensive approach, such as directly analyzing the impact of KIE on long-term behavior change or its effect on reducing stunting prevalence.

Conflict of Interest

The authors declare that they have no competing interests.

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