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Evaluation of the Food Safety Program on the Knowledge of Family and Community Cadres

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ABSTRACT

This study evaluates the impact of the BPOM-initiated Village Food Safety Movement (GKPD) Program in improving food reserve knowledge, attitudes and behaviors in stunting and non-stunting villages in North Sumatra. The study used a descriptive qualitative method with a pretest-posttest design in six villages, involving groups of family and community cadres. The research instrument used a standard BPOM questionnaire to measure changes in knowledge, attitude and behavior aspects. The results showed significant improvement in general food safety knowledge, with an average increase from 26.5% to 57.4% post-intervention. Progress was also seen in attitudinal and behavioral aspects, although some areas such as food processor hygiene still require further attention. The two types of villages show different patterns of improvement, with stunting villages tending to have greater potential for improvement. The conclusion confirms that the GKPD program is effective in improving cadres' ability to manage food safety, which is expected to contribute to village-level food safety. However, sustainable strategies are needed to address the gap between knowledge and behavior change.

Keywords: Village food safety; GKPD; intervention; BBPOM Medan

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INTRODUCTION

Poisoning (WHO) is a condition where psychoactive substances enter the body, causing disturbances in consciousness, cognition, perception, emotion, behavior, function, and psychophysiological responses. The Center for Food and Drug Policy Analysis's 2022 study of 2021 data and 2018-2021 trends revealed the distribution of Food and Drug poisoning cases across provinces. The highest incidences were in West Java (272 cases, 27.25%), East Java (201 cases, 20.14%), DKI Jakarta (176 cases, 17.64%), Special Region of Yogyakarta (41 cases, 4.11%), and Bangka Belitung Islands (33 cases, 3.31%). West Nusa Tenggara and North Kalimantan reported no cases. From 998 total cases meeting poisoning criteria (excluding allergies, side effects, and other adverse events), food-induced poisoning dominated with 685 cases. (1)

Food and drug poisoning significantly impacts public health, burdens health facilities, increases medical costs, reduces economic productivity, undermines product safety confidence, and exposes regulatory system weaknesses. The National Agency of Drug and Food Control (BPOM) launched the Village Food Safety Movement program in 2014 to enhance community self-reliance in food safety. This program aims to reduce hunger through increased safe food access, improve public health through hygienic food consumption, and promote responsible consumption patterns. (2)

Law No. 18/2012 on Food establishes that food safety development must be implemented gradually from individual and family to community levels throughout Indonesia to ensure national food security. (3) The Village Food Safety Movement (GKPD) focuses on supervision and community empowerment for independent food safety management, aiming to establish Pangan Aman Villages (Desa PAMAN) as successful outcomes. (4)

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BPOM has developed Village Food Safety Cadres (KKPD), consisting of trained local community members with certified food safety competence, contributing to various Sustainable Development Goals. (2) However, the significant disparity in poisoning case distribution between provinces indicates potential issues in reporting, monitoring, or public awareness. While NA-DFC implements GKPD and KKPD to improve village-level food safety awareness and management, the training effectiveness and impact on reducing poisoning cases remains unclear.

This study aims to analyze factors affecting the unequal distribution of poisoning cases between provinces, examining reporting and public awareness influences. It also evaluates GKPD and KKPD effectiveness in enhancing community food safety management capacity. The research seeks to understand program implementation challenges and provide recommendations for improving their effectiveness in reducing poisoning cases and increasing food safety awareness.

METHODS

This study used a descriptive qualitative method with a one-group pretest-posttest design (without a control group), where measurements were taken before and after the intervention within the same group. The data analyzed were secondary data from survey reports conducted by the BBPOM team in Medan between January and December 2022, related to the Village Food Safety program in North Sumatra. The research subjects were cadre groups and community cadres. Data collection was carried out through observations and interviews by officers from the Food and Drug Supervisory Agency (BBPOM) in Medan.

BBPOM in Medan team From May to November 2022, conducted a gap assessment before and after the food safety intervention in six villages in North Sumatra: Pidoli Lombang Village (Penyabungan Subdistrict, Mandailing Natal Regency); Sidomulio Village (Penyabungan Subdistrict, Padang Lawas Regency); Batang Pane I Village (East Halongonan Subdistrict, North Padang Lawas Regency); Onan Runggu I Village (Sipahutar

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Subdistrict, North Tapanuli Regency); Pasar Belakang Village (Sibolga Kota Subdistrict, Sibolga City); and Pancuran Bambu Village (Sibolga Sambas Subdistrict, Sibolga City). This gap assessment, which served as a pre-test and post-test, involved observations and interviews with cadre groups. The family cadre groups consisted of 6-7 PKK members, and the community cadre groups consisted of 5 Karang Taruna members. The instrument used in this assessment was a standard questionnaire from the POM Agency (BPOM), which was used to measure changes in the cadres' knowledge, attitudes, and behavior before and after the intervention.

RESULTS

Knowledge, Attitudes, and Behavior Changes Among Family Cadres

Table 1. Changes in Family Cadres' Knowledge, Attitudes, and Behavior (%)

Aspect	**Stunting Village**				**Non-Stunting Village**				**Post Test Target Analysis**
	Pre Test	**Post Test**	**Abs Diff**	**% Change**	**Pre Test**	**Post Test**	**Abs Diff**	**% Change**	**Target ≥60%**
Knowledge									
General Food Safety	26.5	57.4	30.9	116.6%	28.3	57.4	29.1	102.8%	Not Achieved
Purchasing	76.2	92.9	16.7	21.9%	74.2	89.4	15.2	20.5%	Achieved
Preparation & Serving	65.6	80.9	15.3	23.3%	68.9	81.1	12.2	17.7%	Achieved
Hygiene	35.0	49.8	14.8	42.3%	33.6	50.7	17.1	50.9%	Not Achieved
Attitudes									
Purchasing	69.3	75.1	5.8	8.4%	69.6	75.3	5.7	8.2%	Achieved
Preparation & Serving	79.7	82.3	2.6	3.3%	76.4	80.9	4.5	5.9%	Achieved
Hygiene	60.6	65.0	4.4	7.3%	53.0	58.8	5.8	10.9%	Only Stunting Village Achieved

Food Poisoning Response	70.1	72.5	2.4	3.4%	65.4	69.6	4.2	6.4%	Achieved
Behavior									
Purchasing	69.1	79.3	10.2	14.8%	72.8	81.1	8.3	11.4%	Achieved
Preparation & Serving	49.6	58.5	8.9	17.9%	53.0	65.4	12.4	23.4%	Only Non-stunting Village Achieved
Hygiene	89.6	89.8	0.2	0.2%	88.3	89.6	1.3	1.5%	Achieved

Source: Survey Report on Pre and Post Food Safety Intervention in Safe Food Villages, 2022

The analysis of family cadres' performance reveals several noteworthy patterns across knowledge, attitudes, and behavioral domains between stunting and non-stunting villages. The results demonstrate varying degrees of improvement across different aspects of food safety management.

In terms of knowledge acquisition, both village types showed substantial improvements, particularly in general food safety awareness. Stunting villages demonstrated a remarkable 116.6% increase, while non-stunting villages showed a comparable 102.8% improvement. However, despite these significant gains, neither group achieved the target threshold of 60% in the post-test evaluation. The strongest knowledge gains were observed in purchasing practices, where both village types achieved post-test scores exceeding 89%, with stunting villages slightly outperforming at 92.9%.

The attitudinal assessment revealed more modest but consistent improvements across all measured aspects. Both village types showed similar patterns of improvement in purchasing attitudes (approximately 8% increase) and preparation and serving attitudes (3.3% and 5.9% increase for stunting and non-stunting villages, respectively). Notably, while both groups achieved the target threshold in most attitudinal aspects,

hygiene attitudes showed an interesting divergence. Only stunting villages reached the 60% target, achieving 65.0% in the post-test compared to 58.8% in non-stunting villages.

The behavioral domain presented mixed results. Hygiene behaviors showed minimal improvement but maintained high baseline levels (around 89%) in both village types. Purchasing behaviors demonstrated moderate improvement, with both groups achieving post-test scores above 79%. However, preparation and serving behaviors revealed a notable disparity: while non-stunting villages reached the target threshold with 65.4%, stunting villages fell short at 58.5%, despite showing a 17.9% improvement from baseline.

The results of the knowledge, attitudes, and behavior change among family cadres analysis indicate that while both types of villages, showed improvements across all domains, the patterns of change varied significantly. Stymied villages generally showed greater percentage gains in knowledge but sometimes fell short of absolute targets. This pattern may indicate greater potential for improvement in these areas, perhaps due to lower baseline scores. Unstymied villages, while showing more modest percentage gains, often achieved higher absolute scores on behavioral metrics. These findings highlight the complex nature of food security interventions and suggest that different approaches may be needed for hampered and unstymied villages to optimize training outcomes. The results also suggest that while knowledge transfer was generally successful, translating this knowledge into consistent behavioral change remains a challenge, particularly in preparation and serving practices.

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Knowledge, Attitudes, and Behavior Changes Among Community Cadres

Table 2. Changes in Community Cadres' Knowledge, Attitudes, and Behavior (%)

Aspect	**Stunting Village**				**Non-Stunting Village**				**Post Test Target Analysis**
	Pre Test	**Post Test**	**Abs Diff**	**% Change**	**Pre Test**	**Post Test**	**Abs Diff**	**% Change**	**Target ≥60%**
Knowledge									
General Food Safety	24.0	60.5	36.5	152.1%	27.0	55.1	28.1	104.1%	Only Stunting Village Achieved
Purchasing	73.4	90.3	16.9	23.0%	73.5	88.2	14.7	20.0%	Achieved
Preparation & Serving	67.1	81.1	14.0	20.9%	66.8	79.5	12.7	19.0%	Achieved
Hygiene	30.4	46.0	15.6	51.3%	28.2	47.0	18.8	66.7%	Not Achieved
Attitudes									
Purchasing	63.9	66.1	2.2	3.4%	64.2	66.2	2.0	3.1%	Achieved
Preparation & Serving	72.6	76.2	3.6	5.0%	74.9	77.9	3.0	4.0%	Achieved
Hygiene	55.4	59.5	4.1	7.4%	54.1	59.1	5.0	9.2%	Not Achieved
Food Poisoning Response	63.0	65.3	2.3	3.7%	63.8	67.8	4.0	6.3%	Achieved
Behavior									
Purchasing	64.8	72.3	7.5	11.6%	66.5	75.7	9.2	13.8%	Achieved
Preparation & Serving	40.1	59.0	18.9	47.1%	49.3	54.9	5.6	11.4%	Not Achieved
Hygiene	77.8	79.2	1.4	1.8%	80.8	84.4	3.6	4.5%	Achieved

Source: Survey Report on Pre and Post Food Safety Intervention in Safe Food Villages, 2022

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The most dramatic improvement was observed in general food safety knowledge, particularly in stunting villages, where scores increased by 152.1% (from 24.0% to 60.5%), substantially outperforming non-stunting villages' 104.1% increase. Both village types demonstrated strong performance in purchasing and preparation knowledge, with post-test scores exceeding 80%. However, hygiene knowledge remained problematic across both settings, with neither achieving the 60% target despite modest improvements.

Attitudinal shifts were generally modest but positive across both village types. Preparation and serving attitudes showed the highest post-test scores (76.2% in stunting villages and 77.9% in non-stunting villages). While most attitudinal metrics met the 60% target, hygiene attitudes fell short in both settings, reaching only 59.5% and 59.1% respectively. Food poisoning response attitudes showed similar improvements across both village types, with slightly better results in non-stunting villages.

The behavioral domain presented mixed results. Notable success was achieved in purchasing behaviors, with both village types exceeding the 60% target. Hygiene behaviors were particularly strong, with non-stunting villages reaching 84.4% in post-test scores. However, preparation and serving behaviors revealed a striking disparity: stunting villages showed substantial improvement (47.1% increase) but still failed to reach the target, while non-stunting villages demonstrated minimal improvement (11.4% increase).

A consistent pattern emerges where knowledge improvements outpace attitudinal and behavioral changes. This suggests that while information transfer is effective, translating knowledge into practice faces significant barriers. The disparity between knowledge gains and behavioral changes is particularly evident in hygiene, where high knowledge improvement rates contrast with minimal behavioral modifications.

The findings suggest that while the intervention successfully improved knowledge across multiple domains, additional focus is needed on translating these improvements into sustained behavioral change, particularly in hygiene practices and food preparation behaviors. The marked differences between stunting and non-stunting villages in certain areas also indicate the need for context-specific intervention strategies. This analysis illustrates the complex relationship between knowledge acquisition, attitudinal change, and behavioral modification in community health interventions, highlighting both successes and areas requiring additional attention in future program iterations.

DISCUSSION

Cadres are defined as individuals who voluntarily devote themselves to the benefit of the community. The process of selecting cadres is done by the community itself, emphasizing the importance of community involvement and acceptance in choosing their representation. The main task of kaders is to develop the community, covering various aspects such as education, health, and social welfare. In the health domain in particular, kaders play a crucial role as a bridge between the community and health professionals. This function is particularly important because kaders, who come from and are elected by local communities, have an in-depth understanding of the health conditions, needs and challenges in their neighborhoods. With this unique position, kaders can effectively convey health information to the community in a language and manner that is easy to understand, as well as communicate the community's health needs and concerns to health professionals. (5)

The Food and Drug Administration of the Republic of Indonesia (BPOM RI) in its 2021 report provides a specific definition of village food safety cadres, reflecting their important role in the context of food safety programs at the village level. According to BPOM RI, village food safety cadres are community members who voluntarily provide their time, energy and thoughts to actively participate in various activities aimed at improving food safety in their village environment. (6)

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In an effort to optimize the role of Village Food Safety Cadres (GKPD), a series of systematic and integrated empowerment strategies have been developed. The first strategy focuses on improving the capacity of the KKPD through regular and continuous training programs. The training is designed to equip the cadres with the necessary knowledge and skills to effectively carry out their duties. The second strategy involves the implementation of food safety technical guidance aimed at village communities. Through this technical guidance, the MPAs act as facilitators who deliver information and technical knowledge on food safety practices to village communities. (2)

In the national food safety system, food safety cadres play a fundamental role in improving people's food literacy through various educational activities on food safety and nutritional value. They carry out comprehensive extension programs, covering important aspects such as proper food selection, safe processing techniques, and storage methods that comply with food safety standards.

The effectiveness of the educative role of these cadres has been validated through empirical research, as shown in a study conducted by Zukhrina et al. (2023) in Puskesmas Ingin Jaya. The results confirmed a significant increase in the cadres' level of knowledge related to food safety following the extension program, which in turn contributed to their increased capacity to educate the community on appropriate food safety practices. (7)

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Knowledge, Attitudes, and Behavior Changes Among Family Cadres

The results of this empirical analysis reveal complex dynamics in the implementation of food safety programs at the village level. Substantial improvements in the knowledge domain indicate the effectiveness of the intervention program in transferring basic food safety information. However, not achieving the target threshold indicates gaps in the knowledge transfer process that require further evaluation. This phenomenon is consistent with evidence from Masaliha et al. (2024) that the success of food safety programs depends on effective communication strategies, especially in the use of local wisdom-based media. Therefore, to improve the effectiveness of this program, it is necessary to strengthen the capacity of cadres through practice-based training, provide educational materials in a language that is easier to understand, and strengthen the motivation system for cadres so that they are more proactive in carrying out their duties. (8)

The attitudinal aspect showed interesting developments, especially in terms of hygiene in stunting villages, which exceeded the target. This indicates a positive change in mindset towards the importance of hygiene in food handling. According to Weatherspoon et al. (2019) this success may be related to the first-hand experience of stunting villagers who better understand the adverse impacts of lack of attention to hygiene aspects. This phenomenon also suggests that awareness of stunting issues can be a strong motivation for adopting better attitudes towards food safety. (9)

A positive mindset change towards the importance of hygiene in food handling is essential to improve public health. Good hygiene in food handling can prevent diseases caused by contaminated food. Therefore, education and awareness on good hygiene practices should be increased. This includes an understanding of the importance of

handwashing, keeping tools and the environment clean, and proper food storage to prevent contamination. (9)

Changes in attitudes towards hygiene in stunting villages that successfully exceeded the target reflect an increased collective awareness of the importance of sanitation and hygiene in daily life. This is in line with the findings of Cameron et al. (2020) that access to improved sanitation can reduce stunting and improve children's cognitive development, and suggests that investments in sanitation should be a core intervention to support healthy child development in Indonesia. (10)

The gap between increased knowledge and behavioral implementation, especially in aspects of food preparation and serving, underscores the complexity of the behavior change process. This refers to the findings on the gap between knowledge and behavior, according to Sarita & Bhawana (2020) the gap between knowledge and behavior of housewives is quite high, in accordance with the results of the study, the knowledge of housewives is quite high, but only a few shows good behavior. (11)

The interpretation of these data makes an important contribution to the development of a framework for family-based food safety interventions. The analysis indicates the need for a multidimensional approach that integrates educational aspects with contextual considerations and structural support. Furthermore, the study reinforces the urgency of developing more adaptive and sustainable implementation strategies to bridge the gap between knowledge acquisition and adoption of effective food safety practices.

Knowledge, Attitudes, and Behavior Changes Among Community Cadres

Distribution permit owners also have the responsibility to ensure that the recall process is carried out in accordance with the provisions, both mandatory and voluntary, to support safe and standard drug management. (Rahmatullah et al., 2020).

It is likely due to the lower starting value in the village, which makes room for greater improvement. Previous research has also shown that interventions conducted in areas with low levels of knowledge tend to result in more significant changes (Asih & Arsil, 2022; Rasmaniar et al., 2022). In contrast, unhindered villages showed a more moderate increase in knowledge, but often achieved higher absolute values in behavioral metrics (Hartati et al., 2021). These findings emphasize the importance of an approach adapted to the local context to optimize the outcomes of food security interventions (Riyadi et al., 2023). Although the transfer of knowledge in these interventions is generally successful, a major challenge remains in translating that knowledge into consistent behaviour, especially in food preparation and serving practices.

The gap between increased knowledge and behavior change is very visible, especially in the aspect of hygiene, where despite increased knowledge, real behavior changes are still minimal (Sarah, 2023). Previous research has also shown that while health education can increase knowledge, the application of that knowledge in daily practice is often hampered by various factors, including pre-existing cultures and habits (Marissa, 2024). In the context of community cadres, the same pattern is seen where the increase in knowledge is faster compared to changes in attitudes and behaviors.

This suggests that despite the success of interventions in improving knowledge, there are still significant barriers to translating that knowledge into sustainable practice (Jahja et al., 2022). Research shows that to achieve the desired behavior change, a more holistic and sustainable approach is needed, including support from the community and family (Fatimah, 2021). Therefore, intervention strategies that are tailored to the context of each region are essential to achieve optimal outcomes in public health programs (Ferdiansyah, 2016).

In conclusion, although there is progress in the knowledge of family and community cadres, the challenge of transforming knowledge into consistent behavior still needs to be overcome. A more integrated and contextual approach is needed to optimize the

outcomes of interventions, especially in hygiene practices and food preparation. More research is needed to understand the factors that influence the gap between knowledge and behavior, as well as to develop more effective strategies in improving public health.

The implications of this research have profound theoretical and practical significance in the context of food safety empowerment at the village level. The findings reveal that the Village Food Safety Movement (GKPD) program initiated by BPOM is not simply a transfer of knowledge, but a complex process of social transformation that requires a multidimensional approach. The identified gap between knowledge improvement and behavioral implementation suggests the need for a more contextualized intervention strategy, tailored to the specific characteristics of each village, both stunting and non-stunting.

From a policy perspective, this study implies an urgent need for the development of a more comprehensive food cadre empowerment framework. NA-DFC needs to design a training mechanism that not only focuses on cognitive aspects, but also encourages attitudinal changes and real practices in handling food safety. A continuous monitoring and evaluation system is key to ensure that the knowledge gained can be translated into concrete actions, especially in hygiene and food processing practices which still show significant weaknesses.

The social implications of this research are very strategic, demonstrating the potential of empowering village communities through participatory approaches in food safety management. The formation of food cadres is not merely an extension of the bureaucracy, but can become real agents of change at the community level. Recommendations for further research include in-depth exploration of factors inhibiting the transformation of knowledge into behavior, development of more specific interventions, and broader comparative studies to validate the findings of this study.

The Village Food Safety Movement (GKPD) program contributes significantly through the collaborative roles of various complementary parties. The National Agency

of Drug and Food Control (BPOM), as the initiator of the program, not only carries out its supervisory function, but also actively empowers village communities. This approach reflects an important paradigm shift, in which NA-DFC seeks to build community self-reliance in managing food safety at the village level.

The community, through the formation of Village Food Safety Cadres (KKPD), acts as the spearhead of program implementation in the field. The cadres, who are selected from local communities and have undergone comprehensive training, serve as change agents responsible for disseminating knowledge and building community awareness and capacity to manage food safety independently.

The results of the GKPD program show encouraging progress in terms of increasing public understanding and awareness of the importance of food safety. Nonetheless, there are still challenges that need to be addressed, particularly in terms of compliance with hygiene practices in food processing and serving areas.

With a sustainable approach and close collaboration between BPOM and the community, it is expected that the program will continue to grow and contribute significantly to achieving food safety at the village level. In the future, the GKPD program is expected to become a model of community empowerment that can be used to improve food safety at the village level.

Through improving the competence of cadres and strengthening the monitoring system, the program is expected to encourage the formation of village communities that are independent in managing food safety, and can proactively identify and overcome challenges related to food safety. In addition, closer collaboration between NA-DFC, local governments and village communities is expected to create an ecosystem that supports the achievement of higher food safety standards at the grassroots level.

CONCLUSIONS AND SUGGESTIONS

The conclusion of the study revealed that the Village Food Safety Movement Program (GKPD) was successful in improving food reserve knowledge in North Sumatra, with

significant achievements in general food safety knowledge (from 26.5% to 57.4%), but faced challenges in changing practical behavior, especially on hygiene aspects. The study recommends that NA-DFC design more comprehensive interventions, consider differences in village contexts, develop training methods that focus on practical application of knowledge, and conduct ongoing studies to address the gap between theoretical understanding and actual practice in food safety.

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