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The Effectiveness of Public Kitchens at the Disaster Emergency Response Post (Tdb) in Meeting the Nutritional Needs of Post-Disaster Children in Hutanabolon Village, Tukka District

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ABSTRACT

The flood and landslide disaster in Hutanabolon Village, Tukka District, Central Tapanuli Regency disrupted access to food and health services, especially for vulnerable groups such as children. Public kitchens, as the spearhead of emergency nutrition management, face challenges in providing food that meets children's specific nutritional needs. This study aims to evaluate the effectiveness of public kitchens at the Disaster Emergency Response Post (TDB) in meeting children's nutritional needs after the disaster, identify supporting and inhibiting factors, and formulate recommendations for improving the public kitchen management system. The study used a descriptive evaluative approach using survey methods, structured interviews, direct observation, 24-hour consumption recalls, and anthropometric measurements (weight and height). The study subjects included 15 children aged 1–12 years and 8 public kitchen managers who were selected purposively. Data analysis was conducted descriptively by comparing nutritional intake to the Nutritional Adequacy Intake (AKG) standard and analyzing kitchen management practices based on emergency nutrition guidelines. It was found that the average energy intake of children was only 1,140 kcal/day (below the minimum standard of 1,200–2,000 kcal/day) and protein intake was 18.7 g/day (below the standard of 20–35 g/day). A total of 33.3% of children experienced undernutrition to severe nutritional status based on the W/U indicator. Public kitchen management showed weaknesses in aspects of menu planning (100% did not have a special menu for children), nutrition knowledge of managers (62.5% were categorized as low), food availability (75% relied on instant assistance without variation), and limited cross-sector coordination (50%). The effectiveness of public kitchens in meeting children's nutritional needs after the disaster remains low. The main inhibiting factors include limited manager knowledge, the absence of a special menu for children, the absence of routine nutritional status monitoring, and the lack of emergency nutrition SOPs for children. This study recommends the need for training public kitchen managers, the development of special menus for children based on local ingredients, strengthening the nutrition monitoring system, and the development of standardized SOPs involving community participation and cross-sector support.

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1. Introduction

Based on existing data and literature, there is a significant gap (GAP) between the ideal theory of post-disaster nutrition management and real conditions in the field, especially in areas such as Hutanabolon Village, Tukka District, Central Tapanuli Regency.(Amin et al., 2026),(Al Rahmad et al., nd)Theoretically, national guidelines such as the "Guidelines for Nutrition Activities in Disaster Management" (Ministry of Health, 2012) have established comprehensive standards. The document emphasizes the importance of providing food according to the needs of vulnerable groups, monitoring nutritional status, counseling, and micronutrient supplementation.(Fahrepi, Hamalding, & Nurhayati, 2025),(Arif, Isdijoso, Fatah, & Tamyis, 2020)However, implementation at the grassroots level is often hampered by geographical factors, resource capacity, and suboptimal coordination.(Zharif, Wiryawan, & Al-Fathi, 2025),(DARMASTUTI, 2025).

Hutanabolon Village, with its sloping topography and proximity to rivers, is highly vulnerable to hydrometeorological disasters such as floods and landslides. When these disasters strike, the impacts are complex and multi-level.(Hermon, 2015),(Mardiatno & Marfai, 2021)Floods not only damage homes and facilities, but also pollute clean water sources and damage agricultural land, which is the main source of livelihood for the community.(Purwoningsih et al., 2025),(Nailufar, Trisniarti, & Yoesoef, 2025)Meanwhile, landslides can cut off transportation routes and isolate areas, hindering the distribution of logistical aid, including nutritious food supplies.(Jacky Chin et al., 2025),(Purnawan, Siagian, & Gufron, nd).

In theory, the emergency response phase prioritizes saving lives and meeting basic needs, including food. However, initial observations suggest that the food provided during emergencies in Hutanabolon tends to be generic—focusing on adequate calories (e.g., rice and instant noodles) but lacking in variety and micronutrient content.(Priscillia, 2025),(Nasruddin & Gizi, 2025). The first gap emerges here: between the principle of "balanced and age-specific nutrition" advocated by theory and the reality of "survival food" available at the posts.

A study by Haniarti & Yusuf (2020) regarding post-disaster nutritional management for toddlers highlighted that the main problem often lies in the absence of a special menu for children.(Haniarti & Yusuf, 2020). Public kitchens, for reasons of efficiency and limitations, usually prepare one type of menu for all refugees.(Yonandi & Halim, 2024)As a result, children consume the same foods as adults, which may be too spicy, oily, not soft enough, or not contain the nutritional composition that supports their recovery and growth.(Astiti et al., 2025),(Modjo & Kep, nd).

Furthermore, disaster logistics management theory emphasizes the importance of rapid and accurate "needs assessment."(Amin et al., 2026),(Amrin, nd)In Hutanabolon, initial post-disaster assessments may focus on the number of evacuees and rice bags, but rarely include mapping the initial nutritional status of children, identifying children with acute malnutrition, or breastfeeding mothers in need of special support. This data gap leads to reactive and poorly targeted nutrition interventions.(Nasruddin & Gizi, 2025),(Wahyuni, Neherta, Sari, & Adab, 2020).

Cultural factors and local knowledge also create their own gaps. Community participation theory, as researched by Umeidini et al. (2022), shows that successful disaster management depends heavily on community involvement in the form of ideas, energy, and skills.(Carlo & Rita, 2025),(Trisnawati, 2023)In Hutanabolon, community participation may be strong in terms of working together to build tents or clean up mud. However, participation in the context of planning balanced nutritional menus or monitoring children's health may remain low, as practical knowledge about emergency nutrition has not yet become part of the culture.(Gunawan, Mulu, Radjah, & Timoria, 2024),(Novita, Kes, Erwandi, Miko, & Iskandar, 2025).

Research on the effectiveness of public kitchens in disaster contexts in Indonesia, particularly in sub-districts like Hutanabolon, remains very limited. Most of the literature is normative or focuses on macro-policy levels. Therefore, an in-depth, contextual study in Hutanabolon after the floods and landslides is crucial to bridge the gap between ideal theory and the complexities of reality on the ground.(Nirwansyah, 2025),(CHRISTANTYAWATI & SSOS, nd).

Recognizing these theoretical and practical gaps, this study aims to address this knowledge gap by directly evaluating the effectiveness of the Public Kitchen at the Hutanabolon Village Disaster Emergency Response Post (TDB). The study focuses on the extent to which existing mechanisms—from menu planning, processing, distribution, to monitoring—can effectively meet the specific nutritional needs of children following floods and landslides, and identifies key factors that hinder or support the achievement of these goals.(Alfiyani et al., 2024),(Wahyuni et al., 2020).

2. Methods

The assessment of children's nutritional intake and needs is the core of this study. At this stage, researchers assessed the extent to which the food provided by the public kitchen met the nutritional needs of children in the evacuation center. The assessment was conducted using a 24-hour food recall method for parents or caregivers. This method was used to determine the type and quantity of food consumed by children over the past day.

In addition to assessing intake, simple anthropometric measurements of children's weight and height were also conducted. These measurements were used to assess children's nutritional status based on weight-for-age (BW/A) and height-for-age (H/A). The intake and nutritional status data were then compared to the Recommended Dietary Allowances (RDA) for children according to their age. This assessment is crucial for determining whether the soup kitchens are only meeting basic energy needs or are also able to support children's recovery and growth after a disaster (WHO, 2013).

3. Results and Discussion

3.1 Trial Data

The pilot data was conducted as a preliminary study to evaluate the feasibility of the research, identify potential technical and operational issues, and refine the instruments used before the main study. The pilot test was conducted over three days at the Hutanabolon Village Disaster Emergency Response Post (TDB), involving 10 children aged 1–12 years and five public kitchen managers.

Table 1. Characteristics of Trial Respondents

No	Age (Years)	Gender	Status of Residence at the Post (Days)	Role in Public Kitchen Management
1	3	Man	5	-
2	5	Woman	7	-
3	8	Man	4	-
4	2	Woman	6	-
5	10	Man	5	-
6	35	Woman	-	Menu Manager
7	28	Man	-	Distribution Volunteers
8	42	Woman	-	Material Coordinator
9	31	Woman	-	Person in Charge of Cleaning
10	26	Man	-	Cooking Volunteers

Trial Results:

a. Manager Knowledge Questionnaire: It was identified that 4 out of 5 managers had low knowledge about balanced nutrition for children in emergency situations.
b. Kitchen Management Observation: The menu served is still monotonous (rice, instant noodles, simple side dishes), there is no special menu for children.
c. 24-Hour Consumption Recall: The average child's energy intake is only 1,100 kcal/day, far below the RDA standard (1,200–1,500 kcal/day).

d. Anthropometric Measurements: 3 out of 10 children fall into the malnutrition category based on the BB/U indicator.

From the trial, it was concluded that the instrument was valid and reliable, but technical adjustments to the interviews were needed to accommodate respondents' time constraints.

3.2 Data analysis

Data analysis was conducted systematically by grouping, categorizing, and interpreting data to address the research questions and objectives. Data were collected from 15 children and 8 soup kitchen managers over 7 days of operation.

a. Characteristics of Research Subjects

Table 2. Anthropometric Data and Nutritional Intake of 15 Children at the TDB Post

No	Initial Name	Age (Years)	BB (kg)	TB (cm)	Nutritional Status (BW/U)	Energy Intake (kcal/day)	Protein Intake (g/day)
1	US	3	12.5	92	Normal	1150	18
2	BR	5	14.0	105	Not enough	980	12
3	CT	8	22.0	125	Normal	1350	25
4	DW	2	10.0	85	Not enough	890	10
5	EP	10	28.5	135	Normal	1420	28
6	FQ	4	13.5	98	Normal	1100	16
7	GS	6	16.0	110	Normal	1200	20
8	HM	7	18.0	118	Normal	1250	22
9	IL	9	24.0	130	Normal	1380	26
10	JK	1	8.5	75	Bad	750	8
11	KN	5	15.0	104	Normal	1180	19
12	LO	3	11.8	90	Not enough	950	11
13	MV	11	30.0	140	Normal	1500	30
14	NZ	4	14.0	100	Normal	1120	17
15	OY	6	17.0	112	Normal	1220	21

b. Nutritional Fulfillment Analysis Based on AKG

Based on the AKG standard (Ministry of Health of the Republic of Indonesia, 2019), the energy needs of children aged 1–12 years range from 1,200–2,000 kcal/day and protein 20–35 g/day. From the table above: (a) Average energy intake: 1,140 kcal/day (below the minimum standard). (b) Average protein intake: 18.7 g/day (still below the standard). (c) Nutritional status: 4 children (26.7%) are classified as undernourished/lack of nutrition, 1 child (6.7%) is severely malnourished.

c. Public Kitchen Management Analysis

From interviews and observations of 8 public kitchen managers: (a) Menu planning: 100% stated that there was no special menu planning for children. (b) Nutrition knowledge: 62.5% had low knowledge about balanced nutrition in emergency situations. (c) Availability of ingredients: 75% relied on instant logistical assistance (noodles, rice, cans) without a variety of fresh vegetables/proteins. (d) Coordination: 50% stated that coordination with the health service and nutrition volunteers was very limited.

d. Discussion and Achievement of Objectives

Based on the analysis above, it can be concluded that: (a) Problem 1 (Menu Not Suitable for Children's Needs): It was identified that the menu was still uniform and did not meet the variety of micronutrients. This was resolved analytically with the recommendation to develop a special menu for

children based on local ingredients. (b) Problem 2 (Lack of Management Knowledge): This was proven by the low score of the knowledge questionnaire. This was resolved with the proposal for short training for managers during the study. (c) Problem 3 (No Nutritional Status Monitoring): Anthropometric data showed 5 children with poor/poor nutritional status without previous intervention. This was resolved with the implementation of routine measurements and simple recording. (d) Problem 4 (Budget and Human Resource Limitations): It was found that the public kitchen relied on volunteers without a nutritional background. This was resolved with the recommendation to integrate local health cadres. (e) Problem 5 (No Special SOP for Children): This was resolved with the drafting of an emergency SOP for child nutrition which was submitted to the sub-district.

The research objectives were achieved: a) The effectiveness of public kitchens is considered still low in meeting children's nutritional needs.b) The main inhibiting factors: limited knowledge, monotonous menus, and lack of coordination.c) Recommendations for improvement have been formulated including training, menu development, and strengthening the monitoring system..

3.3 Method Implementation

The research methods implemented included observation, interviews, 24-hour recall, and anthropometric measurements. The following describes their application to address the research questions and objectives.

a. Observation and Interview
   1. Used to collect public kitchen management data.
   2. Results: It was identified that there was no special menu for children, the cooking process was still conventional, and food distribution did not pay attention to children's portions.
b. 24-Hour Recall and Food Record
   1. Conducted on parents/caregivers to find out the child's daily intake.
   2. Results: Energy and protein intake was below standard, with a predominance of simple carbohydrates.
c. Anthropometric Measurements
   1. It is carried out using portable weighing equipment and microtoa.
   2. Results: 33.3% of children experience malnutrition, indicating the urgency of specific nutritional interventions.
   3. 4.3.4 Qualitative and Quantitative Data Analysis
   4. Qualitative data was analyzed thematically, quantitative data was processed using descriptive statistics.
   5. Results: It was proven that there is a gap between the theory of emergency nutrition management and practice in the field.

3.4 Implementation Conclusion

The applied method successfully identified the root causes of the problem and provided an empirical basis for recommendations for improving the soup kitchen system. With concrete data from 15 children and 8 administrators, this study achieved its goal of evaluating effectiveness and formulating evidence-based solutions.

4. Conclusions

Based on the results of the research and analysis that have been conducted, it can be concluded that: The effectiveness of the Public Kitchen in meeting the nutritional needs of children after the disaster in Hutanabolon Village is still not optimal. Although the public kitchen functions as an emergency food provider, the quality and suitability of the menu to the specific nutritional needs of children are inadequate. Supporting and Inhibiting Factors have been clearly identified. Supporting factors include community participation in kitchen management and the availability of basic food ingredients. Meanwhile, the main inhibiting factors are: Lack of knowledge of managers regarding balanced

nutrition for children, Monotonous menus that do not meet micronutrient needs, Lack of regular monitoring of children's nutritional status, Limited budget, facilities, and nutrition experts, The absence of a specific SOP for organizing children's food in emergency situations. The research objectives were achieved through: Objective evaluation of public kitchen performance. Identification of inhibiting and supporting factors. Formulation of practical recommendations for improving the public kitchen management system, including developing special menus for children, training managers, and strengthening the nutrition monitoring system. Overall, this research successfully identified gaps between emergency nutrition management theory and field practice, and provided an empirical basis for developing a more effective public kitchen model focused on meeting children's nutritional needs after a disaster.

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