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Research Article

ANALYSIS OF DETERMINANTS OF WASTING INCIDENCE AMONG CHILDREN AGED 12–59 MONTHS IN THE WORKING AREA OF KAYU GADANG PUBLIC HEALTH CENTER IN 2025

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ABSTRACT

Background: Wasting is a condition of acute undernutrition where a toddler's weight is not appropriate for their height, or the z-score is below -2SD. This study aims to analyze the determinants of wasting among children aged 12–59 months in the working area of Kayu Gadang Public Health Center in 2025.
Methods: This research uses a mixed methods approach, which is a combination of quantitative and qualitative methods. The quantitative method applies a cross-sectional approach, while the qualitative method uses a case study approach. The strategy used is the Convergent Parallel Design, in which both quantitative and qualitative data are collected and analyzed simultaneously (in parallel). The sampling technique applied is proportional random sampling, with a total of 104 samples. Data analysis in this study includes multivariate analysis using the Backward LR test.
Results: The results show that energy intake (p-value 0.001), protein intake (p-value 0.001), carbohydrate intake (p-value 0.003), fat intake (p-value 0.005), infectious disease (p-value 0.647), mother's knowledge (p-value 0.001), completeness of immunization (p-value 0.004), and environmental sanitation (p-value 0.001) are statistically significantly associated with wasting among children aged 12–59 months. Family income (p-value 0.647), mother's education (p-value 0.070), and exclusive breastfeeding history (p-value 0.211) are not statistically significantly associated with wasting in this age group. Multivariate analysis showed that the most dominant factor associated with wasting was protein intake.
Conclusion: There is a significant relationship between macronutrient intake (energy, protein, carbohydrates, fat), infectious diseases, maternal knowledge, completeness of immunization, and environmental sanitation with the incidence of wasting. The most dominant factor is protein intake.

Keywords: Wasting, Toddlers, Mix Method, Nutrition, Determinants

INTRODUCTION

The nutritional state of the Indonesian people at this time is still very worrying, where Indonesia faces three burdens of nutritional problems, The three nutritional problems are overnutrition, undernutrition and micronutrient deficiency. Nutrition is the foundation for health and is an important part of growth and development, as it is related to health and intelligence.[1] Wasting is one of the leading causes of child death worldwide and it is estimated that around 400,000 child deaths each year are caused by Wasting. Wasting is an acute malnutrition condition where the weight of toddlers does not match the height or z score value of more than -2SD. Washing can result in impaired physical growth and intelligence of children.

Washing occurs due to rapid weight loss or failure to gain weight. Children wasting have a weakened immune system, a higher risk of pain and death than children with good nutrition.[2] . Based on the theoretical framework of the causes of nutritional problems (wastingSão Paulo ditentukan United Nations Children's Fund (UNICEF)Determine wasting is divided into three. Root of the problem wasting It is due to tradition, politics, economic development, food security and nutrition, poverty, education, purchasing power, access to food, information and health services. Then the indirect causes are the pattern of exclusive breastfeeding, the availability and consumption patterns of households, the provision of complementary foods for breast milk (MP-ASI), psychosocial, and sanitary hygiene. Meanwhile, the direct cause is infectious diseases and food consumption.[3]

2022 Indonesian Nutrition Status Survey (SSGI) prevalence data wasting 7,7 %.4 and increased in 2023 to 8.5%.[4] While for West Sumatra province in 2022 prevalence wasting 7,5 %.[5] and increased in 2023 to 9.3%.[4] South Coast Regency is the most extensive area in West Sumatra Province. In March 2023, the South Coast district faced a natural disaster in the form of flash floods, one of the worst affected areas of the disaster was in the working area of the Kayu Gadang health center. The more fundamental impact of this natural disaster is the emergence of health and nutrition problems in the disaster group due to the damage to health service facilities, the disconnection of food distribution lines, the destruction of clean water facilities and poor environmental sanitation.[5] In addition, nutritional problems that can arise are malnutrition in infants and toddlers, babies do not get breast milk because they are separated from their mothers, toddlers lack food intake, toddlers are affected by infectious diseases and cause a decrease in nutritional status.[5]

2022 and 2023 Indonesian Nutrition Status Survey Report South Pesisir Regency Ranks Top for Pravelensi wasting in the province of West Sumatra. Kayu Gadang Health Center is one of the health centers in South Pesisir Regency, precisely in Sutera District, Kayu Gadang Health Center ranks 3rd highest after the Pasar Kuok Health Center in South Pesisir Regency for pravelensi wasting. Prevalence wasting in the working area of the Kayu Gadang Health Center in 2022, which was 8.7%, in 2023, increased to 9.2%.[7] and the figure is still above the target Sustainable Development Goals (SDGs) in 2025 for prevalence wasting namely <5% and and in 2030 it will be 3%. [6]

Research conducted by Zhihui Li, et al in 2022 stated that there are 9 factors directly related to the incidence Wasting in toddlers, namely, food diversity scores; initiation of breastfeeding; vitamin A supplements; Food

Intake; infectious diseases in the last 2 weeks; oral rehydration therapy for children with diarrhea; search for treatment for suspected pneumonia; complete vaccination; and indoor pollution and 17 indirect factors associated with the occurrence Wasting in toddlers household wealth; maternal and paternal education; height and body mass index of mother and father; maternal autonomy for health care, movement, and money; water sources; sanitation facilities; fecal discharge; antenatal care; skilled midwives during childbirth; family planning needs; and the mother's marriage age.[7]

Macronutrient intake as one of the factors related to the incidence of Wasting in toddlers.[8] Infectious diseases are also a direct cause of their occurrence Wasting, Infectious diseases contribute to deficiencies in energy, protein, and other nutrients due to decreased appetite resulting in reduced food intake.[9] Apart from two direct factors that cause the incident Wasting There are several indirect factors that cause Wasting namely parenting which includes breastfeeding and MP ASI. Breastfeeding patterns affect the nutritional status of children, Feeding too early is associated with an increased risk of respiratory infections. This can be caused by the loss of immunity from non-exclusive breast milk consumption.[10]

Furthermore, the knowledge and educational history of parents, especially mothers, also background the way to take care of their toddlers, the level of parental education also determines the nutritional status of the child because education greatly affects a person to understand and receive information about nutrition. In addition, parental education also determines the economic condition of the household which ultimately affects family consumption. Income is one of the factors that determine the quality and quantity of food. Low family income is related to the level of consumption which will lead to the nutritional status of children. [11]

Immunization is very important for the immunity of toddlers. When a child's body is infected with a disease, often toddlers lose their appetite. This causes a decrease in nutrient intake in toddlers because of this refusal.[14] Environmental sanitation has an important role that is quite dominant in providing an environment that supports the health of children under five and their growth and development Environmental cleanliness plays an important role in the onset of diseases. The consequences of lack of hygiene will have an effect on children's nutrition.[2]

It is known that when a toddler suffers from wasting, it is certainly caused by several factors, so in this study the variables Macronutrient intake, infectious diseases, Family income, Mother's knowledge, Mother's education, Exclusive Breastfeeding History, Complete immunization, Environmental sanitation. were discussed further by conducting research using these variables.

The purpose of this study is to analyze the determinants of wasting incidence in toddlers aged 12-59 months in the working area of the Kayu Gadang Health Center in 2025.

MATERIAL AND METHODS

This research uses a mixed methods approach, which is a combination of quantitative and qualitative methods. For the quantitative method, cross sectional approaches are used, and for qualitative methods use the case study approach. The strategy that will be used is the Convergent Parallel Design strategy, where quantitative and qualitative data are collected and

analyzed simultaneously (parallel). Quantitative data is focused on taking data on wasting incidence, macronutrient intake, family income, maternal knowledge, maternal education, exclusive breastfeeding history, immunization completeness, and environmental sanitation. Qualitative data was used to complete the information (through interviews) of the respondents' answers that were studied through a questionnaire regarding the variables studied. The research was conducted in the working area of the Kayu Gadang health center with a sample of 104 mothers under five. Sampling technique using proportional random sampling

RESULTS

Wasting Incidence in Children Aged 12-59 Months

Table 1. Overview of Wasting Incidence in Children Aged 12-59 Months in the Working Area of the Kayu Gadang Health Center in 2025

Washing	Quantity (n)	Frequency (%)
Washing	41	39,4
Usual	63	60,6

Based on Tabe1, it shows that 41 people (39.4%) of children aged 12-59 months who experienced wasting. Meanwhile, children who are normal or do not experience wasting are 63 people (60.6%).

Table 2. Overview of Wasting Incidence Factors in Children Aged 12-59 Months in the Working Area of the Kayu Gadang Health Center in 2025

Variabel	Quantity (n)	Percentage (%)
Energy Intake		
Less (<95%)	88	84,6
Fair (≥95%)	16	15,4
Asupan Protein		
Less (<95%)	47	45,2
Fair (≥95%)	57	54,8
Carbohydrate Intake		
Less (<95%)	70	67,3
Fair (≥95%)	34	32,7
Fat Intake		
Less (<95%)	74	71,2
Fair (≥95%)	30	28,8
Infectious Diseases		
Ada	32	30,8
None	72	69,2
Family Income		
Less (≤ UMP IDR 2,811,449)	80	76,9
Sufficient (UMP > IDR 2,811,449)	24	23,1
Mother's Education		
Low (<High School/Equivalent)	43	41,3
High (≥High School/Equivalent)	61	58,7
Mother's Knowledge of *Wasting*		
Less (<75%)	54	51,9
Good (≥75%)	50	48,1
Exclusive Breastfeeding History		
No	12	11,5
Ya	92	88,5
Basic Immunization Completeness		
Incomplete	18	17,3
Complete	86	82,7
Environmental Sanitation		
Unhealthy	81	77,9
Healthy	23	22,1

Based on Table 2. it was found that most of the children were in the group of insufficient energy intake (84.6%), adequate protein intake (54.8%), insufficient carbohydrate intake (67.3%), insufficient fat intake (71.2%), no infectious diseases (69.2%), family income ≤ UMP Rp 2,811,449 (76.9%), higher education (58.7%), mother's knowledge about wasting who are deficient (51.9%), have a history of exclusive breastfeeding (88.5%), have complete basic immunizations (82.7%), and unhealthy environmental sanitation (79.9%)

Determinants of Wasting Incidence in Children Aged 12-59 Months

Table 3. The relationship between Independent Variable and Wasting Incidence in Children Aged 12-59 Months in the Working Area of the Kayu Gadang Health Center in 2025

Variabel	*Wasting*		Normal		Total	*p-value*	BY (95% CI)
	N	%	N	%			
Energy Intake							
Less (<95%)	39	44,3	49	55,7	88	0,034	5,57 (1,19 – 25,99)
Fair (≥95%)	2	12,5	14	87,5	16		Ref.
Asupan Protein							
Less (<95%)	31	66,0	16	34,0	47	<0.001	9,11 (3,66 – 22,65)
Fair (≥95%)	10	17,5	47	82,5	57		Ref.
Carbohydrate Intake							
Less (<95%)	35	50,0	35	50,0	70	0,003	4,67 (1,72 – 12,67)
Fair (≥95%)	6	17,6	28	82,4	34		Ref.
Fat Intake							
Less (<95%)	36	48,6	38	51,4	74	0,005	4,74 (1,64 – 13,71)
Fair (≥95%)	5	16,7	25	83,3	30		Ref.
Infectious Diseases							
Ada	25	78,1	7	21,9	32	0,001	12,5 (4,57 – 34,17)
None	16	22,2	56	77,8	72		Ref.
Family Income							
Less (≤ Rp 2.811.449)	33	41,3	47	58,8	80	0,647	1,40 (0,54 – 3,66)
Sufficient (> IDR 2,811,449)	8	33,3	16	66,7	24		Ref.
Mother's Education							
Low (<High School/Equivalent)	12	27,9	31	72,1	43	0,070	0,43 (0,19 – 0,98)
High (≥High School/Equivalent)	29	47,5	32	52,5	61		Ref.
Mother's Knowledge							
Less	33	61,1	21	38,9	54	0,001	8,25 (3,24 – 20,98)
Good	8	16,0	42	84,0	50		Ref.
Exclusive Breastfeeding History							
No	7	58,3	5	41,7	12	0,211	2,39 (0,70 – 8,12)
Ya	34	37,0	58	63,0	92		Ref.
Basic Immunization Completeness							
Incomplete	13	72,2	5	27,8	18	**0,004**	5,39 (1,75 – 16,60)

Variabel	*Wasting*		Normal		Total	*p-value*	BY (95% CI)
	N	%	N	%			
Complete Environmental Sanitation	28	32,6	58	67,4	86		Ref.
Unhealthy	39	48,1	42	51,9	81	**0,001**	9,75 (2,14 – 44,33)
Healthy	2	8,7	21	91,3	23		Ref.

Based on Table 3. shows that there is a relationship between Energy intake and wasting incidence (p-value=0.034), there is a relationship between protein intake and wasting incidence (p-value<0.001), there is a relationship between Carbohydrate intake and wasting incidence (p-value=0.003), there is a relationship between Fat intake and wasting incidence (p-value=0.005), there was a relationship between infectious diseases and wasting incidence (p-value=0.001), there was no relationship between family income and wasting incidence (p-value=0.647), there was no relationship between maternal education and wasting incidence (p-value=0.070), there was a relationship between maternal knowledge and wasting incidence (p-value=<0.001), no relationship between exclusive breastfeeding history and incidence wasting (p-value=0.211), there was a relationship between the completeness of basic immunization and the incidence of wasting (p-value=0.004), there was a relationship between environmental sanitation and the incidence of wasting (p-value=0.001).

Modeling of Determinants of Wasting Incidence in Children Aged 12-59 Months

Table 4. Final Multivariate Modeling of Determinants of Wasting Incidence in Children Aged 12-59 Months in the Working Area of the Kayu Gadang Health Center in 2025

Variabel	Coef. b	*p-value*	AOR (95% CI)
Protein intake			
Less (<95%)	3,726	<0.001	41,51 (6,91 – 249,56)
Fair (≥95%)			Ref.
Carbohydrate Intake			
Less (<95%)	1,844	0,025	6,32 (1,26 – 31,64)
Fair (≥95%)			Ref.
Infectious Diseases			
Ada	3,168	0,001	23,77 (3,52 – 160,63)
None			Ref.
Mother's Knowledge			
Less	3,036	0,001	20,82 (3,74 – 115,76)
Good			Ref.
Basic Immunization Completeness			
Incomplete	2,355	0,011	10,54 (1,73 – 64,17)
Complete			Ref.

R-Square=0.762; N=104

Based on Table 4, the most dominant variable related to wasting incidence is protein intake, which is indicated with the greatest OR value. Children with low protein intake were 41.51 times more likely to experience wasting than children with sufficient protein intake after controlling for variables of carbohydrate intake, infectious diseases, maternal knowledge, and complete basic immunization completeness (AOR=41.51 95% CI 6.91-249.56).

DISCUSSION

Macronutrient Intake of Energy

From the results of the research carried out, it was found that children who are in the group of low energy intake (84.6%), this result is higher when compared to Samnil's research (2025) in the city of Padang which shows lack of energy in children (31.8%). The results of this study stated that there was a significant relationship between energy intake and the incidence of wasting p-value (0.034) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This research is in line with research conducted by Nurlia Siti in 2021 stating that there is a significant relationship between energy intake and wasting incidence in toddlers in the working area of the Nambo Health Center, Kendari City. In addition, the research is also in line with the research put forward by Abeng, Ismail and Huriyati in 2014 that energy intake has a significant relationship with the incidence of wasting in toddlers in Tenggarong, Kutai Kartanegara, this is because energy is a nutritional need that must be met during the growth and development period of children.[12] It is not in line with Sugiatmi's (2022) research which states that there is no significant relationship between energy intake and the incidence of malnourishment in toddlers.[13]

Macronutrient Intake of Protein

From the results of the research conducted, it was found that children in the group of sufficient protein intake (54.8%), this result is lower when compared to the Samnil study (2025) in the city of Padang which showed sufficient protein aspan in children (77.3%).[14] Based on the research that has been conducted, it is found that there is a significant relationship between protein intake and the incidence of wasting p-value ($p<0.001$) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This is in line with research conducted by Zulviana Yesfi et al., there is a significant relationship between protein intake and prevalence Wasting in children. and other studies also state that toddlers who are deficient in protein have a percentage Wasting which is very high (85.7%) compared to toddlers who have sufficient protein intake (18.9%).[15] Research by Azrimaidaliza et al. (2020) also states that protein intake is a dominant factor in food which has a correlation with nutritional status based on body weight according to height. This study is contrary to the study on malnutrition (wasting) in infants in the working area of the Pontianak City Health Center conducted by Rochmawati et al. (2016), because no significant relationship was found between protein intake and the incidence of wasting (p=1,000).[16]

Macronutrient Intake of Carbohydrate

From the results of the research carried out, it was found that children who are in the group of low carbohydrate intake (67.3%), This is higher when compared to the research of Samnil (2025) in the city of Padang which showed a lack of carbohydrate aspan in children (18.2%). Based on the research that has been conducted, it is found that there is a significant relationship between

carbohydrate intake and the incidence of wasting p-value (0.003) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This is in line with research conducted by Ferlina Hena (2020) which states that toddlers who have a normal nutritional status are also considered normal.17 Therefore, the higher the carbohydrate intake, the better the nutritional status of toddlers. The results of this study are in line with research conducted by Intiyati et al (2024) which stated that there is a significant relationship between carbohydrate intake and incidence Wasting with p-value 0.025 (<0.05).[18] Another study from Nova Maria (2024) shows a relationship between carbohydrate intake and nutritional status of toddlers with p-value by 0.004 (<0.05).19 The results of this study are different from the study conducted by Rochmawati, Marlenywati, and Edi Waliyo in 2016, which concluded that there was no significant relationship between carbohydrate intake and wasting incidence in toddlers.[16]

Macronutrient Intake of Fat

From the results of the research carried out, it was found that children who were in the group of low fat intake in children (54.2%), this result was higher when compared to the research of Samnil (2025) in the city of Padang which showed a lack of fat in children (54.2%).[14] Based on the research that has been carried out, it is found that there is a significant relationship between fat intake and the incidence of wasting p-value (0.005) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This is in line with research conducted by Diniyyah and Nindiya in 2017, concluding that there is a significant relationship between fat intake and nutritional status Wasting in children.20 The results of this study are also in line with the research conducted by Maria Nova (2024) with the results that there is a relationship between fat intake and nutritional status with p-value 0,045.[19] This study is not in line with the research conducted in Semarang which shows that there is no relationship between fat intake and the nutritional status of toddlers.[21]

This research was explored more deeply revealing that mothers do not know the intake that suits the needs of their children, the nutrients needed for the growth and development of their children. So that mothers do not provide intake according to their children's needs, both in terms of quality and quantity.

Mothers only get education during the implementation of the class of toddlers, even that only by using the lecture method, without any educational media. Although health workers have provided technical education to improve maternal knowledge, maternal understanding remains at an alarming level. This gap arises due to various interrelated factors, ranging from inappropriate educational methods and media, to the absence of mechanisms to ensure that the information provided is truly understood.

To overcome these challenges, a more innovative and comprehensive educational approach is needed. The development of attractive visual educational media, such as posters or short videos, which contain material on consumption recommendations for toddlers such as increasing balanced nutritional intake, proper supplemental feeding, high calories and high protein consuming one egg per day, the goal can help convey information in a more digestible way. The use of digital platforms or social media also has the potential to expand the reach of information dissemination,

considering the increasing penetration of smartphones in society.

The capacity of health workers in communication needs to be continuously improved through special training. Standard educational materials must be packaged with simpler language Innovations in information delivery methods are also important to consider. This transformation in public health communication strategies must be carried out holistically, involving all relevant stakeholders. The Health Office, health centers, posyandu cadres, community leaders, and religious organizations need to work together to create a massive movement to increase parents' understanding of their children's nutritional status, including wasting.

Infectious Diseases

The results of the study showed that 30.8% of toddlers aged 12-59 months in the work area of the Kayu Gadang Health Center experienced infectious diseases. 16.3% experienced ISPA and 15.4% experienced diarrhea. This result is higher when compared to the prevalence rate of ISPA according to the 2023 Indonesian Health Survey (SKI) (4.8%), nationally but lower when compared to the prevalence of West Sumatra province (29.8%), and South Coast Regency (4.95%). For the prevalence of diarrhea in toddlers according to the 2023 Indonesian Health Survey (SKI) (7.4%) National, the 2022 Nutritional Status Survey (SSGI) (7.9%) West Sumatra.[4] Based on the research that has been carried out, it is found that there is a significant relationship between infectious diseases and the incidence of wasting p-value (0.001) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This study is in line with the research of Rahayu et al. (2018), toddlers who suffer from diarrhea have a six times greater risk of experiencing Wasting.[22] However, this is not in line with the research of Santi (2023) who states that there is no relationship between the history of ISPA and the incidence of wasting, p value = 0.950.[23] There is a mutual relationship between infectious diseases and Wasting. Children under five who experience Wasting more susceptible to infectious diseases due to their weak immune system.

This study was explored more deeply, mothers did not know the relationship between infectious diseases and children's nutritional status. So far, when children are sick, most mothers only focus on treatment, what drugs can speed up their child's recovery, without paying attention to intake. This is due to a lack of knowledge about nutrition when sick, an appetite disorder due to illness, or the assumption that medication is the main solution. When a child is sick in addition to nutritional medications, a balanced nutritious diet, especially those rich in vitamins and minerals, helps strengthen the immune system, speed healing, and restore energy. Although medications help to treat illness, a good dietary intake supports the effectiveness of medications and speeds recovery. Important Provide the mother with an understanding that food and medicines complement each other very important in the healing process. Drugs help to overcome the symptoms or causes of disease, while nutritious foods provide energy, repair body tissues, and strengthen the immune system.

To overcome this challenge, education is needed to increase knowledge and increase mothers' understanding of the importance of nutrition when children are sick, this can be done by means of counseling on routine activities during posyandu, health workers can convey information to mothers, in addition to providing medicine when

children are sick, nutritional fulfillment is also important, because when sick, the body needs nutrient-rich foods to help the immune system work more Optimal. Giving an example of the type of food and its source of nutrients that are good to increase immunity such as Protein Essential for the repair of body tissues and the production of antibodies, can be found in fish, chicken, eggs, milk, tofu, tempeh, nuts. Vitamin C can help fight infections can be found in citrus fruits and guava. Health workers can also explain that when children are sick, the child's appetite will decrease to keep the child's nutrition fulfilled, the mother can apply feeding with small portions but given as often as possible, such as once every two hours. Education must be provided consistently, in simple, relevant, and appropriate language so that the success of change, attitudes and behaviors can be increased

Family Income

From the results of the research conducted, 76.9% of respondents have a small income from UMP. This result is the same as the average per capita income of residents in South Peissir district which is still below the UMP, which is between IDR 1,800,000 – IDR 1,900,000 per month.[24] Based on the research that has been conducted, it is found that there is no significant relationship between family income and incidence wasting p-value (0.647) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. The results of this study are in line with a study conducted by Afifah (2019), which showed that there was no significant relationship between income and nutritional status of BB/TB in children.[25] However, it is not in line with Tuti's (2024) research showing that there is a real relationship between family income and the nutritional status of toddlers.[26]

This research is explored more deeply to reveal the problem that in fact children who have poor nutritional status do not always come from families with low incomes. Although families with low economies are more susceptible to nutritional problems, families with established economies can also have children who experience nutritional problems. Toddlers from families who have income often snack on stall food such as snacks, especially if the child goes to the stall with his father. One of the factors that cause nutritional problems is family and household factors.

The role of fathers in the practice of nutritional care for toddlers is one of the factors in the family that affects the nutritional status of their children. Fathers are figures in the family who can affect the health of their children. In many Indonesian households, fathers have a major role in making decisions about the house, including raising children. To reduce the inhibition of the growth and development of toddlers, fathers can play an active role in nurturing, maintaining and improving the health of their children. Involving fathers in childcare can improve the practice of providing emotional support to mothers and children, including financial assistance, counseling, and the purchase of nutritious food. Therefore, it is very important to involve the role of fathers in every educational provision for toddlers. So that fathers know something good and important for the growth and development of their children. Involving fathers in nutrition education can encourage a fairer division of responsibilities in the family related to the fulfillment of children's nutrition. Fathers who are actively involved will better understand the importance of balanced nutrition and be motivated to

contribute to the provision of healthy food for children.

Nutrition education involving fathers can increase fathers' knowledge and awareness about the importance of balanced nutrition, as well as how to provide the right food for children. Nutrition education programs involving both parents will be more successful in improving the nutritional status of children because household decisions are better if made together. Joint education can create a space for discussion between family members about food choices, diets, and healthy lifestyles. To overcome this challenge, in the future during the implementation of the toddler mother class program in order to be able to present fathers. The goal is to increase the involvement of fathers in parenting and the growth and development of children and fathers to become more aware of the importance of their involvement from an early age.

Mother's Education

From the results of the study conducted by 58.7% of mothers with higher education, this result is lower when compared to the percentage of mothers who are highly educated according to the 2023 Pesisir Selatan district gender profile data (83.61%).[27] Based on the research that has been carried out, it is found that there is no significant relationship between maternal education and the incidence of wasting p-value (0.070) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. Washing In toddlers, it often occurs in toddlers who have mothers with a high level of education, this is in line with research conducted by Amirah (2019) stating that mothers with good nutrition education and knowledge do not necessarily have children with normal nutritional status. In line with the research of Diva (2025), it shows a meaningful relationship between the level of education of mothers and the nutritional status of toddlers (p = 0.002).[28]

This research is explored more deeply to reveal the problem that mothers with low education do not always have children with nutritional problems. Although maternal education has an important role in fulfilling child nutrition, there are many other factors that also affect a child's nutritional status. Mothers with low education can still provide good nutrition for their children if they are supported by other factors such as a healthy environment, access to nutritious food, and good family support.

Mother's Knowledge

From the results of the study, it was found that 51.9% of mothers with less knowledge about Wasting, The results of this study are almost the same when compared to the research of syafyanti (2023) which shows that 60% of mothers have poor nutritional knowledge.[29] Based on the research that has been carried out, it is found that there is a significant relationship between maternal knowledge and incidence wasting p-value (0.001) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This is in line with research by Halimah et al. (2024), which shows a significant relationship between maternal knowledge and Wasting that happens to children.[30] but it is not in line with Evin's (2022) research which states that there is no relationship between maternal knowledge and incidence Wasting in toddlers.[31]

This research is explored more deeply to reveal the problem that mothers have not known what wasting is, the causes of wasting, and how to deal with wasting. My mother has only ever received nutrition education about stunting. So that when asked

what wasting is, there are mothers who answer that children are short, the same as stunting, malnourished children. Efforts to increase knowledge by providing health education. Health education in this case also includes nutritional knowledge about wasting and its prevention. Health education also seeks to encourage positive behavioral changes related to health. This can include nutritious food choices. Health and nutrition education can be provided through counseling in the community, such as at posyandu, health centers.

In the future, when there are counseling activities, information delivery, and classes for mothers of toddlers, health workers should not only explain stunting, but also explain other nutritional problems such as wasting because these two nutritional problems are interrelated, children with nutritional status wasting 3 times at risk of stunting, and vice versa, children with stunted nutritional status 1.5 times at risk of wasting. The method used can be such as Structured Counseling The material is arranged from basic to complex (e.g., starting from the introduction of wasting, causes, impacts, ways of prevention), using language that is easy to understand, including real examples from daily life. Then participatory education involves mothers in discussions, questions and answers, and case studies encourage mothers to share personal experiences about child feeding. Ask questions before and after the educational session to measure the improvement of knowledge, either orally or in writing. By providing comprehensive health education and nutritional knowledge, it is hoped that people can be more concerned and responsible for their own health, so that they can improve the overall quality of life

Exclusive Breastfeeding History

From the research conducted, 88.5% of respondents with an exclusive history of breastfeeding were obtained. The results of this study are higher when compared to the prevalence of exclusive breastfeeding nationally (68.6%), West Sumatra (74.1%), and South Coast (77%).[32] Based on the research that has been conducted, it was found that there is no significant relationship between the history of exclusive breastfeeding and the incidence of wasting p-value (0.211) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This study is consistent with research by Parra et al (2019), Nigatu et al (2019) which concluded that breastfeeding has no relationship with the incidence of breastfeeding Wasting in toddlers Exclusive breastfeeding is not the only major factor that affects nutritional status, as there are other significant factors that affect the nutritional status of toddlers.[33,34] However, in contrast to the research of Muntia (2025), there is a relationship between exclusive breastfeeding and the incidence of breastfeeding Wasting 6-24 months with p-value 0,041.[35]

This research is explored more deeply to reveal the problem that mothers who do not give exclusive breastfeeding to children are working mothers, mothers only give breast milk until the child is three months old or until the leave period is over, after that when the mother works, the child stays at home with the babysitter and is given formula milk, then after the mother returns to work the child is given breast milk again. Various obstacles can arise in efforts to exclusively breastfeed. One of the factors that can affect the failure of exclusive breastfeeding is the busy working mothers

Mothers' knowledge about breastfeeding has an impact on the time

when mothers give their breast milk and even to work. Knowledge will affect the mother's mindset and attitude about breastfeeding, which will affect the behavior of mothers in giving exclusive breastfeeding. Exclusive breastfeeding is often ruled out, especially for mothers who work outside the home. Some think that when mothers return to work after the period of leave exhausts the function of breast milk, it can be replaced with formula milk.

This happens because mothers do not know how to express breast milk so that it can be stocked and given to children when mothers work. Therefore, an effort is needed to support the success of breastfeeding for working mothers starting during pregnancy, after childbirth, and breastfeeding periods. This effort is also called lactation management. The implementation of lactation management requires cooperation from various parties ranging from mothers, fathers, families, to health workers. Lactation management education is provided by health workers who have received breastfeeding counseling training using various media, educational videos, and leaflets. Maternal and child health programs at the health center can also form classes for mothers such as breastfeeding preparation classes, lactation counseling. With the right education, it is hoped that mothers can provide exclusive breastfeeding to their babies properly and smoothly, as well as achieve breastfeeding success.

Basic Immunization Completeness

From the results of the study, 82.7% were obtained with complete immunization status. This result is lower when compared to national achievements (95.4%), higher when compared to West Sumatra (61.2%), and South Coast (60.9%).[36] Based on the research that has been conducted, it is found that there is a significant relationship between the completeness of basic immunization and the incidence of wasting p-value ($p<0.004$) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This is in line with research conducted by Filia et al, which states that children with an incomplete immunization history will be 4 times more at risk of developing Wasting.[37] It is not in line with research by Putri and Wahyono (2023) which states that immunization is not related to the incidence of wasting. [38]

This research is explored more deeply, revealing the problem that most respondents still do not understand the risk of children contracting diseases if they are not immunized, the attitude of parents who do not care and do not understand the risks that their children will receive in the future. This is due to the lack of educational meetings to provide parents with understanding of the importance of immunization. The more negative a parent's view of immunization, the greater the difficulty they will face in receiving immunizations for their children. Therefore, increasing understanding and forming a positive perception of immunization is important to encourage the participation of older people.

Changes in attitudes and better behaviors will encourage proactive actions, such as providing regular immunizations to children, finding reliable sources of information about vaccines, and inviting others to participate in immunization programs. On the other hand, a less supportive attitude towards immunization is usually characterized by doubts about the safety of vaccines, excessive concern about possible side effects, and rejection of the vaccination program from the government as happened in one of the villages in the work area of the Kayu Gadang Health Center,

even they use sharp weapons as a form of rejection of immunization. This attitude generally leads to avoidant behavior, for example by delaying or even refusing immunization.

To change negative attitudes towards immunization to be more positive, a comprehensive, multi-layered, and continuous approach is needed. The main step includes the provision of comprehensive education through individual counseling by competent health workers, who are able to respond to people's doubts with empathy and based on scientific evidence. The government must also strengthen honest and open information campaigns regarding vaccine safety, as well as involve religious and community leaders who have influence as agents of change in shaping behavior. Building a reliable adverse event monitoring system is also important to respond to public concerns, along with the implementation of supportive policies, such as requiring full immunization as a condition of accessing certain public services.

Environmental Sanitation

From the results of the study, 77.9% of respondents with unhealthy sanitation categories were obtained. This result is higher when compared to the percentage of unhealthy sanitation according to the 2023 National Indonesian Health Survey (SKI) (15.7%), West Sumatra (25.7%).[4] Based on the research that has been carried out, it is found that there is a significant relationship between environmental sanitation and the incidence of wasting p-value (0.001) in toddlers 12-59 in the working area of the Kayu Gadang Health Center. This is in line with research in Malawi finding that children from households who have easy access to drinking water are less likely to experience stunting and are underweight compared to children from households who have limited access to clean water because 80% of the well water in Malawi is not fit for consumption. However, it is inversely proportional to Santi's (2023) research which states that there is no relationship between the environment and the incidence of wasting.[23]

This research was explored more deeply reveals that there are still people who have not been able to eliminate the habit of not doing bathing, washing and toilet (MCK) activities in the river, these activities have been going on for generations, even though they have facilities at home. These habits that have been going on for generations are difficult to change. Basically, the community uses the river for various daily needs, including bathing, washing and toileting (MCK) activities. The behavior of the community in using the river as a place to bathe, wash and toilet (MCK) and various other activities does deserve attention. Environmental conditions that affect health, including nutrition, include clean water quality, home conditions, availability of toilets, and social environmental pollution. Sanitation and clean water are basic needs of the community.

Lack of knowledge about the adverse impact of toilet activities in rivers on health and the environment is also a significant factor. Therefore, intensive socialization and education efforts are needed from the government and related parties to increase public awareness so that they can change the habit of toilets in the river to be at home.

To overcome this challenge, there are several things that can be done by the environmental health program at the health center, such as providing education that contains material on explanations about the negative impact of toilets in rivers, such as the spread of diseases (diarrhea, cholera,

worms), water pollution, and environmental damage. Using media that is in accordance with the local culture, such as live counseling, traditional art performances, or short videos in regional languages, provides a real example by involving community leaders, religious leaders, or families who have successfully implemented MCK at home as role models or ambassadors of change. Create a pilot village with good sanitation to be an inspiration for other residents. Make and implement local regulations that encourage the use of latrines at home and prohibit defecation in rivers, involve health cadres, sanitarians, and village volunteers in routine assistance to ensure consistent behavior changes. Cooperation between village governments, health centers, NGOs, and the private sector is essential to support the provision of facilities and education in a sustainable manner. With a combination of education, adequate facilities, and social support, changing the behavior of toilets from the river to the house can be realized gradually but effectively.

Dominant Factors in Wasting Events

Based on the results of the multivariate analysis carried out, it was found that The most dominant variable is related to the occurrence Wasting is the protein intake indicated by the greatest OR value. Children with low protein intake were 41.51 times more likely to develop Wasting compared to children with adequate protein intake. Based on the results of the study Soedarsono & Sumarni, 2021 stated that there is a relationship between protein intake and the incidence of wasting. And research by Durray Shahwar A. Khan (2022) This study reviews various studies in developing countries that show that low protein intake is significantly related to the incidence of wasting in children under five.[39] Yasinta Betan, et al. (2022) also stated that protein intake significantly affects nutritional status in the community, including Wasting in it.[40]

Protein is needed for the growth and maintenance process of the body. Protein is a nutrient that the body needs to restore condition and repair damaged body tissues. The need for energy and protein in toddlers tends to be higher than in other age groups, because some food intake is needed to support the growth process, higher metabolic activity, and maintain optimal health. Therefore, toddlers need special attention regarding the adequacy of their protein intake.[8]

CONCLUSION

1. More than three-quarters of toddlers are in the low energy intake group More than half of the toddlers are in the group with sufficient protein intake, almost two-thirds of toddlers are in the low carbohydrate intake group, Three quarters of toddlers are in the low fat intake group, More than half of the toddlers have no infectious diseases, Three quarters of respondents with a family income ≤ UMP of IDR 2,811,449, more than half of mothers with higher education, half mothers with less knowledge about wasting, more than three-quarters of toddlers who have a history of exclusive breastfeeding, complete basic immunizations and unhealthy environmental sanitation.
2. There is a relationship between the intake of macro-energy nutrients, proteins, carbohydrates, fats, infectious diseases, maternal knowledge, complete basic immunizations, environmental sanitation and the incidence of wasting
3. There was no association between family income, maternal education, exclusive breastfeeding history and wasting

incidence

4. The most dominant factor associated with wasting incidence is protein intake
5. The information related to the Input Component is as follows: National health policy : Health Law Number 17 of 2023 concerning health contained in article 65 is adequate, but implementation at the local level is less than optimal; human resources: Health workers are sufficient in carrying out programs in the health center; Infrastructure: The existing educational media is still inadequate, so it needs to be updated.
6. The information related to Process Components is as follows: Implementation: There are still some natural obstacles to the implementation of wasting prevention efforts and programs; Cross-sectoral supervision and support: Supervision should be carried out regularly and continuously and cross-sectoral support is still ineffective; information related to the Output Component is as follows: The prevalence of wasting incidents is still high, so it is necessary to improve the program, both new policies and new innovations.

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