Literature Review: Factors Associated with Malnutrition in Children Younger than Five

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ABSTRACT

The lack of healthy food impacts developing countries, including Indonesia. A lack of healthy nutrition can limit a person's ability to reach their most significant potential. The factors influencing malnutrition must be known to reduce malnutrition in young children. This article analyzes the factors associated with malnutrition in children under five in Indonesia. This study uses the literature review method. The databases used to find articles that match the theme are taken from several search engines: Google Scholar and Garuda. The selection of articles is based on suitability with keywords, topics, and predetermined inclusion and exclusion criteria. The results of this study were ten factors related to malnutrition in toddlers, namely the Mother's knowledge, parenting style, history of exclusive breastfeeding, history of the disease, number of family members, child feeding patterns, family economic income status, and low birth weight (LBW).), Mother's education level, and protein-energy adequacy. The ten factors related to malnutrition in toddlers are obtained from valid scientific evidence using procedures. Thus, this literature review can be a scientific reference to be applied as an intervention for malnutrition in toddlers.

ARTICLE INFORMATION

Introduction

Nutrition is an essential aspect of growth and development, especially for toddlers. Because nutrition is closely related to health and brain intelligence, it is a factor in the quality of human resources (Hasdianah,2017). According to Fikawati (2017), diet can impact a baby's growth and development during the early stages of life or the first thousand days after birth. According to Y.A. Rias (2017), babies need the right vitamins to help them grow and develop their bodies, minds, and intelligence. Numerous nutritional issues can occur in babies whose diet is out of balance.

Malnutrition, also known as being underweight, is a significant health problem in developing nations. Undernutrition and malnutrition are both forms of malnutrition. Being underweight is a sign of malnutrition in children who do not differentiate between short-term and chronic malnutrition (Watson,2019). Lack of nutrients that the body needs causes malnutrition. Inadequate nutrition causes body disorders; most malnourished children are under five (Hasdianah,2017). In addition to malnutrition, Indonesia also faces other nutritional challenges.

Malnutrition in children under five in Indonesia has decreased from 17.8% in 2018 to 16.5% in 2019 (Watson,2019). The prevalence of being underweight tends to increase between 2016 and 2020. By 2023, according to UNICEF estimates, the number of children under the

age of five globally suffering from malnutrition will have increased by 15%. The pandemic has caused many families to lose money, which is why the rate of undernourishment among children under five has increased.

According to basic health research and nutritional status monitoring, malnutrition affected 4.3 percent of toddlers in 2016 and 4.6 percent in 2017. The amount of undernutrition in kids under five has extended. According to the Indonesian Health Report the Ministry of Health produced in 2018, 7 % of children under five were underweight (Watson,2019). In 2018, there was no increase in weight-height prevalence in children under five. The World Health Organization's goal is to increase body weight by 3% by 2030 for children under five years of age with targeted policies and programs

Economic factors are one of many that contribute to toddler malnutrition. Poverty or a bad economic situation is the leading cause of malnutrition. Education and family income are two socioeconomic factors. These factors can impact children's development because they interact with one another. According to Hermanto (2019), a measure of parents' knowledge of toddlers' nutritional status is their level of education.
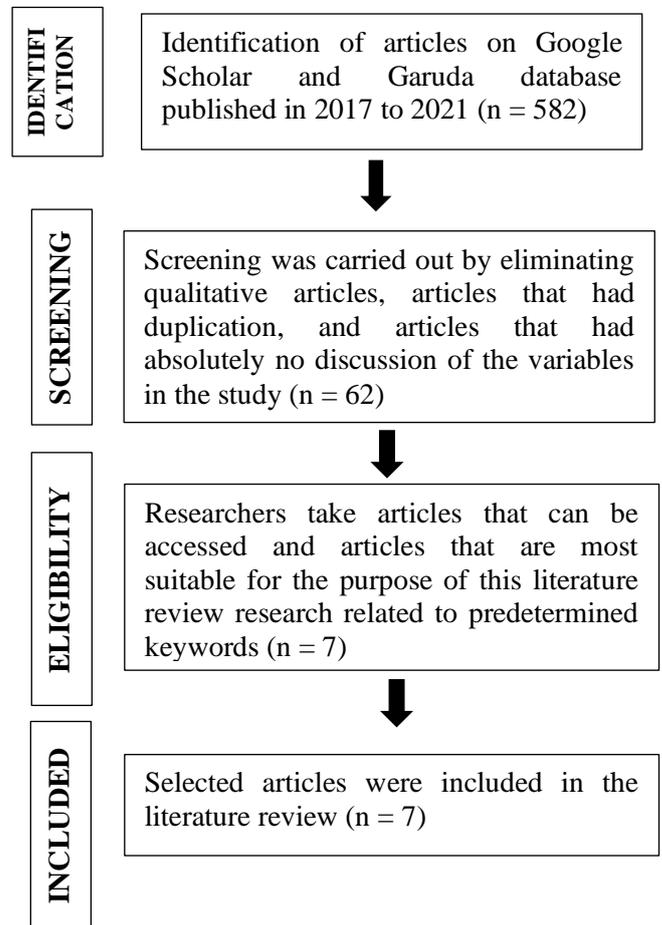
According to Lestari Nina Dwi's research, published in the Indonesia Journal of Nursing Practices under the title "Analysis of the Determinants of Malnutrition in Toddlers in Kulon Progo, Yogyakarta," factors related to undernutrition in toddlers included toddler age, a history of breastfeeding, food intake, Mother's perception of nutritional status, and the pattern of family caregivers related to nutrition. Compared to the data on the prevalence of children under five in the D.I.Y. Province, the findings revealed that malnutrition in the Kulon Progo region remained relatively high.

Various journals have published articles on factors comprehensively related to undernutrition. So, researchers are interested in using the literature review approach to describe nutrition factors in Indonesia's children under five.

Method

The literature review method underlies the research design. Systematically, the stages of the literature study are based on the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) and use several keywords such as Determinant Factors, Malnutrition, and Toddlers. Sources of scientific publication articles via Google Scholar and Garuda. The researcher's inclusion criteria are: 1) The research findings explain the presence of factors associated with under-five malnutrition. 2) Article search between 2017 and 2021 (5 Years). Exclusion criteria, namely: topic articles and results, did not explain adequately. By searching articles using keywords, seven met the inclusion, exclusion, and research objectives per this literature study. a PRISMA diagram used to see the article publication search.

IDENTIFICATION

Identification of articles on Google Scholar and Garuda database published in 2017 to 2021 (n = 582)

SCREENING

Screening was carried out by eliminating qualitative articles, articles that had duplication, and articles that had absolutely no discussion of the variables in the study (n = 62)

ELIGIBILITY

Researchers take articles that can be accessed and articles that are most suitable for the purpose of this literature review research related to predetermined keywords (n = 7)

INCLUDED

Selected articles were included in the literature review (n = 7)

Results

Based on a search with the Google Scholar search engine and Garuda, found seven articles that match the predetermined review criteria, as follows: 1) Factors of Undernutrition Status in Preschool-aged Children in the Work Area of the Guguk

Panjang Health Center, Bukittinggi City, written by Vina Novela and Listiani Kartika; 2) Determinants of Malnutrition Status in Toddlers at the Belawan Health Center in Medan City, written by Duma Jerriyah Harahap, Zuraidah Nasution, Aida Fitria; 3) Determinant Analysis of Toddler Nutrition Problems, Written By Silvia Ari Agustina And Melisa Putri Rahmadhena; 4) The Relationship Between Food Availability and Family Income with The Incidence of Lack Nutrition and Poor Nutrition in Under-Fives in The Work Area of Beruntu Raya Puskesmas written by Rabbina Rahmah, Syamsul Arifin, Lisda Hayatie; 5) Risk Factors of Underground Nutrition in Under-Fives (Case Study in The Working Area of The Bandarharjo Community Health Center, Semarang City) written by Billy Suyatman, Siti Fatimah, Dharminto; 6) Factors on The Relationship of Exclusive Breast Feeding With The Incidence of Lack Nutrition at The Syamtalira Aron Health Center, North Aceh District, written by Julia Fitriany, Noviana Zara, Willani Kocintia; 7) Analysis of Malnutritional Status Problems on Toddlers at South Teupah Health Center Simeulue, written by Wira Mutika, Darwin Syamsul.

1. Based on age, gender, and nutritional status, toddler characteristics.

Table 1.1 shows the age-based characteristics of toddlers. Table 1.2 depicts gender differences, and Table 1.3 depicts nutrition differences.

Table 1.1: Toddlers' Age-Related Characteristics

No	Article	Year	n
1	Novela,Vina, et.al	2019	92
2	Harapah, Duma Jerriyah, et.al	2019	48
3	Agustina, Silvia Ari, et.al	2020	97
4	Rahmah, Rabbani, et.al	2020	50
5	Suyatman, Billy, et.al	2017	146
6	Fitriany, Julia, et.al	2020	60
7	Mutika, Wira, et.al	2018	73
	Total Respondents		566

There were 566 respondents, and seven articles reviewed the age characteristics of toddlers, especially those between the ages of under five years

Table 1.2: Toddlers' Characteristics by Gender

No	Article		Gender			
	Author	Year	Male		Female	
			F	%	F	%
1	Novela,Vina, et.al	2019	58	63,04	34	37,96
2	Harapah, Duma Jerriyah, et.al	2019	22	45,83	26	54,17
3	Agustina, Silvia Ari, et.al	2020	48	49,48	49	50,52
4	Rahmah, Rabbani, et.al	2020	13	26,00	37	74,00
5	Suyatman, Billy, et.al	2017	93	63,26	53	36,74
6	Fitriany, Julia, et.al	2020	37	61,67	37	38,33
7	Mutika, Wira, et.al	2018	44	60,27	29	39,73
	The sum for each age group		315	55,65	251	44,35
	Total respondent (n)		566			

Table 1.2 shows that of the 566 complete populace, the qualities of the respondents in light of orientation were generally male, with 315 (55.65 %) respondents, and the least were female, with 251 (44.35 %) respondents.

Table 1.3: Toddlers' Nutritional Status-Based Characteristics

No	Article		Nutrient intake			
	Author	Year	Good/Sound		Poor	
			F	%	F	%
1	Novela,Vina, et.al	2019	52	56,52	40	43,48
2	Harapah, Duma Jerriyah, et.al	2019	24	50,00	24	50,00
3	Agustina, Silvia Ari, et.al	2020	69	71,10	28	28,90
4	Rahmah, Rabbani, et.al	2020	24	48,00	26	52,00
5	Suyatman, Billy, et.al	2017	73	50,00	73	50,00

| No | Article | | Nutrient intake | | | |
| | Author | Year | Good/Sound | | Poor | |
			F	%	F	%
6	Fitriany, Julia, et.al	2020	30	50,00	30	50,00
7	Mutika, Wira, et.al	2018	32	43,84	41	56,16
	The sum for each nutrient intake group		304	53,71	262	46,29
	Total respondent (n)		566			

According to table 1.3, 304 respondents (53.71%) had characteristics based on sound/good nutritional status, while 262 respondents (46.29%) had characteristics based on poor nutritional status.

2. Characteristics of research-method-based articles

Table 2. Articles' research methods characteristics

No	Article	Research method
1	Novela, Vina, et.al	Cross-sectional descriptive-analytic research
2	Harapah, Duma Jerriyah, et.al	Model using a case-control approach and a mixed method with a sequential explanatory approach
3	Agustina, Silvia Ari, et.al	Cross-sectional research design and correlation analysis
4	Rahmah, Rabbani, et.al	Analytic observational study with a cross-sectional approach to its design
5	Suyatman, Billy, et.al	Quantitative analytical research and the design was a case-control study.
6	Fitriany, Julia, et.al	Quantitative analytical research and the design was a case-control study.
7	Mutika, Wira, et.al	A mixed method with a sequential explanatory approach (quantitative and qualitative)

The following is a list of the seven articles' research methods, as shown in Table 2: Three articles use the cross-sectional method (Novela, Vina et al., Agustina, Silvia Ari, et al., Rahmah, Rabbani, et al.). These two articles use the case-control method (Suyatman, Billy, et al., and Fitriany, Julia, et al.), and two articles that use both methods (Harapah, Duma Jerriyah, et al. and Mutika, Wira, et al.).

3. Characteristics of the article based on the background of the problem

No	Article	Background of the problem
1	Novela, Vina, et.al	The Guguk Panjang Health Center's working area still contains cases of malnutrition in preschoolers. Data from the Bukittinggi City Health Office reported 800 severely malnourished toddlers in 2017. Health Center at Guguk Panjang in 2017 had data on 162 malnourished toddlers
2	Harapah, Duma Jerriyah, et.al	The Belawan Health Center found cases of malnutrition in toddlers to be higher than the prevalence and number of cases of undernutrition at other Health centers in Medan City in 2017 (the prevalence of underweight in toddlers was 0.5% with a total of 112 cases of malnutrition in toddlers) being a measure to dig deeper into the determinants of undernutrition status through the point of view of the research subject.
3	Agustina, Silvia Ari, et.al	In Indonesia, toddlers face a double nutritional burden (double burden). They are obese, on the one hand, but they also suffer from stunting, anemia, thinness, and malnutrition. Because nutritional issues are long-term, they cannot be compared to diseases. At the Tempel 1 Health Center in Sleman Yogyakarta, this study looked at the factors that influence toddlers with nutritional issues, such as socioeconomic status, education, complete immunization, breastfeeding history, low birth weight, and diseases.
4	Rahmah, Rabbani, et.al	Food consumption, infection status, family income, food availability, the provision of MP-ASI, parenting style, health services, sanitation, and environmental health have an impact on the nutritional issues that affect children under the age of five in Indonesia. Food availability

No	Article	Background of the problem
		and family income are two main health issues that persist today. The study's goal was to see if there was a connection between toddler malnutrition, food availability, and family income in the Lucky Raya Health Center's Working Area.
5	Suyatman, Billy, et.al	Toddlers suffering from cognitive and developmental delays are particularly vulnerable to malnutrition. In Semarang City, Bandarharjo Health Center had the highest prevalence of malnutrition in 2015, at 10.82 percent. This study aimed to examine the risk factors for malnutrition in toddlers in Semarang City's Bandarharjo Health Center Working Area.
6	Fitriany, Julia, et.al	Nutritional deficiencies and infectious diseases can have a direct impact on malnutrition. Breast milk meets the nutritional needs of babies, which is the perfect food for them. The antibodies found in breast milk help protect the child from various diseases. The study aimed to determine the relationship between exclusive breastfeeding and the incidence of malnutrition at the Syamtalira Aron Health Center in the North Aceh District in 2019.
7	Mutika, Wira, et.al	There have been multiple nutritional issues in Indonesia up to this point; on the one hand, There is still a lot to be done on nutrition issues, but a new issue has emerged, namely excessive nutrition. According to information gathered in 2017, toddler health data classifies malnutrition based on weight and age by as much as 17%. This study examines mother nutrition knowledge, exclusive breastfeeding history, family income, family size, and eating habits concerning toddler undernutrition at the Teupah Selatan Health Center.

4. The characteristics of the article based on research results

No	Article	Research results
1	Novela, Vina, et.al	The findings revealed that 54.3 percent of mothers had a high level of knowledge and that 52.2% had poor parenting skills. 63.0 percent of mothers did not exclusively breastfeed. After conducting statistical analyses, it was discovered that knowledge and malnutrition had a significant relationship (p-value 0.008). There is a connection between nurturing style and unhealthiness (p-value 0.001) and between a background marked by elite breastfeeding and hunger (p-value 0.021).
2	Harapah, Duma Jerriyah, et.al	Odds value: History of suffering from infection = 5.320, history of exclusive breastfeeding = 6.333, family income = 9.308, number of family members = 4.200, Mother's knowledge about malnutrition = 6.333, and eating habits = 7.286. While eating habits are a determining factor with Exp(B)=11,400.
3	Agustina, Silvia Ari, et.al	The economic status (OR:) that was obtained was statistically significant. 2.79;95% CI:0.004-0.93;p 0.05), and a history of breastfeeding exclusively (OR:0.3.69;95% CI:0.000-0.295;p 0.05), LBW history (OR:6.45;95% CI:0.00-0.06;p 0.05) and the disease's past (OR:3.97;95% CI:0, 01-0.66;p 0.05), and two other independent variables, the level of education and vaccination coverage, do not have a significant relationship. Nutritional issues can be explained or predicted by 88.4% using the logistic regression model's independent variables.
4	Rahmah, Rabbani, et.al	The results of the study using the Chi-Square test obtained the value of food availability p = 0.000 and family income p = 0.001, thus concluding that there is a relationship between food availability and also family income with the incidence of malnutrition and malnutrition in toddlers in the working area of

No	Article	Research results
		the Lucky Raya Health Center.
5	Suyatman, Billy, et.al	The consequence of this examination showed that the factors the gamble variables of unhealthiness in babies are a mother with fundamental schooling level (OR = 28.2;95% CI:6.4-123.6), and families with more than four members (OR = 12.1;95% CI: Poor eating habits (OR = 20.2; 7.3-103.9);95% CI:9.5-97.8), bad health habits (OR = 35;95% CI:11.4-107.3), inadequate energy (OR = 25.2;95% CI:5.7 – 110.7)," inadequacy of protein (OR = 35.7;95% CI:6,9 – 220.9).
6	Fitriany, Julia, et.al	The results showed that 36.7% of toddlers had exclusive breastfeeding, and 63.3% did not. There is a significant, moderate, negative relationship (α = 0.05, p-value = 0.001, r = −0.415) between exclusive breastfeeding and the incidence of malnutrition at the Syamtalira Aron Health Center, North Aceh District in 2019.
7	Mutika, Wira, et.al	Research shows that most moms' information about hunger 43 individuals (63%), a past filled with not giving elite breastfeeding 60 individuals (82.2%), low family pay 47 individuals (64.4%), the number of relatives upwards of 45 families (61.6%) and terrible dietary patterns upwards of 43 families (58.9%). The root causes of malnutrition in children under five are found through direct study through in-depth interviews. At the Teupah Selatan Health Center, Simeuleu Regency, there is no correlation between exclusive breastfeeding and toddler malnutrition status; however, there is a correlation between a mother's knowledge of nutrition, family income, number of family members, and eating habits.

Discussion

Characteristics of toddlers based on age from the seven articles reviewed amounted to 566 respondents. The age of toddlers 0-5 years as the Golden Age period is the most crucial period of growth and development at the beginning of a child's life. During the growth and development of children, attention needs to be paid to detect possible abnormalities so that during development and growth, children become optimally healthy (Hermanto,2019). Based on the gender of the children under five from the seven articles reviewed, the category of the most variable gender was male. The incidence of undernutrition in toddlers is more experienced by boys, and the risk opportunities for experiencing undernutrition are more significant than for girls. Boys need more calories during growth and development (Addawiyah,2020). Based on the nutritional status of children under five from the seven articles reviewed, the most variable category of nutritional status is children with good nutrition. Good nutritional status shows that children are in optimal nutritional status. Nutritional status affects the growth and development of toddlers.

The first of the ten variables related to malnutrition status is the Mother's knowledge of malnutrition in children. The first, second, and seventh articles show a significant relationship to malnutrition in toddlers. After sensing a particular object, knowing someone results in knowledge. Through learning, a person can have insight and knowledge to change previous behavior. Mothers' lack of nutrition knowledge significantly influences toddlers' nutritional status. Thus, it can cause nutritional problems for toddlers (Susanti,2018). The knowledge possessed by the Mother depends on the level of education obtained, both formal and informal. The level of education can influence a person's understanding of knowledge about nutrition and health status (Saparudin,2017).

The second factor is the Mother's upbringing. The first and fifth articles show a relationship with the incidence of malnutrition in toddlers. Toddler age depends on parents to meet basic needs, such as eating, cleaning, feeling safe and comfortable, and getting love. Lack of parenting in toddlers can occur because mothers often leave their children who are still toddlers due to busyness or activities outside

the home, so mothers cannot accompany their children when eating. The lack of a mother's role in preparing and accompanying children to eat can result in irregular meal times. Good parenting patterns depend on how parents practice habits in their children and teach them to eat healthy, nutritious, and timely food in children from a young age (Novela,2019).

A history of exclusively breastfeeding is the third factor. The first, third, and sixth articles correlate with toddler malnutrition rates. Toddlers with a history of exclusive breastfeeding have a lower risk of malnutrition than those without a non-exclusive breastfeeding history. Breast milk is an excellent source of nutrition due to its balanced composition and adaptation to toddlers' requirements. Until they are six months old, babies only eat breast milk. After six months, the baby begins receiving MPASI or solid food (Novela, 2019).

According to the research results of Sugito, M.W et al. in Fitriany (2020) states that the golden period of the first two years of a child's life can be achieved if it is supported by proper nutritional intake from birth. The WHO recommends providing exclusive breastfeeding for babies up to 6 months of age and continuing complementary feeding until the baby is two years old or older. Breastfed babies are not easily exposed to disease, which can affect their nutritional status.

The fourth factor is the history of the illness. The second and third articles show the relationship with the incidence of malnutrition in children under five. Infectious diseases that attack toddlers can directly affect their nutritional status of toddlers. Toddlers who experience infectious diseases can cause the toddler's body not to be able to absorb food properly, resulting in nutritional problems in toddlers (Ratufelan, 2018). A history of infectious disease is a condition where a person has suffered from an infectious disease. Infectious diseases can cause decreased appetite; Toddlers who experience it tend to experience weight loss due to increased body metabolism and decreased

appetite. Weight loss can result in malnutrition in the body (Cono,2020).

The fifth factor is the number of family members. The second, fifth, and seventh articles show a relationship with the incidence of malnutrition in toddlers. The number of family members is related to family expenditure in first meeting primary needs, namely, eating. The more children, the more income must increase, especially with birth spacing too close so that mothers cannot regulate their children's diet (Harahap,2019).

The sixth factor is the pattern of feeding. The second, fifth, and seventh articles show a relationship with the incidence of malnutrition in toddlers. Feeding pattern is a rule in determining the variety and quantity of food consumed each day for individuals, groups, or families that have different characteristics between families or groups. Toddler age eating patterns are a continuation of eating habits formed since infancy. Therefore, accustoming children to consuming foods that are varied and have sufficient nutrients must be started from the age of infants (Suyatman,2017).

The seventh factor is economic status and family income. The third, fourth, and seventh articles show a relationship with the incidence of malnutrition in toddlers. Fulfilling the nutritional needs of children who grow up in families with high and well-established economic status differs from those with moderate or low economic status (Agustina,2020). Improving the nutritional status of toddlers and the availability of food in the household should be a concern through maximizing the yield from gardens and rice fields to increase family income (Rahmah,2020). Income level also determines the type of food purchased with additional money. Limited family income also determines the quality of food served. Family income also determines the dishes served to the family daily, both the quality and the amount of food (Mustika,2018).

The eighth factor is the child's weight at birth (LBW). The third article shows a relationship with the incidence of malnutrition in toddlers. Babies with low birth weight tend to

experience nutritional problems compared to babies with average weight. Babies with LBW have limited immunity, allowing babies to be susceptible to infection. Babies with LBW generally have a digestive tract that does not function properly from a full-term baby, so the body cannot adequately absorb food intake. The growth and development of LBW babies can result in more significant malnutrition and poor nutritional status than in babies born with sufficient weight (Dewi,2015).

The Mother's level of education is the ninth variable. The connection between toddler malnutrition and incidence is demonstrated in the fifth article. Compared to mothers with secondary education levels, who typically have good nutritional status, mothers with low education levels will have an increased risk of having toddlers with poor nutritional status (Suyatman, 2017).

The amount of protein and energy in the diet is the tenth factor. The connection between toddler malnutrition and incidence is demonstrated in the fifth article. This study's findings are consistent with those of Lutviana and Budiono's 2017 study in Suyatman about the prevalence and causes of malnutrition in toddlers of fishing families in Bajomulyo Village, Juwana District, Pati Regency. In that study, it was found that there was a significant relationship a P-value of 0.001—between the level of energy and protein adequacy and toddlers' nutritional status.

Conclusion

Based on a review of seven articles, the characteristics of toddlers include age, gender, and nutritional status with a population of 566 respondents, the highest number of respondents being 147 people (Suyatman, Billy. et al.). The sex of most children under five was male, with a total of 315 (55.65%) people, and the most nutritional status of children under five was good nutrition, with some 304 (64.9%) people. After conducting a literature review on articles that match the predetermined criteria, ten variables become factors related to malnutrition in toddlers. That is, the Mother's knowledge, parenting style, history of exclusive breastfeeding, history of

illness, number of family members, child feeding patterns, family economic income status, low birth weight (LBW), Mother's education level, and energy-protein adequacy.

Acknowledgment

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