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## Factors Associated with Nutrition of 12-59 Months Toddlers



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### Abstract

Malnutrition is still a problem in developing countries, including Indonesia, which ranks 4th with the incidence of malnutrition is still high. Toddlers with malnutrition can continue to be malnourished, impaired physical and mental growth and even increase the risk of illness and death. The purpose of this study was to review journals related to factors of malnutrition of children aged 12-59 months in developing countries. The research design was a literature review using a systematic mapping study method. There were 602 articles obtained and the number of articles selected based on inclusion and exclusion criteria was 13 articles. Accredited and reputable article database from PubMed, DOAJ, Research Gate 1, and SINTA were then analyzed using the compare method. There were 16 factors related to undernutrition status in developing countries including the age of children more than 2 years, sex of male toddlers, low birth weight of children, not being given exclusive breastfeeding, inadequate nutritional intake, disease or infection, low maternal education, low fathers education, lack of knowledge of maternal nutrition, inappropriate eating parenting patterns, low family income or wealth index, rural areas, low maternal BMI, maternal age less than 20 years, non-routine ANC visits, access to drinking/clean water and poor sanitation. It was found that the dominant factor appeared and had a significant correlation, namely the age of toddlers over 2 years was more at risk of experiencing malnutrition and the factor of low maternal education would further increase the possibility of malnutrition in toddlers. The causes of undernutrition in children under five are very complex where there are many related factors, there are also dominant factors that can also be paid more attention to in order to prevent and minimize the incidence of malnutrition

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## INTRODUCTION

Malnutrition is a condition where every day and within a certain period of time a child's advice does not meet the needs that should be given to a child with bad advice, its impact can cause the child to have weak body strength so that it is vulnerable to the disease. (Septikasari, 2018). According to (Rahayu, et al 2018) Malnutrition problems can have a serious impact on development and growth will not be optimal or be delayed, easily ill children, motor and cognitive abilities are also low.

According to the World Health Organization (WHO) there are 3.5 million deaths in children under five which annually reach 25% of children under five, which occur in developing countries and are caused by nutritional problems (malnutrition). In low-income countries, one in 14 children died before the age of 5 (WHO, 2019)

Indonesia still has a high incidence of malnutrition in children under five so that it ranks 4th in the world (Sidiq, 2019). Basic Health Research in Indonesia has recorded the number of under-nutrition and malnutrition of children under five, which is 17.7 in 2018 (Ministry of Health RI, 2018).

The government in the 2015-2019 National Medium-Term Development Plan (RPJMN) has set a target to reduce the number of undernourished children under five (Windiarto *et al.*, 2018) while the percentage in 2019 is still 17.7% until it is not reached. Next for the 2024 target in line with public health policy and action plans for 2020-2024 bad news cases of 7%, that target will certainly require optimal efforts to achieve success (Pritasari, 2020).

According to Riskesdas, East Java Province, the number of under-fives with malnutrition and malnutrition is 16.8%, this number is still high (Riskesdas, 2018). The problem of undernutrition status described in the health profile of the City of Kediri there was a slight increase in the number in 2016 namely the number of cases of malnutrition as many as 148 toddlers, previously in 2015 the number of undernourished children under five was 137 (Fauzan, 2016)

According to research (Pratasis *et al.*, 2018) The nutritional status of children under five is directly influenced by the consumption of nutrients and indirectly influenced by several other factors that can influence the problem of undernutrition to date.

This is in line with research according to (Sukrillah et al, 2012) where nutritional problems are not only influenced by the consumption of

nutrients and individual health conditions but are also related to several other factors that are indirectly.

According to (Sudargo *et al.*, 2018) Nutritional problems can be caused by direct factors, indirect factors and can also be influenced by the causes and root causes of nutritional problems. by certain factors.

Based on the background, phenomena and data above, the researcher aims to conduct further research through a review of journals related to factors related to malnutrition in children aged 12-59 months in developing countries.

## METHODS

The research method used a literature review design that summarized some relevant literature according to the research theme using the Systematic Mapping Study method. The strategy of data collection sources was to formulate PEOS for journal searches, then create keywords to search the database for. The literature search was obtained from several sources through databases with good accreditation, namely PubMed, DOAJ, ResearchGate and, SINTA.

The research method used a literature review with a design of Systematic mapping study with a systematic literature review method using predetermined stages. The feasibility assessment was adjusted to the PEOS strategy and inclusion exclusion criteria that had been determined in the selection and selection of the journals.

*Review* in this research was carried out by outlining or explaining the results of journal literature reviews from various sources that had been collected starting from the results of the research so that conclusions could be drawn in accordance with the expected research objectives. This identification was done by using a literature review identification method using Compare. The researcher's step in conducting a review of the journals that had been collected was by describing the research journal by identifying the author, year of publication, research title, research method, the significance value of the research results in each research journal.

After identifying, the researcher examined the similarity of the research results, namely with malnutrition in the same toddler in each research journal, namely by examining the various factors that existed in each journal to see which factors had a correlation with undernutrition and which factors were most dominantly related with malnutrition in

children under five or which factors appear most often and are in every research journal.

Next was to see how much significance or how big the value of the correlation from the existing research results from each of the factors in the journal and how often certain factors appear in several journals that had been collected to find out which factor was the most dominant and to find out how much the value was the correlation with under-nutrition in children under five of the dominant factors, and summarize the results in the conclusion.

## RESULT

The articles that have been found and collected for this research are thirteen articles. The most widely used research design is the cross-sectional study design, while the others are case-control designs and analytical surveys.

Respondents in this study were all under-fives who were undernourished based on indicators of body weight compared to age (W/U) or under-fives with problems underweight or underweight because

toddlers with underweight were measured based on indicators of BW/U and indicated poor nutritional status. located in several areas of developing countries and poor countries including Indonesia, India, Ethiopia, Bangladesh, Nepal, and Ghana which until now these countries are still categorized as developing countries according to IMF data in 2018. The majority of respondents in the study amounted to more than 50 respondents, with the age included in the study in the range of 12-59 months, the age group in the study was 12-36 months. The gender of the respondents in the study, the majority of children under five were male with an average of more than half, namely (51.42%).

The results of the literature obtained were 9 articles discussing factors related to poor nutritional status from both internal and external factors, 3 articles discussing the prevalence or determinants of undernutrition status in toddlers, and 1 article discussing the epidemiology of malnutrition and its determinants in toddlers. The study characteristics used are presented in table 1.1.

**Table 1: Study Characteristics**

Category	N	%
<b>Publication Year</b>		
2020	4	30.8
2019	6	46.1
2018	1	7.7
2017	2	15.4
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Overview / Factor Characteristics</b>		
Mother's Education	9	20
Father's Education	2	4.4
Mother's knowledge	4	8.8
Parenting	1	2.2
Family income	8	17.7
Area of residence	1	2.2
Mother's BMI	4	8.8
Mother's age	2	4.4
ANC Kunjungan visit	1	2.2
Access to drinking/clean water and sanitation	2	4.4
Exclusive breastfeeding history	1	2.2
Illness/infection (diarrhea, anemia, fever, cough)	1	2.2
Nutrient intake (carbohydrates, protein)	1	2.2
Gender	3	6.6
Child's age	3	6.6
Child's birth weight	2	4.4
<b>Total</b>	<b>45</b>	<b>100</b>
<b>Research Design</b>		

Cross Sectional Study	9	69.2
Case Control	2	15.4
Analytical Survey	2	15.4
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Research Instruments</b>		
Questionnaire	4	30.8
Questionnaire and anthropometric measurements (Measurement of body weight only or weight and TB)	3	23
Primary data and secondary data	1	7.7
Anthropometric measurements	1	7.7
Secondary data (secondary data in the form of survey data / KMS data), anthropometric measurements and questionnaires	4	30.8
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Statistical Analysis &amp; Test</b>		
Univariate and bivariate analysis, Chi Square . test	4	30.8
Logistics Multinomial Regression Model Univariate analysis descriptive test, bivariate analysis chi square test, and multivariate analysis, logistic regression test.	1	7.7
Univariate and bivariate analysis, statistical test with Two-Sample Kolmogorov Smirnov . test	1	7.7
Analyzes were performed in STATA/IC version 15.0, Multiple Logistics Regression Test, Chi Square to assess the significant difference between groups	1	7.7
Bivariate and multivariate binary logistic regression	2	15.4
Binary logistic regression analysis	1	7.7
Ordinal logistic regression analysis	1	7.7
Multivariate logistic regression analysis	1	7.7
<b>Total</b>	<b>13</b>	<b>100</b>

## DISCUSSION

Malnutrition in children under five remains one of the major public health problems in many parts of the world where it is identified as the leading cause of death in children under five. Although malnutrition in children under five remains common throughout the world, it is most dominant in developing countries where the largest percentage is in Africa and Southeast Asia.(Talukder, 2017). The following is a description of internal factors and external factors related to the problem of undernutrition status or the problem of underweight in toddlers:

Nutritional intake is a direct factor that affects the fulfillment of nutritional needs in toddlers so that low food consumption can have an impact on the emergence of malnutrition problems.(Suzanna et al, 2017)stated that there was a significant correlation between energy intake and the nutritional status of children under five. Low food consumption can have an impact on the emergence of malnutrition problems where with low energy intake the child's immune system will decrease so that children are susceptible to infection.

Gender is related to the incidence of malnutrition in toddlers where boys will have a greater chance or possibility to experience problems with poor nutritional status or weight less than female toddlers due to the activities carried out by male toddlers tend to be more active so that their needs energy is also higher that must be met. Previous studies have shown that childhood morbidity is higher in boys than girls(Kassie & Workie, 2020).

The age most vulnerable to experiencing malnutrition problems is over the age of 24 months, if written in vulnerable is the age of 24-47 months and also 48-59 months(Tekile et al.2019 ). The age of the child is associated with the incidence of under-nutrition in children under five, with increasing age the risk of malnutrition is also greater, this can be due to the delay in the introduction of additional food to infants and the provision of food with low nutritional quality.

Exclusive breastfeeding is related with the incidence of malnutrition in toddlers, exclusive breastfeeding can reduce the risk of underweight because breast milk is the best food to meet the growth, development, physical and psychological

needs of babies. This is in line with the results of research conducted by Purba (2017) which shows that there is a significant correlation between exclusive breastfeeding and the nutritional status of toddlers. The same results were also carried out by Ngenget (2017) showing a significant correlation between exclusive breastfeeding and the nutritional status of toddlers.(Kurnia et al., 2019).

Low birth weight is associated with a higher likelihood of underweight children under five (Boah et al, 2019). Birth weight is related to the incidence of malnutrition in toddlers where those who are less are almost 2 times more likely to experience underweight when they are toddlers when compared to children who are born normal or large.

Disease or infection is an internal factor and is a direct factor related to the incidence of malnutrition in children under five. Disease or infection is related to the incidence of malnutrition in toddlers because disease can cause weight loss, this situation is caused by loss of appetite in people with infectious diseases to nutrient intake less than needed.

Mother's education with the incidence of malnutrition in toddlers, high education facilitates the acceptance of broader insights about nutrition, is easy to accept changes in knowledge, while low education can be a limitation in understanding the nutritional needs of toddlers and slow in dealing with child nutrition problems. In line with previous research that mother's education can affect the quality and amount of food given to children.(Suzanna et al, 2017). Mother's education is one of the factors to improve the nutritional status of toddlers this is due to the very important role of mothers in terms of food distribution in the family. Low maternal education will affect behavior in food selection and food supply (Triyanti and Hartriyanti, 2012).

Relating to nutrition in toddlers Fathers with formal education will be better informed about proper child feeding and hygiene practices, which contribute positively to preventing childhood malnutrition (Kassie & Workie, 2020). Father's education is related to the incidence of malnutrition in toddlers because fathers with higher education have a significant contribution to family income and the choice of healthy food for their families.

Family income is related to the incidence of malnutrition in children under five, with a sufficient level of income it will increase the availability of food both in terms of quality and quantity better in the household when compared to the level of less

income. Supported by previous research, low family income will determine the dishes served by the family, this condition is because with a sufficient level of income it will increase the availability of food in the household when compared to a low income level.(Kurnia et al., 2019).

Parenting patterns are related to the incidence of malnutrition in toddlers, if the parenting pattern in the family is good, of course, the level of food consumption of children will also get better and will ultimately affect the nutritional status of children, but must be supported by knowledge and education of parents, while those who are not good tend to suffer from malnutrition. nutrition because parents pay less attention to children's food intake

Knowledge of nutrition is related to the incidence of malnutrition in toddlers, sufficient knowledge so that everything related to food, starting from preparation, processing to giving food to children can be done better than mothers who have less knowledge of nutrition. The results of the same study conducted by Selvera (2017) knowledge of malnutrition is 65% thus there is a significant correlation between knowledge of nutrition and malnutrition in toddlers(Kurnia et al., 2019).

Maternal age is related to the incidence of malnutrition in children under five, this is related to the age of delaying the first pregnancy, namely mothers who delay having children before the age of 20 years will guarantee safer pregnancies and births and reduce the risk of babies being born with low weight. This is in accordance with previous research which stated that compared to children born before the mother was 20 years old, mothers aged 20-34 years were less likely to experience malnutrition.(Kassie & Workie, 2020)

Women in the normal and overweight BMI categories are less likely to have underweight children (Boah et al, 2019). Maternal BMI is related to the incidence of malnutrition in children under five, maternal nutrition, especially during pregnancy is also an important determinant of malnutrition in children

Mothers who receive antenatal care services during pregnancy have a lower probability of remaining in the child's poor nutritional status because the mother visits the ANC to find out how the fetus is. Research supported(Talukder, 2017) that mothers who received antenatal care services during pregnancy had a lower probability of remaining in the child's poor nutritional status, compared to mothers who did not receive services.

Access to clean drinking water is associated with the incidence of malnutrition in toddlers because clean and safe drinking water can prevent toddlers from experiencing various diseases. According to research (Rahmawati et al., 2019) found that, safe sanitation will reduce the 16% chance of under-fives having malnutrition and 7% chance of under-fives having malnutrition. Although not significantly, children under five who live in urban areas will reduce the likelihood of having malnutrition because access to health services in urban areas is more complete and adequate. According to research (Rahmawati et al., 2019) Toddlers living in urban areas will 14% reduce the likelihood of under-fives experiencing malnutrition compared to toddlers living in rural areas

Researchers have analyzed 16 related to undernutrition status in developing countries after analyzing and juxtaposing various research results from several articles in several developing countries. which is an internal factor where the higher the age of the child will have a greater risk of malnutrition problems related to the increasing nutritional needs to fulfill their needs where the age most vulnerable to experiencing malnutrition problems is over the age of 24 months. Thus, according to the researcher's assumption, the child's age is the most dominant internal factor that appears and has a significant correlation to the incidence of malnutrition in toddlers but is not a direct factor and the only one that influences it but also through the intake of nutrients consumed because based on research journals it is stated that the higher At the age of toddlers, more and more nutritional needs must be met.

In external factors, maternal education, which is an external factor, is the dominant factor, this can happen because most of the developing countries in the studies that have been analyzed still have problems, namely low education which triggers the emergence of various other problems including malnutrition. It is widely known that socioeconomic status is one of the important determinants of children's welfare and health where education is also a factor that can support economic status. The lower the socioeconomic status, the higher the risk of malnutrition (Murarkar et al., 2020). According to the assumption that education is important in determining the nutrition consumed by toddlers, especially a mother who has an important role in matters relating to nutrition in the family where the problems currently being experienced in developing

countries are still low levels of education, including in Indonesia, education for women is still lower than for men. -man. According to the national profile of Indonesian women, the female population aged 15 years and over still has a low average length of schooling, namely the average length of schooling is only about 8.17 years, which has not reached the target that should have an average education of at least 9 years. (Hakiki, 2018)

## CONCLUSION

Based on the results of the identification and analysis of the 13 journals that had been carried out and the discussion that had been described in the previous chapter, it could be concluded that. There were 16 factors related to under-nutrition in children under five in developing countries, both internal and external, including the age of children over 2 years old, the gender of the toddler being male, low birth weight, not being given exclusive breastfeeding, inadequate nutritional intake. , disease or infection in children which was an internal factor related to the problem of poor nutritional status in toddlers, then from external factors were low maternal education, low father education, lack of knowledge of maternal nutrition, improper eating parenting, family income or low wealth index , rural areas, low maternal BMI, maternal age less than 20 years, no routine ANC visits, access to drinking/clean water and poor sanitation. The most dominant factor related to malnutrition was the age of the child which was an internal factor, namely children aged over 2 years were more at risk of experiencing malnutrition and maternal education which was an external factor where high maternal education reduced the risk of toddlers experiencing malnutrition.

It could be shown that there were many factors related to the problem of poor nutritional status or the problem of underweight in children under five. For further researchers, the results of this study could be used as material or a source of research data to be used and further research conducted based on other factors and the dominant factor, namely the age of the child and mother's education in this study could be further explored, different variables and also the selection of different places or wider and more varied coverage of the selection of continents such as developing countries in the Americas and Europe, and Australia.

## SUGGESTION

For further researchers, the results of this study can be used as material or a source of research data

to be used and further research is carried out based on other factors and the dominant factor, namely the age of the child and mother's education in this study can be further explored, different variables and also the selection of different places or wider and more varied coverage of the selection of continents such as developing countries in the Americas and Europe, and Australia so that the selected countries will be better and more complete that can be compared.

For midwifery, this research can be used as a reference for health workers, especially midwives, to find out the description of the existing factors so as to increase cooperation in efforts to deal with malnutrition, especially promotive and preventive efforts in order to improve the nutritional status of children under five who are better and optimally through an approach to the community to pay attention to nutrition. toddlers, especially in accordance with their age and efforts to improve the nutritional health of toddlers through formal and non-formal education.

For the Community, The public can better understand and be aware of the many related factors, so it is very important to pay attention to toddler nutrition according to the age of the toddler and continue to strive to improve maternal education, both formal and informal, to improve maternal nutrition knowledge, this can be done by collaborating with health workers to utilize better health service facilities so that these factors can be detected early, controlled and repaired and it is hoped that the impact of malnutrition on children under five can also be minimized.

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