

## The Relationship Of Infectious Diseases To The Nutritional Status Of Toddlers During The Covid-19 Pandemic

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### ABSTRACT

**Background:** The COVID-19 pandemic has had a significant impact on the health system and the economy. Children under the age of 5 are very vulnerable to infectious diseases such as malaria, pneumonia, diarrhea, HIV and tuberculosis. The results of the 2018 Basic health research in Indonesia that the prevalence of underweight/bad nutrition problems was 17.7%, and stunting reached 30.8%.

**Methods:** This type of research is an analytic study and the design of this research is cross sectional. The sampling technique in this study used simple random sampling with inclusion criteria in this study were children aged 0-60 months who visited at the Magelang Community health center complete nutritional status data recorded, namely weight, age, medical diagnosis in the patient's medical record. The sample size is 220 determined by the slovin formula.

**Result:** The majority of respondents are children under five with a diagnosis of infectious lung disease of 179 (81.4%). The nutritional status of the majority of respondents are toddlers with good nutritional status of 164 (74.5%). The results of the analysis showed that there was a relationship between pulmonary infection and nutritional status of children under five at the Magelang Community health center, with a Z value of 11,432a with a significance value of 0.003 (< 0.05).

**Conclusion:** There is a relationship between infection diseases and nutritional status of children under five at the Magelang Community health center. It is important for mothers to ensure that children are raised with good parenting and nutrition patterns, implement health protocols so that children are protected from infectious diseases that will have an impact on poor nutritional status..

Keywords: Infectious disease; nutritional status; toddlers

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**Background.** In developing countries such as Indonesia, infectious diseases and nutritional intake are the main factors that affect nutritional status, especially in children under 5 years old (toddlers). Infectious diseases are one of the factors that affect changes in nutritional status. Infectious diseases occur because of the interaction between the disease agent, the host, and the environment. Many diseases reduce nutritional status, but on the other hand, low nutritional status is also known to make individuals more susceptible to certain diseases and more serious diseases (Schneider, 2021).

The COVID-19 pandemic has had a significant impact on the health system and the economy. WHO has declared COVID-19 a public health emergency in light of the increasing global incidence of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Malnutrition in children, including underweight, is expected to increase as a result of sudden declines in household income, food insecurity and disruption of the health care system (Sharika, 2022). UNICEF stated that there were 37 deaths of children under 5 years of age out of 1,000 births in 2020.

The data from Pusdatin showed that 302 babies died with positive swab/PCR results (UNICEF, 2020).

The results of the 2018 Basic health research in Indonesia, the prevalence of underweight/bad nutrition problems was 17.7%, and stunting reached 30.8%. This figure shows that public health problems are in the moderate level category for nutritional problems with the weight/age index being in the 20-29% range, while short/very short status with the body length/age index are in the high level category because they are in the 30-39 range. % (Indonesian Health Profile, 2019). In Central Java alone, the prevalence of malnutrition is 3.1% and malnutrition is 13.7%. Nutritional status indicators based on the weight/age index provide an indication of general nutritional problems. This indicator does not provide an indication of chronic or acute nutritional problems because body weight is positively correlated with age and height. Low weight/age indicators can be caused by being short (chronic nutritional problems) or suffering from diarrhea or other infectious diseases (acute nutritional problems) (Par'i, 2017). The COVID-19 pandemic has had a significant impact on the health system and the economy. Malnutrition in children, including underweight, is expected to increase as a result of sudden declines in household income, food insecurity and disruption of the health care system (Sharika, 2022).

Infectious diseases that often occur in children under five include acute respiratory infections or ARI. The prevalence of ARI under five in Indonesia is 7.8%, while in Central Java it is 9.7% (Riskasdas 2018), the prevalence of pneumonia in toddlers is 2.1%, while in Central Java it is 2.1%. The prevalence of pulmonary TB in Indonesia based on a doctor's diagnosis history according to the characteristics of age <1 year is 0.1%, age 1-4 years is 0.3%.

According to research by Carolin et al (2020), under-nutrition status in toddlers occurs because toddlers have suffered from ARI (Acute Respiratory Infection) and diarrhea that arise due to unfavorable environmental conditions and poor food intake. The nutritional status of children under five can be disturbed due to infectious diseases. Infectious diseases make toddlers do not have a good appetite. Food that is contaminated by germs can interfere with the absorption of nutrients. Wahyu et al, (2020).Based on this background,

the authors are interested in conducting research on "The relationship between the nutritional status of children under five and respiratory tract infections during the COVID-19 pandemic at the Magelang Community health center".

**Methods.** This type of research is analytic research with cross sectional design. This research was conducted in April - May 2022 at Balkesmas Magelang Region. The sampling technique in this study used simple simple random sampling with the help of Microsoft Excel, with the inclusion criteria in this study were children aged 0-60 months who visited Magelang community health centre with complete nutritional status data recorded in the patient's medical record. The sample size is determined by the slovin's formula, the results are 220. Analysis with the chi square correlation test with a significance level of = 0.005.

### Result and discussion

Table 1. Characteristics of infections diseases in toddlers

respiratory tract infections	N	%
respiratory tract infections	179	81.4
Non respiratory tract infections	41	18,6

Table 2. Distribution of the frequency of respiratory tract infection disease categories among under-five respondents

respiratory tract infections	N	%
TBC	53	29.6
Bronchitis	25	14.0
Pneumonia	20	11.2
Acute Respiratory Infekction	81	45.3

Table 3. Distribution of the frequency of the category of non-respiratory tract infections in under-five respondents

non-respiratory tract infections	N	%
Allergic bronchitis	38	92.7
asthma	3	7,3

Table 4. Characteristics of the nutritional status of children under five based on the weight of the respondents

nutritional status	N	%
<i>severely underweight</i>	16	7,3
<i>underweight</i>	10	18,2
<i>normal</i>	164	74,5

Table 5. Analyzing the relationship between the nutritional status of children under five and lung infections in children under five

Category	nutritional status			Total
	severely nderweight	Under weight	Normal	
respiratory tract infections	16 (7,3%)	38 (17,3%)	125 (56,8%)	179 (81,4%)
non-respiratory tract infections	0 (0,0%)	2 (0,9%)	39 (17,7%)	41 (18,6%)
Total	16 (7,3%)	40 (18,2%)	164 (74,5%)	220 (100%)

Table 6. The results of the chi square test of the relationship between infectious diseases and the nutritional status of children under five.

Indicator	Value
P value	0.007
Z Value	11.432 <sup>a</sup>

The COVID-19 pandemic causes the world to face new challenges in the health system that require special attention to overcome them. Many countries are diverting health services to handle high COVID-19 cases, adding to the burden on the existing health system. In Indonesia, health services for children, pregnant women and the elderly as a group of people who are at high risk of contracting Covid 19. This is in accordance with Melyani's research (2021) that poverty is the dominant factor that has an impact on causing abnormal nutritional status in toddlers due to the inability to provide nutritious food so that nutritional fulfillment is not fulfilled.

The results of this research showed that the majority of respondents who visited the child patient at at the Magelang community health center were toddlers with a diagnosis of acute respiratory tract infection (ARI). This is in line with the research by Virgo (2022) which showed that most of the toddlers experienced frequent ARI occurrences, namely 59 toddlers (62.8%). The results of cross tabulation between both respiratory tract infections and non-respiratory tract infections indicate that the majority of respondents have good nutritional status. This is in accordance with Puspitasari (2021) which states that toddlers suffering from infectious diseases have normal nutritional status. This can happen because the pain experienced is not prolonged and the immune system is stable. In line with the research of

Wahyu et al, (2020), toddlers who have good nutritional status have suffered from infectious diseases. This can happen due to good parenting and food availability. Toddlers have a good diet so that even though they have suffered from infectious diseases, their nutritional status remains normal

The test results show that there is a relationship between pulmonary infectious disease and the nutritional status of children under five at at the Magelang community health center. These lung infectious diseases include tuberculosis, ARI, pneumonia, bronchopneumonia, bronchitis. This is in accordance with Syarif's (2021) research which shows that there is a significant relationship between a history of infectious disease and the nutritional status of children under five. Based on the results of Syarif's research, it showed that respondents who had a history of infectious diseases and were hospitalized 3-4 times could cause malnutrition in toddlers as many as 37 people (68.4%). The results of Elisabeth's research (2021) also prove that a history of infectious diseases such as upper respiratory tract infection, diarrhea, worms, dengue hemorrhagic fever is still the cause of nutritional status problems in toddlers, decreased appetite in children due to discomfort they experience, so that nutrient input is reduced even though children need nutrients more, especially to replace body tissue damaged by disease germs.

Frequent and prolonged childhood illness can cause loss of appetite, absorption, metabolic disorders, and behavioral changes, which in turn can affect the nutritional status of a child. On the other hand, poor nutritional status can predispose children to illness or prolong the duration of recovery. The incidence of infection will directly affect the metabolism of nutrients in the body including inhibiting the absorption of nutrients, then the incidence of infection in children will affect the child's appetite to be less so that both of these things will have an impact on the nutritional status of children (Millward, 2017).

**Conclusion and suggestion.** Based on the results of data analysis and discussion above, it can be concluded that there is a relationship between pulmonary infection and nutritional status toddlers at the Magelang community health center. It is important to ensure that children are raised with good parenting and nutrition patterns, as well as

maintaining a healthy environment so that children are protected from infectious diseases that will have an impact on poor nutritional status. Parents are expected to further increase nutritional knowledge in order to achieve good nutritional status of toddlers, and always monitor the nutritional status of toddlers carefully.

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