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The Connection between Low Birth Weight and Knowledge Level Regarding the Incidence of Stunted in Kedunglumpang Village and Dukuh Mojo Village

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ABSTRACT

Stunted It refers to a situation where a child's height or body length is below -2 standard deviations (SD) referencing the WHO growth and development standards, which arises from lack of inadequate nutritional intake. The main focus of this investigation is to investigate the research investigates the association between knowledge and prevelance rates of stunted in Kedunglumpang Village and Dukuh Mojo Village. This research employs a quantitative approach using an employing a case-control methodology. The study subject consists of children aged 2 – 5 years who lived in Kedunglumpang Village and Dukuh Mojo Village. This study involved 100 samples with 53 case samples and 47 control samples obtained using consecutive sampling the method employed utilized a questionnaire as the primary instrument from previous research. The methodological analysis method the statistical significance was assessed using chi-square. The findings indicate the analysis of statistical data yielded a probability value of 0.028, that less than α (0.05), indicating a statistically significant result, indicating a meaningful association between birth weight as well as the impact on the risk related to stunted. Similarly, the outcomes of the quantitative assessment test for the level of awareness showed a p-value of 0.009, meaning also below the threshold of α (0.05), indicating a significant correlational analysis knowledge level and the incidence of stunted. The odds ratio (OR) for the level of knowledge, Results indicate statistical significance at the 95% confidence level, is 4.141. This suggests that the case the group is 4.141 results suggest an increased risk stunted relative to the control group

Introduction

Indonesian faces serious problems in toddlers, namely nutritional problems, one of which is stunted. Stunted in toddlers occurs mostly at the age stage of 24 - 59 months (Rachmi, Agho, Li, &Baur, 2016). The issue of short stature in toddlers highlights chronic nutritional problems, which are influenced by factors such as the condition of the mother or prospective mother, the fetal stage, infancy, and toddlerhood, including illnesses experienced during infancy (Hutabarat, Irwanto, and Sulistiawati, 2021). Addressing stunting is a key target within the Sustainable Development Goals (SDGs). Indonesia is a significant contributor to countries committed to achieving the SDGs (Nirmalasari, 2020). Stunted can be caused by two factors, Direct factors include nutritional intake and infectious diseases, while indirect factors encompass the lack of maternal knowledge regarding health and nutrition, parental care in feeding, parental education, and socioeconomics. According to Kurniati (2022), It indicates that the more knowledgeable a person is about stunted, the less likely they are to parent has a toddler with stunted.

Globally, 154.8 millions of early childhood population around globally are affected by stunted. According to the Survey on Social Determinants of Nutrional Status in Indonesian (SSGI) within 2021, those frequency of stunted within Indonesian was still at 24.4 percent. The SSGI is

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conducted to monitor and evaluate the nutritional status of Indonesians, particularly focusing on stunting in children. (Ministry of Health, 2022). The prevalence of stunted in East Java in 2021 was 23.5% and decreased in 2022 to 19.2% (SSGI, 2022). Where this prevalence rate is already below the WHO standard of 20%. The prevalence of stunted in Jombang Regency in 2021 was 10.85% with 5774 stunted cases and in 2022 it decreased to 8.39% with 5520 stunted cases, then in 2023 it decreased again to 6.28% with 4375 stunted cases from 34 health centers in Jombang Regency.

As per the data from the Jombang District Health Department in 2022 and 2023, there are 20 villages in the sub-district that are areas with high stunted, including Kedunglumpang Village, Mojoagung Sub-district with the first highest case in Jombang District and Dukuh Mojo Village with the second highest case of stunted in Mojoagung Sub-district.

Stunted can be prevented during pregnancy if a pregnant woman has sufficient knowledge to meet a child's nutritional needs. This can help prevent low birth weight and stunted in children. When parents possess a good level of knowledge, it positively influences a child's growth, development, and nutritional fulfillment, thereby reducing the risk of stunted

As per the data from the Jombang District Health Department, there were 45 cases of stunted in toddlers in Kedunglumpang Village in 2023, with a prevalence rate of 11.48%. In Dukuh Mojo Village, 40 toddlers were affected by stunted, with a prevalence of 9.24%.

Premature delivery in pregnant women can increase the risk to birth weight, as infants born prematurely differ from those born at full term. Premature babies often experience growth failure that should occur after birth. Growth inhibition is linked to brain development, as obstacles to brain growth, such as somatic changes, can occur before the 20th week of pregnancy.

Stunted has short-term and long-term impacts on individuals and society. From this background, the researchers aim to explore the association between knowledge levels and levels and the mortality rate of stunted in Kedunglumpang and Dukuh Mojo Village. This study seeks to analyze association between premature/low-birth-weight infant, knowledge levels, and cases of stunted growth in these two villages

The aim of the primary objective of this research was to examine these correlation among knowledge level and birth weight in relation to the occurrence of stunted

Methods

The research employed correlational analysis analytic case-control epidemiological study because researchers analyzed how risk factors affect outcame retrospectively in sample cases and controls. The subjects of this study were research population of the study sample consisted of toddlers between 24 and 59 months residing in Kedunglumpang Village and Dukuh Mojo Village, with a total of 532 toddlers. This study included a total of 100 respondents. The research was conducted in Kedunglumpang Village and Dukuh Mojo Village in July - August 2024. This study utilized consecutive sampling strategy. These instrument utilized in collecting investigation data is using a knowledge level the data collection involved a instrument with established validity and reliability. The primary data gathered included measurements of the body length and height of toddlers and documentation of low birth weight. Data processing techniques involved 1. Data preparation and analysis phase.

Research findings analysis methods included univariate and bivariate analyses, utilizing the Fisher's Exact Test replaced chi-square analysis due to sparse data to some values being less than 5. This approach was these tests were applied to identify the association among independent as well as dependent variables was assessed evaluate strength related to that relationship between the research variables, namely the relationship between knowledge level and stunted incidence.

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Results

Univariate Analysis

Table 1 Outcames of univariate analysis

Variabel	Not Stunted		Stunted	
	n	%	n	%
Low Birth Weight				
<2500	0	0	6	11,3
>2500	47	100,0	47	88,7
Totally	47	100,0	53	100,0
Knowledge Level				
Good level of knowledge	41	87,2	33	62,3
Sufficient Knowledge level	6	12,2	20	37,7
Totally	47	100,0	53	100,0

As indicated in Table.1, it is evident that observed that a significant proportion of toddlers exhibited a birth weight greater than 2500 grams. However, in the case group, some respondents had a history related to low birth weight (less than 2500 grams), accounting for 11.3%. Additionally, most In this study, respondents demonstrated a good level of knowledge about stunted, with 41 (87.2%) from the control group and 33 (62.3%) from the case group.

Bivariate Analysis

Table 2 Association between Birth Weight and Occurrence related to Stunted in Kedunglumpang Village and Dukuh Mojo Village in 2024

Variabel	Not Stunted		Stunted		p-value
	N	%	N	%	
Low Birth Weight					
<2500	0	0	6	11,3	**0,028**
>2500	47	100,0	47	88,7	
Totally	47	100,0	53	100,0	

Findings of the study, analyzed the study employed chi-square statistics, yielded a probability value of 0.050 but the Chi-square test did not meet the requirements because there was an expect count value of less than 5. Therefore, the test continued using the Fisher Excat Test method and obtained a p-value of 0.028 or less reached statistical significance ($p \leq 0.05$). So it can be concluded the study's findings indicate, analyzed a chi-square test of statistical significance, yielded a probability value< α, indicating significant correlations were observed association between the birth weight of toddlers as well as incidence rates of stunted.

Table 3 Association between Knowledge Degree and Occurrence related to Stunted in Kedunglumpang Village and Dukuh Mojo Village in 2024

Variabel	Not Stunted		Stunted		OR 95% CI	p-value
	N	%	n	%		
Knowledge Level					4,141	
Good level of knowledge	41	87,2	33	62,3	(1,492 -	0,009
Sufficient Knowledge level	6	12,2	20	37,7	11,496)	
Totally	47	100,0	53	100,0		

Findings of the investigation, analyzed employing a chi-square test of statistical significance distribution investigation, recorded a probality value of 0.009, who is less than α (0.05), indicating a meaningful association between the degree related to maternal health literacy and the rate of

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stunted in Kedunglumpang Village and Dukuh Mojo Village. This finding is further supported by an odds ratio (OR) value of 4.141, which suggests that the case group has a 4.141 indicating a significantly increased odds of stunted growth in to the control group.

Discussion

The Association between Birth Weight and the Occurrence of stunted.

Findings from this investigation revealed that, in the case group, 6 (11.3%) toddlers had low birth weight (<2500 grams). Both variables showed the study revelaed a meaningful correlation regarding low birth weight in toddlers as well as the risk related to stunted in Kedunglumpang Village and Dukuh Mojo Village.

Pregnant women with Premature birth can lead to low birth weight, with newborns with a weight of less than 2500 grams are more likely to born prematurely will be different from babies who are born normally, where babies will often experience failure in growth that should be reached by the time the child reaches a certain age after birth. Growth retardation is related to brain maturity, where before 20 weeks of gestation there are obstacles to brain growth such as somatic changes (Rusliani, Hidayani and Sulistyoningsih, 2022). The study found low birth weight to be significantly associated with outcame can elevate the risk of stunted children born with low birth weight face elevated risks before age five. This condition can affect infant growth, and if compounded by inadequate nutrition, frequent infections, and poor healthcare, it can result in stunting. Additionally, socioeconomic factors like education level, income, and family size indirectly affect the incidence of stunted. These findings align with the research of Rusliani, Hidayani, and Sulistyoningsih (2022), which states the association between low birth weight and stunted early childhood population (6-23 months) was determined to be statistically significant, as confirmed through highly substantial correlation (p = 0.000). This indicates association between low birth weight and and stunted early childhood development in Sedayu, Bantul, Yogyakarta: findings from a study. This conclusion is further supported by research from Alba, Suntara, and Siska (2021), which also identified a statistically significant correlation between low birth weight and stunted incidence Sekupang Healthcare facility Area, Batam City, in 2019, showing statistically significant association (p = 0.000) (<0.05).

However, this particular study's outcomes differ significantly from those of Rambe (2020), who reported no statistically significant association between LBW and stunted in toddlers in Tulung Kakan Village, Bumiratu Nuban District, Lampung Regency, with a p-value of 0.743 (>0.05). This discrepancy challenges the prevailing theory, which posits that a low birth weight experience increases stunted development risk to children without such a history because babies who experience low birth weight can experience normal growth and nutritional status as babies who do not experience low birth weight, and some babies who experience low birth weight but do not occur stunting because when the mother gives birth and knows if the baby is with low birth weight, the midwife who helps the mother's delivery will provide counseling on nutritional intake so that LBW toddlers do not occur stunted.

These results are supported by Puspasari's research (2021) which indicates analysis revealed no significant correlation between LBW and stunted among early childhood, showing a correlation coefficient of statistical a probality value of 0.543 (>0.05) because birth weight significantly influences the first 6 months of age, if during this period the nutritional status of toddlers can be improved, then the possibility of toddler growth will be normal and avoid stunted.

Association between Knowledge Magnitude and Incidence of Stunted

A results indicated which out of 47 samples in the control group, 41 (87.2%) had good knowledge, while in the case group, 33 (62.3%) out of 53 samples had good knowledge. A meaningful connection was found among the level related to knowledge and the occurrence

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related to stunted within toddlers in Kedunglumpang Village and Dukuh Mojo Village. This result is further supported by an odds ratio (OR) of 4.141 with a 95% confidence interval (CI), which indicates that the case group has a 4.141 times higher likelihood of being exposed to stunted than the control group. Therefore, the association between the explanatory variable (knowledge magnitude) as well as the outcame variable (occurrence related to stunted) is statistically significant. In other words, the case group sample has a 4.141 elevated probability of experiencing stunted as opposed to the control group sample.

According to research by Rahayu, Suryani and Utami (2022) states that knowledge and experience have a close relationship that can be associated with stunted, respondents in the study revealed a lack of knowledge about stunted in depth. A person's knowledge can be acquired through multifaceted information source, such as conventional digital media channels, have a significant impact on shaping public awareness and influencing behaviors related to health and nutrition. Technological advancements have introduced a wide range of media platforms that can influence an individual's knowledge about new innovations. Knowledge is considered among the predisposing variables for a human being, and such factors can trigger behavior, which then serves serving as a foundation or motivation, mass media influences actions driven by habits, beliefs, education levels, and socio-economic status (Rahayu, Suryani, and Utami, 2022). Mothers who possess the ability to gain knowledge will be better equipped to prevent stunted in toddlers (Arsyanti, 2019). This is supported by Rahmawati's research (2019), which suggests that parents who receive information about stunted are more likely to understand, interpret, and retain the messages conveyed. If a mother lacks sufficient knowledge, it can be a significant factor influencing the nutritional status of her toddler. Since mothers are responsible for determining and choosing the foods their children consume, those with limited nutritional knowledge may provide inadequate nutrition, which can adversely affect the child's nutritional status (Luh Masrini et al., 2020).

This study's results indicate regarding association between knowledge and incidence of stunted align with the findings of Devianto, Dewi, and Yustiningsih (2022), who also identified correlation analysis revealed a significant link between maternal knowledge and about stunted and its prevalence in Sanggrahan Prambanan Village, Klaten, with a correlation coefficient of 0.731, indicating a strong and unidirectional relationship. These findings are further supported by Aghadiati, Ardianto, and Wati (2023), who also reported Correlation analysis revealed a meaningful link among maternal health literacy, knowledge, and outcomes and stunted prevalence within the Suhaid Operations of the Health Center area, Kapuas Hulu District, noting higher stunted rates among mothers with lower knowledge. Additionally, the outcames of this research are consistent within the Wardani et al. (2022), who found a significant correlation analysis revealed a association connection between maternal awareness and stunted In children who are 24 to 59 months old in Panedagandor, Labuhan Haji Operations of the Health Center area. Their research highlighted that higher maternal knowledge is associated with a reduced risk of stunted, whereas mothers with limited or only adequate knowledge are at greater risk due to a lack of understanding regarding effective interventions to prevent stunted.

This study's results indicate do not align consistent with the findings of Harikatang et al. (2020), who indicated no correlation analysis revealed a association link connection between maternal awareness and stunted in children from a village in Tangerang, with a p-value of 1.000 (>0.05). Their study suggests that factors other than maternal knowledge may play a more significant role in the incidence of stunted. In contrast, the study's respondent profile revealed a majority holding D-III qualifications and undergraduate college graduates, which likely provided them with more opportunities to access information and better understand the issue of stunted. As a result, these respondents had a higher level of knowledge about stunted.

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There are various factors that can contribute to stunted, including maternal education, economic or income levels, toddler age, and maternal age. The mother's level of education is closely linked to her ability to receive information regarding nutritional status and other health-related matters (Zulhakim, Ediyono, and Nur Kusumawati, 2022). Additionally, maternal research suggests nutritional knowledge is multifactorially influenced by education level, socioeconomic status, and access to information, which may contribute to differing results in the significant correlation between maternal knowledge and stunted beyond just the level of education. Another important factor is the mother's age, as older individuals typically experience better mental development, intelligence, and the capacity to acquire knowledge and adapt to unfamiliar circumstances (Devianto, Dewi, and Yustiningsih, 2022).

Conclusion

Research findings indicate, Regression analysis indicates a meaningful connection low birth weight and the rate of stunted in Kedunglumpang Village and Dukuh Mojo Village. Furthermore, a significant relationship was also observed between the degree of knowledge and the prevalence of stunted in both communities.

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