

**DESCRIPTION OF NUTRITIONAL STATUS AND DIFFERENCES IN STUNTING INCIDENCE IN ACUTE AND CHRONIC DISEASES IN CHILDHOOD INPATIENTS AT RSUD KLUNGKUNG**

**Putu Wiliska Wilasitha, I Gede Catur Wira Natanagara dan Kadek Wini Mardewi**

Klungkung Hospital Bali, Indonesia

E-mail: wila.sitha89@gmail.com, caturwira@gmail.com dan kadekwini@gmail.com

**Received:**

December, 13<sup>th</sup>  
2021

**Direvisi:**

December, 14<sup>th</sup>  
2021

**Disetujui:**

December, 15<sup>th</sup>  
2021

**Abstrak**

**Latar belakang:** *Stunting* adalah gangguan pertumbuhan linier yang ditunjukkan dengan nilai Z-score tinggi badan menurut usia (TB/U) kurang dari -2 standar deviasi (SD) berdasarkan standar *World Health Organization* (WHO). *Stunting* tetap menjadi salah satu masalah gizi utama di dunia dan mencerminkan efek kumulatif dari malnutrisi kronis selama 1.000 hari pertama kehidupan. Penelitian ini bertujuan mengetahui perbedaan kejadian *stunting* pada penyakit akut dan kronis pada pasien rawat inap di RSUD Klungkung. **Metode:** Desain penelitian analitik *cross sectional*. Pengumpulan data melalui rekam medik anak yang di rawat di RSUD Klungkung periode 1 Januari sampai 31 Desember 2018 dengan metode *total sampling* yang dipilih berdasarkan kriteria inklusi dan eksklusi yaitu anak usia 0-60 bulan. Data dianalisis univariat dan bivariat menggunakan uji *chi square*. **Hasil:** Selama periode penelitian tercatat 404 orang anak dirawat di RSUD Klungkung dengan 356 anak (88,1%) menderita penyakit akut dan 48 anak (11,9%) menderita penyakit kronis. Gambaran status gizi anak berdasarkan BB per TB/PB sebagai berikut: status gizi kurus (<-2SD) sebanyak 45 (11,1%) dan status gizi normal ( $\geq$  -2SD) sebanyak 359 (88,9%). Sedangkan gambaran TB/PB per Usia: status gizi pendek (<-2SD) sebanyak 45 (11,1%) dan status gizi normal ( $\geq$ -2SD) sebanyak 359 (88,9%) anak. Hasil pengolahan data bivariat menunjukkan bahwa tidak terdapat perbedaan bermakna terhadap kejadian *stunting* pada penyakit akut dan kronis pasien rawat inap di RSUD Klungkung. (p=0,074) OR=2,051 (95% CI 0,919 – 4,577). **Kesimpulan:** Tidak terdapat perbedaan kejadian *stunting* pada penyakit akut dan kronis pasien rawat inap di RSUD Klungkung.

**Kata kunci:** *Status nutrisi, stunting, penyakit akut dan kronis*

**Abstract**

**Background:** *Stunting* is a linear growth disorder indicated by Z-score of height for age less than -2 standard deviation (SD) based on *World Health Organization* (WHO) standards. *Stunting* is one of the major nutritional problems in the world. It reflects cumulative effects of chronic malnutrition during the first 1,000 days of life. Based on the explanation, The researchers want to know the difference of *stunting* in acute and chronic diseases in patients hospitalized at Klungkung Hospital. **Methods:** The researchers used an *analytic cross-sectional Study*, collecting

*data from medical records of children treated at Klungkung Hospital periods 2018, from 1<sup>st</sup> January until 31<sup>st</sup> December with total sampling method based on inclusion and exclusion Criteria. The samples were children aged 0-60 months. Data will be analyzed with univariate and bivariate with chi square test. **Results:** From 404 children hospitalized at Klungkung hospital, 356 children (88,1%) was acute disease and 48 children (11,9%) chronic disease. The description of nutritional status based on Weight for Length/Height were wasted (<-2SD) as 45 (11,1%) and normal nutritional status ( $\geq -2SD$ ) as 359 (88,9%). Length/Height for Age were stunted (<-2SD) as 45 (11,1%) and normal status ( $\geq -2SD$ ) as 359 (88,9%) children. The result form bivariate analysis reveals that was no differences in the incidence of stunting in acute and chronic inpatient at Klungkung Hospital. ( $p=0,074$ )  $OR=2,051$  (95% CI 0,919 – 4,577. **Conclusion:** There is no differences of incident stunting in acute and chronic disease in pediatric inpatients in Klungkung Hospital. **Keywords:** Nutritional status, stunting, acute and chronic diseases*

## **Introduction**

Stunting is a linear growth disorder indicated by the Z-score of height for age (TB/U) less than -2 standard deviations (SD) based on World Health Organization standards (WHO) (Amin & Julia, 2016). Stunting remains one of the main nutritional problems in the world. This reflects the cumulative effect of chronic malnutrition during the first 1,000 days of life, which is related to lack of education, poverty, morbidity (Helmyati, Atmaka, Wisnusanti, & Wigati, 2020). This will result in being more vulnerable to non-communicable diseases in the future which indicates a poor quality of life and has a negative impact on the human resources of a nation, thereby reducing productivity capacity in the future.

Stunting is currently in the world's Spotlight. This is due to the high number of stunting in a country (Marbun, Pakpahan, & Tarigan, 2019). Zero Hunger in the Sustainable Development Goals (SDGs) for 2030 and the Global Nutrition Target for 2025 states that the incidence of stunting in the world is currently around 150.8 million or 22.2% so that many programs are carried out to reduce the stunting rate in the world. In 2018, Indonesia was ranked 5th in the world with a stunting prevalence of 30.2% or around 9 million children were stunted, which means that approximately one out of every 3 Indonesian children was stunted and Bali was ranked 6th with a stunting percentage of 32.6% (Fitri, 2018).

Various factors can influence the occurrence of stunting at the beginning of the growth period, such as inadequate nutrition, IUGR, not receiving exclusive breastfeeding, reduced appetite due to infection, insufficient consumption and not guaranteeing optimal physical growth due to other diseases such as acute infections or illnesses chronic (Susilowati, 2018). Several diseases that often cause stunting such as acute enteric infections, diarrhea, worms, respiratory infections, decreased appetite due to attacks of infection and other inflammation (Andini, 2021). Chronic diseases that can occur such as heart, liver, kidney, thalassemia or other chronic diseases.

The purpose of this study was to determine the difference in the incidence of stunting in acute and chronic diseases in patients hospitalized at Klungkung Hospital.

### Research methods

The research design used was analytic with a cross sectional design. Data was collected by looking at the medical records of children treated at the Klungkung Hospital with the total sampling method selected based on inclusion and exclusion criteria. The inclusion criteria for selecting the sample were children aged 0-60 months who had TB/U below -2 SD. Excluded patients were those who had congenital abnormalities and physical disabilities.

Variables that were recorded were weight and length/height, diagnosis or history of disease while the Patient were being treated. Weight and length/height will be converted into BB/TB to assess the nutritional status of children. The diagnosis will be divided into acute and chronic diseases. It is said to be acute disease if the diagnosis or incidence of disease occurs in less than 2 weeks and chronic disease if the diagnosis or occurrence of disease occurs more than or equal to 2 weeks.

Research instruments include patient medical records, standard table Z-score WHO. Data processing using SPSS 26.0 software with all data analyzed univariate and bivariate. Bivariate analysis using the chi square test to assess differences in the incidence of stunting in acute and chronic diseases inpatients at the Klungkung Hospital.

### Results and Discussion

During the study period, 404 children were treated at the Klungkung Hospital with the following characteristics.

Table 1. Characteristics of pediatric patients aged 0-60 months undergoing inpatient care at the Klungkung Hospital in 2018

Characteristics	n (404)	Percent (%)
<b>Gender</b>		
Man	227	56,2
Woman	177	43,8
<b>Age (months)</b>		
0 – 11	134	33,2
12 – 23	105	36
24 – 35	64	15,8
36 – 47	47	11,6
48 – 60	54	13,4
<b>Disease</b>		
Akut	356	88,1
Chronic	48	11,9
<b>Weight per Age (W/W)</b>		
Poor (<3 SD)	17	4,2
Less (-3 SD to -2 SD)	27	6,7
Good (-2 SD to 2 SD)	349	86,4
More (>2 SD)	11	2,7

**Description Of Nutritional Status And Differences In Stunting Incidence In Acute And Chronic Diseases In Childhood Inpatients At Rsud Klungkung**

**2021**

<b>Body Length/Height per Age (PB/U or TB/U)</b>		
Short (<-2SD)	45	11,1
Normal (>-2SD)	359	88,9
<b>Weight per Height/Length (BW/TB or BW/PB)</b>		
Thin (<-2SD)	45	11,1
Normal (>-2 SD)	359	88,9

Based on the data obtained, More boys, than girls, were treated at the Klungkung Hospital with a percentage of 56.2% with the incidence being dominated by acute illness, almost 88.1% and the most age at 12-23 months with 36%. In BB/U the highest percentage is in good nutrition (-2 SD to 2 SD) as much as 86.4%. Children with normal height ( $\geq$ -2SD) in PB/U or TB/U with the percentage of 88.9%, while the percentage of short children (<-2SD) is 11.1%. Characteristics of children with BB/TB found thin children (<-2SD) 11.1% and normal children ( $\geq$ -2SD) 88.9%.

Table 2. Incidence of Stunting in Children Diagnosed with Acute and Chronic Diseases

<b>Disease</b>	<b>Stunting</b>		<b>Total</b>	<b>P value</b>	<b>OR (95% CI)</b>
	<b>Yes</b>	<b>No</b>			
Akut	36	320	356	0,074	2,051
Chronic	9	39	48		0,919 – 4,577

In the bivariate analysis of stunting in children diagnosed with acute and chronic diseases analyzed by the chi square test, significant results were obtained where  $p = 0.074$  ( $p > 0.05$ ) with  $OR = 2.051$  (0.919 – 4.577). It is stated that there is no difference in the incidence of stunting in acute and chronic diseases inpatients at the Klungkung Hospital.

Stunting is caused by a combination of factors including maternal and intrauterine malnutrition, inadequate quality or quantity of complementary foods in childhood, and low absorption of nutrients caused by a high prevalence of infection or disease.<sup>10</sup> From this study, data on the incidence of stunting in children were obtained. boys are taller than girls. This is in accordance with data by Riskesdas in 2010 that girls have a lower incidence of stunting than boys. This is also in line with research conducted in West Java, East Nusa Tenggara and Bali regarding the risk factors for stunting in children aged 0-60 months which showed that boys were more likely to experience stunting than girls.

The results of statistical tests in this study showed that there was no significant difference in the incidence of stunting in children diagnosed with acute and chronic diseases,  $p = 0.074$  ( $p > 0.05$ ) and  $OR = 2.051$  (0.919 – 4.577). These results are in accordance with research from Richard et al<sup>12</sup> that in the group of children who are younger and still consuming breast milk, body weight is not significantly affected by the incidence of acute or chronic disease. This is due to the protective function of breast milk.<sup>12</sup> Even though children have a decreased appetite when sick, The researchers still consume normal amounts of breast milk. Pascale et al<sup>13</sup> conducted a cross sectional study involving 414 children aged five years and under living in Bangui to determine the risk factors associated with stunting. The children were recruited from December 2011 to November 2013. After correcting for age, no statistically significant relationship was found between the incidence of infectious disease and stunting.

Several studies have shown conflicting results, children who suffer from acute illness, i.e. illness for more than three days and less than two weeks, are twice as likely to suffer from stunting.

The interaction between acute and chronic infection and the incidence of malnutrition is a complex matter. Malnourished children have a higher risk of developing diarrhea (Kartiningrum, 2015). In a meta-analysis of several cohorts of newborns up to 24 months of age, it was shown that there was a 16% increase in the incidence of stunting for every 5% increase in the incidence of diarrhea (Dalimunthe, 2015). It should be noted that the nutritional status of a child is influenced not only by food, but also by the frequency of infection. Evidence for an association between nutrition and the occurrence of this infection has been demonstrated in the past and was qualitative, with malnourished children having higher mortality rates (Renyoet, 2013). Studying the epidemiological relationship between infection and the development of malnutrition in Guatemala, where children with a high prevalence of diarrhea had less growth in weight and height over a six-month period, compared with similar children with a lower prevalence of diarrhea (WAHID, 2020).

In addition to a study by Prendergast, children with chronic disease disorders such as immunological disorders have a high enough risk of stunting. Studies conducted on infants in Zimbabwe who were stunted at 18 months of age were found to have higher plasma concentrations of proinflammatory markers (C-reactive protein, CRP, and /1-acid glycoprotein, AGP) and lower plasma levels of IGF-1 than normal baby. A better understanding of the immunopathogenesis of malnutrition is also known from the C57BL/6 mouse model fed a low-fat, low-protein diet experiencing mild stunting and wasting. Another chronic disease that can lead to stunting is Thalassemia (Adistie, Lumbantobing, & Maryam, 2018). -thalassemia major as one of the main forms of -thalassemia is the most severe form of blood disorder. Those who were not treated or transfused showed a variety of clinical manifestations including stunted growth or stunting, pallor, jaundice and bone changes. Other chronic diseases that can lead to stunting are heart, liver, and kidney disease (ALPIN, 2020).

Toddlers have a very fast and rapid growth phase (Murni, 2017). In the process of growth and development, it is necessary to have adequate nutrition. In developing countries, the possibility of infection with a disease is still quite high so that disturbances between nutrient absorption and infection can occur simultaneously. Infection can worsen children's nutrient uptake (RAHAYU, 2020).

In children with a disease duration of less than one to three months, there is an improvement in body weight and growth can follow according to children their age. However, this does not happen if children have lower food intake (Including breast milk intake), access to health services is more difficult, and socio-economic level is low which can trigger a higher incidence of diarrhea (Sitti Patimah, 2021). This is supported by the results of research from de Onis, et al which states that the incidence of stunting in Brazil has improved from 34% in 1986 to 6% in 2006 along with an increase in income and access to schools, clean water, sanitation, and health services. This shows that stunting is associated with both acute and chronic inflammatory diseases. Likewise, the etiology of acute and chronic diseases experienced by malnourished children will result in different clinical or with the same bacterial infection but have developed antibiotic resistance.

Other literatures reveal different things where age, gender, and overweight are the most significant risk factors associated with stunting in children compared to the incidence of acute and chronic diseases. In a meta-analysis of 18 studies conducted in Sub-Saharan Africa, the main factors associated with stunting were gender (boys are shorter than girls), socioeconomic factors and maternal education. Another meta-analysis of 16 demographic and health surveys from Sub-Saharan Africa showed that boys from socioeconomically weaker families were at greater risk of stunting or stunted growth than girls.

### **Conclusion**

The conclusion of this study is that there is no difference in the incidence of stunting in acute and chronic diseases inpatients at Klungkung Hospital.

### **Bibliografi.**

- Adistie, Fanny, Lumbantobing, Valentina Belinda Marlianti, & Maryam, Nenden Nur Asriyani. (2018). Pemberdayaan kader kesehatan dalam deteksi dini stunting dan stimulasi tumbuh kembang pada balita. *Media Karya Kesehatan*, 1(2).
- Alpin, Pipin. (2020). *Studi Literatur: Faktor-Faktor Yang Berhubungan Dengan Kejadian Stunting Pada Balita Usia 24-59 Bulan*.
- Amin, Nur Afia, & Julia, Madarina. (2016). Faktor sosiodemografi dan tinggi badan orang tua serta hubungannya dengan kejadian stunting pada balita usia 6-23 bulan. *Jurnal Gizi Dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, 2(3), 170-177.
- Andini, Tiya Pramawita. (2021). *Determinan Kejadian Stunting Pada Balita di Kabupaten Sorong*.
- Dalimunthe, Shella Monica. (2015). *Gambaran faktor-faktor kejadian stunting pada balita usia 24-59 bulan di Provinsi Nusa Tenggara Barat tahun 2010 (analisis data sekunder riskesdas 2010)*. Jakarta: UIN Syarif Hidayatullah Jakarta: Fakultas Kedokteran Dan Ilmu Kesehatan, 2015.
- Fitri, Lidia. (2018). Hubungan BBLR Dan Asi Eksklusif Dengan Kejadian Stunting Di Puskesmas Lima Puluh Pekanbaru. *Jurnal Endurance: Kajian Ilmiah Problema Kesehatan*, 3(1), 131-137.
- Helmyati, Siti, Atmaka, Dominikus Raditya, Wisnusanti, Setyo Utami, & Wigati, Maria. (2020). *STUNTING: Permasalahan dan Penanganannya*. Yogyakarta: UGM PRESS.
- Kartiningrum, Eka Diah. (2015). Faktor risiko kejadian gizi kurang pada balita di Desa Gayaman Kecamatan Mojoanyar Mojokerto. *Hospital Majapahit (Jurnal Ilmiah Kesehatan Politeknik Kesehatan Majapahit Mojokerto)*, 7(2).
- Marbun, Meyana, Pakpahan, Romauli, & Tarigan, Adrian K. (2019). Hubungan Pengetahuan Ibu Hamil Dan Tingkat Ekonomi Tentang Kejadian Stunting Dipuskesmas Parapat Kecamatan Parapat Kabupaten Simalunguntahun 2019. *Jurkessutra: Jurnal Kesehatan Surya Nusantara*, 7(2).
- Murni, Murni. (2017). Perkembangan fisik, kognitif, dan psikososial pada masa kanak-kanak awal 2-6 tahun. *Bunayya: Jurnal Pendidikan Anak*, 3(1), 19-33.
- Rahayu, S. R. I. (2020). *Hubungan Status Imunisasi Dan Riwayat Penyakit Infeksi Dengan Kejadian Stunting Pada Balita Di Upt Puskesmas Citarip Kota Bandung Tahun 2020*.
- Renyoet, Brigitte Sarah. (2013). *Hubungan pola asuh dengan kejadian stunting anak usia 6-23 bulan di wilayah pesisir kecamatan tallo kota makassar*. Makassar: Universitas Hassanuddin.
- Sitti Patimah, S. K. M. (2021). *Stunting Mengancam Human Capital*. Yogyakarta: Deepublish.
- Susilowati, Endah. (2018). *Faktor Risiko Kejadian Stunting pada Balita 1-5 tahun di Puskesmas Bangsri I Kabupaten Jepara*. Semarang: Universitas Muhammadiyah Semarang.
- Wahid, Nurul Khairunnisa. (2020). *Analisis Wash (Water, Sanitation And Hygiene) Terhadap Kejadian Stunting Pada Baduta Di Kabupaten Mamuju*. Makassar: Universitas Hasanuddin.



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).