Trends in achieving nutritional status aged 0-23 months based on the TB/U index against the median line for 2019-2022 in Madina Regency

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ABSTRACT

Child growth trends are used to compare weight gain and body length or height with standard weight gain and body length or height gain. Based on data from the 2021 Indonesian Nutrition Status Survey (SSGI) in North Sumatra Province in Madina Regency. The prevalence of stunted children (TB/U) is 47.7%. Based on 2018 Riskesdas survey data in North Sumatra Province in Madina Regency. The prevalence of stunted children (TB/U) is 17.3%. Determine the trend in achieving nutritional status aged 0-23 months based on the TB/U index against the 2019-2022 Median Line in Madina Regency (Secondary Data Analysis). The method used in this research is secondary data. Secondary data is data obtained through relevant agencies in the form of documents or references related to the problem being studied. The data source in this research is e-PPGBM data in Madina Regency from 2019 to 2022. Results in the graph of male and female toddlers, the z-score of female toddlers is closer to the median line. A line graph goes up and down (zigzag) on the male line graph, which could cause invalid data.

INTRODUCTION

The first thousand days of life (1000 HPK) is the golden age period *of humans (golden age period)* because human brain cells and organs develop very rapidly. Because of this period's importance, toddlers' nutritional status needs to be monitored for development. (Farida Kusumaningrum, 2012). Child growth trends compare weight gain and body length or height with weight gain standards and weight gain or height (Kemenkes, 2020).

Nutritional status trends determine whether children are normal, have dietary problems, and experience risks that must be reassessed. Children who usually grow up follow a trend parallel to the median and Z-score lines (Kemenkes, 2020). Nutritional status is one of the good indicators of poor daily food provision, but it is also a form of expression of equilibrium conditions presented in the form of certain variables. Good nutritional status is used to maintain health levels and help childhood growth (Arieska & Herdiani, 2020).

TB/U is an indicator that determines the disruption of physical growth that has passed (stunting). Stunting shows that the quality of human resources could be improved, which will reduce the nation's productivity in the future (Wijayanti & Komariyah, 2019). Stunting is a chronic nutritional problem in toddlers characterized by a child's height. Shorter than children of the same age (Dwi et al., 2019). Stunting is a picture of prolonged undernutrition status during the most critical period of growth and development

early in life. This can be interpreted as toddlers aged 0-59 months who have a height according to age below minus two standard deviations and three standard deviations from the median toddler growth standards set by the WHO (Christin Angelina F, 2019).

The problem of stunting, which occurs at the age of less than two years, dramatically determines the subsequent growth and development. This period of the central nervous system develops very quickly. Children with good nutritional status will experience brain cell development that is at 80% of adult brain development. In addition, fulfilling nutritional adequacy is essential to maximize the growth and development of the child's brain (Samuel, 2021).

Stunting is a manifestation of chronic malnutrition, defined as low height for age, often associated with poverty. The burden of malnutrition is more significant in developing countries than developed ones. (Fufa, 2022). The impact of stunting on individuals includes reduced cognitive and physical growth and development, decreased productivity, and increased risk of degenerative diseases, and these impacts can occur now and in the future (Mchau et al., 2023). Stunting is affected by many factors, including a history of low birth weight. Babies born with low birth weight are mostly born to mothers with low nutritional status during pregnancy who are at risk of becoming stunted (M.S. Hidayat, 2017).

The relationship between exclusive breastfeeding and stunting rates is in line with the theory that states that the nutritional status of toddlers is also influenced by exclusive breastfeeding. Breast milk is the best food for babies up to 6 months of age (Supriati, 2020). Socialization through discussion, lecture, and question-and-answer methods can increase mothers' knowledge about stunting prevention and malnutrition (Christy Johanna, 2023). In 2017, the Indonesian Ministry of Health issued an Integrated Sigizi as an electronic Community-Based Nutrition Reporting Recording (e-PPGBM), a module used to record individual data complete targets with names and addresses sourced from Posyandu (Kemenkes RI, 2019).

Based on data from the 2021 Indonesian Nutritional Status Survey (SSGI) in North Sumatra Province in Madina Regency. The prevalence of *stunting* children (TB/U) is 47.7% (SSGI, 2021). Based on Riskesdas survey data from 2018 in North Sumatra Province in Madina Regency, the Prevalence of stunting children (TB/U) is 17.3% (Riskesdas, 2018). This study aims to further analyze Nutritional Status Data for Toddlers Aged 0-23 Months Based on the TB/U Index and Its Achievement Against the Median Line 2019-2022 in Madina Regency (Secondary Data Analysis). Based on the description above, the author is interested in researching the Trend of Achieving Nutritional Status at 0-23 Months Based on the TB/U Index Against the Median Line for 2019-2022 in Madina Regency.

METHOD

The method used in this study is secondary data. Secondary data is obtained not from the researcher's efforts, but indirectly through outside references, articles, journals, and others. Secondary data is often interpreted as processing existing data (Indrasari, 2020). The data used in this study was obtained from E-PPGBM (Electronic Recording and Reporting of Community-Based Nutrition). For secondary data collection, we must ask for a username and password from TPG in Madina Regency, enter the E-PPGBM application via Google, and if you are already logged in, see the menu list, then click import. Then click import identity, select North Sumatra Province, select Madina district/city, and fill in the age of 0-23 months. If everything is correct, click Export toddler data to import the blue identity.

After the data is successfully imported into Excel, the first step is distinguishing the gender of boys and girls. The second stage ranges from 0-5 months, 6-11 months, and 12-23 months. The next step is to average the z-score using the formula, namely = Averenge, then click z-score then the average z-score results will be obtained starting from BB/U, TB/U, and BB/TB based on age grouping, and gender in 2019-2022.

In making graphs, the first stage is to create a table of average z-score TB/U according to age and gender groupings. The second step is to click Insert, then click Charts, and select the 2-D line chart on the fourth chart. Then right-click, choose a select data source, and click add, and the series name and series values will appear. Fill in the series name average male TB/U z-score (0-5 months) in 2019, then on series values click = then click male TB/U z-score (0-5 months) in 2019 after the add is complete, then click edit then type = 2019, 2020, 2021, 2022 and make it continuously according to the grouping and year.

RESULT

The following table and graph show the average z-score of male and female toddlers aged 0-23 months in Madina Regency from 2019 to 2022.

Table 1. Average z-score TB/U for boys and girls aged 0-23 months in February and August 2019 to 2022 in Madina Regency

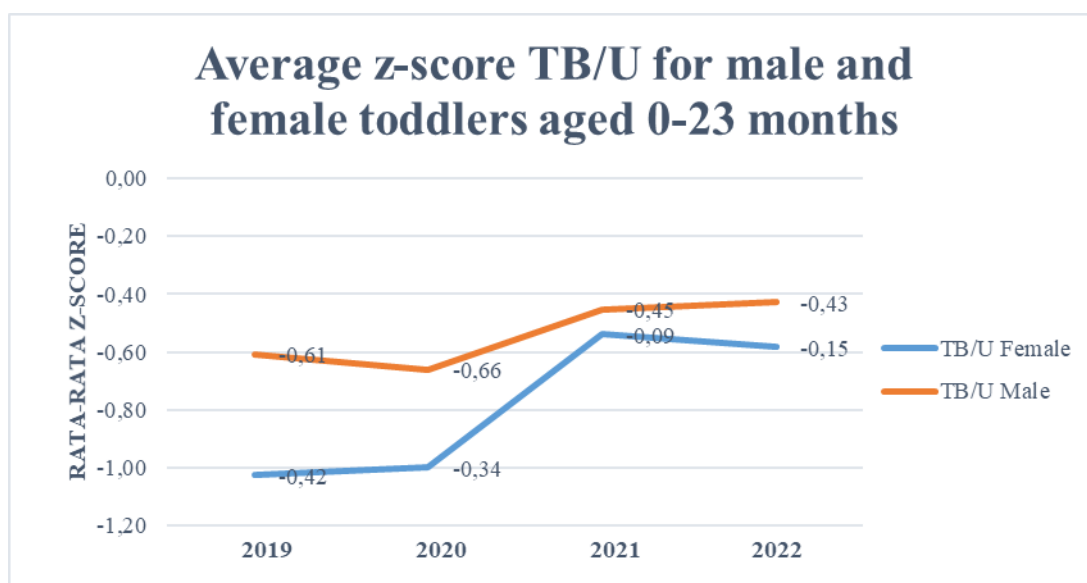| AVERAGE-Z-SCORE TB/U AGE 0-23 MONTH		
Year	TB/U Male	TB/U Female
2019	-0,61	-0,42
2020	-0,66	-0,34
2021	-0,45	-0,09
2022	-0,43	-0,15

Figure 1. Average z-score TB/U for male and female toddlers aged 0-23 months in February and August 2019 to 2022 in Madina Regency

DISCUSSION

The nutritional status of toddlers is one reflection of the nutritional state of the community. In general, nutritional status in toddlers can be seen based on three indicators, namely (1) age weight (BB/U), (2) height to age (TB/U), and (3) height weight (BB/TB). Nutritional problems will arise when there is an imbalance in the three aspects above. If there is a problem with the BB/U indicator, then the problem that occurs is undernutrition (Sukoharjo, 2019). This study aims to analyze the average z-score based on the median age line of 0-23 months in males and females in Madina Regency in February and August 2019-2022. From the research results and data processed from the E-PPGBM application in Madina Regency based on the TB/U index aged 0-23 months men, there is a problem, namely the zigzag line graph. This is due to incorrect data typing, which causes the graph to become zigzag. This can also be caused by the different number of toddlers each month.

Data typing errors are also a problem; for example, the BB data of toddlers aged one month is 3.6 kg, but in e-PPGBM at entry 3,600 gr, this dramatically affects the Z-score in the toddler. For TB/U data aged 23 months in e-PPGBM data reached 102 cm with a Z-score of +5.15 SD, while in PMK, the Z-score Median TB/U was 86.9 cm and +3 SD was 95.9 cm; this was due to an error in data entanglement to the e-PPGBM application.

Z-score is a measure that determines how far a value (from observing a sample set) is to its average in units of standard deviation. The Z- Z-score value will be at a point on the flat axis of the standard curve (Rahmadhita, 2020). Z-Score or standard deviation is used to assess how far the deviation is from the

median number (middle value). Growing Toddlers follow trends that generally align with the median and Z-score lines.

Stunting is one of the nutritional problems that are the focus of the government of Indonesia. Stunting is a nutritional status based on the PB/U or TB/U index (Dwi et al., 2019). Exclusive breastfeeding is one of the factors in stunting. The lack of knowledge of mothers about stunting to improve diet and parenting is concluded by research conducted in Madina Regency. The benefit of the results of this study is that TPG and Puskesmas cadres can find out the number of errors in data thickening to the e-PPGBM application, which causes errors in determining the Z-score in the e-PPGBM application.

CONCLUSION

Based on the study results, the nutritional status of toddlers with the TB / U index in Madina Regency from February and August 2019 to 2022 is known. It is known that there is a gap in nutritional status achievement against the median line by sex and age group 0-23 months. In female toddlers, the TB/U z-score is closer to the median line, while in boys, the TB/U z-score tends to be lower than the median line. In the age group of 6-11 months, there is a zigzag line in boys. This can happen because invalid data is filled out on the z-score line on the zigzag graph.

REFERENCES

Arieska, P. K., & Herdiani, N. (2020). *HUbungan Pengetahuan Dan Pola Konsumsi Dengan Status Gizi Pada Mahasiswa Kesehatan*. *4*(2), 203–211.

Christin Angelina F, A. A. P. et al. (2019). *Faktor Kejadian Stunting Balita Berusia 6-23 Bulan Di Provinsi Lampung*. *7*, 127–134.

Christy Johanna, N. S. (2023). *Penyuluhan Tentang Pencegahan Stunting Dan Gizi Buruk Di Desa Tombang Bustak, Kabupaten Mandailing Natal*. *2*(1), 8–12.

Dwi, A., Yadika, N., Berawi, K. N., & Nasution, S. H. (2019). *Pengaruh Stunting terhadap Perkembangan Kognitif dan Prestasi Belajar*. *September*, 273–282.

Farida Kusumaningrum, S. (2012). *Faktor-Faktor Yang Berhubungan Dengan Kegemukan Pada Anak Balita 24-59 Bulan Di Indonesia Tahun 2010 (Analisis lanjut Riskesdas 2010)*. *35*(1), 41–56.

Fufa, D. A. (2022). *Human Nutrition & Metabolism Determinants of stunting in children under five years in dibate district of Ethiopia : A case-control study*. *30*(January), 1–6.

Indrasari, Y. (2020). Efesiensi Saluran Distribusi Pemasaran Kopi Rakyat Di Desa Gending Waluh Kecamatansempol (Ijen) Bondowoso. *Jurnal Manajemen Pemasaran*, *14*(1), 44–50. https://doi.org/10.9744/pemasaran.14.1.44-50

Kemenkes. (2020). *PMK NO 2 TAHUN 2020 TENTANG STANDAR ANTROPOMETRI ANAK* (Vol. 2507, Issue February).

Kemenkes RI. (2019). *Petunjuk Teknis Sistem Informasi Gizi Terpadu (Sigizi Terpadu)*. 113.

M.S. Hidayat, G. N. I. P. (2017). Prevalensi Stunting Pada Balita Di Wilayah Kerja Puskesmas Sidemen

Karangasem. *E-Jurnal Medika*, *6*(7), 1–5.

Mchau, G., Killel, E., Azizi, K., Henry, S., Jumbe, T., Bundara, N., Kystikila, W., Mwingira, F., Machafuko, P., Wilson, B., Paulo, H. A., Epimack, S., Mshinda, H., Charky, F., Noor, R., Masumo, R., & Leyna, G. (2023). *Co-occurrence of Overweight , Stunting , and Anemia among Adolescents (10 – 19 Years) in Tanzania Mainland : A School-Based Cross-Sectional Study*. *xxxx*.

Rahmadhita, K. (2020). Permasalahan Stunting dan Pencegahannya. *Jurnal Ilmiah Kesehatan Sandi Husada*, *11*(1), 225–229. https://doi.org/10.35816/jiskh.v11i1.253

Riskesdas. (2018). *Hasil Utama Riset Kesehatan Dasar (Riskesdas) Tahun 2018*.

Samuel, S. (2021). Pertumbuhan Anak Sekolah Dasar Yang Mengalami Stunting Umur 0-23 Bulan. *Media Informasi*, *16*(1), 54–59. https://doi.org/10.37160/bmi.v16i1.452

SSGI. (2021). *Hasil Studi Status Gizi Indonesia Tahun 2021*.

Sukoharjo. (2019). *Profil Kesehatan Kabupaten Sukoharjo Tahun 2019*.

Supriati, R. S. et al. (2020). *Faktor-Faktor Penyebab Kejadian Stunting Pada Balita*. *1*(2), 51–56.

Wijayanti, A. R., & Komariyah, S. (2019). Growth Growth Description (BB/U, TB/U, BB/TB) Children Age 4-5 Years (In Endah Kinder Garden Bandar Lor Subdistrict Mojoroto, Kediri City). *Jurnal Kebidanan*, *8*(1), 30–39. https://doi.org/10.35890/jkdh.v8i1.114

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