Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

THE RELATIONSHIP BETWEEN D/S COVERAGE AND THE PREVALENCE OF NUTRITIONAL PROBLEMS AMONG CHILDREN UNDER FIVE: A QUADRANT ANALYSIS APPROACH IN THE MARUSU COMMUNITY HEALTH CENTER AREA

Harlinda Hamsa[1*], Manjilala[2], Sunarto[2]
[1]Dietitian Professional Student, Ministry of Health Polytechnic, Makassar, Indonesia
[2]Nutrition Department, Ministry of Health Polytechnic, Makassar, Indonesia
***Corresponding author email address: indah6165123@gmail.com**

Article History
Received 10 November 2026
Accepted 31 January 2026

Keyword
Child malnutrition,
D/S coverage,
Nutritional,
Quadrant

DOI
10.69632/jgkk.v3i2.68

Abstract
challenge in Indonesia, despite improvements in weighing coverage (D/S). A high D/S coverage did not necessarily indicate better nutritional status without adequate intervention quality. This study aimed to analyze the relationship between D/S coverage and the prevalence of under-five nutritional problems using a quadrant analysis approach in the working area of UPTD Marusu Health Center. This was a descriptive quantitative study using secondary data from routine reports and e-PPGBM in February and August 2024, covering seven villages. The data included D/S coverage and the prevalence of stunting, wasting, and underweight, which were analyzed visually into four quadrants based on the average of each indicator. The results showed that D/S coverage increased from an average of 83,90% in February to 100% in August. However, the prevalence of stunting increased from 8,97% to 17,74%, wasting from 5,31% to 11,88%, and underweight from 0,97% to 1,12%. Several villages, such as Nisombalia, A'Bulosibatang, and Bonto Mate'ne, consistently fell into Quadrant I, indicating high coverage but also a high prevalence of nutritional problems. These findings suggested that increased D/S coverage alone did not directly lead to a reduction in nutritional issues without comprehensive and high-quality interventions.

Introduction

Nutritional problems among children under five remain a major public health concern, particularly in developing countries. Issues such as stunting, wasting, and underweight are key indicators that reflect the quality of nutrition and the overall health status of children (1). Stunting refers to impaired growth resulting from chronic undernutrition, wasting indicates acute malnutrition, and underweight describes low body weight for age, which may serve as an early sign of nutritional deficiency (2).

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

According to the 2024 Indonesian Nutritional Status Survey (SSGI), the prevalence of stunting decreased from 21.5% to 19.8%. Wasting also declined from 8.5% in 2023 to 7.4%, whereas underweight increased from 15.9% to 16.8% (3). The decline in some indicators reflects the success of ongoing nutrition interventions, yet the rise in underweight highlights the need for more systematic and comprehensive efforts to monitor and improve children's nutritional status. In South Sulawesi, the prevalence of stunting reached 23.3%, placing the province seventh nationally. This figure remains above the WHO standard of below 20%, indicating that nutritional interventions in South Sulawesi still require strengthening.

One important approach is optimizing the role of *posyandu*, which plays a strategic role in early detection of nutritional problems through routine activities such as child growth monitoring. The D/S (Weighed/Target) coverage is an indicator that reflects community participation in these activities and determines the accuracy of nutrition data in a given area (4). Low D/S coverage may lead to under-reporting, resulting in poorly targeted policy decisions.

Based on the 2022 Indonesian Health Profile, national D/S coverage reached 78.39%, exceeding the 2022 Strategic Plan (Renstra) target of 75% (5). However, in 2023, although coverage increased to 82.3%, it remained below the target of 85%, with only 7 out of 38 provinces achieving it (6). In South Sulawesi specifically, D/S coverage reached 83.2% in 2023 placing the province ninth nationally, down from fifth the previous year, yet still above the national average (6). These figures underscore the importance of D/S coverage as a crucial indicator for assessing the performance of *posyandu* services and community engagement. Optimal D/S coverage ensures that children receive regular monitoring for the early detection of nutritional issues. However, limited research has directly examined the relationship between D/S coverage and the prevalence of nutritional problems, particularly at the local level such as health center work areas.

Therefore, this study aims to analyze the relationship between D/S coverage and the prevalence of stunting, wasting, and underweight in the working area of the Marusu Community Health Center (UPTD Puskesmas Marusu). Using a quadrant analysis approach, this study seeks to map nutritional problems among children under five and provide clearer insights into which areas require greater attention in addressing malnutrition.

Materials and Methods

This study is a quantitative descriptive research employing a quadrant analysis approach. This approach was used to map the relationship between the coverage of child weighing (D/S) and the prevalence of nutritional problems among children under five, including stunting, wasting, and underweight. The research was conducted in the working area of the Marusu Community Health Center in Maros District, which consists of seven villages. Data collection was carried out in August 2024. The type of data used in this study

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

was secondary data obtained from routine reports of the Marusu Community Health Center. These reports included child weighing coverage for February and August 2024, as well as the prevalence of stunting, wasting, and underweight based on anthropometric measurements of children under five in each village.

Data analysis was performed descriptively and visually using the quadrant approach. The average D/S coverage and the average prevalence of stunting, wasting, and underweight across the seven villages were calculated to determine the position of each village within the quadrant diagram. The villages were then classified into four quadrants: Quadrant I (high D/S, high prevalence), Quadrant II (high D/S, low prevalence), Quadrant III (low D/S, low prevalence), and Quadrant IV (low D/S, high prevalence). The results were visualized in quadrant diagrams for each nutritional problem.

Results

Overview of Research Location

The Marusu Community Health Center (UPTD Puskesmas Marusu) is located in Marusu Subdistrict, Maros Regency, South Sulawesi Province. The health center's working area covers seven villages: Marumpa, Temmapaduae, Pabbentengan, Nisombalia, A'bulosibatang, Bonto Mate'ne, and Tellumpoccoe. The general condition of nutrition services in this area still faces various challenges, particularly regarding the coverage of growth monitoring among children under five and the prevalence of nutritional problems such as wasting, stunting, and underweight. Nutrition services are primarily delivered through *posyandu*; however, variations in the quality and consistency of reporting between villages remain evident.

The data used in this analysis were obtained from routine nutrition reports of the Marusu Community Health Center and aggregated records from the e-PPGBM system (Electronic Community-Based Nutrition Recording and Reporting). The data collection period covered February and August 2024, representing the national child-weighing months.

D/S Coverage and the Prevalence of Nutritional Problems Among Children Under Five

Table 1. Descriptive Statistics of Weighing Coverage (D/S) and the Prevalence of Nutritional Problems in Children Under Five in the Puskesmas Marusu Working Area

Indicator	February 2024				August 2024			
	Min	*Max*	*Mean*	SD	*Min*	*Max*	*Mean*	SD
Cakupan D/S (%)	72,12	94,58	83,90	9,77	100	100	100	0,00
Underweight (%)	0,24	2,56	0,97	0,93	0	1,97	1,12	0,85

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

Stunting (%)	0,72	19,73	8,97	7,35	40	31,38	17,74	8,86
Wasting (%)	0,96	13,24	5,31	4,18	4	18,80	11,88	6,53

Source: Secondary data

In February 2024, the D/S coverage showed an average of 83.90%, with a range of 72.12% to 94.58% and a standard deviation (SD) of 9.77. A significant improvement was observed in August 2024, when the coverage reached 100% uniformly across all areas (minimum, maximum, and mean = 100%; SD = 0.00). Regarding nutritional status, the prevalence of underweight showed a slight increase from an average of 0.97% to 1.12%, although it remained relatively low. Stunting experienced a substantial rise, increasing from an average of 8.97% in February to 17.74% in August, with notable increases in both minimum and maximum values. Wasting also increased, rising from an average of 5.31% to 11.88%, with wider variability (SD increasing from 4.18 to 6.53).

Quadrant Analysis of D/S Coverage and Underweight February 2024

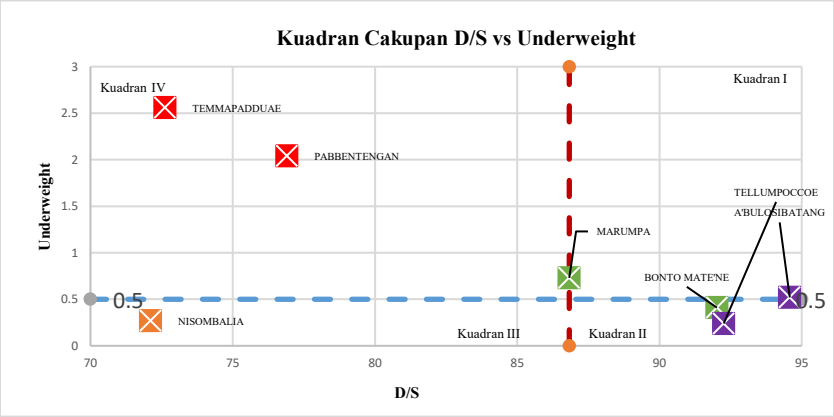

Figure 1. Quadrant of D/S Coverage and Underweight

Based on Figure 1 above, the quadrant analysis of D/S coverage and the prevalence of underweight among children under five in February 2024 categorizes the area into four groups. Quadrant I (upper right) includes Marumpa and Bonto Matene, which have high D/S coverage (≥ 85%) but also high underweight prevalence (≥ 0.5%). These areas require evaluation regarding the quality of nutrition services. Quadrant II (lower right) consists of Tellumpoccoe and A'bulosibatang, which show high D/S coverage and low underweight prevalence (< 0.5%), indicating effective early detection and prevention of malnutrition.

Quadrant III (lower left) is represented by Nisombalia, which has low D/S coverage (< 85%) but also low underweight prevalence. Although the nutritional condition remains relatively good, improvements in coverage are still needed. Meanwhile, Quadrant IV (upper left) includes Temmappaduae and Pabbentengan, which show low D/S coverage and high

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

underweight prevalence. These areas should be prioritized for targeted childhood nutrition interventions.

Quadrant Analysis of D/S Coverage and Stunting February 2024

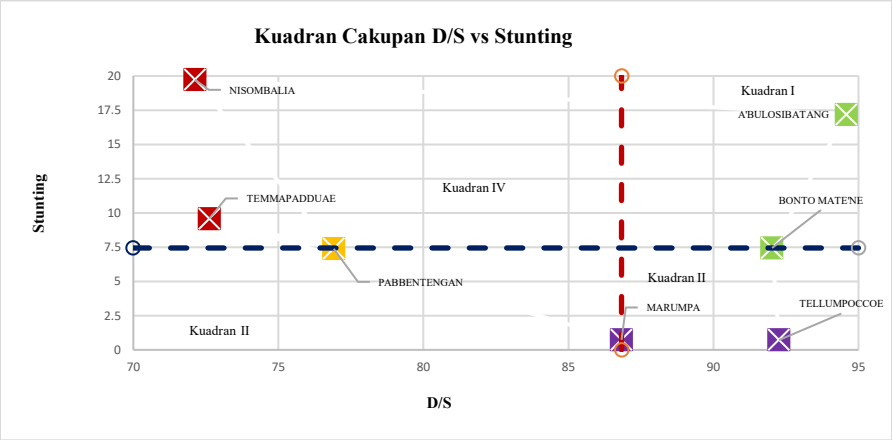

Figure 2. Quadrant of D/S Coverage and Stunting

Based on Figure 2 above, the quadrant analysis indicates that A'Bulosibatang and Bonto Mate'ne fall into Quadrant I (high D/S coverage, high stunting prevalence), suggesting that although D/S coverage is adequate, stunting remains a significant issue requiring further attention. Marumpa and Tellumpoccoe are positioned in Quadrant II (high D/S, low stunting), which represents an ideal condition. Pabbentengan falls into Quadrant III (low D/S, low stunting), while Temmappadduae and Nisombalia are categorized in Quadrant IV (low D/S, high stunting), making these areas priorities for intervention as they face dual challenges suboptimal D/S coverage and high stunting prevalence.

Quadrant Analysis of D/S Coverage and Wasting February 2024

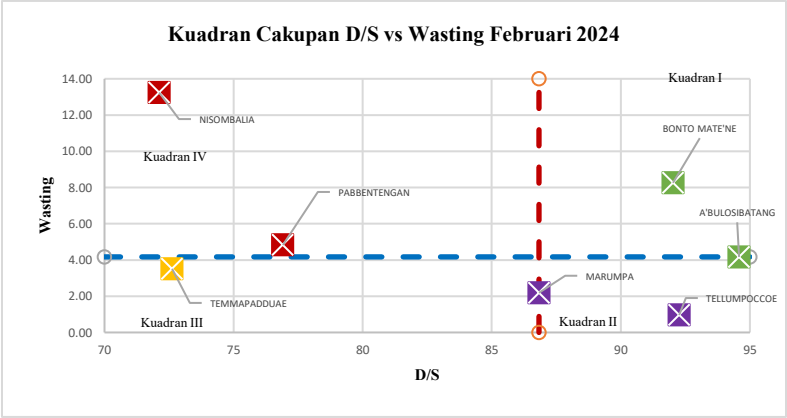

Figure 3. Quadrant of D/S Coverage and Wasting

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

Figure 3 shows the distribution of villages based on D/S coverage and wasting prevalence, with the horizontal axis representing D/S coverage and the vertical axis indicating wasting prevalence. The village data points are distributed across four quadrants. Quadrant I (upper right) includes A'Bulosibatang and Bonto Mate'ne, which have high D/S coverage but also high wasting prevalence. Quadrant II (lower right) consists of Marumpa and Tellumpoccoe, representing ideal conditions with high D/S coverage and low wasting prevalence. Temmappadduae falls into Quadrant III (lower left), indicating both low D/S coverage and low wasting prevalence, while Pabbentengan and Nisombalia belong to Quadrant IV (upper left), which are priority areas due to their low D/S coverage accompanied by high wasting prevalence.

Quadrant Analysis of D/S Coverage and Underweight August 2024

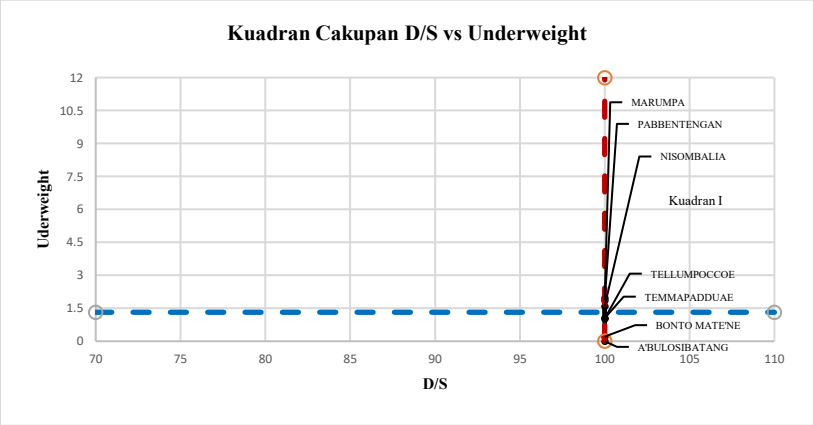

Figure 4. Quadrant of D/S Coverage and Underweight

Figure 4 illustrates the relationship between D/S coverage and the prevalence of underweight, showing that all villages achieved 100% D/S coverage. As a result, the distribution falls only into Quadrants I and II. Three villages Marumpa, Pabbentengan, and Nisombalia are positioned in Quadrant I, with an underweight prevalence of ≥ 1.32%, indicating that despite optimal D/S coverage, a relatively high burden of underweight among children under five still exists. Meanwhile, the remaining four villages Temmappadduae, A'Bulosibatang, Bonto Mate'ne, and Tellumpoccoe are located in Quadrant II, with an underweight prevalence of < 1.32%, reflecting a more favorable condition in which high D/S coverage is accompanied by relatively low levels of undernutrition.

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

Quadrant Analysis of D/S Coverage and Stunting August 2024

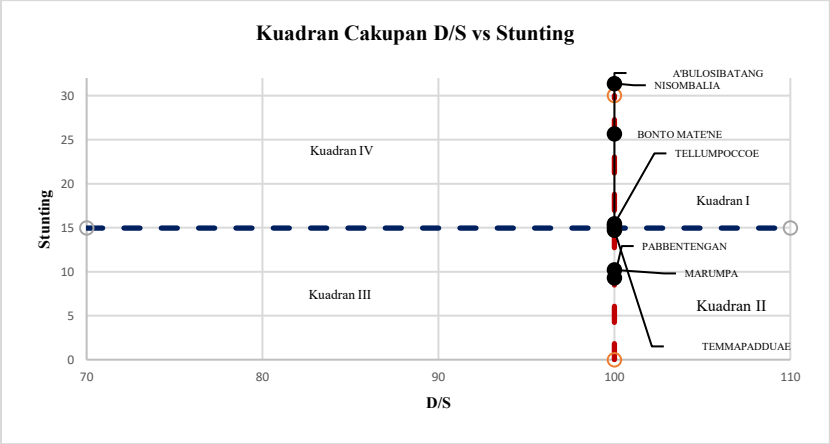

Figure 5. Quadrant of D/S Coverage and Stunting

Based on Figure 5, the quadrant analysis of D/S coverage and stunting prevalence shows that all villages achieved 100% D/S coverage; therefore, the distribution appears only in Quadrants I and II. Villages categorized in Quadrant I defined by D/S coverage ≥ 100% and stunting prevalence ≥ 14.95% include Nisombalia, A'Bulosibatang, Bonto Mate'ne, and Tellumpoccoe. These four villages indicate that despite optimal D/S coverage, stunting remains high and requires special attention. Meanwhile, the villages in Quadrant II Marumpa, Temmappaduae, and Pabbentengan have D/S coverage ≥ 100% and stunting prevalence < 14.95%, reflecting a more favorable nutritional situation among children under five.

Quadrant Analysis of D/S Coverage and Wasting — August 2024

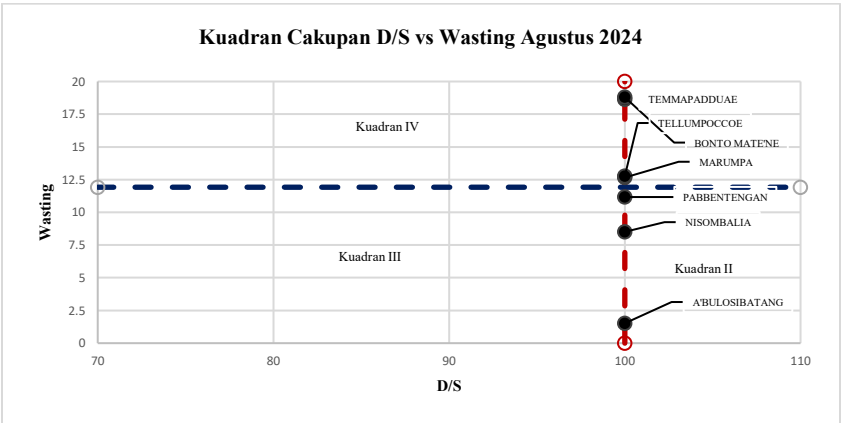

Figure 6. Quadrant of D/S Coverage and Wasting

Jurnal Gizi Dan Kesehatan Keluarga
https://saintifypublish.com/index.php/JGKK
Volume 03 | Number 02 | January |2026
e-ISSN: 3025-9886

Based on the quadrant graph of D/S coverage and wasting prevalence, all villages recorded 100% D/S coverage; therefore, the distribution appears only in Quadrants I and II. Villages categorized in Quadrant I defined by D/S coverage ≥ 100% and wasting prevalence ≥ 11.92% include Marumpa, Temmappaduae, Bonto Mate'ne, and Tellumpoccoe. These four villages show a relatively high burden of wasting despite optimal D/S coverage, indicating the need for greater attention in addressing acute malnutrition. Meanwhile, the villages in Quadrant II Pabbentengan, Nisombalia, and A'Bulosibatang have a wasting prevalence of < 11.92%, reflecting a better nutritional condition among children under five amid high D/S coverage.

Comparison of Results Between February and August

Table 2. Summary of quadrant shifts for each village

Village	*Underweight*	*Stunting*	*Wasting*
Marumpa	I→II	II→II	II→I
Temmappaduae	IV→II	IV→II	III→I
Pabbentengan	IV→I	III→II	IV→II
Nisombalia	III→I	IV→I	IV→II
A'bulosibatang	II→II	I→I	I→II
Bonto Mate'ne	I→II	I→I	I→I
Tellumpoccoe	II→II	II→I	II→I

Overall, there was a significant improvement in child weighing coverage (D/S), changing from variable levels in February to a uniform 100% coverage across all villages in August 2024, reflecting progress in the implementation of *posyandu* activities. However, the impact on the prevalence of nutritional problems was not uniform.

The prevalence of underweight increased in several villages, as evidenced by three villages moving into Quadrant I in August (Marumpa, Pabbentengan, and Nisombalia). This indicates that the increase in coverage has not yet been fully effective in reducing underweight cases. Stunting also showed an increase in prevalence, with more villages shifting to Quadrant I, such as Nisombalia and Tellumpoccoe. Only a few villages remained in Quadrant II (the ideal condition), such as Marumpa and Pabbentengan, highlighting the need to evaluate the quality of long-term nutrition interventions. Wasting increased significantly in some villages, with four villages in Quadrant I in August, including villages that were previously in Quadrant II or III, indicating a surge in wasting issues despite optimal D/S coverage.

The following villages demonstrated consistency in occupying priority quadrants (I or IV), either due to high prevalence or previously low coverage:

- Bonto Mate'ne: Consistently in Quadrant I for stunting and wasting, requiring attention despite high D/S coverage.
- A'Bulosibatang: Consistently in Quadrant I for stunting (February and August), indicating persistent chronic problems that have not been addressed.
- Nisombalia: Increasing nutritional problems, shifting to Quadrant I in all indicators in August, making it a high-priority area for multi-indicator interventions.
- Temmappaduae and Pabbentengan: Previously in Quadrant IV, some improvements were observed; ongoing monitoring and program strengthening are needed to prevent regression.

DISCUSSION

The results of this study indicate that child weighing coverage (D/S) in the working area of the Marusu Community Health Center increased significantly from an average of 83.90% in February 2024 to 100% across all villages in August 2024. This achievement reflects success in the quantitative aspect of growth monitoring; however, it did not consistently translate into improvements in the nutritional status of children, as evidenced by the increased prevalence of underweight, stunting, and wasting in several areas.

The shift of several villages into Quadrant I for the underweight indicator (e.g., Marumpa, Pabbentengan, and Nisombalia) suggests that despite optimal weighing coverage, underweight problems persist. This aligns with Yanti et al. (2019), who emphasized that high D/S coverage does not guarantee good nutritional status if not accompanied by quality nutrition interventions and appropriate follow-up at *posyandu*. According to Nursyam et al. (2022), underweight conditions are often associated with improper caregiving practices, recurrent infections, and limited access to nutritious food, which cannot be addressed by coverage alone.

Stunting prevalence surged significantly from an average of 8.97% to 17.74% over six months. However, this sharp increase should be interpreted with caution. Since stunting is a chronic (long-term) issue, biologically, the prevalence rarely spikes dramatically within such a short period in the same population unless extreme factors, such as famine, occur. Therefore, the surge is likely attributed to the achievement of 100% D/S coverage, which successfully unmasked previously hidden cases that were underreported in the February period due to incomplete sampling. This finding demonstrates the effectiveness of the posyandu surveillance function: when monitoring coverage is optimal, the true magnitude of nutritional problems is revealed, highlighting the urgent need for targeted interventions in the identified priority villages (Quadrant I). This is consistent with Black et al. (2013), who stated that stunting requires multi-sectoral interventions beginning within the first 1,000 days of life. Effective stunting reduction necessitates the integration of nutrition, sanitation, education, and primary healthcare services. A study by

Fitriani et al. (2021) in Bone Regency similarly found that high nutrition service coverage does not necessarily correlate directly with stunting reduction if the quality and sustainability of interventions are inadequate.

Wasting, as an indicator of acute malnutrition, is highly sensitive to short-term changes. The analysis showed an increase in the average prevalence from 5.31% to 11.88%. Four villages fell into Quadrant I in August, reflecting a concerning rise in acute malnutrition cases. Regarding the potential causes, this sharp increase may be related to recent infectious diseases (such as diarrhea or respiratory infections) or temporary food insecurity, consistent with factors identified (1). However, since this study relied on secondary surveillance data, specific morbidity records were not analyzed to confirm a direct causal link. Nevertheless, the identification of these cases through 100% D/S coverage confirms that the monitoring system functioned effectively as an early detection tool, necessitating immediate follow-up from health services to investigate and treat these acute cases**.**

Villages consistently located in Quadrant I, such as Bonto Mate'ne, A'Bulosibatang, and Nisombalia, should be prioritized in nutrition program planning and implementation. Consistency in priority quadrants indicates a high nutritional burden despite maximal service coverage, necessitating evaluation of *posyandu* service quality, cadre training, and cross-sectoral collaboration. Overall, the findings reinforce the argument that D/S coverage is only a process indicator and must be supplemented by analyses of service quality, intervention effectiveness, and understanding of the socio-economic context. This is in line with the Ministry of Health (2023) guideline, which emphasizes that nutrition indicators should be assessed holistically, not solely based on coverage figures.

Conclusion

This study concludes that the achievement of 100% child weighing coverage (D/S) in the Marusu Community Health Center area successfully revealed the true burden of nutritional problems that were previously underreported. The sharp increase in stunting and wasting prevalence should be interpreted as the unmasking of hidden cases due to improved monitoring coverage, rather than a failure of ongoing interventions. This confirms that optimal D/S coverage functions effectively as an early detection tool. However, the quadrant analysis results which consistently placed villages such as Nisombalia, Bonto Mate'ne, and A'Bulosibatang in Quadrant I indicate that the actual nutritional load in the community is indeed high. Therefore, effective surveillance must be immediately followed by comprehensive, high quality interventions and cross-sectoral collaboration to address the identified cases in these priority areas

Reference

1. Bahar M.A., Galistini G.F., Eliyanti U., Mohi A.R. 2024. Gambaran Nilai Utilitas Kesehatan Anak dengan Malnutrisi: Studi pada Kasus Stunting, Wasting, dan Underweight di Indonesia. Jurnal Mandala Parmacon Indonesia. 10(2), 610-617. DOI : 10.35311/jmpi.v10i2.656
2. Rahayu A., Yulindasari F., Putri A.O., Anggraini L. 2018. Studi Guide Stunting dan Upaya Pencegahannya bagi Mahasiswa Kesehatan Masyarakat. Yogyakarta: CV Mine.
3. Kemenkes. 2024. Hasil Survei Status Gizi Indonesia 2024. Jakarta: Kementerian Kesehatan Republik Indonesia.
4. Yanti M., Asbiran N., Rusti S. 2019. Analisis Faktor yang Mempengaruhi Cakupan Penimbangan Balita ke Posyandu Balita di Kota Padang Tahun 2018. Jurnal Ilmu Kesehatan. 3(1), 1-7. Doi:10.33757/Jik.V3i1.151
5. Kemenkes. 2022. Profil Kesehatan Indonesia Tahun 2022. Jakarta: Kementerian Kesehatan Republik Indonesia.
6. Kemenkes. 2023. Profil Kesehatan Indonesia Tahun 2023. Jakarta: Kementerian Kesehatan Republik Indonesia.
7. Black R.E., et al. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet, 382(9890), 427–451. https://doi.org/10.1016/S0140-6736(13)60937-X
8. Fitriani, F., Lestari, T., & Hasanah, N. (2021). Analisis Cakupan Program Gizi dan Kejadian Stunting di Kabupaten Bone. Media Kesehatan Masyarakat Indonesia, 20(1), 1–7. https://doi.org/10.30597/mkmi.v20i1.11538
9. Kementerian Kesehatan RI. (2023). Profil Kesehatan Indonesia Tahun 2023. Jakarta: Kementerian Kesehatan RI. https://pusdatin.kemkes.go.id
10. Nursyam, H., Rohmadi, M. D., & Izzaty, R. E. (2022). Determinants of Underweight in Children Under Five in Indonesia. Journal of Nutrition and Health Research, 5(2), 88–95. https://doi.org/10.30604/jgmi.v5i2.255