Jurnal Bidan Cerdas
e-ISSN: 2654-9352 dan p-ISSN: 2715-9965
Volume 7 Issue 2, 2025, page 300-307
DOI: 10.33860/jbc.v7i2.4235
Website: https://ojs.polkespalupress.id/index.php/JBC
Publisher: Poltekkes Kemenkes Palu

Role of Management Functions in Stunting Coverage among Nutrition Officers in Majalengka Regency

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ARTICLE INFO

Article History:

Received: 2025-07-08
Accepted: 2025-09-12
Published: 2025-09-30

Keywords:

Stunting; management functions; planning; implementation; supervision.

ABSTRACT

Background: Stunting remains a major public health problem in Indonesia, with persistently high prevalence despite ongoing national reduction programs. Primary healthcare centers (*Puskesmas*) play a frontline role in stunting prevention, yet challenges in management functions such as planning, implementation, and supervision may affect program outcomes. **Methods:** A cross-sectional study was conducted from July to August 2024 involving all 41 nutrition officers at *Puskesmas* in Majalengka Regency through total sampling. Data on planning, implementation, and supervision functions were collected using a validated questionnaire, while stunting coverage was obtained from official Puskesmas reports. Variables were categorized into "good" and "poor" based on mean scores. Statistical analysis included Chi-square tests and binary logistic regression to identify factors associated with stunting coverage. **Results:** More than half of respondents demonstrated poor planning (53.7%), poor implementation (51.2%), and poor supervision (61.0%). Bivariate analysis showed significant associations between all management functions and stunting coverage ($p < 0.05$). Multivariate logistic regression revealed that planning (OR = 6.9; 95% CI = 1.5–31.7; p = 0.01) and implementation (OR = 5.2; 95% CI = 1.1–23.7; p = 0.03) were significant predictors, with planning emerging as the strongest factor. **Conclusion:** Planning and implementation functions are critical determinants of stunting program coverage at the Puskesmas level. Weaknesses in technical capacity, human resources, and cross-sectoral collaboration hinder program effectiveness. Strengthening participatory planning, enhancing community engagement, and improving supervision mechanisms are essential strategies to optimize stunting reduction efforts. Further studies with larger and more diverse samples are recommended to validate these findings.

INTRODUCTION

Stunting remains a major public health concern due to its long-term effects on child development, human capital, and national productivity. According to the World Health Organization (WHO), stunting is defined as impaired growth and development when a child's height-for-age z-score (HAZ) falls below –2 SD of the WHO Child Growth Standards (Setiyawati et al., 2024). Stunting increases childhood morbidity, impairs cognitive and motor development, and reduces productivity in adulthood.

Globally, stunting prevalence reached 22% (149.2 million children) in 2020, with Indonesia recording one of the highest burdens in Southeast Asia (WHO, 2022). To

address this, WHO has targeted a 40% global reduction by 2025. Nationally, the Indonesian Nutrition Status Survey (SSGBI) reported prevalence of 21.6% in 2021 and 24.4% in 2022. The Indonesian government, through the 2020–2024 National Medium-Term Development Plan (RPJMN), set a target to reduce prevalence from 27.6% in 2019 to 14% by 2024 (BKPK, 2024).

At the provincial level, West Java showed a decline from 26.2% in 2019 to 20.2% in 2022 (kenmenkes). However, Majalengka Regency recorded fluctuating prevalence that remained above the provincial average despite the implementation of various stunting reduction programs (Dinas Kesehatan, 2024). This highlights local management challenges that require closer examination.

Effective stunting reduction depends on management functions at the primary healthcare (Puskesmas) level, including planning, implementation, and supervision. Evidence shows that proper planning improves coverage of nutrition interventions, implementation of convergence actions enhances outcomes, and supervision contributes to program success (Picauly, 2021).

A preliminary study at the Majalengka District Health Office revealed that a considerable proportion of Puskesmas consistently reported stunting coverage below target, with 47% falling short in 2021, 46% in 2022, and 65.6% in 2023(Dinas Kesehatan, 2024). These findings suggest persistent management problems and indicate a research gap in understanding how management functions influence stunting coverage at the primary healthcare level. Therefore, this study aims to analyze the relationship between planning, implementation, and supervision functions and stunting coverage among nutrition officers.

METHODS

This study employed a quantitative analytical correlational design with a cross-sectional approach (Diaz, 2019). Data collection was conducted between July 13 and August 10, 2024, across the working areas of community health centers (Puskesmas) in Majalengka Regency, West Java Province, Indonesia. Both primary data (collected directly from respondents) and secondary data (extracted from institutional records) were utilized. The cross-sectional design was considered appropriate to identify associations, although it does not allow inference of causality

The study population comprised all nutrition officers working in Puskesmas within The study population comprised all nutrition officers working in Puskesmas within Majalengka Regency. Given the small total population size, total sampling was applied, resulting in a sample of 41 respondents. Inclusion criteria were: (1) currently employed as nutrition officers during the study period, and (2) directly involved in stunting prevention programs. Although total sampling minimized selection bias, the relatively small sample size may limit the statistical power of the study.

The independent variables were the management functions of planning, implementation, and supervision, measured through a structured questionnaire. Each function was assessed using multiple items rated on a Likert scale (1 = strongly disagree to 5 = strongly agree). Scores were categorized as “good” (≥ mean score) or “poor” (< mean score). Planning Function – process of determining objectives and outlining actions for stunting reduction (10 items). Implementation Function – execution of planned activities and mobilization of team members (8 items). Supervision Function – monitoring, evaluation, and corrective actions (7 items).

The dependent variable was stunting coverage, defined as the proportion of children under five who were screened and reported in the Puskesmas Stunting

Coverage Report 2023, consistent with the Ministry of Health reporting system. It refers to program reach (coverage) rather than prevalence.

Primary data on management functions were obtained using a validated questionnaire developed based on previous studies (Siramaneerat et al., 2024). The instrument was pre-tested for face and content validity, and reliability was confirmed with Cronbach's alpha > 0.70. Secondary data on stunting coverage were retrieved from official Puskesmas reports and cross-verified with the Majalengka District Health Office. Scores for each management function were obtained from a structured questionnaire. The mean score was used as the cut-off point. Respondents with scores below the mean were categorized as "poor," while those with scores equal to or above the mean were categorized as "good" . Stunting coverage was categorized into "low" and "high" based on the standard target set by the Indonesian Ministry of Health, which defines adequate coverage as ≥80%. In this study, coverage <80% was categorized as "low," while coverage ≥80% was categorized as "high".

Data analysis followed a three-stage process. Univariate Analysis, Descriptive statistics (frequency, percentage, mean, and standard deviation) summarized respondent characteristics and variable distributions(Subhaktiyasa, 2024). Bivariate Analysis, The Chi-Square test examined associations between independent variables and stunting coverage, with significance set at $p < 0.05$(Sugiyono, 2018). Multivariate Analysis Binary logistic regression was used to assess the simultaneous effects of management functions on stunting coverage. Variables with $p < 0.25$ in bivariate analysis and relevant demographic characteristics (e.g., age, years of service, education) were included in the model to control for confounding. Results were presented as odds ratios (OR) with 95% confidence intervals (CI).

Ethical clearance for this study was obtained from the Research Ethics Committee (Komite Etik Penelitian, KEP) of Mahardika, no. 023/KEP.ITEKESMA/III/2024. All participants provided informed consent prior to data collection. Confidentiality and anonymity were maintained throughout the study, and participation was entirely voluntary.

RESULTS

This study analyzed the demographic characteristics of respondents as well as the distribution of their planning, implementation, and supervision functions in relation to stunting coverage. The findings are presented in the following tables.

Table 1. Demographic characteristics of respondents (n = 41)

Characteristic	Category	n	%
Age (years)	<30	10	24.4
	30–39	15	36.6
	≥40	16	39.0
Gender	Male	7	17.1
	Female	34	82.9
Education	Diploma in Nutrition	18	43.9
	Bachelor's Degree	20	48.8
	Master's Degree	3	7.3
Years of Service	<5	9	22.0
	5–10	12	29.3
	>10	20	48.7

As shown in Table 1, most respondents were female (82.9%) and aged ≥40 years (39.0%). Nearly half held a bachelor's degree (48.8%), while 43.9% had a diploma, and 7.3% a master's degree. Almost half (48.7%) had more than 10 years of service, indicating that the majority were experienced female nutrition officers.

Table 2. Distribution of planning, implementation, and supervision functions, and stunting coverage among nutrition officers (n = 41)

Variables	Category	n	%
Planning Function	Poor	22	53.7
	Good	19	46.3
Implementation Function	Poor	21	51.2
	Good	20	48.8
Supervision Function	Poor	25	61.0
	Good	16	39.0
Stunting Coverage	Low	22	46.3
	High	19	53.7

More than half of respondents demonstrated poor planning (53.7%), poor implementation (51.2%), and poor supervision (61.0%) functions. Regarding stunting coverage, 46.3% were categorized as low and 53.7% as high.

Table 3. Relationship between management functions and stunting coverage among nutrition officers

Variables	Category	High Coverage n (%)	Low Coverage n (%)	Total n (%)	p-value
Planning Function	Poor	15(68.2)	7(31.8)	22 (100)	<0.001
	Good	4 (21.1)	15 (78.9)	19 (100)	
Implementation Function	Poor	15 (71.4)	6 (28.6)	21 (100)	<0.001
	Good	4(20.0)	16(80.0)	20 (100)	
Supervision Function	Poor	15 (60.0)	10 (40.0)	25 (100)	0.030
	Good	4 (25.0)	12(72.2)	16(100)	

Poor planning function was significantly associated with higher stunting coverage (68.2% vs. 21.1%; $p < 0.001$). Similarly, poor implementation function was linked with higher coverage (71.4% vs. 20.0%; $p < 0.001$), and poor supervision showed a significant relationship (60.0% vs. 25.0%; $p = 0.03$).

Table 4. Final logistic regression model of factors associated with stunting coverage

Variables	p-value	OR	95% CI
Planning Function	0.01	6.9	1.5–31.7
Implementation Function	0.03	5.2	1.1–23.7

In the final logistic regression model (Table 4), planning and implementation functions remained significant predictors of stunting coverage. Respondents with good planning function had 6.9 times higher odds of achieving low stunting coverage (OR = 6.9; 95% CI = 1.5–31.7; $p = 0.01$), while good implementation function increased the odds by 5.2 times (OR = 5.2; 95% CI = 1.1–23.7; $p = 0.03$).

DISCUSSION

This study found that planning, implementation, and supervision functions were significantly associated with stunting coverage at the Puskesmas level in Majalengka District. Among these, planning emerged as the most dominant factor, indicating that weaknesses in this function substantially increase the likelihood of poor stunting program coverage.

The importance of planning in stunting reduction programs has been highlighted in several studies. Picauly, (2021) and Sibalaya et al., (2023) note that planning determines the direction and integration of interventions, while Fernandez et al., (2019) emphasize that well-structured plans must be followed by consistent monitoring. Our findings are consistent with this literature, but they also highlight practical challenges, such as limited technical capacity in problem identification and insufficient cross-sector involvement. These gaps suggest that strengthening human resources and ensuring inter-sectoral collaboration are critical for effective planning(Untoro et al., 2017).

Implementation also showed a significant relationship with stunting coverage. Previous studies Syahrir et al., (2023; Teungku Nih & Zakiyuddin, (2020) indicate that successful implementation requires mobilization of resources and active community participation. In our study, inadequate implementation was largely due to low participation in Posyandu activities and the limited number of nutrition officers (Fadiyah et al., 2020; Marisa, Dioso, Elengoe, & Kamasturyani, 2025; Marisa, Dioso, Elengoe, Kamasturyani, et al., 2025). This finding underscores the need for strategies that enhance community engagement and optimize existing human resources through task-shifting and cross-program collaboration, as suggested in global evidence on primary health care strengthening (WHO, 2025).

Supervision was another important determinant. Consistent with Sugiyanto, (2023) and Dakhi, (2016), our results indicate that regular monitoring and timely corrective action are essential for program effectiveness. However, high workloads and limited staff capacity reduced the effectiveness of supervision in this study. Strengthening supervision mechanisms, possibly through digital monitoring tools or decentralized evaluation systems, could help overcome these barriers(Widyaningsih et al., 2022).

The multivariate analysis revealed planning remained the strongest predictor of stunting coverage, even after accounting for other management functions. However, the wide confidence intervals indicate potential instability of the estimates, likely due to the small sample size. This limitation, along with reliance on self-reported data and the use of cross-sectional design, means that causal inferences cannot be made. Furthermore, because the study was conducted in a single district, the findings should not be generalized without caution ((Afework et al., 2021; Annisa et al., 2025; Nurhaeni et al., 2025).

Despite these limitations, the study contributes to the understanding of how core management functions affect stunting program outcomes at the frontline level. Integrating lessons from both local and international contexts suggests that effective stunting reduction requires: (1) evidence-based and participatory planning, (2) strong community engagement during implementation, and (3) consistent, supportive supervision mechanisms(Darwis et al., 2021; Sudarman et al., 2025; Suhartatik & Al Faiqoh, 2022). Future research should involve larger and more diverse samples, incorporate longitudinal designs, and explore the use of innovative tools to strengthen management functions in stunting prevention programs.

The findings of this study emphasize that strengthening management functions particularly planningis critical to improving stunting program coverage. At the policy

level, these results align with Indonesia's national strategy for stunting reduction, which emphasizes convergence across sectors, evidence-based planning, and accountability mechanisms. Ensuring that Puskesmas have adequate technical capacity, sufficient human resources, and effective supervision systems is essential to achieving the 2025 national target of reducing stunting prevalence. Integrating digital monitoring tools, enhancing inter-sectoral collaboration, and institutionalizing continuous training for nutrition officers could further enhance program performance. By addressing these managerial gaps, local governments can contribute more effectively to the national agenda of improving child growth and breaking the intergenerational cycle of malnutrition.

CONCLUSION

This study demonstrates that planning, implementation, and supervision functions are significantly associated with stunting coverage at the Puskesmas level, with planning emerging as the most influential factor. Weaknesses in technical capacity, limited human resources, and insufficient cross-sector collaboration were key barriers to effective program management. Strengthening participatory and evidence-based planning, enhancing community engagement, and adopting innovative supervision mechanisms are essential strategies for improving stunting program coverage. Future research with larger and more diverse samples is needed to validate these findings and guide national efforts to reduce stunting prevalence.

Author's Contribution Statement: Authors Detail each author's role in the research and manuscript development. Lilis Banowati: Conceptualization, Methodology, Software, Megi Melati Dwi Putri: Data curation, Writing-Original draft preparation. Cucu Herawati: Visualization, Investigation. Rokhmatul Hikmat: Supervision. Awis Hamid Dani: Software, Validation. Muslimin: Writing- Reviewing and Editing.

Conflicts of Interest: The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

Source of Funding Statements: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgments: The authors would like to express their sincere gratitude to STIKes Cirebon for the institutional support. Special thanks are extended to the all respondents who contributed their valuable time and insights, as well as colleagues who assisted in the technical development and evaluation process.

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