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Determinants of community health volunteers in Balikpapan City: The role of incentives, motivation, and retention

Determinan kinerja tim penggerak keluarga di Kota Balikpapan: Peran insentif, motivasi, dan retensi

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Abstract

Community Health Volunteers (CHVs) play a critical role in supporting stunting reduction programs; however, their performance in Balikpapan City remains suboptimal, as reflected in low family assistance coverage and increasing local stunting trends. This study aimed to analyze the influence of cash incentives, non-cash incentives, motivation, and retention on CHV performance. A cross-sectional study was conducted from March to July 2025, involving 603 CHVs, with 235 respondents selected through purposive sampling. Data were collected using a structured questionnaire that had undergone validity and reliability testing, and the variables were measured based on predefined operational definitions. Data analysis included univariate, bivariate (chi-square), and multivariate (logistic regression) tests. The results showed that retention and marital status were significantly associated with the CHV performance. Respondents with high retention had significantly higher odds of good performance (OR = 8.217; 95% CI: 3.640-18.549; p < 0.001), and marital status also showed a significant effect (OR = 2.629; 95% CI: 1.090-6.342; p = 0.031). In contrast, cash incentives, non-cash incentives, and motivation were not significantly associated with performance in the final model. In conclusion, retention is the most dominant factor influencing CHV performance. Therefore, strengthening CHV performance requires strategies focused on sustaining volunteer engagement and retention, alongside supportive non-financial mechanisms.

Keywords: Stunting prevalence, community health volunteers, incentives, motivation, personal retention, job performance

Abstrak

Tim Penggerak Keluarga (Community Health Volunteers/CHVs) memiliki peran penting dalam mendukung program penurunan stunting; namun, kinerja mereka di Kota Balikpapan masih belum optimal, yang tercermin dari rendahnya cakupan pendampingan keluarga serta meningkatnya tren stunting di tingkat lokal. Penelitian ini bertujuan untuk menganalisis pengaruh insentif tunai, insentif non-tunai, motivasi, dan retensi terhadap kinerja CHV. Penelitian ini menggunakan desain potong lintang yang dilaksanakan pada Maret hingga Juli 2025 dengan melibatkan 603 CHV, dan sebanyak 235 responden dipilih menggunakan teknik purposive sampling berdasarkan kriteria inklusi yang telah ditetapkan. Data dikumpulkan menggunakan kuesioner terstruktur yang telah melalui uji validitas dan reliabilitas, serta seluruh variabel diukur berdasarkan definisi operasional yang telah ditentukan. Analisis data dilakukan secara univariat, bivariat (Chi-square), dan multivariat (regresi logistik). Hasil penelitian menunjukkan bahwa retensi dan status perkawinan berhubungan signifikan dengan kinerja CHV. Responden dengan retensi tinggi memiliki peluang yang secara

signifikan lebih besar untuk mencapai kinerja baik (OR = 8,217; 95% CI: 3,640–18,549; p < 0,001), sementara status perkawinan juga menunjukkan pengaruh yang signifikan (OR = 2,629; 95% CI: 1,090–6,342; p = 0,031). Sebaliknya, insentif tunai, insentif non-tunai, dan motivasi tidak berhubungan signifikan dengan kinerja dalam model akhir. Kesimpulan, retensi merupakan faktor paling dominan yang memengaruhi kinerja CHV. Oleh karena itu, peningkatan kinerja CHV memerlukan strategi yang berfokus pada keberlanjutan keterlibatan dan retensi kader, serta dukungan non-finansial yang berkelanjutan.

Kata Kunci: Retensi prevalensi, stunting, tim penggerak keluarga, insentif, motivasi, retensi personel, kinerja kerja

Introduction

Stunting remains a major global public health challenge, affecting 22.3% of children under the age of five worldwide (WHO, 2023). In Indonesia, despite ongoing national efforts, the prevalence of stunting remains above the national target, posing a significant threat to human capital development and long-term economic productivity. Chronic malnutrition during the first 1,000 days of life has been widely recognized as a critical determinant of impaired physical growth and cognitive development and an increased risk of morbidity, as highlighted by global evidence from the WHO, UNCEF, and the Lancet Maternal and Child Nutrition Series (WHO, 2023). These conditions present a serious barrier to achieving Indonesia Emas 2045, which envisions a healthy, intelligent, productive and competitive population (BKKBN, 2021; Ministry of Health RI, 2020).

To accelerate stunting reduction, the Indonesian government has implemented integrated strategies, including strengthening the role of *Tim Pendamping Keluarga* (TPK), hereafter referred to as Community Health Volunteers (CHVs). Established under Presidential Regulation No. 72 of 2021, CHVs are responsible for delivering community-based interventions that target families at risk of stunting. These volunteers, consisting of health workers, PKK cadres, and Family Planning (KB) cadres, operate at the community level under the supervision of Family Planning Counselors. Their roles include providing health education, facilitating referrals, monitoring household conditions, and identifying risk factors among pregnant women, infants, and young children (BKKBN, 2021). The Health Act No. 17 of 2023 further recognizes CHVs as essential components of the national health system, emphasizing the need for adequate incentives, capacity building, and institutional support.

At the local level, the Balikpapan City Government provides cash incentives and periodic training programs. However, the CHV performance in Balikpapan remains suboptimal. In 2023, the coverage of family assistance for stunting-risk households in East Kalimantan was only 7.86%, with Balikpapan reporting the lowest coverage at 3.97% (Satgas PPS Kaltim, 2023). Although coverage increased to 43.42% in 2024 (DP3AKB Balikpapan, 2024), it still falls short of the program targets. Simultaneously, the prevalence of stunting in Balikpapan has shown an increasing trend, rising from 17.6% in 2021 to 21.6% in 2023, exceeding the national prevalence of 14% (TPPS Provinsi Kaltim, 2024).This situation highlights the need to better understand the factors influencing CHV performance.

Previous studies have identified multiple determinants of CHV performance, including financial and non-financial incentives, motivation, and organizational support (Pandya et al., 2022; Abuya et al., 2021 ; Agarwal et al., 2021). However, evidence suggests that financial incentives alone are insufficient to ensure optimal performance, as issues such as inadequate compensation, delayed payment, and unequal distribution may reduce their effectiveness (Alexandra & Yusran, 2024). Non-financial incentives, including training, supervision, and recognition, have been shown to enhance intrinsic motivation and job satisfaction, although their availability is often inconsistent (Colvin et al., 2021). Retention has emerged as a critical factor influencing continuity, experience accumulation, and long-term engagement of CHVs in community-based programs.

Despite these findings, most previous studies have examined these factors separately rather than simultaneously, particularly in the context of stunting reduction programs (SRPs). For instance, several studies have focused primarily on financial or non-financial incentives without integrating psychosocial and organizational factors, such as motivation and retention (Pandya et al., 2022; Agarwal et al., 2021; Colvin et al., 2021). Moreover, limited evidence is available from local settings with increasing stunting prevalence and expanding program responsibilities in the country. Since 2024, CHVs have also been involved in implementing the Free Nutritious Food (*Makan Bergizi Gratis/MBG*) Program, which has increased their workload and responsibilities. This expansion underscores the importance of understanding how incentives, motivation, and retention interact to influence CHV performance in a more complex program environment.

Therefore, this study addresses a critical gap by examining the combined association of cash incentives, non-cash incentives, motivation, and retention with CHV performance in Balikpapan. Unlike previous studies, this study adopts a comprehensive approach by integrating multiple determinants within a single analytical framework, focusing on a high-burden setting with increasing program demands. The findings provide evidence-based insights for policymakers to design more effective and sustainable strategies to strengthen CHV performance and accelerate stunting reduction.

Based on this background, this study aims to analyze the association between cash incentives, non-cash incentives, motivation, and retention on the performance of Community Health Volunteers (CHVs) in Balikpapan.

Methods

Study Design

This study employed an analytical survey with a cross-sectional design to examine the association between cash incentives, non-cash incentives, motivation, retention, and performance of Community Health Volunteers (CHVs). The study was conducted in six districts of Balikpapan City, Indonesia from April to October 2025.

Sample Size and Sampling Technique

The sample size was calculated using the Lemeshow formula, resulting in 235 respondents. A purposive sampling technique was applied to select participants based on predefined inclusion and exclusion criteria of the study.

The inclusion criteria were as follows: (1) active CHVs involved in stunting prevention programs, (2) having served for at least six months, and (3) willingness to participate in the study. The exclusion criteria were CHVs who were inactive during the data collection period or had incomplete questionnaire responses. This approach ensured that the selected respondents were relevant to the study objectives while minimizing selection bias.

Data Collection Procedures

Primary data were collected using a structured questionnaire administered directly by trained enumerators. The questionnaire was developed based on the relevant literature and previous studies on CHV performance and incentive systems (Pandya et al., 2022; Agarwal et al., 2021). Prior to data collection, the instrument was assessed for its validity and reliability. Content validity was assessed by public health experts, and construct validity was evaluated using correlation analysis. Reliability testing was conducted using Cronbach's alpha, with all variables demonstrating acceptable reliability coefficients ($\alpha > 0.70$).

To minimize information bias, enumerators were trained to standardize the administration process, and respondents were assured of confidentiality to encourage honest answers. Secondary data were obtained from relevant institutions to support the contextual analysis.

Measurement of Variables

All variables were measured using standardized operational definitions. Cash and non-cash incentives were assessed based on the adequacy and regularity of the incentives received. Motivation and retention were measured using Likert-scale items adapted from previous research. Performance was assessed based on key CHV responsibilities, including family assistance coverage, reporting, and program implementation.

Each variable was scored and categorized into two groups (e.g., high/low or adequate/inadequate) based on predetermined cut-off points derived from the total score distribution. These categories were used for subsequent statistical analyses.

Data Processing Techniques

Data analysis was performed through editing, coding, data entry, cleaning, and tabulation. Missing data were checked during the data cleaning process, and incomplete responses were excluded based on the predefined criteria. Data consistency was verified to ensure accuracy and completeness prior to the analysis.

Data Analysis Model

Data analysis was conducted using the SPSS software (version 25). Univariate analysis was used to describe the respondent characteristics and study variables. Bivariate analysis using the chi-square test was performed to assess the association between independent variables and CHV performance.

Multivariate analysis was conducted using binary logistic regression to identify the most dominant factors associated with the CHV performance. Variables with p-values < 0.25 in the bivariate analysis were included in the initial regression model. A stepwise method was applied to obtain the final model, while controlling for potential confounding variables. Multicollinearity was assessed using the variance inflation factor (VIF), and the model fit was evaluated using the Hosmer-Lemeshow goodness-of-fit test.

Ethical Approval

This study was approved by the Health Research Ethics Committee of the Faculty of Medicine, Mulawarman University (NO. 129/KEPK-FK/VI/2025). All participants provided informed consent before data collection. The confidentiality and anonymity of the respondents were strictly maintained throughout the study, and participation was entirely voluntary.

Result and Discussion

Respondent Characteristics

A total of 235 Community Health Volunteers (CHVs) participated in this study. Most respondents were aged 46-65 years, followed by those aged 25-46 years, while only a small proportion belonged to the 17-25 age group. Due to the limited number of respondents in the youngest category, findings related to this group should be interpreted with caution.

Most respondents had completed secondary education (senior high school), and most were married. In this study, CHV performance was measured based on the accomplishment of essential program tasks, including the family assistance coverage, reporting compliance, and program implementation. Motivation was measured using a Likert-scale instrument reflecting intrinsic and extrinsic motivation factors and categorized as high or low based on predetermined cut-off values.

Table 1. Respondent characteristics

Characteristics	Performance				p-value
	Good		Not Good		
	n	%	n	%	
Age					0.150
17–25 years	2	100	0	0	
26–45 years	46	45.5	55	54.5	
46–65 years	72	54.5	60	45.5	
Education					0.462
Junior High School	10	37	17	63	
Senior High School	81	52.9	72	47.1	
Diploma	14	50	14	50	
Bachelor's degree	15	55.6	12	44.4	
Marital Status					0.008
Unmarried	9	100	0	0	
Married	103	50	103	50	
Divorced	8	40	8	40	

Bivariate analysis showed that age and education were not significantly associated with CHV's performance ($p > 0.05$). However, marital status was significantly associated with performance ($p = 0.008$), with married respondents more likely to demonstrate good

performance than unmarried or divorced respondents. These findings should be interpreted cautiously because of the small number of unmarried respondents. These findings indicate that the CHV work environment supports favorable psychological and structural conditions to sustain their performance.

Table 2. Associations of incentives, motivation, and retention with community health volunteer performance

Variable	Good Performance, n (%)	Poor Performance, n (%)	Total, n (%)	p-value	OR (95% CI)
Cash incentives					
High	118 (83.1)	24 (16.9)	142 (100)	0.707	0.87 (0.42–1.79)
Low	79 (84.9)	14 (15.1)	93 (100)		Reference
Non-cash incentives					
Adequate	127 (88.8)	16 (11.2)	143 (100)	0.010	2.50 (1.25–5.01)
Inadequate	70 (76.1)	22 (23.9)	92 (100)		Reference
Motivation					
High	31 (16.4)	158 (83.6)	189 (100)	0.845	0.92 (0.38–2.23)
Low	39 (84.8)	7 (15.2)	48 (100)		Reference
Retention					
High	29 (13.9)	185 (86.4)	214 (100)	<0.001	4.78 (1.85–2.33)
Low	9 (42.9)	12 (57.1)	21 (100)		Reference

Table 3. Multivariable Logistic Regression analysis of factors associated with community health volunteer performance

Model Step	Variable	β	p-value	Adjusted OR	95% CI
Step 1	Cash incentives	−0.470	0.11	0.625	0.352–1.111
	Non-cash incentives	−0.117	0.687	0.89	0.505–1.569
	Motivation	−0.194	0.505	0.824	0.466–1.457
	Marital status	0.985	0.03	2.677	1.099–6.524
	Retention	2.114	<0.001	8.28	3.639–18.839
Step 2	Cash incentives	−0.473	0.107	0.623	0.351–1.107
	Motivation	−0.201	0.49	0.818	0.463–1.446
	Marital status	0.968	0.032	2.631	1.086–6.378
	Retention	2.104	<0.001	8.201	3.610–18.627
Step 3	Cash incentives	−0.466	0.111	0.628	0.354–1.114
	Marital status	0.926	0.039	2.525	1.049–6.078
	Retention	2.095	<0.001	8.122	3.583–18.412
Step 4 (final model)	Marital status	0.967	0.031	2.629	1.090–6.342
	Retention	2.106	<0.001	8.217	3.640–18.549
	Constant	−3.718	<0.001	0.024	—

The bivariate analysis showed that cash incentives were not significantly associated with CHV performance (p = 0.707; OR = 0.87; 95% CI: 0.42–1.79). In contrast, non-cash incentives were significantly associated with CHV performance (p = 0.010; OR = 2.50; 95% CI: 1.25–5.01). CHVs who received adequate non-cash incentives had 2.50 times the odds of the specified performance outcome compared with those who received inadequate non-cash incentives.

Retention was also significantly associated with the CHV's performance (p < 0.001). However, the direction and magnitude of this association should be interpreted after confirming the coding of performance and retention variables in the original statistical analysis.

In the multivariable logistic regression analysis, marital status and retention remained significantly associated with the CHV's performance in the final model. Marital status was associated with approximately 2.6-fold higher odds of the modeled performance outcomes (adjusted OR [AOR] = 2.629; 95% CI: 1.090–6.342; p = 0.031). Retention showed the strongest association, with an AOR of 8.217 (95%

CI: 3.640–18.549; p < 0.001). Cash and non-cash incentives and motivation were not statistically significant in the final multivariable model.

Retention as the Dominant Predictor of CHV Performance

This study demonstrated that retention is the strongest factor associated with CHV performance. CHVs with longer retention periods were substantially more likely to achieve good performance outcomes than those with lower retention levels. This finding suggests that sustained engagement is critical for improving the effectiveness and continuity of community-based health programs.

From an organizational perspective, retention reflects long-term commitment, accumulated field experience, and adaptation to the program's responsibilities. CHVs who remain active over extended periods are more likely to strengthen their technical competencies, communication skills and familiarity with local health needs. In addition, prolonged engagement enables volunteers to establish stronger trust and credibility within the communities they serve, thereby facilitating more effective health promotion and service delivery. Long-term retention may also contribute to stronger program ownership and greater consistency in implementing community health interventions.

This finding is consistent with previous studies emphasizing the importance of sustained engagement in improving CHV effectiveness and program sustainability. Evidence from Uganda also demonstrated that long-term retention among volunteer CHWs contributed to sustained community health service delivery and improved the continuity of care. Retention is further supported by organizational commitment theory, which suggests that individuals who remain within an organization for a longer period tend to demonstrate greater loyalty, responsibility, and work effectiveness (Turyakira, 2021; Colvin et al., 2021). Therefore, strengthening retention mechanisms should be a strategic priority for community health programs aiming to improve service quality and sustainability.

Retention-oriented interventions may include supportive supervision, continuous training opportunities, recognition systems, workload adjustments and stronger institutional support. Previous evidence has shown that CHV retention is influenced not only by incentives but also by organizational culture, supervision quality, and perceived community appreciation (CHW Central, 2023; CHW Central, 2015). These findings indicate that retention should be viewed as a multidimensional organizational outcome rather than solely an individual characteristic of the employee.

Role of Marital Status in CHV Performance

Marital status was also a significant predictor of CHV performance. Married CHVs demonstrated significantly higher odds of good performance than unmarried respondents.

This association may be related to the stronger emotional, social, and logistical support systems among married individuals. Family support may help volunteers manage community responsibilities more effectively while maintaining their household obligations. Emotional stability and practical assistance from spouses may also strengthen volunteer commitment, reduce stress, and improve time management during community health activities (Thomas, 2016).

In community-based volunteer systems, family and social support are often important determinants of sustained participation and work efficiency. Married individuals may experience greater social stability, enabling them to remain consistent in fulfilling volunteer responsibilities (Gaber et al., 2020). Nevertheless, this finding should be interpreted cautiously because the number of unmarried respondents in the study was relatively small, potentially limiting the representativeness of this association. Further studies involving more diverse demographic distributions are needed to better understand the influence of marital status on the performance of volunteers.

Non-Significant Effect of Cash Incentives

Cash incentives were not significantly associated with the CHV performance. This finding indicates that financial compensation alone may not be sufficient to improve volunteer effectiveness in community health program.

The limited effect of financial incentives may reflect several contextual challenges, including inadequate compensation, delayed payment, inconsistent disbursement systems, and perceived inequities in incentive distribution. Previous studies have similarly reported that financial incentives frequently fail

to sustain volunteer engagement when compensation does not adequately reflect workload expectations or opportunity costs (Agarwal et al., 2021; Pandya et al., 2022). Additional evidence suggests that poorly structured incentive systems may reduce volunteer satisfaction and contribute to higher attrition rates.

Furthermore, CHVs are commonly driven by altruistic motivations, social recognition, and community responsibility, rather than purely economic benefits. The voluntary nature of CHV work may reduce their dependence on monetary compensation as the primary source of motivation. Previous studies have also highlighted that financial incentives alone are insufficient without supportive supervision, training opportunities, and community recognition (Samb et al., 2025; Colvin et al., 2021). Therefore, financial incentives should be positioned as complementary support mechanisms within broader organizational retention strategies.

Influence of Non-Cash Incentives

Non-cash incentives demonstrated a significant relationship with CHV performance in the bivariate analysis. CHVs who received adequate non-financial support were more likely to demonstrate better performance outcomes.

Non-cash incentives may include supportive supervision, training opportunities, transportation support, certificates of recognition, mentorship and public appreciation. Such incentives may strengthen volunteers' sense of belonging, professional identity, and perceived value in the health system. Non-financial support may also contribute to stronger social recognition and psychological satisfaction, both of which are important determinants of volunteer engagement.

However, the association between non-cash incentives and performance was not retained in the multivariate analysis, suggesting that its influence may be mediated by stronger organizational factors, such as retention. This finding indicates that while non-financial support contributes positively to volunteer engagement, sustained retention may represent a broader mechanism underlying improved volunteer performance.

Previous studies have similarly demonstrated that non-financial incentives, including training, supervision, public recognition, and opportunities for professional development, contribute substantially to volunteer motivation and retention (CHW Center, 2016; Oladeji,2023). Non-financial incentives may indirectly improve CHV capacity and engagement by strengthening organizational attachment and long-term participation in community health programs.

Motivation and CHV Performance

Motivation did not show a statistically significant association with CHV performance in the multivariate analysis. Although motivation is theoretically considered an important determinant of volunteer engagement, the absence of significance in this study may reflect the limited variability in motivation levels among respondents.

Because CHVs voluntarily participate in community health programs, most respondents may already possess relatively high intrinsic motivation, making it difficult to detect differences in motivation statistically. In addition, organizational and structural factors, such as retention, supervision quality, workload distribution, and community support, may exert stronger influences on performance outcomes than individual psychological factors alone.

This finding aligns with the literature suggesting that CHV performance is influenced by complex interactions between intrinsic motivation, organizational support, supervision, and broader health system factors. Motivation alone may not guarantee optimal performance when volunteers face operational barriers, such as limited resources, inadequate support systems, and high workloads (Colvin et al., 2021; Sarriot et al., 2021; Al-Rahmad et al., 2026).

Overall, the findings of this study indicate that retention is the most critical determinant of CHV performance within community-based health programs. While incentives and motivation remain important supportive factors, long-term engagement appears to play a more substantial role in sustaining the effectiveness of volunteers. These findings highlight the importance of developing retention-oriented strategies, including supportive supervision, continuous training, recognition systems, career development opportunities, and organizational support mechanisms that encourage sustained participation by CHVs. Strengthening retention may ultimately improve service quality, program

continuity, and community trust in community-based health interventions.

Conclusion

Retention was the most dominant factor associated with the performance of Community Health Volunteers (CHVs) in Balikpapan City. CHVs with higher retention were significantly more likely to demonstrate good performance than those with lower retention levels. Marital status was also significantly associated with CHV performance, whereas cash incentives, non-cash incentives, and motivation did not remain significant predictors in the multivariate analysis. These findings indicate that sustained engagement, organizational commitment, and long-term involvement play a more important role in improving CHV performance than financial incentives.

Practically, strengthening CHV retention should be a strategic priority through supportive supervision, continuous capacity-building programs, recognition systems, and improved organizational support. Developing sustainable retention-oriented interventions may enhance CHV effectiveness, service quality, and continuity of community-based health programs.

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