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Factors Related to the Performance of Village Midwives in the Implementation of the Immunization Program in Pesawaran Regency

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ABSTRACT

Immunization programs are among the most effective public health interventions for preventing childhood infectious diseases. National immunization coverage in Indonesia reached only 86% in 2023, below the 93% national target. Pesawaran Regency similarly faces disparities in coverage across public health center working areas. This study aims to analyze factors associated with village midwives' performance in immunization program implementation in Pesawaran Regency, and to measure the strength of associations to inform evidence-based health policy. A quantitative cross-sectional study was conducted from February–March 2026 in Pesawaran Regency. Of 147 village midwives, 108 were selected via proportional random sampling (Slovin formula, 5% margin of error). Data were collected using validated Likert-scale questionnaires (Cronbach's alpha: 0.839–0.901). Bivariate analysis used the Chi-square test with cell frequency checks, effect sizes (Cramér's V), and 95% confidence intervals. Multivariate analysis employed binary logistic regression with multicollinearity checks (VIF) and Hosmer-Lemeshow goodness-of-fit. Significant associations were found between all four independent variables and midwives' performance: organizational culture (p=0.005, OR=5.12), compensation (p<0.001, OR=8.46), motivation (p<0.001, OR=9.67), and leadership (p<0.001, OR=6.67). Multivariate analysis identified compensation as the dominant factor (OR=7.660, 95% CI: 2.401–24.434), followed by motivation (OR=7.016, 95% CI: 2.252–21.851) and leadership (OR=4.246, 95% CI: 1.379–13.075). Organizational culture, compensation, motivation, and leadership significantly influence midwives' immunization program performance. Health authorities should prioritize equitable compensation structures and strengthen leadership capacity. Study limitations include potential social desirability bias from self-report data and cross-sectional design that limits causal inference.

INTRODUCTION

Immunization is one of the most effective public health interventions for reducing morbidity, disability, and mortality from vaccine-preventable diseases (VPDs)[1]. Indonesia's national immunization program covers BCG, Hepatitis B, DPT-HB-Hib, Polio, and MR vaccines, with a target coverage of at least 93%[2]. Despite a well-established system, national coverage reached only approximately 86% in 2023, falling below this target[3].

Grounded in the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM), individual performance in health service delivery is shaped by attitudes, social norms, perceived barriers, and environmental context[4]. Applied to village midwives, these frameworks suggest that

motivational factors, compensation adequacy, leadership style, and organizational culture collectively determine behavioral intention and actual performance in immunization delivery[5].

In Pesawaran Regency, immunization coverage reached approximately 88%, still below the national target, with notable disparities between puskesmas (public health center) catchment areas, particularly in remote and coastal regions. Local socio-cultural factors including geographic isolation, low health literacy, and community skepticism toward immunization further compound delivery challenges[6]. Village midwives play a crucial role in planning, implementing, recording, and evaluating immunization services at community level; thus, their performance directly affects program outcomes[7].

Previous studies have demonstrated that organizational culture, compensation, motivation, and leadership significantly influence healthcare worker performance[8,9]. evidence specific to village midwives in Pesawaran Regency remains limited. This study therefore aims to measure the strength of association between these four factors and village midwives' immunization program performance, and to generate empirical evidence to inform local health policy and workforce management strategies.

MATERIALS AND METHODS

This study employed a quantitative analytic design with a cross-sectional approach. The study was conducted from February to March 2026 across 12 puskesmas in Pesawaran Regency, Indonesia. Health centers were purposively selected to represent variation in immunization coverage, geographic characteristics (coastal, remote, and urban), and workforce size.

The study population comprised 147 active village midwives in Pesawaran Regency. Sample size was calculated using the Slovin formula with a 5% margin of error ($n = N / (1 + N \times e^2) = 147 / (1 + 147 \times 0.05^2) \approx 108$). A proportional random sampling technique was applied to ensure representation from each health center. Inclusion criteria: midwives actively involved in immunization services for ≥6 months and willing to provide informed consent. Exclusion criteria: midwives on leave, transferred, inactive, or submitting incomplete questionnaires [10,11].

Data were collected using structured self-administered questionnaires with a 5-point Likert scale (never to always). Instrument validity and reliability were confirmed prior to data collection. All items met the corrected item-total correlation threshold ($r > 0.361$). Internal consistency was satisfactory: organizational culture (Cronbach's $\alpha = 0.865$), compensation ($\alpha = 0.901$), motivation ($\alpha = 0.845$), leadership ($\alpha = 0.839$), and performance ($\alpha = 0.855$). Ethical principles including informed consent, anonymity, and voluntary participation were strictly observed throughout the study. Ethical clearance was obtained from the institutional research ethics committee (No. [ethics committee number]).

Data were processed through editing, coding, entry, and cleaning in SPSS. Univariate analysis described variable distributions. Bivariate analysis used Chi-square tests, including Yates' correction or Fisher's exact test where expected cell frequencies fell below 5, and reported Cramér's V as effect size alongside OR and 95% CI. Multivariate binary logistic regression with backward elimination was performed; assumptions checked included multicollinearity (VIF < 5) and model fit (Hosmer-Lemeshow test, Nagelkerke R^2). Age, sex, and socioeconomic status were considered as potential confounders.

RESULTS

Univariate Analysis

Tablel 1. Distribution of Variablels among Villagel Midwivels in Pelsawaran Relgelncy (n=108)

Variable	Category	n	%
Organizational Culture	Good	91	84.3
	Poor	17	15.7
Compensation	Adequate	76	70.4
	Inadequate	32	29.6
Motivation	Strong	68	63.0
	Weak	40	37.0
Leadership	Good	66	61.1
	Poor	42	38.9
Midwife Performance	Good	73	67.6
	Poor	35	32.4
Total		108	100.0

Table 1 shows that the majority of respondents had good organizational culture (84.3%), adequate compensation (70.4%), strong motivation (63.0%), and good leadership (61.1%). Most midwives (67.6%) demonstrated good performance in immunization program implementation.

Bivariate and Multivariate Analysis

All expected cell frequencies in Chi-square analyses were ≥5, confirming assumption validity. Cramér's V values indicated moderate-to-strong associations: organizational culture (V=0.26), compensation (V=0.40), motivation (V=0.44), and leadership (V=0.38). Table 2 presents consolidated bivariate results.

Table 2. Bivariate Analysis: Association between Independent Variables and Midwives' Performance

Variable	Good Performance n (%)	Poor Performance n (%)	Total n (%)	p-value	OR (95% CI)
Org. Culture – Good	67 (73.6%)	24 (26.4%)	91 (100%)	0.005	5.12 (1.71–15.35)
Org. Culture – Poor	6 (35.3%)	11 (64.7%)	17 (100%)		
Compensation – Adequate	62 (81.6%)	14 (18.4%)	76 (100%)	<0.001	8.46 (3.33–21.47)
Compensation – Inadequate	11 (34.4%)	21 (65.6%)	32 (100%)		
Motivation – Strong	58 (85.3%)	10 (14.7%)	68 (100%)	<0.001	9.67 (3.82–24.44)
Motivation – Weak	15 (37.5%)	25 (62.5%)	40 (100%)		
Leadership – Good	55 (83.3%)	11 (16.7%)	66 (100%)	<0.001	6.67 (2.74–16.24)
Leadership – Poor	18 (42.9%)	24 (57.1%)	42 (100%)		

All four variables were significant at $p < 0.05$ and were included as multivariate candidates ($p \leq 0.25$ selection threshold). VIF values were all below 2.5, confirming no multicollinearity. The Hosmer-Lemeshow test indicated acceptable model fit ($p = 0.714$). Nagelkerke $R^2 = 0.512$, indicating the model explains approximately 51% of variance in midwife performance. Confounding analysis revealed that organizational culture acted as a confounder (OR change >10% upon removal), and was therefore retained in the final model alongside motivation, compensation, and leadership. Table 3 presents the final multivariate model.

Table 3. Final Multivariate Logistic Regression Model for Midwives' Performance (n=108)

Variable	B Coefficient	p-value	OR / Exp(B)	95% CI Lower	95% CI Upper
Compensation	2.036	0.001	**7.660***	2.401	24.434
Motivation	1.948	0.001	7.016	2.252	21.851
Leadership	1.446	0.012	4.246	1.379	13.075
Organizational Culture†	1.319	0.077	3.742	0.866	16.166
Constant	-3.265	—	—	—	—

** Most dominant factor. †Retained as confounder (OR change 15.39%). Logit(p) = −3.265 + 1.948(Motivation) + 2.036(Compensation) + 1.446(Leadership) + 1.319(Org.Culture)*

DISCUSSION

The majority of village midwives demonstrated good organizational culture (84.3%). Organizational culture encompasses shared values, norms, and behavioral expectations that guide individual conduct[12]. In healthcare settings, positive organizational culture fosters teamwork, accountability, and service quality. The current finding aligns with previous studies reported that strong organizational culture enhances work engagement and performance among health workers.[13,14] A predominantly good culture at Pesawaran's puskesmas reflects effective supervision and coordination, but the 15.7% with poor culture warrants targeted workplace culture improvement efforts.

Approximately 70.4% of midwives perceived compensation as adequate. Compensation encompassing financial and non-financial returns for services is a key hygiene factor in Herzberg's two-factor theory, influencing job satisfaction and reducing turnover.[15] Nearly 30% of midwives perceived compensation as inadequate, a proportion that demands policy attention, particularly for those working in remote and coastal areas with higher workloads.

Strong motivation was reported by 63.0% of respondents. Motivation the internal and external drive influencing effort and persistence is fundamental to sustaining immunization service quality [16]. [17] and [18] confirmed that motivation significantly affects healthcare worker performance. Professional responsibility and workplace support appear to be key drivers of motivation in this setting.

Leadership was rated as good by 61.1% of respondents. Effective transformational leadership in public health settings enhances motivation, organizational commitment, and service delivery.[19] The 38.9% who perceived leadership as poor indicate uneven leadership quality across puskesmas, reinforcing the need for targeted leadership development programs.

Bivariate analysis confirmed significant associations between all four factors and midwife performance. The highest crude OR was observed for motivation (OR=9.67), consistent with motivation's theoretical centrality in the Theory of Planned Behavior and expectancy theory. After adjustment in the final multivariate model, compensation emerged as the dominant factor (adjusted OR=7.660, 95% CI: 2.401–24.434), followed by motivation (OR=7.016), leadership (OR=4.246), and organizational culture retained as a confounder (OR=3.742). These findings underscore that material security is a prerequisite for sustained behavioral engagement in health service delivery particularly in resource-limited settings.

These results carry significant policy implications. Health authorities in Pesawaran Regency should: (1) review and equalize compensation structures particularly performance-based incentives for midwives in underserved areas; (2) implement leadership capacity-building programs at puskesmas level; (3) sustain organizational culture development through structured SOPs, peer mentoring, and performance review systems; and (4) maintain motivational frameworks through

recognition programs and continuous professional development [20].

Several limitations should be noted. First, the cross-sectional design precludes causal inference. Second, self-reported questionnaire data may introduce social desirability bias. Third, while the sample size was adequate per Slovin's formula, it was drawn from a single regency, which may limit generalizability. Future studies should employ longitudinal designs, objective performance metrics (e.g., immunization coverage rates by midwife catchment), and multi-regency sampling to strengthen internal and external validity.

CONCLUSION

This study found that the majority of village midwives demonstrated good organizational culture (84.3%), perceived compensation as appropriate (70.4%), had strong work motivation (63.0%), and rated leadership as good (61.1%), while most respondents also showed good performance (67.6%) in implementing immunization programs. Bivariate analysis revealed that organizational culture, compensation, motivation, and leadership were all significantly associated with midwives' performance ($p < 0.05$). Multivariate analysis further identified compensation as the most dominant factor influencing performance, with an odds ratio of 7.660, indicating that midwives receiving appropriate compensation were significantly more likely to demonstrate good performance. These findings highlight that improving compensation systems, alongside strengthening organizational culture, motivation, and leadership, is essential to enhance the performance of village midwives and optimize the implementation of immunization programs in Pesawaran Regency.

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