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FACTORS INFLUENCING THE PERFORMANCE OF LARVAE MONITORING OFFICERS (JUMANTIK) IN THE PREVENTION OF DENGUE HEMORRHAGIC FEVER IN THE WORKING AREA OF SOUTH KUTA PRIMARY HEALTH CENTER, BADUNG REGENCY

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ABSTRACT

Background: Dengue Hemorrhagic Fever (DHF) remains a public health problem in Indonesia, including the service area of the South Kuta Primary Health Center, Badung Regency, Bali, where case numbers fluctuate annually. Prevention efforts are carried out through mosquito breeding site elimination (MBSE) with sustainable vector control. The success of MBSE largely depends on the role of larva monitoring cadres (jumantik). However, their performance varies and is influenced by individual and external factors such as age, length of service, knowledge, attitudes, training, work tools, supervision, and incentives. **Objective:** To determine the association between individual and external factors and the performance of larva monitoring cadres in the service area of the South Kuta Primary Health Center. **Methods:** This analytical observational study employed a cross-sectional design involving 56 larva monitoring cadres. Total sampling was applied, including all cadres who met the inclusion criteria. Data were collected using structured questionnaires and analyzed using univariate and bivariate analyses with the Chi-square test in SPSS. **Results:** Most cadres demonstrated good performance (57.9%). Length of service was significantly associated with cadre performance (p = 0.045), with cadres having a service duration of less than 84 months showing good performance in 73.1% of cases. Other variables, including age, knowledge, attitudes/motivation, training, work tools, supervision, and incentives, were not significantly associated with performance. **Conclusion:** Length of service was significantly associated with the performance of larva monitoring cadres. Although other factors were not statistically significant, the findings suggested that greater experience and better support tended to contribute to improved cadre performance in dengue prevention.

Keywords: Dengue Hemorrhagic Fever, Larva Monitoring Cadres, Performance, Length of Service.

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by infection with the dengue virus (DENV).[1] DHF remains a significant public health problem in Indonesia to date. In 2022, the incidence rate (IR) of DHF was reported at 52.1 per 100,000 population. North Kalimantan recorded the highest incidence rate in 2022, followed by Bali Province, which ranked third with 127.49 cases per 100,000 population.[2]

In 2022, Badung Regency ranked second in the number of DHF cases in Bali after Denpasar City.[3] The DHF incidence rate in Badung Regency was recorded at 129 per 100,000 population, which was considerably higher than the national DHF incidence rate of 49 per 100,000 population.[3] In the same year, the highest number of DHF cases at the primary health care level was reported in South Kuta Primary Health Center, with a total of 351 cases.[3]

The high incidence of DHF is influenced by various factors, one of which is the presence of its vector. Aedes aegypti mosquitoes are the primary vectors of DHF.[4] The Badung Regency Health Office has implemented various DHF prevention and control efforts, including early detection, fogging, health education on Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat / PHBS), and the establishment of larvae monitoring volunteers (Juru Pemantau Jentik / Jumantik) to carry out Mosquito Breeding Site Eradication (Pemberantasan Sarang Nyamuk / PSN) through the implementation of the 3M Plus strategy, which consists of draining, covering, and burying water containers, as well as the use of larvicides.[5] The success of these efforts largely depends on the active role of Jumantik cadres in monitoring and controlling mosquito larvae within the community.[6]

The establishment of Jumantik cadres in Badung Regency was first initiated in 2018, involving a total of 634 cadres.[7] The formation of these cadres aimed to suppress the population of dengue-transmitting mosquitoes and ultimately reduce the incidence of DHF in Badung Regency. However, in practice, DHF morbidity has continued to increase, with the incidence rising from 129 per 100,000 population in 2022 to 201 per 100,000 population in 2023.[8]

Previous studies examining the relationship between the role of Jumantik cadres and household behavior in DHF mosquito breeding site eradication have demonstrated that improved performance or activeness of Jumantik cadres is associated with better community responses in implementing PSN and the 3M Plus strategy.[9]

The performance of Jumantik cadres in preventing DHF may be influenced by various factors. A study conducted by Aila, Nurul, and Isnaini identified several factors significantly associated with the performance of Jumantik cadres, including motivation, knowledge, availability of supporting tools, incentives, and attitudes. In the context of Jumantik cadres, external motivation such as work environment conditions, effective supervision, job security, clearly defined roles and responsibilities, and flexibility in work regulations was found to be more influential than internal motivation.[10]

According to the performance report of the Badung Regency Health Office, DHF prevention and control efforts involving Jumantik cadres have not yet achieved optimal results, as reflected by Badung Regency's continued classification as a DHF-endemic area. In 2022, the DHF incidence rate in Badung Regency remained at 129 cases per 100,000 population, exceeding the national target. At the primary health care level, DHF incidence rates varied across regions, with South Kuta Primary Health Center identified as one of the working areas with relatively high DHF incidence. This condition highlights the need for special attention through evaluation and strengthening of the role of Jumantik cadres as the frontline of larval surveillance in the community, thereby underscoring the relevance of conducting research on the performance of Jumantik cadres in the working area of South Kuta Primary Health Center.[11]

OBJECTIVE

This study aimed to describe the performance of *Juru Pemantau Jentik* (Jumantik) cadres in the working area of South Kuta Primary Health Center, Badung Regency, in 2025, as well as to describe individual factors, including age, length of service, level of knowledge, attitudes, and motivation, and external factors, comprising training, availability of supporting tools, supervision, and incentives. In addition, this study aimed to analyze the associations between these individual and external factors and the performance of Jumantik cadres in the working area of South Kuta Primary Health Center.

METHODS

This study was an analytic observational study with a cross-sectional design that aimed to analyze the associations between individual factors (age, length of service, level of knowledge, and attitudes/motivation) and external factors (training, availability of supporting tools, supervision, and incentives) and the performance of Juru Pemantau Jentik (Jumantik) cadres. The study was conducted in the working area of South Kuta Primary Health Center, Badung Regency, during the period from May to December 2025.

The study population comprised all Jumantik cadres assigned to the working area of South Kuta Primary Health Center in 2025. A total sampling technique was applied; thus, all cadres who met the inclusion criteria were enrolled. Of the 68 registered cadres, 56 were included as study participants, while 12 were excluded due to death (n = 1) and inactivity or leave (n = 11). The inclusion criteria included active Jumantik cadres who had served for at least one year and were willing to participate as respondents by providing written informed consent. Sample recruitment was conducted periodically at the primary health center in coordination with the person in charge of the Jumantik program.

The dependent variable was the performance of Jumantik cadres, whereas the independent variables consisted of individual and external factors as defined. The operational definitions and measurement scales of the variables referred to the operational definition table in Chapter IV, with categorization based on median values due to non-normal data distribution.

Data were collected using a structured printed questionnaire covering all study variables. Data collection was conducted after obtaining ethical approval and institutional permission, following procedures that included an explanation of the study and written informed consent from the respondents. The collected data were edited, coded, and analyzed using SPSS software. Univariate analysis was used to describe the distribution of variables, while bivariate analysis was performed using the Chi-square test to assess the associations between variables, with a significance level set at $p < 0.05$.

This study received ethical approval from the Ethics Committee of the Faculty of Medicine, Udayana University (No. 1008/UN14.2.2.VII.14/LT/2025). Respondent confidentiality and anonymity were maintained throughout the research process and during the reporting of the results.

RESULTS

The researchers conducted an analysis of the study data using a total sample of 56 Jumantik cadres. Data analysis was performed using univariate analysis to descriptively present each variable and bivariate analysis using the Chi-square test.

General Characteristics of Respondents

The distribution of the general characteristics of respondents in this study is presented in Table 1, which included age, sex, and highest level of education of the Jumantik cadres. The age distribution of respondents showed a relatively balanced proportion between the age groups < 37 years and ≥ 37 years, with 28 respondents (50%) in each group. Based on sex, the majority of respondents were female, accounting for 32 individuals (57.1%). Meanwhile, most respondents had completed senior high school or vocational high school education (SMA/SMK), totaling 37 individuals (66.1%).

Table 1. General Characteristics of Respondents

Characteristics	Number (n)	Percentage (%)
Age		
< 37 years	28	50.0
≥ 37 years	28	50.0
Sex		
Female	32	57.1
Male	24	42.9
Highest Level of Education		
Diploma/Bachelor's degree	16	28.5
Senior high school/vocational school	37	66.1
Junior high school	3	5.4

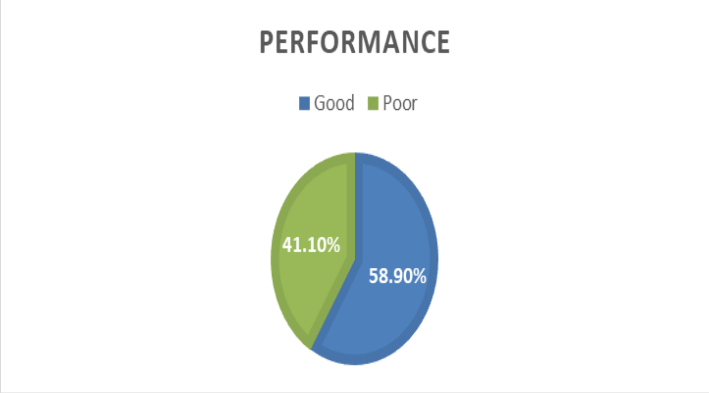
Univariate Analysis Results

Univariate analysis was used to describe the distribution, frequency, and percentage of the characteristics of Jumantik cadres, including individual factors (age, length of service, level of knowledge, attitudes or motivation) and external factors (training, availability of supporting tools, supervision, and incentives), as well as the performance of Jumantik cadres.

Jumantik Performance

The distribution of respondents based on the performance of Jumantik cadres is presented in Figure 1. The majority of Jumantik cadres demonstrated good performance, accounting for 33 respondents (58.9%), while the remaining 23 respondents (41.1%) were categorized as having poor performance.

Figure 1. Jumantik Performance



Individual Factors

The distribution of individual factors in this study is presented in Table 2, including age, length of service, level of knowledge, and attitudes/motivation. The researchers found that the age of the study sample was evenly distributed
between those aged < 37 years and ≥ 37 years, with 28 respondents (50.0%) in each group. The longest length of service among Jumantik cadres was ≥ 84 months, comprising 30 respondents (53.6%). The level of knowledge of Jumantik cadres was equally distributed between the good and adequate categories, with 28 respondents (50.0%) in each category. Attitudes/motivation among Jumantik cadres were predominantly positive, with 30 respondents (53.6%).

Table 2. Frequency Distribution of Individual Factors of Jumantik Cadres

Characteristics	Number (n)	Percentage (%)
Age		
< 37 years	28	50.0
≥ 37 years	28	50.0
Length of Service		
< 84 months	26	46.4
≥ 84 months	30	53.6
Level of Knowledge		
Good	28	50.0
Poor	28	50.0
Attitudes/Motivation		
Positive	30	53.6
Negative	26	46.4

External Factors

The distribution of external factors is presented in Table 3, including training, availability of supporting tools, supervision, incentives, and the performance of Jumantik cadres. The majority of Jumantik cadres reported frequent participation in training activities, with 30 respondents (53.6%). Adequate availability and ease of access to the required supporting tools were reported as good by 43 respondents (76.8%). The level of supervision reflected by the frequency of monitoring, assistance, clarity of guidance, and feedback received from the primary health center during larval surveillance activities was perceived as good by 31 respondents (55.4%). A total of 44 respondents (78.6%) reported receiving appropriate and adequate incentives.

Table 3. Frequency Distribution of External Factors of Jumantik Cadres

Characteristics	Number (n)	Percentage (%)
Training		
Frequent	30	53.6
Infrequent	26	46.4
Availability of Supporting Tools		
Good	43	76.8
Poor	13	23.2
Supervision		
Good	31	55.4
Adequate	25	44.6
Incentives		
High/Appropriate	44	78.6
Inappropriate	12	21.4

Bivariate Analysis Results

Bivariate analysis was conducted to determine the associations between independent variables and the dependent variable in this study. Individual factors, including age, length of service, level of knowledge, and attitudes/motivation, were analyzed in relation to the performance of Jumantik cadres. In addition, external factors, namely training, availability of supporting tools, supervision, and incentives, were also analyzed in relation to Jumantik cadre performance. The associations between variables were presented using p-values and the frequency distribution of each variable. A relationship was considered statistically significant if the p-value was < 0.05.

Association Between Individual Factors and the Performance of Larvae Monitoring Officers (Jumantik Cadres)

The results of the Chi-square analysis presented in Table 4 regarding the association between individual factors and the performance of Jumantik cadres indicated that there were no statistically significant associations for age ($p = 0.786$; $p > 0.05$), level of knowledge ($p = 0.174$; $p > 0.05$), and attitudes/motivation ($p = 0.861$; $p > 0.05$). In contrast, length of service showed a statistically significant association with Jumantik cadre performance ($p = 0.045$; $p < 0.05$).

Although most individual variables did not demonstrate statistically significant associations, the crosstabulation results revealed a positive trend, whereby cadres of more productive age, longer length of service, higher levels of knowledge, and more positive attitudes or motivation tended to have a higher proportion of good performance compared with their respective counterparts.

Table 4. Association Between Individual Factors and the Performance of Larvae Monitoring Officers (Jumantik Cadres)

Variables	Good Performance		Poor Performance		p-value
	n	%	n	%	
Age					
< 37 years	16	57.1	12	42.9	0.786
≥ 37 years	17	60.7	11	39.3	
Length of Service					
< 84 months	19	73.1	7	26.9	0.045
≥ 84 months	14	46.7	16	53.3	
Level of Knowledge					
Good	19	67.9	9	32.1	0.174
Poor	14	50.0	14	50.0	
Attitudes/Motivation					
Positive	18	60.0	12	40.0	0.861
Negative	15	57.6	11	42.4	

Association Between External Factors and the Performance of Larvae Monitoring Officers (Jumantik Cadres)

The results of the Chi-square analysis presented in Table 5 regarding the association between external factors and the performance of Jumantik cadres indicated that none of the examined variables showed a statistically significant association. These variables included training ($p = 0.472$; $p > 0.05$), availability of supporting tools ($p = 0.827$; $p > 0.05$), supervision ($p = 0.215$; $p > 0.05$), and incentives ($p = 0.170$; $p > 0.05$).

Nevertheless, the crosstabulation results demonstrated variations in trends across variables. For the training variable, cadres with higher levels of training tended to have a greater proportion of good performance. In contrast, for the availability of supporting tools, an opposite trend was observed, in which cadres reporting poorer availability of supporting tools exhibited a slightly higher proportion of good performance compared with those reporting good availability. Meanwhile, for supervision and incentives, cadres who received better supervision and those who perceived their incentives as appropriate tended to demonstrate better performance in descriptive terms.

Table 5. Association Between External Factors and the Performance of Larvae Monitoring Officers (Jumantik Cadres)

Variables	Good Performance		Poor Performance		p-value
	n	**%**	**n**	**%**	
Training					0.472
Frequent	19	63.3	11	36.7	
Infrequent	14	53.8	12	46.2	
Availability of Supporting Tools					0.827
Good	25	58.1	18	41.9	
Poor	8	61.5	5	38.5	
Supervision					0.215
Good	16	51.6	15	48.4	
Adequate	17	68.0	8	32.0	

Variables	Good Performance		Poor Performance		p-value
Incentives					0.170
Appropriate	28	63.6	16	36.4	
Inappropriate	5	41.6	7	56.4	

DISCUSSION

General Characteristics of Respondents

Based on the results of the study involving 56 Jumantik cadres in the working area of South Kuta Primary Health Center, Badung Regency, the majority of respondents were female, totaling 32 individuals (57.1%), while males accounted for 24 individuals (42.9%). This finding is consistent with the study by Indrayani and Suryani, which stated that Jumantik cadres are generally dominated by women, as women are considered to be more meticulous, have a higher level of concern for environmental cleanliness, and are more active in social and community activities.[12]

Based on age distribution, respondents were evenly divided between the < 37 years and ≥ 37 years age groups, with 28 individuals (50.0%) in each group. Most respondents were of productive age. This finding is in line with the study by Indrayani and Suryani, which explained that cadres of productive age tend to have better performance compared with older individuals because they are more active, adaptable, and responsive to change.[12]

Based on the highest level of education attained, the majority of respondents were senior high school or vocational high school graduates, totaling 34 individuals (60.7%), followed by diploma or bachelor's degree graduates, totaling 19 individuals (33.9%), while the remaining 3 individuals (5.4%) were junior high school graduates. This relatively good level of education indicates that most cadres possessed adequate cognitive abilities. A study by Bangsa, Syaodih, and Andriani also demonstrated that educational level has a positive influence on the performance of health personnel.[13]

Overview of the Performance of Larvae Monitoring Officers (Jumantik Cadres)

The results of the study showed that most Jumantik cadres demonstrated good performance, with 33 individuals (58.9%), while 23 individuals (41.1%) were categorized as having poor performance. Good performance was reflected in the consistency of cadres in conducting larval inspections in residential areas, accurately recording inspection results, and routinely reporting them to primary health center staff. This finding is consistent with the study by Wardhani et al., which reported that most Jumantik cadres demonstrated good performance because they were actively involved in larval surveillance activities and made tangible contributions to the prevention of dengue transmission.[15] Similar results were also reported by Indrayani and Suryani, who stated that Jumantik cadres with good performance were able to conduct regular larval inspections and report the results in a timely manner, thereby playing an important role in detecting potential mosquito breeding sites associated with dengue transmission.[12] Therefore, the proportion of cadres with good performance in this study reflects that dengue prevention activities through larval surveillance have been implemented relatively effectively and in an organized manner in the working area of South Kuta Primary Health Center.

Description of Individual Factors (Age, Length of Service, Level of Knowledge, Attitudes/Motivation)

The individual factors observed included age, length of service, level of knowledge, and cadres' attitudes or motivation. Based on the age distribution, Jumantik cadres were found to be between 25 and 53 years old, with the majority in the 30–50 year age group. This finding was consistent with the study by Indrayani and Suryani, which stated that cadres of productive age tend to have better performance because they are more energetic, responsive, and adaptable to field conditions.[12]

Based on length of service, most cadres had relatively long work experience, namely more than 60 months, indicating commitment and experience in carrying out larval surveillance activities. Longer work experience influenced cadres' skills in conducting inspections, recording findings, and reporting monitoring results.

Meanwhile, the study results also showed that the cadres' level of knowledge was evenly distributed between the good and poor categories, with 28 individuals (50.0%) in each category. This finding was consistent with studies by Wardhani et al. and Rahmawati and Kurniawati, which explained that knowledge plays an important role in supporting the effectiveness of health cadres' work, as adequate knowledge increases confidence and accuracy in task implementation.[14,15]

From the perspective of attitudes and motivation, most cadres demonstrated positive motivation, totaling 30 individuals (53.6%), while 26 individuals (46.4%) showed negative motivation. This finding was in line with the opinion of Wardhani et al., who stated that positive motivation contributes to cadres' consistency and sense of responsibility in carrying out field duties.[14,16]

Overall, the individual characteristics of Jumantik cadres in the working area of South Kuta Primary Health Center depicted a relatively potential group, with productive age, adequate work experience, a fairly good level of knowledge, and positive motivation that supported dengue prevention efforts in the community.

Description of External Factors (Training, Availability of Supporting Tools, Supervision, Incentives)

Based on the study results, external factors including training, availability of supporting tools, supervision, and incentives were generally categorized as fairly good. Most cadres reported frequent participation in training, totaling 30 individuals (53.6%), indicating that the

majority had received adequate knowledge and skills training. Training played an important role in improving cadres' technical capacity and readiness in the field, as explained by Indrayani and Suryani, who stated that effective training can enhance cadres' understanding and responsibility in implementing environmental health programs. [12,17]

In addition, regarding the availability of supporting tools, most cadres reported good availability, totaling 43 individuals (76.8%). This indicated that most cadres had been facilitated with supporting equipment such as flashlights, larva cards, and larvicides, which facilitated field surveillance activities. This finding was consistent with the study by Wardhani, Nurhayati, and Fitria, which stated that adequate facilities and infrastructure can improve the efficiency and outcomes of health cadres' work in primary health center working areas.[14,18]

In terms of supervision, 31 cadres (55.4%) reported receiving good guidance and direction from the primary health center. This was supported by the study by Rahmawati and Kurniawati, which explained that regular coaching and supervision play an important role in improving cadres' motivation and performance in the field.[15]

Meanwhile, regarding incentives, most cadres stated that they had received appropriate incentives, totaling 44 individuals (78.6%), indicating that the majority had received adequate recognition for their performance. The study by Wardhani et al. also reinforced that external support in the form of sufficient incentives has a positive influence on increasing the enthusiasm and performance of health cadres.[14]

Overall, the results of this study indicated that external factors had been implemented relatively well and exerted a positive influence on the implementation of Jumantik cadres' duties in the working area of South Kuta Primary Health Center. Continuous external support from the primary health center was expected to further encourage cadres to work more optimally in dengue prevention and control efforts within the community.

Association Between Individual Factors (Age, Length of Service, Level of Knowledge, Attitudes/Motivation) and External Factors (Training, Availability of Supporting Tools, Supervision, Incentives) and the Performance of Jumantik Cadres

Based on the results of the bivariate analysis of the eight study variables, only length of service showed a significant association with the performance of Jumantik cadres ($p = 0.045$). Cadres with shorter length of service (< 84 months) had a higher proportion of good performance (73.1%) compared with those with longer length of service (≥ 84 months), who demonstrated good performance in 46.7% of cases.

This finding indicated that relatively newer cadres tended to demonstrate better performance, possibly because they still possessed high work enthusiasm and strong adherence to task implementation standards. In contrast, cadres with longer length of service might experience work fatigue due to repetitive routines. This result differed from the study by Wardhani, Nurhayati, and Fitria, which stated that longer length of service was associated with improved performance.[10] However, this difference could be explained by variations in research context, where cadres with long tenure in the present study might have received less refresher training and continuous guidance. This was in line with the findings of Jannah et al., who explained that excessively long work experience without rotation and ongoing coaching may reduce cadres' work effectiveness.[14]

Meanwhile, the other variables did not show significant associations with Jumantik cadre performance. For the age variable, the analysis showed no significant association with performance ($p = 0.786$). Nevertheless, cadres aged ≥ 37 years had a slightly higher proportion of good performance (60.7%) compared with those aged < 37 years (57.1%). This finding indicated that both younger and older cadres were equally capable of performing their duties well as long as they had sufficient commitment and field experience. This result was consistent with the study by Kusumawati and Hidayati, which stated that productive age is an ideal age for cadres because it is supported by physical capacity, cognitive ability, and stability of work responsibility.[19] Indrayani and Suryani also stated that productive age supports the effectiveness of cadres' work in field activities.[13] In addition, Meilina et al. emphasized that age was not significantly associated with Jumantik cadres' performance, as optimal performance was more strongly influenced by individual awareness and responsibility toward assigned tasks.[20]

Furthermore, cadres' level of knowledge also did not show a significant association with performance ($p = 0.174$); however, cadres with good knowledge had a higher proportion of good performance (67.9%) compared with those with poor knowledge (50.0%). This finding illustrated that better understanding of dengue fever and its prevention may help cadres perform their roles more effectively, as explained by Wardhani et al. and Rahmawati and Kurniawati, who stated that knowledge plays an important role in improving the accuracy and effectiveness of health cadres' work.[14]

Meanwhile, for the attitudes or motivation variable, no significant association with performance was found ($p = 0.861$). Nevertheless, cadres with negative attitudes had a proportion of good performance of 57.7%, while cadres with positive attitudes had a slightly higher proportion of good performance (60%). This finding illustrated that differences in personal motivation did not result in meaningful differences in performance. This was consistent with the opinion of Wardhani et al., who explained that cadre performance is influenced not only by internal motivation but also by social support factors. Similarly, Meilina et al. found that cadres' attitudes and motivation were not significantly associated with performance, as other factors such as work environment support and guidance

from health workers played a major role in determining cadres' field performance.[14,20]

In addition, no significant association was found between training and cadre performance (p = 0.472); however, in terms of percentage, cadres who frequently received training demonstrated better performance (63.3%) compared with those who rarely received training (53.8%). This finding illustrated that training still played an important role in improving cadres' skills and readiness in the field. This was consistent with the study by Indrayani and Suryani, which explained that effective training can enhance cadres' knowledge, technical skills, and sense of responsibility toward program implementation. The study by Winda Meilina et al. also supported that although training does not always show a significant association, cadres who receive better training tend to have higher understanding and skills in conducting larval surveillance.[12,20]

Regarding the availability of supporting tools, the study results showed no significant association with cadre performance (p = 0.827); however, cadres with poorer availability of supporting tools had a slightly higher proportion of good performance (61.5%) compared with those with good availability (58.1%). This condition might have occurred because some cadres continued to strive to perform their duties optimally despite limited facilities. This finding was consistent with the study by Wardhani et al., which stated that limited facilities do not always constitute a major barrier when cadres possess high commitment and awareness of their duties.[14]

In terms of supervision, although no significant association was found (p = 0.215), cadres who received supervision in the adequate category had a higher proportion of good performance (68.0%) compared with those who received good supervision (51.6%). This finding indicated that cadres were still able to perform well even when supervision was not very intensive. Nevertheless, supervision remained an important factor in maintaining discipline, guidance, and coordination among cadres, as explained by Rahmawati and Kurniawati, who stated that regular coaching and supervision play a role in improving cadres' motivation and work consistency in the field.[15]

Regarding incentives, the analysis showed no significant association with cadre performance (p = 0.170). Nevertheless, cadres who perceived their incentives as appropriate had a higher proportion of good performance (63.6%) compared with those who perceived their incentives as inappropriate (58.3%). This pattern illustrated that incentives perceived as adequate can still provide additional encouragement for cadres to work more optimally. In line with the study by Meilina et al., cadre performance is influenced not only by material support but also by intrinsic motivation, a sense of social responsibility, and the drive to provide the best possible service to the community.[20]

Overall, this study showed that internal and external factors had generally functioned well and exerted a positive influence on the implementation of Jumantik cadres' duties at South Kuta Primary Health Center. For example, the higher the level of training received, the higher the proportion of cadres with good performance, while cadres with limited availability of supporting tools (61.5%) paradoxically demonstrated higher good performance. This phenomenon was likely influenced by social responsibility, loyalty, and intrinsic motivation among cadres, in accordance with the findings of Meilina et al., who stated that cadre performance is influenced by personal motivation and social commitment, not solely by external support. Factors that were not statistically significant remained important because their influence was indirect and dependent on coaching systems, supervision, and field working conditions.[20]

In addition, length of service was the only factor significantly associated with cadre performance, with the direction of the association indicating that cadres with shorter length of service demonstrated better performance. This finding highlighted the need for special attention to cadres with longer length of service to ensure that their motivation and work effectiveness are maintained.

LIMITATIONS

The researchers acknowledge that this study has several limitations. The study was conducted only in one working area, namely the Kuta Selatan Primary Health Center, Badung Regency, with a relatively limited number of respondents (56 people), which may affect the strength of the analysis and the representativeness of the data. The use of printed questionnaires has the potential to cause information bias due to respondents' limited understanding, recall factors, or the tendency to provide answers perceived as socially desirable (social desirability bias). The assessment of cadre performance also relied on secondary data from the primary health center, which is highly dependent on the consistency of recording, completeness of reports, and accuracy of data entry, thus potentially leading to bias if the data are not regularly updated or if assessment standards differ among officers. In addition, the questionnaire instrument was still general in nature and did not explore more specific aspects, which may have influenced the analysis results and caused several variables to show no significant association.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, overall, the performance of jumantik cadres in the working area of the Kuta Selatan Primary Health Center is categorized as good. Most cadres have carried out larval monitoring, reporting, and community education tasks according to their responsibilities, although a small proportion of cadres still showed less optimal performance, particularly in reporting and the timeliness of field activities. The characteristics of the cadres indicate that the majority are in the productive age group, with good levels of knowledge and attitudes toward mosquito breeding site eradication (PSN) activities,

and are supported by training, supervision, work tools, and incentives.

The results of the bivariate analysis show that only the length of service variable has a significant relationship with the performance of jumantik cadres (p = 0.045), while age, knowledge, attitude, training, availability of work tools, supervision, and incentives do not show a significant association. Based on these findings, it is recommended that the Kuta Selatan Primary Health Center strengthen routine coaching and supervision, especially for cadres with longer years of service, and conduct evaluations of the work support provided. Future studies are expected to involve wider areas, larger numbers of respondents, and additional variables to obtain a more comprehensive overview of the factors influencing the performance of jumantik cadres.

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