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Research

Multilevel Analysis of Community Health Center, Performance of Health Personnel: Evidence from Ngawi, East Java

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ABSTRACT

Background: Quality health services are one of the priorities and development goals in the health sector. Community Health Center as the first-line public services in the health sector are expected to provide quality services for the community. The quality of health services in community health center can be seen from the performance of the health personnel. This study aims to determine the factors that determine the performance of health personnel in health centers.

Subjects and Method: This study used an observational analytic method with a cross sectional approach. The study was conducted in 24 community health center in Ngawi, East Java on June-July 2019. The total sample of 216 health personnel of the community health center was selected based on proportional random sampling. The dependent variable of this study was the performance of health personnel. The independent variables in this study were accreditation status, education, income, work length, motivation, satisfaction, and workload. The data collections used questionnaires and were analyzed using multilevel linear regression test with Stata 13.

Results: The performance of health personnel significantly improved with good accreditation status (b= 2.87; 95% CI= 0.03 to 5.71; p= 0.048), high education (b= 0.63; 95% CI= 0.13 to 1.13; p= 0.013), and high workload (b= 0.86; 95% CI= 0.34 to 1.39; p= 0.001). There was a contextual effect of the performance health personnel (ICC= 53.69%).

Conclusion: Good accreditation status, higher education and high work responsibilities increase the performance of the health personnel. There was a contextual effect of health centers on the health personnel.

Keywords: performance of health personnel, community health center, multilevel linear regression

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BACKGROUND

Quality health service is one of the determinants of the degree of public health in Indonesia. The National Medium-Term Development Plan (RPJMN) for 2015-2019 stated that one of the development goals in the health sector is improving access and quality of health services (Bapenas, 2014).

Uha (2012) stated that the current performance of public services is in the spotlight because the success or failure of an organization in carrying out its main tasks and functions can be seen from the achievements. Conceptually, performance can be seen from two aspects, namely the performance of individual employees and organizations.

Likewise, the performance of community health center can be seen from the achievements of the institution's performance as well as from the performance of health personnel.

Gibson et al. (2012) revealed that there are three variables that affect performance, namely individual, psychological, and organizational variable. Individual factors include skills, abilities, work experience, family background, etc. Psychological factors include the role, perception, attitude, motivation and job satisfaction. While organizational factors include organizational structure, job design, type of leadership, reward system, organizational culture, and accreditation status in it.

Community health center accreditation is a form of recognition from independent institutions that have been established by the Minister of Health that the community health centers have performed services according to national standards. Community health center standards have been established by the ministry of health through the Minister of Health Regulation No. 75 of 2014, and community health center accreditation assessment instruments are stipulated in Minister of Health Regulation No. 46 of 2015 (Ministry of Health, 2015).

The data from Ministry of Health in health profile in 2018 reported that the number of community health center in East Java was 963 out of a total of 9845 throughout Indonesia. East Java Province is the province with the second largest number of community health center in Indonesia after West Java. Based on these privileges, East Java Province has the responsibility to foster the first-level health facilities in the region. East Java has 38 districts/cities, one of which is Ngawi (Ministry of Health, 2018).

A study by O'Beirne et al. (2012) explained that accreditation of health service facilities abroad (Canada, United States, United Kingdom, Netherlands, Denmark, Australia, and New Zealand) had an effect on performance of health personnel through efforts to improve quality, clearer quality assurance, an implementation for a better risk management, put more attention in patients' safety, and conduct better services for patients.

A study by Gusti et al. (2018) explained that work length, high motivation, better knowledge, complete facilities, strong leadership, and age are positively related to better performance on midwife profession.

Workload is another factor that affects the performance of health personnel from organizational variables. High workload is shown by the dual tasks that must be performed by health personnel. High workload is associated with increased work stress that can affect work motivation and decreased performance (Marfu'ah et al. 2016).

Another factor that affects performance is income. Income or incentives can affect the health personnel's performance because rewards can increase work motivation which ultimately directly increases performance to achieve high achievement. Likewise, there is supervision from superiors that fosters motivation to work better (Rusmitasari et al. 2018).

This study aims to analyze the contextual effect of community health center on health personnel's performance as well as other factors that affect the performance of health personnel.

SUBJECTS AND METHOD

1. Study Design

The design of this study used an observational analytic model with a cross sectional approach. This study was conducted at 24 community health centers in Ngawi, East Java on June-July 2019.

2. Population and Sample

The target population of this study was the health personnel of community health center in Ngawi, East Java. The sampling technique

in this study used proportional random sampling and got a total sample of 216 health personnel.

3. Study Variables

The dependent variable in this study was the performance of health personnel. The independent variables were the health center accreditation status, education, income, work length, workload, motivation, and job satisfaction.

4. Operational Definition of Variables

Performance of the health personnel could be interpreted as the results of work in quality and quantity in carrying out their duties in accordance with the responsibilities given to him. The tool used to collect data was questionnaires. The measurement scale was continuous, but for data analysis the scale was changed to a dichotomy.

Accreditation status was the level of accreditation graduation issued by the First Level Health Facilities Accreditation Commission (KA FKTP). The tool used to collect the data was in the form of community health center accreditation certificates. The measurement scale was categorical, but for data analysis it was changed to dichotomy.

Education was formal learning of knowledge, a skill acquired through teaching. The tool used to collect data was questionnaires. The scale of measurement was categorical, but for data analysis it was changed to dichotomy.

Income is the money received as a result of his work. The tool used to collect the data was a list of employee salaries. The measurement scale was continuous but for the purpose of data analysis it was changed to a dichotomy.

Workloads were tasks assigned by the head of the community health center to the health personnel to be completed within a certain period of time regarding additional tasks in addition to the main tasks that exist. The tool used to collect data was in the form of questionnaires. The measurement scale was continuous, but for data analysis it was changed to a dichotomy.

Motivation is an effort that can cause employees to be moved to do something to achieve their desired goals. The tool used to collect data using a questionnaire. The measurement scale is continuous, for the purpose of data analysis it is converted into a dichotomy.

Work length was the period of time someone works at the health center in a matter of months. The tool used to collect data was in the form of questionnaires. The measurement scale was continuous data but for the purposes of data analysis it was changed to a dichotomy.

Job satisfaction was the psychological condition of someone who was pleasant when working at the health center for his assignment or role. The tool used to collect data was in the form of questionnaires. The measurement scale was continuous whereas for the purpose of data analysis it was changed to a dichotomy.

5. Data Analysis

Insert Univariate analysis aimed to describe the characteristics of each variable. Continuous data were described in n, Mean, SD, Min, Max. Categorical data were described in n and percent (%).

The bivariate analysis was to determine the correlation between the performance of health personnel and the independent variables using chi-square test. Multivariate data analysis used multilevel linear regression analysis.

6. Research Ethic

The ethics of this study include consent, anonymity, confidentiality, and ethical eligibility. The ethical eligibility for this study came from the Health Research Ethics Commission of RSUD Dr. Moewardi with number: 738 / V / HERC / 2019.

RESULTS

A. Sample Characteristics

Characteristics of the sample of the study in the form of continuous data were are presented in table 1, while the characteristics of categorical data were presented in table 2.

Table 1.Characteristics of the sample (continuous data)

Variable	(n)	Mean	SD	Min.	Max.
Income (x Rp 1,000)	216	4,365	2,203	200	12,993
Work length (month)	216	161.73	111.41	2	414
Workload	216	1.78	0.93	1	5
Motivation	216	34.66	4.19	23	48
Satisfaction	216	14.41	2.31	8	26
Performance	216	36.07	5.36	24	48

Table 2.Characteristics of the sample (categorical data)

Characteristics	N	Percentage (%)
Accreditation status		
Poor (basic-intermediate)	162	75
Good (primary)	54	25
Education		
Low(<Senior high school)	131	60.65
High (≥Senior high school)	85	39.35
Income		
Low	94	43.52
High	122	56.48
Work length		
Short (< 161 months)	95	43.98
Long (≥ 161 months)	121	56.02
Workload		
Light (<2)	110	50.93
Heavy(≥ 2)	106	49.07
Motivation		
Low (<34)	109	50.46
High(≥34)	107	49.54
Satisfaction		
Less satisfied (<14)	95	43.98
Satisfied (≥14)	121	56.02
Performance		
Poor (<36)	132	61.11
Good (≥36)	84	38.89

Employees with level of education ≥Senior high school were more likely to perform well than those with education <Senior high school (OR= 1.76; p= 0.047), health personnel with workloads ≥2 had a greater likelihood of good performance than health personnel with less workload (OR= 2.54; p= 0.001), health personnel with high motivation had a higher probability of better performance than health personnel with low motivation (OR= 2.92; p<0.001), and health personnel with high job satisfaction had a greater likelihood of good performance than health personnel with low satisfaction (OR= 2.91; p <0.001).

Table 3.The result of bivariate analysis from the factors that affect the performance of health personnel

Variable Group	Performance Assessment				Total		OR	p
	Poor		Good					
	N	%	N	%	N	%		
Accreditation status								
Poor (basic, intermediate)	107	66.05	55	33.95	162	100.0	2.26	0.009
Good (primary)	25	46.29	29	53.71	54	100.0		
Education								
Low (<Senior high school)	87	66.41	44	33.59	131	100.0	1.76	0.047
High (≥Senior high school)	45	52.94	40	47.06	85	100.0		
Income								
Low	64	68.09	30	31.91	94	100.0	1.69	0.065
High	68	55.74	54	44.26	122	100.0		
Work length								
Short (<161 months)	52	54.74	43	45.26	95	100.0	0.62	0.089
Long (≥161 months)	80	66.12	41	33.88	121	100.0		
Workload								
Light (<2)	79	71.82	31	28.18	110	100.0	2.54	0.001
Heavy (≥2)	53	50.0	53	50.0	106	100.0		
Motivation								
Low	80	73.39	29	26.61	109	100.0	2.92	<0.001
High	52	48.60	55	51.40	107	100.0		
Satisfaction								
Low	71	53.79	61	46.21	132	100.0	2.91	<0.001
High	24	28.57	60	71.43	84	100.0		

B. The result of multivariate analysis

Table 4 shows the results of multivariate analysis. There was an effect of accreditation status on the performance of heath personnel and was statistically significant. Heath personnel who work in community health center with good accreditation status had a log odd to perform well 2.87 units higher than heath personnel who work at community health center with low accreditation status (b= 2.87; 95% CI= 0.025 to 5.71; p= 0.048).

Highly educated heath personnel had logodd to perform well 0.36 units higher than low educated heath personnel (b= 0.36; 95% CI= 0.016 to 0.71; p= 0.040). Health personnel with high incomes had logodd to perform well 0.69 units higher than heath personnel with low income (b= 0.69; 95% CI= -0.48 to 1.87; p= 0.246). Health personnel with long work length had logodd for good performance 0.002 units lower than heath personnel who had short work length (b= -0.002; 95% CI= -0.007 to 0.002; p= 0.393). Heath personnel who had heavy workloads had log-odd to perform well 0.86 units higher than heath personnel who had light workloads (b= 0.86; 95% CI= 0.34 to 1.39; p= 0.001). Heath personnel who had high motivation had log-odd to perform well 0.03 units higher than health personnel who had low motivation (b= 0.03; 95% CI= -0.103 to 0.17; p= 0.646). Satisfied heath personnel had logodd for good performance 0.69 units higher than unsatisfied heath personnel (b= 0.69; 95% CI= -0.41 to 1.78; p= 0.218).

The ICC value was 53.49%, meaning that there was a contextual effect of the community health center on the performance of health personnel. Table 4 also shows that the LR test value vs. linear regression p <0.001 which means that there was a significant difference between the multilevel linear regression analysis model and the usual linear regression analysis model.

Table 4. The results of multilevel multiple logistic regression analysis of the factors affecting midwife performance

Independent Variable	Coefficient (b)	95% CI		p
		Lower limit	Upper limit	
Fixed Effect				
Accreditation status (primary)	2.87	0.03	5.71	0.048
Education (≥Senior high school)	0.36	0.02	0.71	0.040
Income (high)	0.69	-0.48	1.87	0.246
Work length (≥161 months)	-0.002	-0.007	0.003	0.393
Workload (≥2)	0.86	0.34	1.39	0.001
Motivation (High)	0.03	-0.11	0.17	0.646
Job satisfaction (high)	0.69	-0.41	1.78	0.218
Random Effect				
Community health center				
Var (Constanta)	0.54	0.37	0.69	
N observation= 216				
N community health center= 24				
Log likelihood= -591.81				
LR test vs. Linear Regression,		p<0.001		
ICC= 53.69%				

DISCUSSION

1. The effect of accreditation status on the performance of health personnel

The results show that there is a significant effect of the health center accreditation status on the performance of health personnel. Health personnel who work in community health center with good accreditation status have a logodd to perform well 2.87 units higher than health personnel who work at community health center with low accreditation status (b= 2.87; 95% CI= 0.025 to 5.71; p= 0.048).

The results of this study are in line with a study conducted by Ensha (2018). According to O'Beirne et al. (2013), accreditation of health services abroad (Canada, United States, United Kingdom, Netherlands, Denmark, Australia and New Zealand) has an effect on efforts to improve quality, clearer quality assurance, better implementation of risk management, safety patients are given more attention by health personnel and services for patients become better.

2. The effect of education on the performance of health personnel

The results of this study indicate that there is an effect of education on the performance of health personnel and is statistically significant. Highly educated health personnel (>Senior high school) have a logodd to perform well 0.36 units higher than health personnel with low education (b= 0.36; 95% CI= 0.016 to 0.71; p= 0.040). The results of this study are in line with a study by Listyanti and Dewi, (2019) which stated that educational factors have a positive effect on health personnel performance.

3. The effect of income on the performance of health personnel

The analysis shows that there is an effect of income on the performance of health personnel, but it is not statistically significant. Health personnel with high income have a logodd to perform well 0.69 units higher than health personnel with low income (b= 0.69; 95% CI= -0.48 to 1.87; p= 0.246). This study is in line with a study by Irwadi et al. (2019) and Zahara et al. (2011).

4. The effect of work length on the performance of health personnel

The results of the analysis show that there is an effect of the length of service on the performance of health personnel but is not statistically significant. Health personnel with long work length have a logodd for good performance 0.002 units lower than health personnel with short work length (b= -0.002; 95% CI= -0.007 to 0.002; p= 0.393). The results of this study are not in line with a study conducted by Rusmitasari et al. (2018). In this study, long work length of more than 13 years can reduce health personnel's performance due to boredom that is caused by being too long in an organization. So, the health personnel are less enthusiastic and the performance is decreased. For those who are old physical abilities begin to decrease.

5. The effect of workload on the performance of health personnel

The analysis shows that there is an effect of workload on the performance of health personnel and is statistically significant. Health personnel with heavy workload have a logodd to perform well 0.86 units higher than health personnel who have low workload (b= 0.86; 95% CI= 0.34 to 1.39; p= 0.001). The results of this study are not in accordance with a study conducted by Sutarto et al. (2016). In his study, more workload does not reduce health personnel performance but rather increases health personnel performance. This can be explained that workload is a form of responsibility and participation of health personnel in their work, so that the health personnel who are given workloads feel that they get trust and responsibility from their superiors, this is conveyed by Gibson et al. (2012).

6. The effect of motivation on the performance of health personnel

There is a motivational effect on the performance of health personnel but is not statistically significant. Health personnel who have high motivation had a logodd to perform well 0.03 units higher than health personnel who have low motivation (b= 0.03; 95% CI= -0.103 to 0.17; p= 0.646). The results of this study are in line with a study by Pundati et al. (2018) and Irwadi et al. (2018) which stated that work motivation has an effect on the performance of health personnel.

7. The effect of satisfaction on the performance of health personnel

There is an effect of job satisfaction on the performance of health personnel but is not statistically significant. Satisfied health personnel have a logodd for good performance 0.69 units higher than unsatisfied health personnel (b= 0.69; 95% CI= -0.41 to 1.78; p= 0.218). The results of this study are in line with a study conducted by Rusmitasari et al. (2018) which stated that health personnel satisfaction has a direct effect on performance.

8. The effect of community health center contextual on the performance of health personnel

The analysis shows that the ICC value is 53.69% which means that there is a contextual effect of the health center on the performance of health personnel. The results of this study are in line with a study byGusti et al. (2018) which stated that there is a contextual effect of health center on the performance of midwives.

AUTHOR CONTRIBUTION

Rahayu Zulaikah asthe main researcher collected themes and analyzedthe data of the study; Didik Gunawan Tamtomo examined the contents of the study; Endang Sutisna Sulaeman examined the conceptual framework and methodology.

CONFLICT OF INTEREST

This study used fund from Ministry of Health's Human Resources Development Center (PPSDM).

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