

## Multilevel Analysis: Factors Related to Work Performance in Health Workers at Community Health Centers

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### ABSTRACT

**Background:** Patient satisfaction is a very valuable asset because if patients are satisfied they will continue to use the services of their choice. The level of patient satisfaction arises as a result of the performance of health services obtained after the patient compares it with the quality of health services. The aim of this research is to analyze the performance of health workers at community health centers.

**Subjects and Method:** Cross-sectional research was conducted at community health centers in Karanganyar, Central Java, from November to December 2023. A total of 210 health workers were selected using stratified random sampling. The dependent variable was work performance. The independent variables were age, length of work, employment status, income and work environment. Data were collected using questionnaires and analyzed using multiple multilevel linear regression.

**Results:** Age decreased the performance but was not statistically significant ( $b = -0.33$ ; CI 95% = -1.63 to 0.97;  $p = 0.623$ ). Length of work ( $b = -1.19$ ; CI 95% = -2.30 to -0.08;  $p = 0.035$ ) and income ( $b = -1.43$ ; CI 95% = -2.78 to -0.07;  $p = 0.039$ ) significantly degraded the performance. Employment status decreased performance but it was statistically close to significant ( $b = -1.44$ ; CI 95% = -3.04 to 0.16;  $p = 0.078$ ). A comfortable work environment significantly increased performance ( $b = 0.16$ ; 95% CI = 0.02 to 0.30;  $p = 0.029$ ). There was a contextual influence of community health center factors on work performance (ICC = 9.62%).

**Conclusion:** Age decreases performance but is not statistically significant. Length of work and income significantly decrease performance. Employment status decreases performance but is statistically close to significant. A comfortable work environment significantly improves performance. There is a contextual effect of community health center factors on work performance.

**Keywords:** health centers, multilevel analysis, performance of health workers

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### BACKGROUND

Advances in science and technology have had many impacts on human life, both in the health sector and in other field. Therefore,

improving the quality of human resources in the health sector cannot be ruled out, because health is the basic and most valuable need for a person's life. Without a healthy life, a

person cannot carry out optimal activities (Ministry of Health of the Republic of Indonesia, 2015).

Community health center is a health service facility that carries out public health efforts and first-level individual health efforts, prioritizing promotive and preventive efforts in its working area (Ministry of Health of the Republic of Indonesia, 2019). Every patient will feel satisfied if the service they receive is the same as or exceeds expectations. Patient satisfaction is the outcome of health services. It can be proven that patients and the public who experience satisfaction with the health services provided tend to comply with advice, be loyal or adhere to the agreed treatment plan (Pohan I, 2010).

Patient satisfaction is a very valuable asset because if patients are satisfied they will continue to use the service of their choice, but if patients are dissatisfied they will tell other people about their bad experience with a little exaggeration (Sabarguna B, 2008).

To create patient satisfaction, hospitals or health services must create and manage a system to obtain more patients and the ability to retain patients. The level of patient satisfaction arises as a result of the performance of health services obtained after the patient compares it with the quality of health services (Pohan, 2010). The success of a company or organization is largely determined by the quality of its Human Resources (HR) (Donni, 2017).

Employee performance, which is a measure of a person's success in carrying out their duties, is very necessary to improve the accreditation of community health centers. In this case it can be assumed that employee performance is good if all their needs are met. Community health centers that already have

### **3. Study Variables**

The variables in this study were dependent variables and independent variables. The dependent variable includes the performance

complete accreditation should ideally fulfill all the needs required by their employees, such as meeting the physical work environment and providing compensation, so that they can motivate employees which will ultimately improve their performance. This agrees with research conducted by Zainuddin et al., (2019) which stated that research from 322 respondents showed a significance value below 0.05, meaning that the variables leadership, organization, quality improvement team and self-efficacy had a significant effect on the assessment status of accredited Community Health Centers. Intermediate with Primary - Plenary Accredited Community Health Centers in 2016-2019, and the organizational variable is the most meaningful variable based on the results of statistical tests.

Based on this background, the researcher conducted a study entitled multi-level analysis; factors that influence the performance of health center health workers in the Karanganyar District Health Service working area.

## **SUBJECTS AND METHOD**

### **1. Study Design**

The type of study carried out was analytical observational research with a cross sectional approach.

### **2. Population and Sample**

The populations in this study were health workers at the health center of Karanganyar DKK working area with a total of 943 health workers. The number of samples was taken based on stratified random sampling in 21 community health centers, so that 210 respondents were selected based on the rule of thumb. This research was carried out in November-December 2023.

of health workers, while the independent variables were age, length of work, employment status, monthly income (salary) and work environment.

#### 4. Operational Definition

**Age:** The number of years since the research subject was born until the time of data collection.

**Length of work:** The period of time a person works at an agency, office and others.

**Employment status:** The situation that differentiates one employee from another in a company or organization is the distinction between permanent employees and contract employees.

**Monthly income:** The number of inputs obtained for services provided by the company received in 1 month.

**Work environment:** Every employee wants a pleasant working atmosphere, a comfortable working atmosphere that includes clear lighting, quiet environment, and work safety.

**Performance:** Achievement results or work results with quality and quantity that have been achieved within a certain time to complete the obligations and responsibilities given by a particular organization.

#### 5. Study Instrument

The research instruments used for data collection were questionnaires and interviews.

#### 6. Data Analysis

Univariate analysis to obtain frequency distribution and percentage characteristics of research subjects. Bivariate analysis to analyze the influence of independent and dependent variables using the chi-square test with a significance level of  $p < 0.050$ , and multivariate analysis using the multiple linear regression test.

#### 7. Research Ethics

Research ethics include informed consent, anonymity, and confidentiality. A letter of approval for research ethics permission was obtained from the Research Ethics Committee of RSUD Dr. Moewardi in Surakarta No.117/I/HREC/2024, in January 16th, 2024.

### RESULTS

#### 1. Univariate Analysis

Table 1 shows the results of 210 research subjects aged below 39 years old, there were 102 research subjects (48.57%) while there were 108 people aged  $\geq 39$  years old (51.43%).

There were 15 subjects with a length of work of 1 year with a percentage of (7.14%), 22 subjects with a length of work of 2 years with a percentage of (10.48%), and 173 subjects with a length of work of 3 years with a percentage (82.38%), therefore, most of the research subjects are working for 3 years totaling 173 research subjects.

Table 1 shows the results of 210 study subjects who were examined regarding employment status, subjects with Civil Servant status were 162 research subjects with a percentage of (77.14%), while for honorary/contracts, there were 48 research subjects with a percentage of (22.86%), therefore it was dominated by the Civil Servant employment status with a total of 162 research subjects. Around of half employees (50.48%) have an income of  $\geq$  Rp 3,100,000. 54.29% of employees feel comfortable with their work environment. As many as 51.90% of employees have good performance.

**Table 1. The Characteristics of Research Subjects**

Variable	Frequency (N)	Percentage (%)
<b>Age</b>		
< 39 years old	102	48.57
$\geq 39$ years old	108	51.43
<b>Length of Work (Year)</b>		
1	15	7.14

Variable	Frequency (N)	Percentage (%)
2	22	10.48
3	173	82.38
<b>Employment Status</b>		
Honorary / Contract	162	77.14
Civil servant/PPPK	48	22.86
<b>Income</b>		
< Rp 3,100,000	104	49.52
≥ Rp 3,100,000	106	50.48
<b>Work Environment</b>		
Uncomfortable, Score < 31	96	45.71
Comfortable, Score ≥ 31	114	54.29
<b>Performance</b>		
Not Good, Score < 51	101	48.10
Good, Score ≥ 51	109	51.90

**2. Bivariate Analysis**

Table 2 shows that the longer length of work has 0.51 times better performance (OR= 0.51; 95% CI= 0.27 to 0.95; p= 0.035). Employment status (OR= 0.50; 95% CI= 0.22 to 1.51;

p= 0.104), income (OR= 0.66; 95% CI= 0.33 to 1.29; p= 0.220), and work environment (OR= 1.20; 95% CI= 0.68 to 2.10; p= 0.517) is not related to performance.

**Table 2. Bivariate analysis of age, length of work, employment status, income, work environment on performance**

Variable	OR	CI (95%)		p
		Lower Limit	Upper Limit	
Age	0.90	0.46	1.75	0.756
Length of work (year)	0.51	0.27	0.95	0.035
Employment status	0.50	0.22	1.51	0.104
Monthly income (salary)	0.66	0.33	1.29	0.220
Work environment	1.20	0.68	2.10	0.517

**3. Multivariate Analysis**

Table 3 shows that age decreased performance but it was not statistically significant (b= -0.33; 95% CI= -1.63 to 0.97; p = 0.623). Long working hours significantly decreased performance (b= -1.19; 95% CI= -2.30 to -0.08; p = 0.035) and income (b= -1.43; 95% CI= -2.78 to -0.07; p = 0.039). A comfort-

able work environment improved performance (b= 0.16; 95% CI= 0.02 to 0.30; p= 0.029). Employment status as a civil servant decreased performance, but it was statistically close to significant (b= -1.44; 95% CI= -3.04 to 0.16; p= 0.078). There was a contextual influence of community health centers on employee performance (ICC= 9.62%).

**Table 3. Results of Multiple Linear Multilevel Analysis of Factors that Influence Employee Performance at Community Health Centers.**

Independent Variable	Regression coefficient (b)	CI 95%		p
		Lower Limit	Upper Limit	
<b>Fixed Effect</b>				
Age (≥39 years old)	-0.33	-1.63	0.97	0.623
Length of Work (year)	-1.19	-2.30	-0.08	0.035

Independent Variable	Regression coefficient (b)	CI 95%		p
		Lower Limit	Upper Limit	
Employment Status (Civil Servant)	-1.44	-3.04	0.16	0.078
Monthly income ( $\geq$ Rp 3.100.000)	-1.43	-2.78	-0.07	0.039
Work environment (comfortable)	0.16	0.02	0.30	0.029
<b>Random Effect</b>				
Health center Variation (constant)	1.60	0.48	5.36	
N observation = 210				
N group= 10				
LR test vs. linear model	p = 0.008			
Intra Class Correlation (ICC)	9.62%			

## DISCUSSION

### 1. Effect of age on performance

Age is often a consideration for companies when recruiting employees, as they aim to hire productive individuals for key positions. However, this study found no statistically significant relationship between age and performance. This finding aligns with Lasut et al. (2017), which also found no significant performance differences based on age in the Youth Education and Sports Services sector.

This study found no significant difference in employee performance based on age. However, older employees generally have more experience, such as in handling work tasks and resolving issues or crises within organizations.

This finding contrasts with research by Christiana et al. (2016), which reported a significant relationship between age and the performance of health workers. Their study showed that age negatively affected performance ( $b = -0.33$ ;  $p = 0.011$ ).

Bashir et al. (2021) stated that performance and age are closely related, largely due to the common belief that performance declines with age. Older employees are often seen as less adaptable and more resistant to new technologies. However, they also bring valuable strengths such as experience, sound judgment, and a strong work ethic. Additionally, many are unmarried or have relatively

few children, which may allow them to focus more on their work.

This study found that the average age of health workers is 39 years. Supporting this, Nur et al. (2021) reported that health workers aged 30–40 years and above tend to work diligently and optimally due to sufficient experience and well-developed skills. Their study at the Sidrap District Health Service also showed that the majority of workers were in this age group, which contributed to strong job performance.

### 2. Effect of length of work on performance

Statistical tests revealed a significant negative relationship between length of work and performance. Specifically, each additional year of work experience was associated with a 1.19-point decrease in performance score. This aligns with Afifa (2019), who found that length of work weakens the relationship between work stress and employee performance. Long-serving employees may struggle to cope with ongoing stress due to accumulated pressures, which can impact their psychological well-being and hinder job performance.

The results indicate that length of work weakens the relationship between work motivation and employee performance, leading to the rejection of the fifth hypothesis. According to Thoha (2015), once certain needs are



fulfilled and bring satisfaction, their motivational power tends to diminish, making them less effective in driving individuals to achieve further goals.

This finding is consistent with Christiana et al. (2016), who reported a statistical test result of  $p=0.199$ , indicating no significant relationship between length of work and the performance of health workers in Integrated ANC services. Seniority does not necessarily determine performance. Employees with longer tenure may prefer to maintain their current positions rather than pursue growth opportunities. This lack of motivation could stem from limited job prospects and population pressures. Afifa (2019) also noted that many respondents, despite holding bachelor's degrees, still struggle to find employment, which may discourage efforts to improve skills.

### **3. Effect of employment status on performance**

The results of multilevel multiple linear regression analysis show that there was a negative relationship between employment status and performance, and this relationship was statistically close to significant. This is in line with research by Riko Hendrajana et al., (2018) which states that the research results show that employment status has a negative effect on employee performance. This result showed that the higher the difference in employment status, the lower employee performance will be. Employees with permanent status are higher than non-permanent employees, as shown by the average performance of permanent employees which is 4.41 which is greater than the average performance of non-permanent employees which is 3.5949.

The results of research conducted by Aspita & Sugiono (2019) show that employee status has a positive and significant effect on the performance of Bank Rakyat Indonesia Daan Mogot Branch employees, it is in line

with the results of research conducted by Nuryati (2015) which shows that employment status has a positive but not significant effect on employee performance. These results show that the better the employment status, the better the employee's performance, although the effect is not significant. This is because employees who have good employment status will be encouraged to have good performance.

### **4. Effect of income on performance**

The results of multilevel multiple linear regression analysis show that there was a negative relationship between income and performance, and this relationship was statistically significant. Employees with higher incomes tend to have low performance than employees with lower incomes. The results of this research are in line with research conducted by Renyaan et al. (2016) which showed the relationship between incentives, motivation, supervision and nurse performance in the inpatient ward at the Regional General Hospital of Sorong Regency-West Papua. There is a significant relationship between incentives and nurse performance ( $p=0,048$ ).

However, this research is not in line with Rempowatu, et al., (2020), based on the results of the analysis, it can be concluded that the hypothesis proposed/tested in this research states that "welfare has a significant effect on employee performance at the Bolaang Mongondow Regency Regional Inspectorate". The results of this research imply that it is necessary to pay attention to improving employee welfare in an effort to improve performance, namely by providing appropriate salaries and allowances in accordance with the workload, responsibilities and job risks.

### **5. Effect of work environment on performance**

The work environment is a means for supporting the smooth working process,

where comfort and safety at work are also taken into account in creating a conducive and enjoyable work atmosphere for employees so that it can support employee performance in carrying out their work activities. (Nabawi, 2019).

The results of multilevel multiple linear regression analysis showed that there was a positive relationship between work environment and performance, and this relationship was statistically significant. These results are in line with previous research by (Siagian and Khair, 2018) which shows that the work environment has a positive and significant influence on employee performance. This is also in line with research by Apridani et al., (2021) showing that the work environment has a significant effect on the performance of employees assigned to accredited health centers. This shows that employees assigned to the Accredited Community Health Center in Konut feel happy to work in the room, because they love their profession, so they are able to adapt to various conditions in the room, especially with good relationships with colleagues, harmonious relationships with superiors and subordinates. Good lighting conditions, a safe environment, and good air circulation are also provided for them.

The work environment is a place where employees carry out their activities, which can have positive and negative impacts on employees in achieving results. A conducive work environment will have a positive impact on the continuity of work, while a less conducive work environment will have a negative impact on the continuity of work. Zhenjing et al. (2022), state that the work environment is a physical environment that influences employee performance, safety and quality. The work environment provides a sense of security and allows employees to work optimally, this can influence employee emotions. If the employees enjoy their work environment, they will utilize their work time

effectively and optimally, and it will improve their work performance. Apart from the physical environment, the work environment also includes working relationships between other employees and the relationship between subordinates and their seniors.

Proto (2016) states that happy workers are productive workers and productive workers are likely to be happy. Employee job satisfaction is essential to face the dynamic and ever-increasing challenges of maintaining organizational productivity by keeping their workforce continuously engaged and motivated. In addition, environmental pressures, increasing health costs and other needs also become challenges for management. This can be overcome by creating a work environment that maintains employee job satisfaction and motivates people to achieve extraordinary performance at work and achieve work-life balance.

## **6. Contextual Effect of Community Health Centers on Performance**

The results of this multilevel linear regression analysis showed that there was a contextual effect of factors at the community health center level on the performance of community health center employees. The allocation and management of human resources (HR) to carry out the main tasks of the community health center has a significant impact on the success of the community health center in carrying out its duties and functions. Human resources must be allocated fairly between therapeutic, promotional, and preventive initiatives. Human resource management (HR) in health services (health and non-health personnel) is the most important factor in achieving health development goals (Ministry of Health of the Republic of Indonesia, 2020).

Employee performance is important for an organization because the performance of Community Health Center employees can be directly assessed by the community. Efforts

to improve the performance of Community Health Center employees need special attention from various parties. Several elements undoubtedly influence the ability to achieve excellent employee performance. Internal controls are the first consideration. Internal control is highly important in improving employee performance in an organization (Dewi, 2012). Study by Wahono & Mustaqim (2016) shows that the organizational justice variable has an influence on the performance of employees.

Mariani (2011) states that poor employee performance is higher if the quality of internal control and perceptions of justice are low. Kinicki & Kreitner (2007) document this result in the capital used (Wood & Stangster 2002). Efficiency and effectiveness of the company, and therefore participating by playing a role in the whole process shows that employee performance is higher among happy and satisfied workers and management finds it easy to motivate high performers to achieve company targets.

#### **AUTHOR CONTRIBUTION**

Ajeng Christiana Putri Pratiwi is the main researcher who selects topics, searches and collects articles, analyzes data and writes manuscripts. Argyo Demartoto and Bhisma Murti helped analyze the data and review research documents.

#### **CONFLICT OF INTEREST**

There is no conflict of interest in this study.

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