The Relationship Between Human Resource Characteristics and the Performance of Larvae Surveyors in Gondokusuman 2 Health Center of Yogyakarta

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Abstract—The city of Yogyakarta is an endemic area of Dengue Hemorrhagic Fever (DHF) where DHF cases can be found each year. In Gondokusuman 2 Health Center of Yogyakarta, the number of DHF cases still fluctuates all year round where there were a total of 60 cases in 2016. The eradication and prevention of DHF in Gondokusuman 2 Health Center of Yogyakarta were focused on the utilization of the community potential to contribute to mosquito nest eradication (PSN). This study aimed at finding out and analyzing the relationship between the characteristics of larvae surveyors (health cadres) and the increase of larvae-free number (ABJ) in Gondokusuman 2 Health Center of Yogyakarta. This study was an analytical observational study. The population of the study was health cadres, with a total number of 70 people and the sample was selected through total sampling. From the findings of the study, we found that the relationship between age variable and larvae surveyor performance had a p-value of (0.0665) or (p>0.05), meaning that Ha was rejected. The relationship between age variable and larvae surveyor performance had a p-value of (0.317) or (p>0.05), meaning that Ha was rejected. The relationship between training variable and larvae surveyor performance had a p-value of (0.909) or (p>0.05), meaning that Ha was rejected. The relationship between work status variable and larvae surveyor performance had a p-value of (0.190) or (p>0.05), meaning that Ha was rejected. The relationship between community support variable and larvae surveyor performance had a p-value of (0.028) or (p>0.05), meaning that Ha was accepted.

Keywords—DHF, larvae surveyor, human resource characteristic

I. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by dengue virus that can be infected from one person to another through mosquito as a vector. DHF is caused by dengue virus with 4 serotypes, which are DEN-1, DEN-2, DEN-3, and DEN-4 [1]. Dengue virus can cause sudden high fever, along with shock manifestation that may lead to death [2].

DHF is commonly found in tropical and sub-tropical regions. DHF is an endemic disease that can be found all year round, especially in rainy season when there is an optimum condition for mosquitos to breed. Mostly, a big number of people is infected in a short period of time [3].

DHF is an endemic disease in more than 100 countries, including Africa, America, East Mediterranean, Southeast Asia, and West Pacific where the number of DHF cases is the highest. The number of DHF cases in America, Southeast Asia, and West Pacific exceeded 1.2 million in 2008 and increased to 3.2 million in 2015. From the data collected globally, Asia is placed first with the highest number of DHF cases each year. Moreover, from the data collected from 1968 to 2009, World Health Organization (WHO) recorded Indonesia as the country with the highest number of DHF cases in Southeast Asia [4]–[6].

DHF disease is still one of the main health concerns in Indonesia. The number of DHF patients and its spread area keep growing as the citizen mobility and population density increase. In 2015, it was reported that out of 126,675 DHF cases in 34 provinces in Indonesia, 1,229 cases led to deaths. That number is higher than the number of DHF cases in 2014 with a total of 100,247 cases and 907 fatal cases [6].

The DHF epidemic trend has undergone a change within the last 15 years. The epidemic trend initially occurred once every 5 years or so. Currently, the trend changes and it occurs every 2-5 years [7].

The city of Yogyakarta is an endemic area of DHF. The number of DHF patients from 2004 to 2014 fluctuated each year. Figure 1 demonstrates the DHF cases found in the city of Yogyakarta from 2004 to 2014.

Fig. 1. The Chart of DHF Cases in Yogyakarta City from 2004 to 2014.
From the chart, it is found that the highest number of cases occurred in 2010, followed by that in 2013 and 2006. The number of DHF cases keeps fluctuating all year round, which is influenced by rainfall in the city of Yogyakarta [8]. Meanwhile, the number of DHF cases found in Gondokusuman 2 Health Center of Yogyakarta was 60 in 2016, consisting of 31 cases in Terban village and 29 cases in Kotabaru village.

The eradication and prevention of DHF in Gondokusuman 2 Health Center of Yogyakarta were focused on the optimization of the community potential to contribute to mosquito nest eradication (PSN) through 3M, monitoring of larval-free number (ABJ), and introducing the symptoms of DHF as well as its treatment in a household. The effort made to optimize the community potential was through community-based surveillance activity.

The community-based surveillance in Gondokusuman 2 Health Center of Yogyakarta involved 78 chosen citizens from each region. They represented the region and were proposed to the health center to be made village surveillance workers (health cadres) as the representative agents for health center surveillance workers.

The community-based surveillance activity that had been conducted by Gondokusuman 2 Health Center of Yogyakarta was the surveillance for DHF disease through periodic larval monitoring that was done once a week. The activity was expected to increase ABJ within the working area of Gondokusuman 2 Health Center of Yogyakarta as well as to decrease the morbidity rate of DHF.

The community-based surveillance activity in Gondokusuman 2 Health Center of Yogyakarta that involved village surveillance workers or larval surveyor (health cadres) to do periodic larval monitoring had been realized since 2013. However, the activity had never been evaluated to see the characteristics of larval surveyor (health cadres) in increasing ABJ.

II. METHOD

A. Study Design

This study was an analytical observational study with cross-sectional design. The survey method with cross-sectional study approach was done by collecting the data for the dependent and independent variables at the same time.

B. Data Source and Data Collection

This study was conducted within the working area of Gondokusuman 2 Health Center of Yogyakarta. The working area of Gondokusuman 2 Health Center of Yogyakarta covered two urban villages, namely Terban village and Kotabaru village.

C. Sample population

The population of the study was all health cadres within the working area of Gondokusuman 2 Health Center of Yogyakarta. The selection sample was done through total sampling method.

D. Variables

The dependent and independent variables were measured simultaneously.

E. Analysis

The data was analyzed by using univariate and bivariate analyses.

1. Univariate analysis in this study was a frequency distribution analysis from all respondents selected as the sample.

2. Bivariate analysis in this study was an analysis that involved one independent variable and one dependent variable. To test the relationship between the independent variable and dependent variable, statistical analysis with chi-square test was used. However, if the requirements were not fulfilled, fisher exact test would be used instead. We could see whether there was any significant relationship between the variables being analyzed from the p-value of the statistical calculation results. If we obtained p < 0.05 from the statistical calculation, it meant that there was a significant relationship between one variable and another variable.

III. RESULTS

The univariate analysis was made to describe the characteristics of the respondents of the research.

A. Age of the Respondents

The distribution of the respondents according on their age can be seen in Table 1.

<table>
<thead>
<tr>
<th>No</th>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Average</td>
<td>49.86 years</td>
</tr>
<tr>
<td>2</td>
<td>Standard Deviation</td>
<td>8.833</td>
</tr>
<tr>
<td>3</td>
<td>Minimum</td>
<td>22 years</td>
</tr>
<tr>
<td>4</td>
<td>Maximum</td>
<td>67 years</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

Based on Table 1, it was found that the average age of the respondents was 49.86 years, with a standard deviation of 8.833. The youngest respondent was 22 years old, while the oldest one was 67 years old.

B. The Occupation of the Respondents

The distribution of the respondents according on their occupation can be seen in Table 2.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housewife</td>
<td>39</td>
<td>68.4</td>
</tr>
<tr>
<td>Tradesman</td>
<td>11</td>
<td>19.3</td>
</tr>
<tr>
<td>Household Assistant</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>10.5</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

Based on Table 2, we can see that most respondents of the study were housewives, with a percentage of 68.4%.
C. The Education of the Respondents

The distribution of the respondents according on their education can be seen in Table 3.

TABLE III. THE RESPONDENT CHARACTERISTIC BASED ON EDUCATION

<table>
<thead>
<tr>
<th>Education</th>
<th>Frequency</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Not Graduate</td>
<td>1</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Primary School</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Junior High School</td>
<td>16</td>
<td>16</td>
<td>28.1</td>
</tr>
<tr>
<td>Senior High School</td>
<td>36</td>
<td>36</td>
<td>63.2</td>
</tr>
<tr>
<td>Diploma (D1, D2, D3)</td>
<td>2</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>2</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

Based on Table 3, we can see that most respondents of the study graduated senior high school, with a percentage of 63.2%.

D. Duration of Being a Cadre

The distribution of the respondents based on their length of experience of being a cadre can be seen in Table 4.

TABLE IV. THE RESPONDENT CHARACTERISTIC BASED ON DURATION OF BEING A CADRE

<table>
<thead>
<tr>
<th>Duration of Being a Cadre</th>
<th>Frequency</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>3</td>
<td>3</td>
<td>5.3</td>
</tr>
<tr>
<td>1-5 years</td>
<td>25</td>
<td>25</td>
<td>43.9</td>
</tr>
<tr>
<td>6-10 years</td>
<td>18</td>
<td>18</td>
<td>31.6</td>
</tr>
<tr>
<td>11-15 years</td>
<td>10</td>
<td>10</td>
<td>17.5</td>
</tr>
<tr>
<td>≥ 16 years</td>
<td>1</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

Based on Table 4, we found that most respondents had been a cadre for 1-5 years. The average duration of the respondents of being a cadre can be seen in Table 5.

TABLE V. THE AVERAGE DURATION OF RESPONDENTS BEING A CADRE

<table>
<thead>
<tr>
<th>No</th>
<th>Duration Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Average</td>
<td>6.82 years</td>
</tr>
<tr>
<td>2</td>
<td>Standard Deviation</td>
<td>4.485</td>
</tr>
<tr>
<td>3</td>
<td>Minimum</td>
<td>0 years</td>
</tr>
<tr>
<td>4</td>
<td>Maximum</td>
<td>16 years</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

According to Table 5, we found that the average duration of the respondents of being a cadre was 6.82 years, with a standard deviation value of 4.485. The duration of being a cadre ranged from 0 to 16 years.

The bivariate analysis described the relationship between dependent variable and independent variable, i. e.:

A. The Relationship between Education and the Performance of Larvae Surveyor (JUMANTIK)

The result of the bivariate analysis between education and larvae surveyor performance can be seen in Table 6.

TABLE VI. THE RESULT OF BIVARIATE ANALYSIS BETWEEN EDUCATION AND LARVAE SURVEYOR PERFORMANCE

<table>
<thead>
<tr>
<th>Education</th>
<th>Larvae Surveyor Performance</th>
<th>Total</th>
<th>%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor</td>
<td>Good</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>9</td>
<td>52.9</td>
<td>8</td>
<td>47.1</td>
</tr>
<tr>
<td>High</td>
<td>17</td>
<td>42.5</td>
<td>23</td>
<td>57.5</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

Based on Table 6, it was found that the group of respondents who had low education consisted of 17 cadres (29.82%), where 9 cadres (52.9%) had a poor performance. The other group of respondents with high education consisted of 40 cadres (70.18%), and 17 cadres (42.5%) had a poor performance as a larvae surveyor.

From the analysis result on the relationship between education and larvae surveyor performance, we found that there was not any relationship between education and larvae surveyor performance. It was proven by the p-value (0.665), The p-value was bigger than the alpha value (0.05), meaning that Ha was rejected.

B. The Relationship between Age and the Performance of Larvae Surveyor (JUMANTIK)

The result of the bivariate analysis between age and larvae surveyor performance can be seen in Table 7.

TABLE VII. THE RESULT OF BIVARIATE ANALYSIS BETWEEN AGE AND LARVAE SURVEYOR PERFORMANCE

<table>
<thead>
<tr>
<th>Age</th>
<th>Larvae Surveyor Performance</th>
<th>Total</th>
<th>%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Age and Elderly</td>
<td>17</td>
<td>40.5</td>
<td>25</td>
<td>59.5</td>
</tr>
<tr>
<td>Productive Age</td>
<td>9</td>
<td>60</td>
<td>6</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

From Table 7, we can see that the group with middle-aged and elderly respondents consisted of 42 respondents and 17 cadres (40.5%) still had a poor performance. Meanwhile, the group with respondents in their productive age consisted of 15 respondents and 9 cadres (60%) still had a poor performance as a cadre.

The analysis result between age and larvae surveyor performance showed that the variable of age did not have any relationship with larvae surveyor performance. This can be seen from the p-value (0.317). The p-value was bigger than the alpha value (0.05), meaning that Ha was rejected.

C. The Relationship between Training and the Performance of Larvae Surveyor (JUMANTIK)

The result of the bivariate analysis between training and larvae surveyor performance can be seen in Table 8.
Based on Table 8, we found that from 8 cadres who did not get any training, 3 (37.5%) of them had poor performance. Meanwhile, the group with respondents who had experienced training consisted of 49 respondents, and a total of 23 cadres (46.9%) had a poor performance as a larvaesurveyor. The result of the analysis between training and larvae surveyor performance showed that there was not any relationship between training and larvae surveyor performance. It was proven by the p-value (0.909). The p-value was bigger than the alpha value (0.05). Thus, Ha was rejected.

D. The Relationship between Work Status and the Performance of Larvae Surveyor (JUMANTIK)

The result of the bivariate analysis between work status and larvae surveyor performance can be seen in Table 9.

<table>
<thead>
<tr>
<th>Work Status</th>
<th>Larvae Surveyor Performance</th>
<th>Total %</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working</td>
<td>Poor 61.1 %</td>
<td>Good 38.9 %</td>
<td>18 100</td>
</tr>
<tr>
<td>Not Working</td>
<td>Poor 38.5 %</td>
<td>Good 61.5 %</td>
<td>39 100</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

From Table 9, we can see that there was a total of 18 cadres from the group with respondents who were working and 11 (61.1%) of them still had a poor performance as a cadre. On the other hand, the group with respondents who were unemployed consisted of 39 respondents, and 15 cadres (38.5%) still had a poor performance. The result of the analysis between work status variable and larvae surveyor performance showed that there was not any relationship between work status and larvae surveyor performance. Furthermore, it was proven by the p-value (0.190). The p-value was bigger than the alpha value (0.05). Therefore, Ha was rejected.

E. The Relationship between Community Support and the Performance of Larvae Surveyor (JUMANTIK)

The result of the bivariate analysis between community support and larvae surveyor performance can be seen in Table 10.

<table>
<thead>
<tr>
<th>Community Support</th>
<th>Larvae Surveyor Performance</th>
<th>Total %</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Supportive</td>
<td>Poor 64 %</td>
<td>Good 9 %</td>
<td>36 25 100</td>
</tr>
<tr>
<td>Supportive</td>
<td>Poor 31.2 %</td>
<td>Good 68.8 %</td>
<td>32 100</td>
</tr>
</tbody>
</table>

Source: Primary Research Data, 2018

From Table 10, we can see that the group consisting of respondents who did not get community support consisted of 25 respondents and 16 respondents (64%) had a poor performance. Meanwhile, the group of respondents who got community support consisted of 32 respondents and 10 respondents (31.2%) still had a poor performance as a larvae surveyor.

From the analysis result between community support variable and larvae surveyor performance, we found that there was a relationship between community support and larvae surveyor performance. It can be seen from the p-value (0.028). The p-value was smaller than the alpha value (0.05). Thus, Ha was accepted.

IV. DISCUSSIONS

From the results of the bivariate analysis, it was proven that the cadre characteristic that had a relationship with larvae surveyor performance was community support factor. The other factors that were proven not to have any relationship with larvae surveyor performance were: education, age, work status, and training.

A. The Factor that was Proven to have a Relationship with Larvae Surveyor Performance

From the result of the bivariate analysis, we found that there was a relationship between community support and larvae surveyor performance with a p-value of 0.028. The activity of mosquito nest eradication (PSN) was known for its action through 3 M, which were drain, close and bury places that could hold water, both inside and outside of the house as a part of the community empowerment. The monitoring of the development of mosquito larvae was done by involving the community in the act of PSN. Thus, larvae surveyors were needed. The regulation of larvae surveyor was arranged in one of the regulations made by the central government to improve the eradication of DHF disease in Indonesia. Its implementation was handed over to regional government, both on province level and regency/ city level. The involvement of the community could mean that the community anticipation on the success of the program was very high.

Human resource is the most important organization asset. Without human resource that is well-managed, the other resources will not be as beneficial to achieve the organizational goals. Thus, the optimization of human resources needs to be done in order to achieve the goals of the organization or company and employees or workers need to optimize their performance. In other words, performance is an important factor that an organization needs to pay attention to because it may affect the goal achievement of the organization as well as the fluctuated progress of the organization to face the global competition. Performance refers to the carrying out actions and perfecting them as one’s responsibility to achieve desirable results. It means that a good performance can be observed through the results that one achieves, in accordance with the work standard of the organization or the workplace he/she works at.
B. The Factors that were Proven not to have any Relationship with Larvae Surveyor Performance.


Education is a task to improve a worker’s knowledge, understanding, and behaviour for him/ her to be able to adapt with the work environment. In other words, education is related to the process of improving one’s general knowledge and understanding of the work environment. Education is also closely related to providing answer to how and why. It means, education usually deals with the theories needed to carry out a job, while training is the educational process in a more specific way, especially in terms of instruction, specific task, or related to the work discipline of the worker [11]. In this study, we found that there was not any relationship between education and larvae surveyor performance. This finding was in line with some prior studies (Erdi, 2011) [12], who found that \( p = 0.47 \), meaning that there was not any relationship between education and larvae surveyor performance. In that study, it was explained that high formal education did not guarantee good knowledge on health. Access to knowledge on the prevention of DHF may come from factors from the outside, such as the behaviour of family members, neighbours, social gathering members, health workers, and fellow larvae surveyors. Moreover, the information may be obtained internally or externally [12].

2) The relationship between age and larvae surveyor performance

The group with older respondents tended to participate more than that with younger respondents. This was down to the fact that older people had more leisure time compared to that of younger respondents. This study found that there was not any relationship between age and larvae surveyor participation within the working area of Gondokusuman 2 Health Center of Yogyakarta after being controlled by the variables of education, work status, motivation, communication, reward, and collaboration. The result of that study was not in line with the theory. It may be caused by the cut of point, or the age boundaries used in the study that were > 35 and \( \leq 35 \) years old, and both were still categorized as productive age to work. Thus, the free time that the respondents had was most likely the same. Based on the result of the analysis, we also found that the oldest respondent was 67 years old and the total number of respondents aged >50 who had retired was 18 respondents. Although, larvae surveyors were usually recruited from younger people, having a group with older respondents was also beneficial since they had more active participation [12].

3) The relationship between training and larvae surveyor performance

Training is an activity done to learn about a job that is related to the knowledge, skill, and behaviour of the participant that is planned and facilitated by an organization [13]. Training will only be attended by a participant whose potential is needed by an organization and is in need of training [14].

A training is influential to the performance of larvae surveyors since when they get a training, the processes of communication, guidance, and discussion will take place and those processes will affect the cadres’ comprehension and understanding [15]. This is in line with the findings of a study [14], showing that the majority of the respondents (40.3%) had participated in a training for \( \geq 3 \) times. The respondents who had never got any training had a prevalence ratio of 2.8 times more that those who had got training(s) before.

Another study [10], found that training could improve a worker’s skills, leading to improved work result according to the standard being applied. It also showed that there was a relationship between training and the participation of larvae surveyor with PR value of 1.933 [10].

In this study, it was found that there was not any relationship between training and larvae surveyor performance. This result was probably due to the unrelated distinction between formal training that had got. There was a possibility that one training was not enough for the workers to get deep knowledge and the required skills. Thus, there was a need for more than one training. The provision of more than one training would allow the participants to refresh their mind and establish their skills in working better.

4) The relationship between work status and larvae surveyor performance

According to Wibowo (2011) in Ayu (2016), performance was the work result that is closely related to the strategic goals of an organization, consumer satisfaction, as well as contribution to the economy. Therefore, performance is about carrying out a job and the achieved result of the job [11]. Furthermore, Suyadi Prawirosetono (1999) in Subekhidian Jaular (2012) in Ayu (2016) described performance as the work result that can be achieved by a person or a group of people in an organization, based on their own authority and responsibility, in order to achieve the goals of the organization on the management or task that had been done. This result was probably due to the one’s performance could be measured from the work quantity and quality produced from the human resource and the extent of the customer service.

The work quantity refers to the number of works being finished, while work quality refers to the quality of the works done [11]. An occupation has an influence on one’s knowledge and insight. The work environment allows a worker to gain experience and knowledge, both directly and indirectly.

In this study, there was not any relationship between work status and larvae surveyor performance. This finding is in line with a study [12] on the performance of larvae surveyor performance and DHF control program in Tebet sub-district that showed a p-value of 0.47, meaning that there was not any relationship with work status and larvae surveyor performance. In another study [16], it was also shown that there was not any relationship between work status and larvae surveyor performance with a p-value of 1.00. It was due to the fact that a job might not have a significant role for a good practice since it could be difficult to change one’s behaviour. Those who are working have the same probability as those who are unemployed in terms of having self-awareness in carrying out mosquito nest eradication of DHF well. It is not guaranteed that someone who has a job and has the experience and knowledge from the work environment will have the awareness to carry out action in a better way.

V. CONCLUSIONS
1) There was a relationship between community support and larvae surveyor performance.

2) There was not any relationship between education and larvae surveyor performance.

3) There was not any relationship between age and larvae surveyor performance.

4) There was not any relationship between training and larvae surveyor performance.

5) There was not any relationship between work status and larvae surveyor performance.

REFERENCES


