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RESEARCH ARTICLE

Geographic Accessibility to Healthcare: Study Case Dengue Fever in Purwosari Sub-District, Gunungkidul Regency, Yogyakarta, Indonesia

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Abstract. The distribution and spatial analysis of public healthcare in Indonesia are rarely discussed, with most studies predominantly focusing on quantity and quality. Therefore, this study aims to investigate the relationship between health facilities selection and geographic conditions by integrating medical facilities data and the number of doctors using spatial analysis approach. The selected study areas were referral health facilities chosen by Dengue Hemorrhagic Fever (DHF) patients in Purwosari District, Gunungkidul Regency. Furthermore, data were collected through interviews, field measurements (altitude and location plotting), and secondary sources (hospital type, number of doctors, and number of beds). The data collection and analysis employed GPS, Altimeter, ArcGIS, and SPSS. Spatial analysis method included kernel density, buffer, ruler, and altitude of each facility. Meanwhile, the medical analysis approach used Pearson's correlation and multinomial logistic regression in SPSS. Spatial analysis results showed that DHF patients in Purwosari dominantly chose hospitals located in Bantul Regency due to closer proximity, relatively short travel time, lower elevation, and the availability of numerous health facilities centers. Puskesmas Purwosari (Sub-district level Primary Health center) was primarily chosen as an early reference and a place for treating mild dengue patients. In addition, distance, duration of travel time, and the number of doctors exhibited a strong relationship based on Pearson's correlation. These three variables demonstrated strong linear relationship with the response variable. Some variables like elevation, number of doctors, hospital type, and number of beds were considered by patients in choosing a hospital, as revealed by multinomial logistic regression analysis.

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1. Introduction

Health facilities are crucial in public service for public health rights (Lisitiyono, 2015; Lawal and Anyiam, 2019). However, in Indonesia, these facilities are less distributed and insufficient to fulfill the needs of the region nowadays (Nainggolan et al. 2013). The existing health facilities, both private and government-run, exhibit varying quality and quantity (Sulistyorini and Purwanta, 2011; Adam, 2016). Presently, health services in Indonesia, particularly for health insurance purposes, are primarily based on proximity (Hadiyati et al. 2017; Irawan and Ainy, 2018).

Spatial studies on the detailed impact of health facilities locations in Indonesia are scarce, with few primarily focusing on disease distribution, causes, and predictions (Satoto et al. 2018; Surendra et al. 2019; Rejeki et al. 2019). Others mainly approach the topic from a medical standpoint, based on standard health facilities and infrastructure, as well as a number of medical personnel (Haryanto and Olivia, 2009; Agustrianti, 2015; Yulisetyaningrum et al. 2019). The importance of these spatial studies lies in their ability in managing referrals to the appropriate health facilities based on factors, such as travel duration, distance, and efficiency (Tanser et al. 2001; Luo et al. 2016).

There are limited previous studies utilizing spatial approach to understand the referral distribution of DHF patients in border areas to health facilities. Studies on health facilities in border areas are also quite rare, making it an intriguing area of interest (Rechel et al. 2016). The physiography of Purwosari District is characterized by an altitude of 250m above sea level, while the referral health facilities in Bantul Regency range from 25-100m above sea level. Another influencing factor is the proximity to health facilities than the regional hospitals in Gunungkidul Regency.

This study builds upon Riyanto et al 2020, which investigated the distribution and causes of dengue fever in Purwosari District, Gunungkidul Regency. The current study aims to determine spatial factors that influence the selection of health facilities for DHF patients in Purwosari District. It

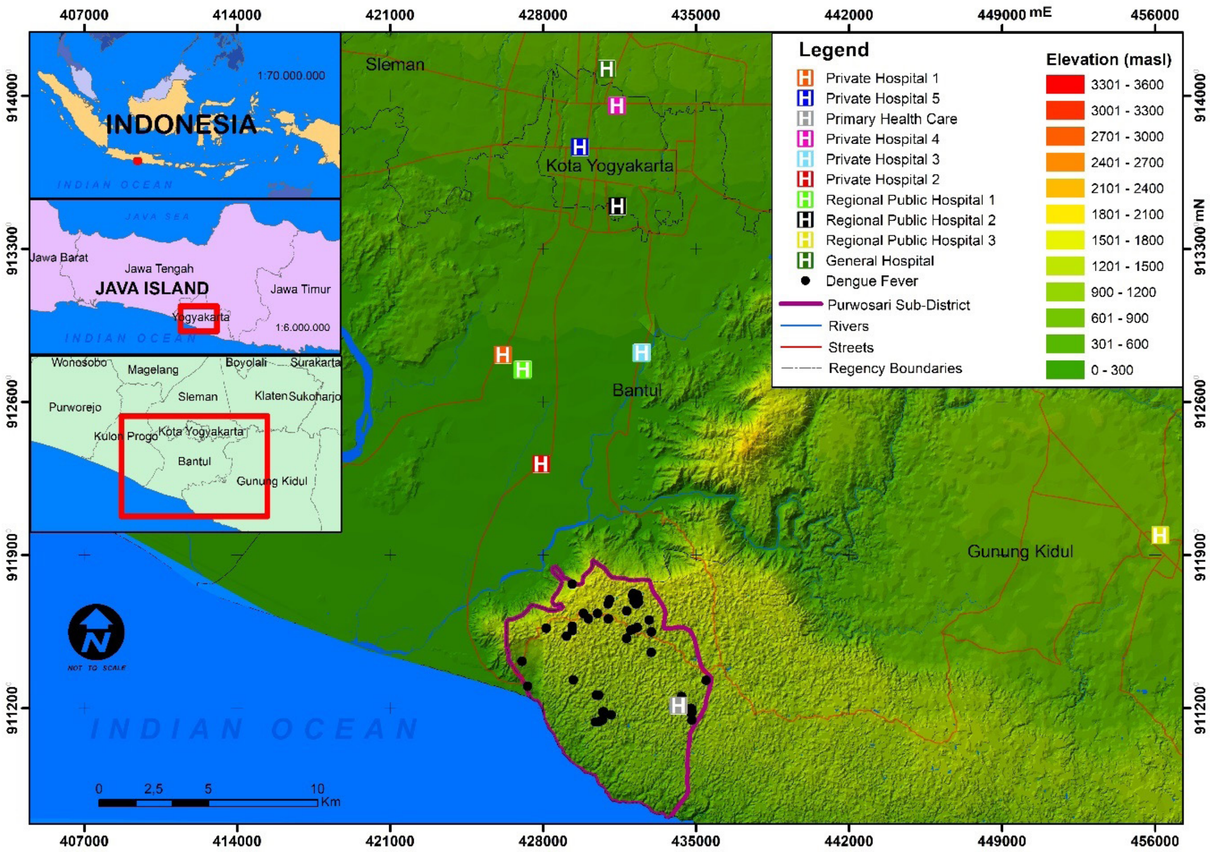

Figure 1. Study area and distribution of health facilities and DHF patients (Sources: Topography Map scale 1:25,000, Geospatial Information Agency of Republic Indonesia and Field Survey)

also examined additional medical analyses using statistical tests of SPSS software. The results are expected to provide valuable insights for the efficient management of referrals to health facilities in border areas and regions with different morphologies.

This study was conducted in Purwosari District of Gunungkidul Regency, DI Yogyakarta Province (Figure 1). District shares a direct border with Bantul Regency in the west and the Indian Ocean in the south. It has an altitude of approximately 200-300m above sea level, with absolute locations ranging from 425000-435000 mE and 911000-911500 mN. The scale of analysis in this study is limited to Bantul Regency, Yogyakarta City, Sleman Regency, and Wonosari City in relation to the distribution of referral health facilities for DHF patients. Figure 1 shows the distribution of hospitals and a single case of DHF per point.

2. The Methods

This study obtained data from interviews, field measurements, and secondary sources. Census-based interviews were conducted on individuals who suffered from DHF between 2012 and 2017 in Purwosari District, Gunungkidul Regency. This was carried out to determine the respondents' choices of health facilities. Field measurements involved plotting coordinates using GPS for both residential locations and health facilities. In addition, an altimeter was used to gather information on the height of healthcare. Secondary data, such as the number of hospital beds, hospital accreditation, and the number of doctors were also utilized based on each hospitals website. The hospital type and the number of bed data can be accessed through the website of the Ministry of Health of the Republic of Indonesia (Kemenkes, 2020) while the number of doctors can be obtained from (bppsdmk, 2020) database. The distance between the patient's residences and hospitals, as well as travel time, were obtained from Google Maps application.

The data were processed using ArcGIS software, Microsoft Excel, and SPSS. Microsoft Excel was used to input patient location, the height of health facilities, the number of doctors, hospital accreditation, distance from the patients' residences to the hospital, and travel time. Statistical data were analyzed using SPSS to determine correlation between the various factors. Arcgis software was employed to visualize the distribution of patients as well as health and altitude facilities. Buffer analysis was employed to analyze the distance between patients and health facilities by determining the radius within dengue patient's residences, utilizing buffers sizes of 2, 5, 10, 15, and 20 km. The ruler menu in ArcGIS was used to calculate the distance from the residences to the intended health facilities. The density of health facilities was analyzed using kernel density.

This study employed spatial and statistical analysis from both geographic and medical perspectives. Spatial analysis described the location of patients' residences in relation to the hospital, which was chosen based on altitude, buffer analysis, travel time, center of health facilities, and distance. Pearson correlation is a statistical analysis used for determining the strong and linear relationship between two variables. The hospital served as the response (dependent) variable, while distance, altitude, hospital accreditation, number of doctors, and travel time served as predictor (independent) variables.

Patient preferences in choosing health facilities were influenced by various factors, including distance, scale, number of beds, quality, complete facilities, and the number of doctors. Previous studies have shown that elderly preferred hospitals closer in proximity, with greater scale and capacity. However, when patients experience more severe illnesses, they tend to seek the nearest rural hospital with more complete facilities (Tai *et al*., 2004; Gilbert *et al*., 2021).

Hussain et al. (2019) found that the distance of the hospital was one factor that impacted patient satisfaction. Other studies explained that patients preferred hospitals with longer distances, travel time, and higher travel costs because they perceived them to have lower medical risks and higher quality (Buhn et al., 2020; Raval & Rosenbaum, 2021). These discoveries have led to the opinion that distance, duration, and difficulty of reaching a medical clinic do not matter as long as it offers good quality.

The quality of hospitals and services is closely related to hospital type. According to Hapsari et al. (2019), hospital type affects customer satisfaction, as it involves the assessment of physical facilities (medical staff, beds, and doctors) and a safety culture supported by staff and leaders. The number of beds, as part of physical facilities or infrastructure, can increase patient service satisfaction and also influence patient satisfaction at public hospitals (Hapsari et al., 2019; Hussain et al., 2019; Falchetta et al., 2020; Sadeghi et al., 2021). This statement was supported by Khan et al., (2021), which observed that good accreditation enhanced patient comfort and service quality. Pearson correlation formula is as follows:

$$-1 = r = \frac{?_i^N x_i y_i - ?_i^N x_i ?_i^N y_i}{\sqrt{\left(?_i^N {x_i}^2 - \frac{(?_i^N x_i)^2}{N}\right)\left(?_i^N {y_i}^2 - \frac{(?_i^N y_i)^2}{N}\right)}} = 1.$$

where x represents the predictor variable, y represents the response variable, and i=1, 2,3…N ; N is the number of data observed. The following rule can be used to interpret the value:

|r| = 0 : No correlation
|r| = 0 - 0.25 : Low correlation
|r| = 0.25 - 0.50 : Moderate correlation
|r| = 0.50 - 0.75 : Strong correlation
|r| = 0.75 - 0.99 : Very strong correlation
|r| = 1 : Perfect correlation

The range of correlation values is -1 to 1, with a value closer to 1 (perfectly positive) indicating strong linear correlation, and -1 indicating negative correlation (Swinscow and Campbell, 1996). Subsequently, Pearson correlation was calculated between each predictor variable and the response variable. All categorical data were converted into nominal and ordinal data to facilitate correlation analysis.

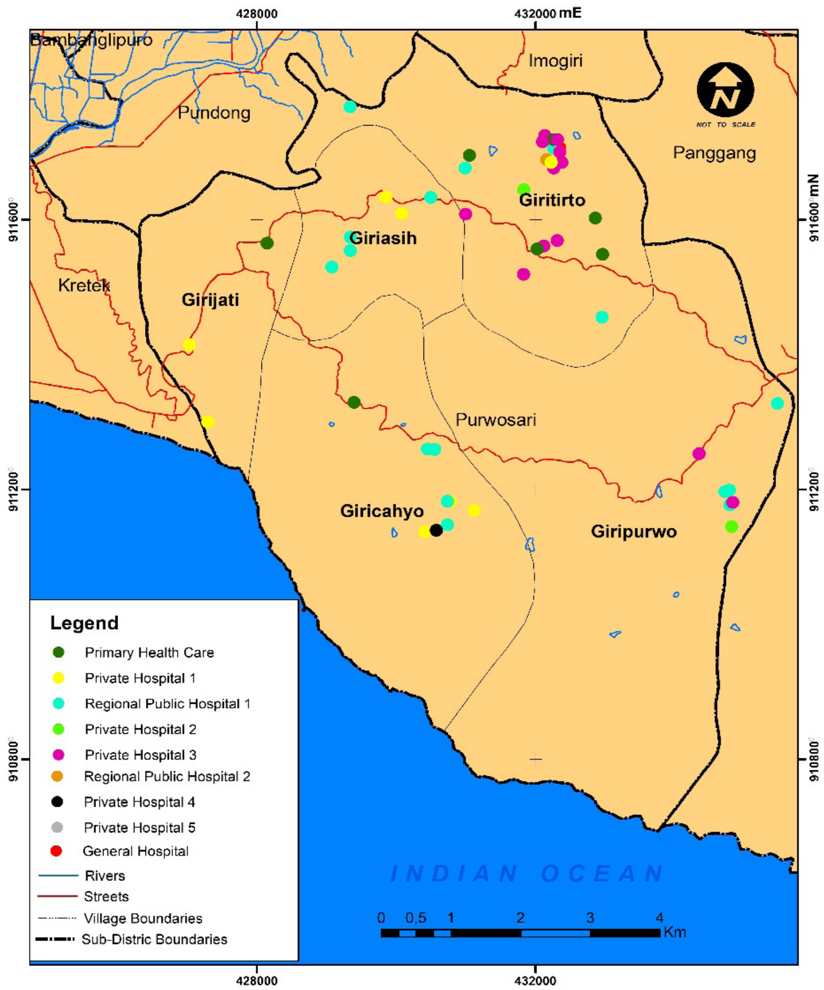

Figure 2. Distribution of 1 DHF patient/point with their choice of hospitals (Sources: Based Map scale 1:25,000, Geospatial Information Agency of Republic Indonesia and Analysis of Results)

Table 1. Details of each facility as referral healthcare for DHF patients in Purwosari Sub-District

No	Health Facility	Number of Patients	Number of Beds	Number of Doctors	Hospital Type	Elevation (masl)
1	General Hospital	1	810	373	A	140
2	Private Hospital 5	1	156	116	B	109
3	Private Hospital 4	1	351	101	B	127
4	Regional Public Hospital 2	1	137	119	B	86
5	Private Hospital 3	19	70	28	D	47
6	Private Hospital 2	2	62	16	D	25
7	Regional Public Hospital 1	17	214	54	B	46
8	Private Hospital 1	8	145	63	C	51
9	Regional Public Hospital 3	0	175	42	C	181
10	Primary Health Care	11	6	2	-	291
	Total	61	2126	914	-	-

Multinomial logistic regression method was employed to analyze hospital choice preferences. This method shows correlation between the response variable (nominal data) and predictor variables (nominal, continuous, discrete, or ordinal data). The modeling can be assessed by the Goodness-of-Fit (Gof) criteria, specifically Chi-square and significance, which can be observed from analysis using SPSS for the overall model. A decrease in the Chi-square value in the overall model indicates the model is more suitable for data.

A significant value greater than $\alpha = 0.05$ indicates a good model, whereas a smaller value implies the model is inadequate for the data. The suitability of the model in representing the data can be assessed by the pseudo R-square, where a good pseudo R-square value is closer to 1 and the worse is closer to 0 (Swinscow and Campbell, 1996).

3. Result and Discussion

Spatial distribution results illustrated the hospitals chosen by DHF patients in Purwosari District. Figure 2 shows that most patients prefer hospitals in Bantul Regency. The majority of patients from Giritirto Village opted for Private Hospital 3 as their preferred option. Most patients from Giriasih, Giricahyo, and Giripurwo, chose Goverment Hospital 1 in Bantul as their early option. Only 11 DHF patients (Table 1) chose Primary Health Care in Gunungkidul Regency as their main treatment facility, while non selected Goverment Hospital 3. The total number of patients in Purwosoari was 61, and all received care in Bantul Regency.

The results showed most patients chose health facilities in Bantul Regency and Yogyakarta City, which were located at lower altitudes (around 20, 40, 60, 80, and 140 m above sea level (asl)) compared to Purwosari District (Table 1). Most of the choices, including Government Hospital 1, Private Hospital 1, Private Hospital 3, and Private Hospital 2 dengan which are hospital type B,C, and D. Patients preferred these facilities due to easier access (lower altitude) in relation to optimal location and facilities (Falchetta et al., 2020; Cheng et al., 2021).

However, no DHF patients chose Regional Public Hospital 3 which had the same altitude as the study location (181m asl). Primary Health Care was an alternative option due to its closer proximity, even with its altitude of 291 m asl. It was also preferred because health facilities were rarely found at high altitudes.

There is a tendency to choose health facilities at lower altitudes, as they offer more options and easier access, primarily due to the scarcity of facilities in higher altitudes (Monoz and Kallestal, 2012; Kuupiel et al. 2019; Song et al. 2020). A similar result was observed in Purwosari District.

Table 2 summarizes the distance and travel time to healthcare facilities in each area. The measurement showed that Centre Hospital was the farthest from Giritirto Village, with approximately 30 km and a travel time of 72 minutes. On the other hand, Giricahyo Village was the closest to Primary Health Care, located around 3.6 km away, with about 8 minutes travel time. According to interviews, Centre Hospital was recommended by the previous hospital due to the inability to provide more intensive care. A number of 11 patients chose Primary Health Care as the closest health facility.

These patients were classified as mild DHF cases. Primary Health Care serves as the first reference for early medication, followed by referral to more comprehensive health facilities. Most of the patients preferred Private Hospital 3 and Regional Public Hospital 1 in Bantul Regency because they were relatively close, with a distance of approximately 11-13 km and a travel time of about 28-30 minutes.

There is a similar tendency to choose the nearest health facility and minimize travel time as the main reference (Apparicio et al. 2017; Sidibe and Burkey, 2017). Reaching health facilities in border areas takes longer (Haynes et al. 2006; Luis and Cabral, 2016), such as Purwosari Subdistrict, which requires 28-30 minutes away in Bantul Regency.

The results of kernel density showed two referral centers of health facilities were chosen by DHF patients in Purwosari District. Kernel density is used for calculating the facilities per unit area in each hotspot (Laasasenaho et al., 2019). The map illustrates areas with high and low clusters of health facility occurrences. The denser the clusters, the darker they are, and the more choices of health facilities. Health facilities with shorter travel times, distances, and more complete infrastructures attract patients (Liu *et al.,* 2018). This indicates that despite the closer distance of Government Hospital 3, the patients and their families still seek hospitals with more complete facilities (Figure 2).

Figure 3 shows that the distribution of health facilities is clustered in Bantul Regency and Yogyakarta City. Bantul Regency accommodated Private Hospital 2, Private Hospital

Table 2. Di stance and travel time from the patient's area to healthcare

No	Village	Health Facility	Distance (Km)	Travel Time (Minute)
1	Giriasih	Private Hospital 1	12.40	29.76
		Regional Public Hospital 1	11.60	27.84
2	Giricahyo	Private Hospital 1	16.43	39.43
		Private Hospital 2	26.00	62.40
		Primary Health Care	3.60	8.64
		Private Hospital 4	28.00	67.20
		Regional Public Hospital 1	15.80	37.92
3	Girijati	Private Hospital 1	12.90	30.96
		Primary Health Care	6.60	15.84
		Regional Public Hospital 1	11.97	28.73
4	Giripurwo	Private Hospital 3	15.50	37.20
		Private Hospital 2	12.40	29.76
		Regional Public Hospital 1	16.60	39.84
5	Giritirto	Private Hospital 1	13.95	33.48
		Primary Health Care	4.06	9.74
		Private Hospital 3	12.00	28.80
		Private Hospital 2	8.06	19.34
		Regional Public Hospital 2	24.00	57.60
		Regional Public Hospital 1	9.50	22.80
		General Hospital	30.00	72.00

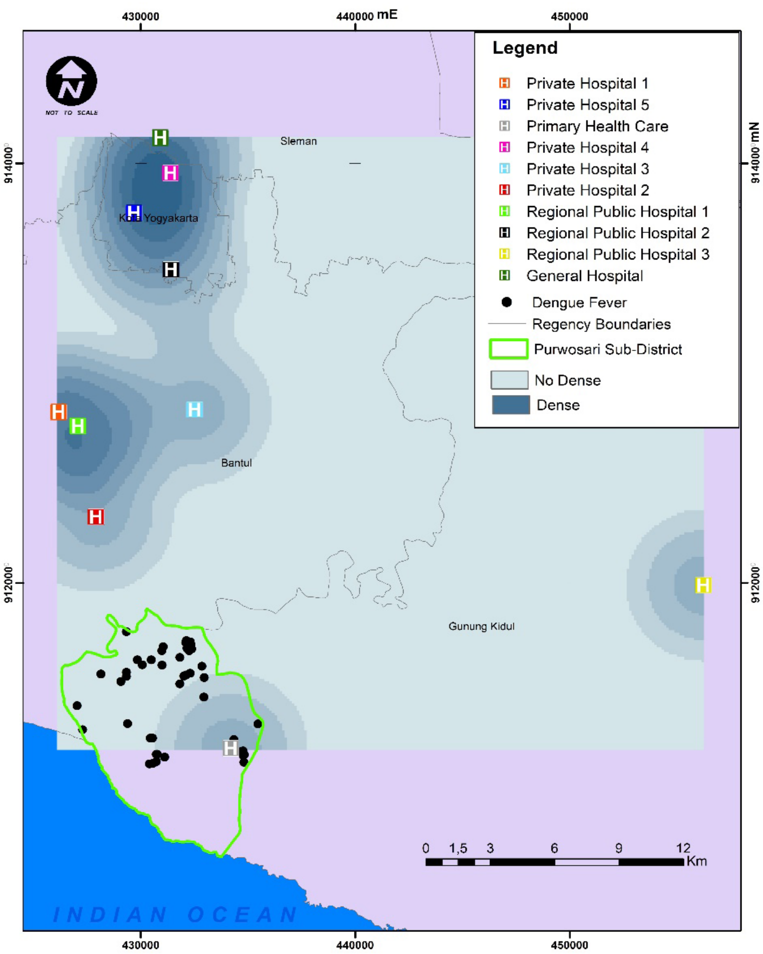

Figure 3. Distribution of healthcare density (Sources: Based Map scale 1:25,000, Geospatial Information Agency of Republic Indonesia and Analysis of Results)

3, Regional Public Hospital 1, and Private Hospital 1l. Meanwhile, Yogyakarta City had Regional Public Hospital 1, Private Hospital 5, Private Hospital 4, and General Hospital. In Gunungkidul Regency, Primary Health Care Purwosari was the only referral and treatment center for mild dengue patients, and no patient chose Government Hospital 3. The distribution patterns of patients in Purwosari District were observed to be similar to those in other areas. The clustering of facilities in an area is a main consideration when choosing health facilities due to the availability of several alternative options (Ruktanonchai et al., 2017; Zheng et al., 2019).

Figure 4 describes the scope of several health facilities accessible to DHF patients. Within a 2 km and 5 km radius from the facilities, only Primary Health Care was close to DHF patients' location. Health facilities within a 15 km radius included Primary Health Care, Private Hospital 2, Regional Public Hospital 1, Private Hospital 1, and Private Hospital 3. Regional Public Hospital 1, Private Hospital 5, Private Hospital 4, and General Hospital, which were all within a 20 km radius, were inaccessible. However, they approve referrals from other locations due to their more comprehensive medical equipment. There is a similarity in the pattern with other places, where the closest radius is the main factor in the selection of referral health facilities (Masoodi and Rahimzadeh, 2015; Kim et al., 2018).

Table 3 shows that almost all predictors strongly correlate with the response variable. The elevation variable negatively correlated with the hospital. This indicates that people are more inclined to choose hospitals with less high elevations in relation to their place of residence. In addition, the distance, duration, and number of predictors of doctors showed the highest correlation values. Therefore, these variables had the strongest linear relationship with the response variable.

Pearson correlation value in Table 3 reveals that almost all predictors have a significant correlation with the response variable. Specifically, the elevation variable had a negative correlation of -0.443 with hospitals, indicating that people were likely to choose hospitals with less higher elevation positions, in relation to their residences. The predictor values of distance at 0.629, duration at 0.629, and the number of doctors at 0.607 were the three variables with the highest correlation value.

A strong correlation between distance, duration of travel, and the number of doctors with hospitals was observed in studies conducted in Norway, Denmark, and Sweden. Several patients preferred closer hospitals due to short travel time, as they perceived shorter distances to increase safety (Vrangbæk et al., 2007). Similar studies in Latimojong demonstrated a significant effect of distance, culture, and sources of information on the choice of health services (Lolo and Julma, 2016). The long-distance factor implies limited options for health services.

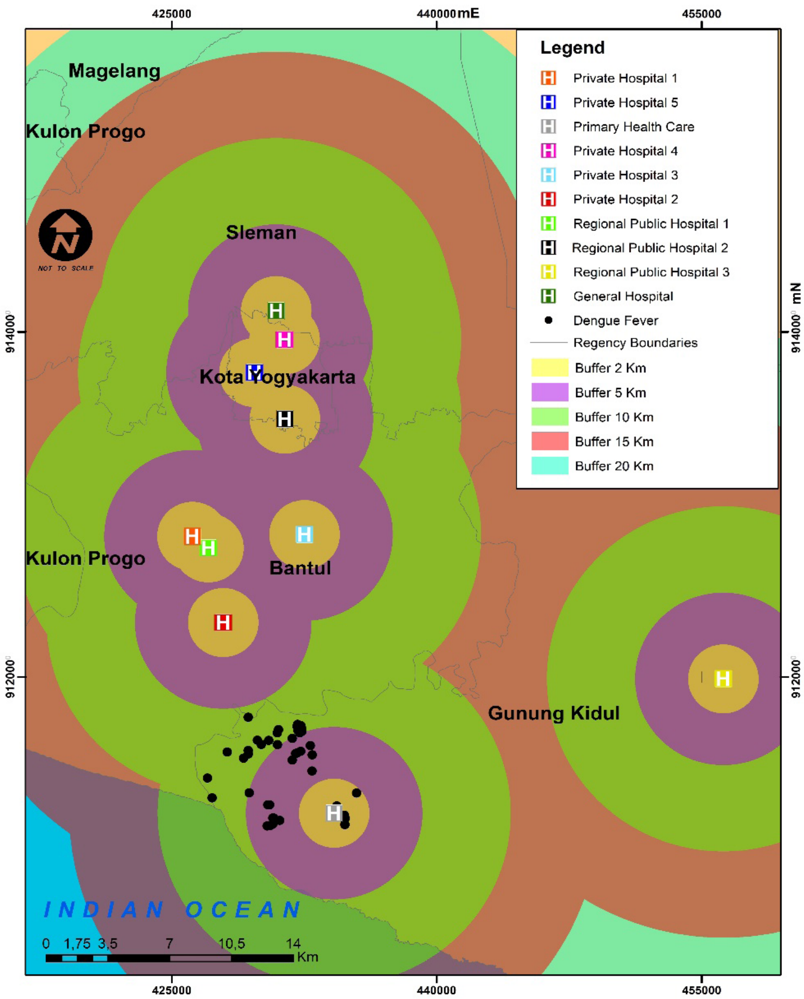

Figure 4. A buffer of healthcare facilities and DHF patient (Sources: Based Map scale 1:25,000, Geospatial Information Agency of Republic Indonesia and Analysis of Results)

Table 3. Result of Pearson correlation coefficient

		Hospital	Village	Years	Distance	Duration	Elevation	Hopital Type	Bed	Doctor
Hospital	Pearson Correlation	1	.263*	.224	.629**	.629**	-.443**	.241	.402**	.607**
	Sig. (2-tailed)		.040	.083	.000	.000	.000	.062	.001	.000
	N	61	61	61	61	61	61	61	61	61
Village	Pearson Correlation	.263*	1	.529**	-.058	-.058	-.103	-.261*	-.143	-.030
	Sig. (2-tailed)	.040		.000	.660	.660	.431	.042	.271	.821
	N	61	61	61	61	61	61	61	61	61
Years	Pearson Correlation	.224	.529**	1	-.124	-.124	.109	-.366**	-.203	-.059
	Sig. (2-tailed)	.083	.000		.341	.341	.405	.004	.116	.652
	N	61	61	61	61	61	61	61	61	61
Distance	Pearson Correlation	.629**	-.058	-.124	1	1.000**	-.553**	.724**	.696**	.689**
	Sig. (2-tailed)	.000	.660	.341		0.000	.000	.000	.000	.000
	N	61	61	61	61	61	61	61	61	61
Duration	Pearson Correlation	.629**	-.058	-.124	1.000**	1	-.553**	.724**	.696**	.689**
	Sig. (2-tailed)	.000	.660	.341	0.000		.000	.000	.000	.000
	N	61	61	61	61	61	61	61	61	61
Elevation	Pearson Correlation	-.443**	-.103	.109	-.553**	-.553**	1	-.599**	-.350**	-.245
	Sig. (2-tailed)	.000	.431	.405	.000	.000		.000	.006	.057
	N	61	61	61	61	61	61	61	61	61
Hopital Type	Pearson Correlation	.241	-.261*	-.366**	.724**	.724**	-.599**	1	.824**	.659**
	Sig. (2-tailed)	.062	.042	.004	.000	.000	.000		.000	.000
	N	61	61	61	61	61	61	61	61	61
Bed	Pearson Correlation	.402**	-.143	-.203	.696**	.696**	-.350**	.824**	1	.913**
	Sig. (2-tailed)	.001	.271	.116	.000	.000	.006	.000		.000
	N	61	61	61	61	61	61	61	61	61
Doctor	Pearson Correlation	.607**	-.030	-.059	.689**	.689**	-.245	.659**	.913**	1
	Sig. (2-tailed)	.000	.821	.652	.000	.000	.057	.000	.000	
	N	61	61	61	61	61	61	61	61	61

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Goodness-of-fit criteria

	Goodness-of-Fit		
	Chi-Square	df	Sig.
Pearson	41.295	147	1.000
Deviance	17.092	147	1.000

Pearson correlation value alone cannot conclude the actual relationship between each variable, as it specifically measures linear relationships. In reality, variables may not always be linearly related. It is not valid to conclude that the predictor variable with the highest correlation to the response variable is the most influential in determining its value of the response variable. However, it can describe the linear relationship between the two variables.

Table 3 shows that the hospital type variable has a relatively small correlation value with hospital (0.241) compared to other variables. However, there was a strong correlation between hospital type and distance (0.724), duration (0.724), as well as a doctor (0.659). These three predictors exhibited a strong correlation with the response variable. It is possible that the hospital type had a relationship with the response variable, but not linearly. Analysis in this study utilized multinomial logistic regression, enabling the investigation of the relationship between response variables (nominal data) and predictor variables (nominal, continuous, discrete, or ordinal data).

Table 5. Pseudo R- Square calculation

Pseudo R-Square	
Cox and Snell	.949
Nagelkerke	.987
McFadden	.914

Table 6. Likelihood ratio test

Likelihood Ratio Tests				
	Model Fitting Criteria	Likelihood Ratio Tests		
Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	17.092	0.000	0	
Distance	17.092	0.000	0	
Duration	17.092	0.000	0	
Elevation	63.935	46.843	7	.000
Bed	55.575	38.483	7	.000
Doctor	61.605	44.513	7	.000
Village	19.557	2.466	35	1.000
Hospital Type	77.892	60.800	28	.000
Year	15.098		35	

Table 7. Model fitting information: full model

Model Fitting Information: Full Model				
	Model Fitting Criteria	Likelihood Ratio Tests		
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	198.232			
Final	17.092	181.141	126	.001

Table 8. Analysis of the partial relationship between the predictors and the response variable

GoF\Predictor	*Year*	*Village*	*Distance*	*Duration*	*Elevation*	*Hopital Type*	*Bed*	*Doctor*
Percent Accuracy	0.40984	0.54098	0.65574	0.65574	0.98361	0.91803	0.93443	0.96721
Pseudo R Square: Cox and Snell	0.00000	0.00000	0.73162	0.73165	0.95786	0.91935	0.90113	0.95827
Pseudo R Square: Nagelkerke	0.00000	0.00000	0.76115	0.76117	0.99651	0.95645	0.93750	0.99693
Pseudo R Square: McFadde	0.00000	0.00000	0.40476	0.40479	0.97449	0.77474	0.71206	0.97745
Mean	0.10246	0.13525	0.63832	0.63834	0.97812	0.89215	0.87128	0.97497
Rank	8	7	6	5	1	3	4	2

Table 4 shows that the Chi-Square value is relatively small (generally exceeding 100), and the significance value is equal to 1. This indicates the predictor variables significantly affect the response variable. Table 5 presents the Pseudo R-square values for the three approaches used in the SPSS analysis, where all the calculations yield values relatively close to 1. This indicates that the model effectively explains the relationship between the predictor and the response variables of the data.

Based on Table 6 below, the predictor variables significantly influence the response variable (hospital). Notably, intercept, distance, duration, and year coefficients can be ignored due to their indeterminate values. This is attributed to the fact that the -2log likelihood value of the intercept, distance, and duration variables is equal to the full -2log likelihood model, approximately 17.092 (table 7). Therefore, these variables did not affect the calculation of the response value.

The significance value in Table 6 indicates which predictor variables are statistically significant in influencing the response variable. Unlike the significance criteria for the overall model in the previous GoF Chi-Square, a significance value approaching 1 in the likelihood ratio test table suggests the variable is increasingly insignificant. On the other hand, when the significance value is close to 0 and less than $\alpha = 0.05$, the predictor variable is statistically significant in influencing the response variable. Notably, the village variable had a significance value of 1, indicating that the variable can be ignored. The variables with a statistically significant effect on the response variable included elevation, bed, doctor, and hospital type, each with a significance value close to 0 and less than $\alpha = 0.05$.

Table 8 sorts the predictor variables based on the mean value of the pseudo R square and the accuracy percentage. The elevation, with an average value of 0.978, was the most important factor when choosing hospitals, followed by the number of doctors (0.974), hospital type (0.892), and the number of beds (0.87). The gap in the GoF mean value between elevation and the number of doctors was not significant. Elevation is an important factor that requires consideration for access and distribution. The number of doctors is also essential, as they ensure optimal service delivery. The hospital accreditation factor needs improvement to facilitate credibility and public trust. Lastly, there is a need to increase service capacity by expanding the number of beds in the hospital.

The elevation variable plays a significant role in choosing hospitals for DHF patients in Purwosari District. This conclusion was similar to a study conducted in Latimojong, where facilities at 600-2500m asl experienced minimal visitors due to distance and low accessibility (Lolo and Julma, 2016). The number of doctors, accreditation, and the number of beds variables were also important factors in choosing hospitals. This is similar to (Al-Doghaither et al., 2003) in Riyadh, which concluded the qualifications and experience of health workers, adequate health facilities, and the experience of using appropriate technology were more credible. In addition, the community considered the communication skills of medical personnel as important as their professional skills. A study in Seoul found a strong correlation between well-equipped medical personnel and hospital selection (Lee, 2018).

4. Conclusions

In conclusion, based on spatial analysis, DHF patients in Purwosari District tended to choose health facilities with complete infrastructures, numerous health centers, and shorter travel distances from their residences. Pearson correlation analysis showed that the predictors variable, namely distance, duration, as well as complete health facilities and service quality exhibited the highest correlation values (0.629, 0.629, and 0.607). Although these three variables showed the strongest linear correlation in determining health facilities, it cannot be concluded they were the most influential factors. The most important factors considered by patients when choosing hospitals, based on data and multinomial logistic regression analysis were elevation (0.978), number of doctors (0.974), and hospital type (0.892).

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