Spatial Analysis Of Pharmacy Services Area
In Rajabasa District

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Abstract – Rajabasa District is one of the district areas in Bandar Lampung City, with 22 pharmacies in Bandar Lampung City which are not supported by spatially based distribution information. The lack of availability of information regarding pharmacies in Rajabasa District can cause problems such as how many pharmacies should be in Rajabasa District if adjusted to the population, and unclear information regarding the extent of services of each pharmacy in Rajabasa District. This research aims to analyze the spatial distribution of pharmacy services in Rajabasa District. The variable in this research is the pharmacy, with data collection techniques namely surveys and documentation. This research uses data overlay and network analyst techniques. The results of the research are a thematic map of the broad distribution of pharmacy services in Rajabasa District.

Keywords – Spatial, Overlay, Pharmacy, Service Area.

I. INTRODUCTION

Health is the most important aspect that must be considered in national and state life [1, 2]. Countries in the world definitely have problems related to their own health problems, where these health-related problems have been integrated into the Sustainable Development Goals (SDGs) or what is known as the Sustainable Development Goals (TPB) in goal number 3 regarding health, which was agreed upon. in September 2015 at the United Nations (UN) general assembly. The technical instructions for preparing an action plan for sustainable development goals (TPB) issued by the Ministry of National Development Planning/Bappenas in 2020 stated that the content of SDGs/TPB goal number 3 is to ensure a healthy life and improve welfare for all people throughout the world. all ages which then becomes one of the focuses. One of the goals of SDGs number 3 is increasing access and health facilities.

Increasing health access and facilities as stated in SDGs goal number 3 is in accordance with what has been done by the Indonesian government, especially the Ministry of Health. In 2023, the Ministry of Health will focus on improving the quality of health services as evidenced by the agreement to focus on the 2023 APBN and Expenditure Revenue, where the physical Special Allocation Fund. The Ministry of Health has allocated funds amounting to 12.9 trillion for development, rehabilitation and fulfillment of health equipment in primary and referral health care facilities.

Location is one of the things that needs to be considered because this is closely related to the affordability of pharmacies and meeting people's drug needs. The affordability of a pharmacy location is one dimension of the quality of pharmacy services,

namely tangible evidence [3], where an affordable pharmacy location will create high customer satisfaction. The importance of determining the location of a pharmacy is in line with Christaller's central location theory, where in determining the location of a facility there are two basic concepts that need to be considered, namely [4]:

1) Range of goods or services, the maximum average distance traveled by residents to obtain certain goods or services.

2) Threshold, the minimum population (number of residents) needed to provide provisions for a particular product or service.

These two concepts for determining the location of facilities are very important to apply to cities/districts that have a high population number and density. one of which is the city of Bandar Lampung. Bandar Lampung City, which is the capital of Lampung Province, has the second highest population after Central Lampung Regency with the first highest population density. Bandar Lampung City in its 2024 figures explains that the population in Bandar Lampung City in 2022 will be 1,209,937 people (BPS Bandar Lampung City, 2023).

SNI Regulation 03-1733-2004 is a guide that functions as a frame of reference for planning, designing, estimating costs and space requirements in urban residential environments. Based on SNI 03-1733-2004, the population required (threshold) to build one pharmacy in an urban environment is 30,000 people, or in other words one pharmacy is able to meet the pharmaceutical or medicine needs of 30,000 people. Meanwhile, the service area radius of one pharmacy in an urban environment is 1,500 m^2 (range). In order to ensure equitable distribution of pharmaceuticals or medicines, the two basic concepts of location theory need to be implemented in determining the location of pharmacies. Implementing these two basic concepts is not easy. Currently, field facts prove that when determining the location of supporting facilities such as pharmacies, these two basic concepts are not taken into account. One of the things that causes this problem to arise is the unavailability of spatially based information regarding pharmacies, starting from information in the form of how many pharmacies there are to the unavailability of information in the form of the location and distribution of pharmacies. Information regarding the number of pharmacies available in a place is very important.

Spatial information related to the location and distribution of pharmacies in a place is also very important [5]. The unavailability of information regarding the location and distribution of pharmacies will create difficulties for the community, resulting in a number of pharmacies being unable to meet the needs of the local community and on the other hand, it can also cause low competitiveness with other pharmacies [6].

Rajabasa District experienced the same thing, where the largest number of pharmacies in the Northern Region of Bandar Lampung City was not supported by spatial based information in the form of location or distribution of pharmacies. The unavailability of spatially based information regarding pharmacies in Rajabasa District can cause problems such as how many pharmacies should exist and be distributed in each subdistrict in Rajabasa District if adjusted to the population, and unclear information regarding the extent of services of each pharmacy in Rajabasa District.

II. RESEARCH METHOD

A. Research Method

Research methods are basically a scientific way to obtain data with specific purposes and uses [7]. In this research, the type of research method used is a quantitative method with a spatial approach.

B. Variable and Definition Operational Research

1. Research Variabel

A research variable is an attribute or trait or value of a person, object or activity that has certain variations determined by the researcher to be studied and then conclusions drawn. The variable used in this research is pharmacies in Rajabasa District in 2024.

2. Definition Operational Research

Based on the existing background, it has been stated that there are two concepts that are used as references in determining a pharmacy location, namely threshold and range, where these two concepts are indicators of the variables in this research. The following will present the operational definition of the variables in this research.

Table 1. Definition Operational Research

Variable	Definition Operational	Indicator
Pharmacy	A pharmacy is a pharmaceutical service facility or provider of medicines to the community. In this research, pharmacies will be analyzed based on the number of residents (threshold) and the distance between services.	The threshold population required to build a pharmacy in Rajabasa District according to SNI 03-1733-2004 regulations is 30,000 people. The service area range for each pharmacy in Rajabasa District according to SNI 03-1733-2004 regulations is 1,500 m^2.

C. Research Instrument

Research instruments are measuring tools used to obtain quantitative information about variations in variable characteristics objectively [8]. The research instrument in this study consists of tools and materials including:

1. Research Tools

The tools used in this research are as follows:

1) Hardware

a. A set of computers used to enter, analyze, process and store data in creating service area maps in Rajabasa District.

b. Smartphone used to take documentation and plot pharmacy locations in Rajabasa District.

c. Printer used to print maps/data needed for research.

2) Software

a. ArcGis is software used to process and present data obtained from the field in map form. Apart from that, the ArcGis application is also used to carry out service area analysis using the network analyst method.

b. GPS Essentials is used to determine the coordinates (plotting) of pharmacy locations in Pringsewu Regency.

c. Microsoft Excel is used to enter coordinate points (plotting) of pharmacy locations in Pringsewu Regency into the ArcGis application.

2. Research Materials

The materials used in this research are as follows:

1) Rajabasa District Administrative Map for 2023 sourced from the Bandar Lampung City Housing and Settlement Service.

2) Rajabasa District settlement map in 2023 sourced from the Bandar Lampung City Housing and Settlement Department.

3) Rajabasa District road network map in 2023 sourced from INA Geoportal.

4) Number and location of pharmacies in Rajabasa District in 2023 sourced from Rajabasa District in 2023 and survey results.

5) Number of residents in Rajabasa District in 2022 sourced from Rajabasa District in 2023.

6) Area of Rajabasa District in 2022 sourced from Rajabasa District in 2023.

D. Data Collection Techniques

Data collection techniques in this research used:

1. Survey

Surveys are used in the evaluation process to make systematic and accurate assessments of the facts and characteristics of research objects or certain areas. There are several objectives for conducting surveys in the field, namely as follows:

1) Look for detailed iterative information that captures existing symptoms.

2) Identify problems or to obtain justification for ongoing conditions and activities

3) To find out what people who are the target of research do in solving problems, as material for planning and decision making in the future.

2. Documentation

Documentation is a way of collecting data by recording existing data. The documents used in this research come from several publications/documents from related agencies such as:

1) Ina geoportal.

2) Bandar Lampung City Housing and Settlement Department.

3) Bandar Lampung City in 2023.

4) Rajabasa District in 2023.

E. Data Analysis Techniques

Data analysis techniques are the process of systematically searching and compiling data obtained from observation and documentation, by organizing data into categories, describing it into units, synthesizing it, arranging it into patterns, choosing what is important and what will be studied and make conclusions so that they are understood by yourself and others. The analysis technique used in this research is spatial analysis technique, namely in the form of overlay and network analysis. Furthermore, network analysis techniques are used to analyze the extent of services based on connectivity, such as roads connected to each other at road intersections, which represent possible routes from one location to another [9].

F. Research Design

1. Preparation and Data Collection Stage

At this stage the research begins with identifying and formulating the problem, conducting literature studies related to the problem raised, selecting the location that will be used as the research location, and collecting the data needed to answer the research problem formulation. The data that will be used in this research is taken from various government information sources.

2. Data Processing Stage

There are several stages of data processing that will be carried out in this research, namely as follows:

1) After the required data such as road shapefiles, Rajabasa District administration shapefiles and pharmacy location shapefiles are obtained, the next process is that we will overlay the three shapefiles before carrying out the network analyst (service area) process to obtain the service area of each pharmacy.

2) First, overlay the road shapefile and Rajabasa District administration shapefile, by clipping the road shapefile with the Rajabasa District administration shapefile so that the roads listed on the map are only roads in Rajabasa District.

3) After the clip has been successfully carried out, the next step is to split the results of the road shapefile clip and the Rajabasa District administration shapefile.

4) Then the next step is to overlay the pharmacy location shapefile again with the Rajabasa District road shapefile from the previous clip, this way you will get a map of pharmacy locations in Rajabasa District complete with roads.

3. Data Analysis Stage

The data analysis stage is the final stage or determining stage of the research being carried out, where at this stage all problem questions in the research will be answered. At this data analysis stage, the data analysis technique used is network analysis using the service area method.

III. RESULTS AND DISCUSSION

A. Research Results

1. General description of the research location

Rajabasa District is one of 20 subdistricts in Bandar Lampung City. Rajabasa District is a subdistrict resulting from the expansion of the parent subdistrict, namely Kedaton District, based on Regional Regulation Number 4 of 2001 dated 3 October 2001 concerning the Development, Elimination and Expansion of District and Village Areas within the City of Bandar Lampung. The formation of new subdistricts aims to improve services to the community as well as carry out government functions and community empowerment based on the number of residents in the new subdistricts and subdistricts, namely Rajabasa District.

On February 9 2002 Rajabasa District was officially made a new subdistrict which was ratified by the Mayor of Bandar Lampung at that time, namely Mr Suharto, through the Decree of the Mayor of Bandar Lampung Number: 821.22/08/02.7/2001 dated December 29 2001 and based on Regional Regulation Number 4 of the Year 2001 concerning the Development, Abolition and Expansion of Subdistrict and Subdistrict areas within the City of Bandar Lampung, with the administrative center of Rajabasa Subdistrict located in Rajabasa Subdistrict.

2. Geographical Conditions of Rajabasa District

Based on Bandar Lampung City Regional Regulation Number 04 of 2012, concerning the Arrangement and Formation of Villages and Districts, the Rajabasa District area is divided into seven villages, namely:

1. Gedong Meneng

2. Rajabasa

3. Rajabasa Raya

4. Rajabasa Jaya

5. Gedong Meneng Baru

6. Rajabasa Pemuka

7. Rajabasa Nunyai

Administratively, Rajabasa District is located in the north of the Bandar Lampung City area. Apart from the division of subdistrict areas, Bandar Lampung City Regional Regulation Number 04 of 2012, concerning the Arrangement and Formation of Subdistricts and Subdistricts also regulates the Administrative area of Rajabasa Subdistrict. The territorial boundaries of Rajabasa District are as follows:

1. To the north it borders Tanjung Senang District and Labuhan Ratu District.

2. To the south, it borders Langkapura District.

3. To the east it borders Labuhan Ratu District.

4. To the west it borders Natar District (South Lampung Regency.

The 7 subdistricts in Rajabasa District, there are a total of 14 Neighborhoods and 111 Neighborhood Units are community organizations recognized and fostered by the government to maintain and preserve the values of Indonesian society based on mutual cooperation and kinship and to help improve the smooth implementation of government duties, development and society in villages and subdistricts. Table 2 distribution of the number of Neighborhoods and Neighborhood Units in Rajabasa District.

Table 2. Neighborhoods Units by Subdistrict in Rajabasa District in 2024

No.	Subdistrict	Familiy Neighborhood	Neighborhoods
1	Gedong Meneng	2	15
2	Rajabasa	2	12
3	Rajabasa Raya	2	20
4	Rajabasa Jaya	2	20
5	Gedong Meneng Baru	2	6
6	Rajabasa Pemuka	2	18
7	Rajabasa Nunyai	2	20
	Total	**14**	**111**

Source: Rajabasa District, 2024.

Table 2 can be seen that the number of family neighborhoods in each subdistrict in Rajabasa District is the same, namely 2 family neighborhoods. Then, for Neighborhood Units in every subdistrict in Rajabasa District, the most are in Rajabasa Raya, Rajabasa Jaya and Rajabasa Nunyai Subdistricts with the same number, namely 20 Neighborhood Units. Meanwhile, the subdistrict that has the lowest number of neighborhood units in Rajabasa District is Gedong Meneng Baru Subdistrict, namely 6 neighborhood units. Rajabasa District has an area of 13.53 km^2. To find out more clearly the area per subdistrict in Rajabasa District, table 3 area area by subdistrict in Rajabasa District.

Table 3. Area by Subdistrict in Rajabasa District in 2024.

No	Kelurahan	Areas (km^2)	(%)
1	Gedong Meneng	1,77	13,65
2	Rajabasa	1,22	9,41
3	Rajabasa Raya	1,52	11,72
4	Rajabasa Jaya	4,94	38,08
5	Gedong Meneng Baru	0,42	3,24
6	Rajabasa Pemuka	1,31	10,10
7	Rajabasa Nunyai	1,79	13,80
	Total	**12,97**	**100,00**

Source: Rajabasa District, 2024.

Table 3 can be seen that Rajabasa Jaya Village, which is located in the northernmost part of Rajabasa District, is the village that has the largest area with a total area of 4.94 km^2 or 38.08% of the total area of Rajabasa District. Meanwhile, the subdistrict which has the smallest area in Rajabasa District is Gedong Meneng Baru Subdistrict which is located in the south of Rajabasa District with a total area of 0.41 km^2 or 3.24% of the total area of Rajabasa District.

Apart from the condition of the administrative area, another thing that needs to be considered geographically in a region is its topographic condition. Topography is the condition of the relief or heights and lows of an area that can influence land use and the usefulness of a land. Rajabasa District itself has quite diverse altitude conditions, ranging from flat with a slope of 0-8%, sloping with a slope of 8-15%, rather steep with a slope of 15-25%, to steep with a slope of 15-25%, by 25-45%. The topographic conditions of the area in Rajabasa District it self are mostly found with a flat slope type (0-8%), where under these conditions the

area in this district is often used as a built-up land area, or as a center for population activities.

3. Demographic Conditions of Rajabasa District

In 2024, the population of Rajabasa District will reach 54,751 people. The population of Rajabasa District consists of various tribes in Indonesia, this cannot be separated from the strategic position of Rajabasa District which is located at the end of Bandar Lampung City or is one of the main gateways for residents coming from other cities or districts on the island. Sumatera. In 2024, the male population in Rajabasa District will reach 27,896 people and the female population will reach 26,855 people. To find out more clearly the population in Rajabasa District, you can see table 4.

Table 4. Population by Subdistrict in Rajabasa District in 2024.

No.	Subdistrict	Man	Women	Amount
1	Gedong Meneng	3.518	3.470	6.988
2	Rajabasa	7.118	6.742	13.860
3	Rajabasa Raya	5.214	4.918	10.132
4	Rajabasa Jaya	6.284	6.053	12.337
5	Gedong Meneng Baru	437	425	862
6	Rajabasa Pemuka	2.364	2.307	4.671
7	Rajabasa Nunyai	2.961	2.940	5.901
	Total	**27.896**	**26.855**	**54.751**

Source: Rajabasa District, 2023.

Table 4 shows that the largest number of male residents in Rajabasa District is in Rajabasa Subdistrict with a male population of 7,118 people, and the least is located in Gedong Meneng Baru Subdistrict with a male population of 437 people. Then, the largest female population in Rajabasa District is in Rajabasa Subdistrict with a female population of 6,742 people, and the lowest is in Gedong Meneng Baru Subdistrict with a female population of 425 people.

So overall the largest total population in Rajabasa District is in Rajabasa District with a total population of 13,860 people, which happens because Rajabasa Village is the capital or activity center of Rajabasa District itself, especially in the form of educational activities and government activities. Meanwhile, in Rajabasa District, the subdistrict with the lowest total population is Gedong Meneng Baru Subdistrict with a total population of 862 people. This is because Gedong Meneng Baru Village is the subdistrict with the smallest area in Rajabasa District and its location is on the border between subdistricts which makes this subdistrict have a smaller total population compared to other subdistricts. A part from the population aspect, another important thing in the demography of a region is the level of population density. Population Density is a measure of population distribution which shows the number of people in each square kilometers of area [10]. To determine the level of population density in an area, the formula used is:

Population Density = Number of Population/Area

The population density in Rajabasa District in 2024 itself will be 4,047 people per km^2. For more details, see table 5.

Table 5. Population Density According to Subdistricts in Rajabasa District in 2024.

No.	Subdistrict	Population Density
1	Gedong Meneng	3.602
2	Rajabasa	14.143
3	Rajabasa Raya	2.830
4	Rajabasa Jaya	3.436
5	Gedong Meneng Baru	1.039
6	Rajabasa Pemuka	4.097
7	Rajabasa Nunyai	4.014
	Total	**4.047**

Source: Rajabasa District, 2024.

Table 5 shows that the subdistrict with the highest population density in Rajabasa District is Rajabasa Subdistrict with a population density of 14,143 people per km^2, meaning that for every 1 km^2 in Rajabasa Subdistrict the population is 14,143 people. Meanwhile, the lowest population density level in Rajabasa District is Gedong Meneng Baru Village with a population density of 1,039 people per km^2, meaning that for every 1 km^2 in Gedong Meneng Baru the population is 1,039 people. A part from that, to determine population density in an area, there are several criteria that we need to know, one of which is the criteria for classifying population density. To determine the range and classification of population density we can use the following formula:

Class Range $= $ (Highest Value-Lowest Value)/(Number of Classes)

$$= (14{,}143 \text{ people}/(Km^2)-1{,}039 \text{ people}/Km^2)/3$$

$$= 4{,}368 \text{ people}/km^2$$

From the results above, it is known that the distance between each population group is 4,368 people/km^2. From this distance, the class classification is obtained as follows:

The population of 1,039-5,407 people/km^2 is relatively rare

The population of 5,407-9,775 people/km^2 is classified as medium

The population of 9,775-14,143 people/km^2 is classified as dense

Based on the class classification that has been carried out above, a conclusion can be drawn that Rajabasa District, Gedong Meneng, Rajabasa Raya, Rajabasa Jaya, Gedong Meneng Baru, Rajabasa Pemuka, and Rajabasa Nunyai have relatively sparse population densities. Meanwhile, the remainder, namely Rajabasa, has a relatively dense population density. A part from aspects of the condition of the population, several things that need to be considered in the lives of residents in an area are the pattern of the settlements where they live. Settlement pattern is a form of distribution of where the population lives and where people carry out their daily activities based on natural conditions and population activities. The settlement pattern in Rajabasa District it self is a clustered pattern. This is because most settlements in Rajabasa District were built close to facilities or centers of population activity. For example, many settlements in Rajabasa Village were built around universities, such as around Lampung University and around Lampung Open University. Apart from that, in Rajabasa Raya you can also see many settlements clustered around Tempel Market.

4. Road Conditions in Rajabasa District

Roads are land transportation infrastructure consisting of all parts of the road, including complementary buildings and equipment intended for traffic, which are on the ground surface, above the ground surface, below the ground or water surface, and above the water surface, except railways. fire, truck roads and cable roads (Law No. 38 of 2004). In the publication of the Central

Statistics Agency, Rajabasa District has a road network which is divided into arterial roads, collector roads and neighborhood roads, where the function of these roads is to facilitate traffic flow. The names of the roads in Rajabasa District based on their function are as follows:

1. Arterial roads, are public roads that function to serve public transportation with the characteristics of long distance travel, high average speed, and the number of access roads is limited in an efficient manner. Arterial roads in Rajabasa District consist of Lintas Sumatra road (Bypass Sukarno Hatta) and Zainal Abidin Pagar Alam road.

2. Collector road, is a public road that functions to serve collector or divider transportation with the characteristics of traveling medium distances with a medium average speed and the number of access roads is limited. The collector road in Rajabasa District is Pramuka Road.

3. Environmental roads, are public roads that function to serve environmental transportation with the characteristics of close travel at low average vehicle speeds. Neighborhood roads in Rajabasa District are all roads that are not arterial or collector roads.

B. Data Processing Results

1. Standards for the Number and Extent of Pharmacy Services

The standard number of pharmacies is based on the supporting population and the area of pharmacy services in Rajabasa District in accordance with SNI 03-1733-2004 concerning urban environmental planning procedures. To find out the number of pharmacies, a field survey will be carried out to find out the number and coordinates of pharmacies in Rajabasa District, while to find out the population, data will be used from the publication of the Bandar Lampung City Central Statistics Agency in 2024. Then to find out the extent of services For pharmacies in Rajabasa District, network analyst tools will be used, namely the service area in the ArcGis application, where these tools will help in obtaining the desired area of pharmacy services based on the existing road network in Rajabasa District.

In carrying out variable analysis in this research, the unit of analysis that will be used is the spatial analysis unit, where the regional analysis unit is based on the subdistrict unit. The purpose of using this subdistrict analysis unit is to facilitate the analysis process carried out. The results and discussion of the variable number of pharmacies that should be in Rajabasa District if adjusted to the population and the area of pharmacy services in Rajabasa District will be explained as follows.

There are two things you need to know when analyzing the standard number of pharmacies in a place, namely the number of pharmacies and the number of residents. To find out the location of each pharmacy in Rajabasa District, a pharmacy location map is needed. This pharmacy location map is needed to make it easier for researchers to determine the number of pharmacies that should be in each sub-district in Rajabasa District if adjusted for the number of supporters. There is some data needed to create a pharmacy location map, namely data in the form of a list of pharmacies and the coordinates of pharmacies in Rajabasa District [11]. To obtain data on the coordinates of pharmacies in Rajabasa District, the essential GPS application on your cellphone will be used. The following will explain the steps for determining pharmacy coordinates using the essential GPS application:

i. Open the essential gps application. Then wait until the main menu appears on the essential GPS application make sure that when using this application the network on your cellphone is stable or good.

ii. Then when the main menu of the essential GPS application appears, then click Waypoints (in Waypoints the coordinates of the pharmacy location will be plotted.

iii. If you have entered Waypoints, the next step is to click the plus sign in the lower right corner.

iv. Next, select Waypoint, then give the symbol, name and description as desired in this research, give the symbol, name and description of the pharmacy. Then wait until the visible satellites and the satellites used have reached the maximum number, then click create.

v. After clicking create, the coordinates of the location you want to plot will appear in the main Waypoints menu. The projection system can be adjusted to what we want, where in this research the projection system used is the Universal Tranverse Mercator projection system.

Table 6. Pharmacy Coordinate Points (UTM) in Rajabasa District in 2024.

No.	Pharmacy Name	X	Y
1	Apotek Jannah	525146	9406080
2	Apotek Arziki	524891	9406023
3	Apotek Musi	524819	9406002
4	Apotek Pamungkas-2 (Pramuka)	524471	9405621
5	Apotek Rosa	526774	9406027
6	Apotek Kimia Farma No.318 KMC	526835	9405967
7	Apotek Akhyar Farma	527260	9405651
8	Apotek Farmasi 89	527223	9405528
9	Apotek Ratu Farma	527130	9405394
10	Apotek Jaya Mandiri	525836	9406391
11	Apotek Assipa 1	526001	9406791
12	Apotek Jesaya Berkah Farma	524536	9406047
13	Apotek Siger 88	524462	9406231
14	Apotek Batara	526219	9407774
15	Apotek Eka Medica	526437	9408167
16	Apotek Karunia Farma	526740	9408181
17	Apotek Ogan	526478	9408412
18	Apotek Deeva Farma KS3	526494	9408541
19	Apotek Zhafran Farma	526522	9408686
20	Apotek Ogan Baru	526504	9408736
21	Apotek Auzza Farma	526500	9408736

Source: Survey Results, 2024.

Table 6 can be seen that pharmacies in Rajabasa District have their respective UTM coordinates according to their location. The pharmacy coordinate point data in Rajabasa District will then be processed further by entering the pharmacy coordinate point data into Microsoft Excel. The purpose of entering the pharmacy coordinate point data into Microsoft Excel is so that the data can be operated into ArcGis and can display the location of each pharmacy. Meanwhile, to see more clearly the distribution of pharmacies in the subdistrict based on subdistricts, you can see table 7 below.

Table 7. Pharmacies by Subdistrict in Rajabasa District in 2024.

No.	Subdistrict	Pharmacy	Amount
1	Gedong Meneng	Apotek Kimia Farma 318 KMC	2
		Apotek Rosa	
2	Rajabasa	Apotek Assipa 1	1
3	Rajabasa Raya	Apotek Auzza Farma	8
		Apotek Ogan Baru	
		Apotek Zhafran Farma	
		Apotek Deeva Farma KS3	
		Apotek Ogan	
		Apotek Karunia Farma	
		Apotek Eka Medica	
		Apotek Batara	
4	Rajabasa Jaya	-	-
5	Gedong Meneng Baru	Apotek Ratu Farma	3
		Apotek Farmasi 89	
		Apotek Akhyar Farma	
6	Rajabasa Pemuka	Apotek Jaya Mandiri	2
		Apotek Jannah	
7	Rajabasa Nunyai	Apotek Siger 88	5
		Apotek Jessaya Berkah Farma	
		Apotek Musi	
		Apotek Pamungkas-2 (Pramuka)	
		Apotek Arziki	
	Total		**21**

Source: Survey Results, 2024.

Table 7 can be seen that Rajabasa District has a total of 21 pharmacies spread across 6 out of 7 subdistricts. Rajabasa Raya Subdistrict is the subdistrict that has the largest number of pharmacies in Rajabasa District with a total of 8 pharmacies, then the remaining 13 pharmacies are spread across 5 other subdistricts, namely Gedong Meneng Subdistrict with a total of 2 pharmacies, Rajabasa Subdistrict with a total of 1 pharmacy unit, Gedong Meneng Baru Village with a total of 3 pharmacy units, Rajabasa Pemuka with a total of 2 pharmacy units, and Rajabasa Nunyai with a total of 5 pharmacy units. Rajabasa Jaya Subdistrict is the only subdistrict in Rajabasa District that does not have a pharmacy.

The process that will be carried out in Microsoft Excel is first to compile the pharmacy coordinate point data into a table consisting of the name of the pharmacy accompanied by the coordinate points (X and Y) according to the table form above, then save the file in the format (.xls). After getting the format in the form of Microsoft Excel 97-2003 workbook (.xls.), process the pharmacy coordinate data into the ArcGis application. Through the ArcGis application, namely by using the overlay technique, it

will be known where the pharmacies are in Rajabasa District, whether they are spread across every subdistrict in Rajabasa District or not. To find out more clearly the location of pharmacies in Rajabasa District, see Figure 1.
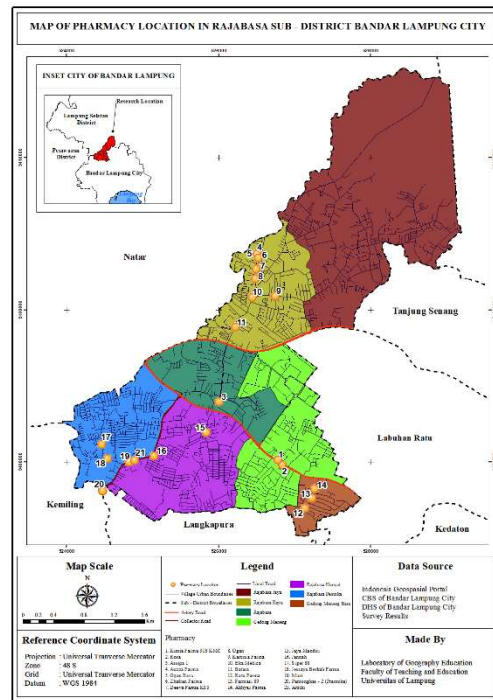

Figure 1. Map of pharmacy locations in Rajabasa District, Bandar Lampung City

Figure 1, shows that the location of pharmacies in Rajabasa District tends to be clustered and gathered in one place, for example, it can be seen in Gedong Meneng Village. The pharmacy in Gedong Meneng Village is located almost next door and in the same location, namely on Arterial Road Zainal Abidin Pagar Alam. Apart from the locations of pharmacies which tend to be clustered and clustered, not all subdistricts in Rajabasa District have pharmacies. A part from the number of pharmacies and pharmacy locations, population is an important indicator that needs to be considered when determining standards for the number of pharmacies in Rajabasa District. This is in accordance with what has been stated by Christaller (Utami, 2022) in his location theory, namely the theory of central place, threshold or minimum population (number of residents) is the number of residents needed to form a particular product or service. The minimum population for each health service facility will definitely vary between each type. In SNI regulation 03-1733-2004 concerning urban environmental planning procedures, the population for each pharmacy is 30,000 people. Meanwhile, based on documentation results, Rajabasa District has a total population of 54,751 people spread across 7 subdistricts. To calculate the standard number of pharmacies in Rajabasa District, the formula that will be used is the formula for calculating the threshold, which is as follows:

(Population)/Supporting Population) = Standard of Pharmacies

This standard number of pharmacies will be used as a basis for determining the need for the number of pharmacies in Rajabasa District. By determining the standard needs for the number of pharmacies, the condition of the need for pharmacies in Rajabasa District in each subdistrict will be seen. There are 3 types of classification of public facility needs, namely as follows:

i.   Oversupply, is a condition where the need for facilities exceeds the standard amount required, so that there are facilities that are not absorbed by the community.

ii. Undersupply is a condition where the need for facilities is less than the standard amount required, so that there are people who cannot be reached by the facilities.

iii. Balanced, is a condition where the need for facilities and the standard number of required requirements are balanced, so that existing facilities are absorbed and all communities can be reached by the facilities.

To find out more about the standard number of pharmacies by subdistrict based on SNI 03-1733-2004 regulations in Rajabasa District, table 8 standard number of pharmacies by subdistrict based on SNI 03-1733-2004 regulations in Rajabasa District follows.

Table 8. Number of Pharmacy Standards by Subdistrict Based on SNI Regulation 03-1733-2004 in Rajabasa District in 2024

No.	Subdistrict	Popula-tion Support	Popula-tion	Phar-macy Existing	Pharmacy Needs Based on Quantity Standards	Amount Pharmacy		Infor-mation
						Over-supply	*Under-supply*	
1	Gedong Meneng	30.000	6.988	2	1	1	-	fulfilled
2	Rajabasa	30.000	13.860	1	1	-	-	fulfilled
3	Rajabasa Raya	30.000	10.132	8	1	7		fulfilled
4	Rajabasa Jaya	30.000	12.337	-	1	-	1	Not fulfilled
5	Gedong Meneng Baru	30.000	862	3	1	2	-	fulfilled
6	Rajabasa Pemuka	30.000	4.671	2	1	1	-	fulfilled
7	Rajabasa Nunyai	30.000	5.901	5	1	4	-	Memenuhi
	Total	**30.000**	**54.751**	**21**	**2**	**19**	**-**	**fulfilled**

Source: Survey Results, 2024.

Table 8 can be seen that not all subdistricts in Rajabasa District have the number of pharmacies in accordance with SNI 03-1733-2004 regulatory standards. For greater clarity, the following will explain the standard explanation for the number of pharmacies based on the supporting population for each subdistrict in Rajabasa District:

i. Gedong Meneng Subdistrict has a population of 6,988 people, where with this population the need for pharmacies in Gedong Meneng Subdistrict based on the standard number is 1 unit, while the number of pharmacies in this subdistrict is 2 units. Based on this explanation, the number of pharmacies in Gedong Meneng Subdistrict meets the standard for the number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations, in fact the number of pharmacies in this subdistrict experienced an oversupply of 1 unit.

ii. Rajabasa Subdistrict has a population of 13,860 people, where with this population the need for pharmacies in Rajabasa Subdistrict based on the standard number is 1 unit, while the number of pharmacies in this subdistrict is 1 unit. Based on this explanation, the number of pharmacies in Rajabasa Village meets the standard for the number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations.

iii. Rajabasa Raya Subdistrict has a population of 10,132 people, where with this standard number the need for pharmacies in Rajabasa Raya Subdistrict based on the standard is 1 unit, while the number of pharmacies in this subdistrict is 8 units. Based on this explanation, the number of pharmacies in Rajabasa Raya Subdistrict meets the standard for the number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations, in fact the number of pharmacies in this subdistrict experienced an oversupply of 7 units.

iv. Rajabasa Jaya Subdistrict has a population of 12,337 people, where with this population the need for pharmacies in

Rajabasa Jaya Subdistrict based on the standard number is 1 unit, whereas in this subdistrict there are no pharmacies at all. Based on this explanation, the number of pharmacies in Rajabasa Jaya Subdistrict does not meet the standard number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations, where this number experiences an undersupply (shortage) of 1 unit.

v. Gedong Meneng Baru Subdistrict has a population of 862 people, where with this population the need for pharmacies in Gedong Meneng Baru Subdistrict based on the standard number is 1 unit, while the number of pharmacies in this subdistrict is 3 units. Based on this explanation, the number of pharmacies in Gedong Meneng Baru Subdistrict meets the standard for the number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations, in fact the number of pharmacies in this subdistrict experienced an oversupply of 2 units.

vi. Rajabasa Pemuka Subdistrict has a population of 4,671 people, where with this population the need for pharmacies in Rajabasa Pemuka Subdistrict based on the standard number is 1 unit, while the number of pharmacies in this subdistrict is 2 units. Based on this explanation, the number of pharmacies in Rajabasa Pemuka Subdistrict meets the standard for the number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations, in fact the number of pharmacies in this subdistrict experienced an oversupply of 1 unit.

vii. Rajabasa Nunyai Subdistrict has a population of 5,901 people, where with this population the need for pharmacies in Rajabasa Nunyai Subdistrict based on the standard number is 1 unit, while the number of pharmacies in this subdistrict is 5 units. Based on this explanation, the number of pharmacies in Rajabasa Nunyai Subdistrict meets the standard for the number of pharmacies based on the supporting population, namely 30,000 people in accordance with SNI 03-1733-2004 regulations, in fact the number of pharmacies in this subdistrict experienced an oversupply of 4 units.

From the description above, it can be concluded that the sub-districts in Rajabasa District whose number of pharmacies meets the standard number of pharmacies based on population in accordance with SNI 03-1733-2004 regulations are Gedong Meneng Subdistrict, Rajabasa Subdistrict, Rajabasa Raya Subdistrict, Gedong Meneng Baru Subdistrict, Rajabasa Pemuka Subdistrict and Rajabasa Nunyai. Meanwhile, Rajabasa Jaya Subdistrict is the only subdistrict in Rajabasa District whose number of pharmacies does not meet the standard number of pharmacies based on population in accordance with SNI 03-1733-2004 regulations.

2. Pharmacy Service Area

Pharmacies spread across Rajabasa District are analyzed based on the threshold or number of supporting population and will also be analyzed based on the standard distance of service area to the surrounding areas or settlements based on SNI 03-1733-2004. This is in accordance with what has been stated by [12] in his location theory, namely the theory of central place, where there is a Range of goods or services or the maximum average distance traveled by residents to obtain certain goods or services.

SNI Regulation 03-1733-2004 concerning urban environmental planning procedures, explains that the maximum distance of service area from each pharmacy is 1,500 m^2 to the surrounding area or settlement. The specified service distance aims to regulate the location of each pharmacy, where it is hoped that each existing pharmacy can reach all surrounding areas or settlements. However, the facts in the field found that not all pharmacies in Rajabasa District can reach all areas or surrounding settlements. There are still several areas or settlements that have not been reached by the pharmacy.

The standard service area that has been determined by SNI regulation 03-1733-2004, namely 1,500 m^2, will be subdivided into 3 categories, namely as follows:

i.   A distance of 0-750 m^2 is categorized as an area or settlement that is very accessible from a pharmacy.
ii. A distance of 750-1,500 m^2 is categorized as an area or settlement within reach of a pharmacy.
iii. A distance of > 1,500 m^2 is categorized as an area or settlement that is not accessible from a pharmacy.

To find out more about the extent of pharmacy services in Rajabasa District, below will be presented in Figure 2 map of the extent of pharmacy services in Rajabasa District as a result of the network analyst process.
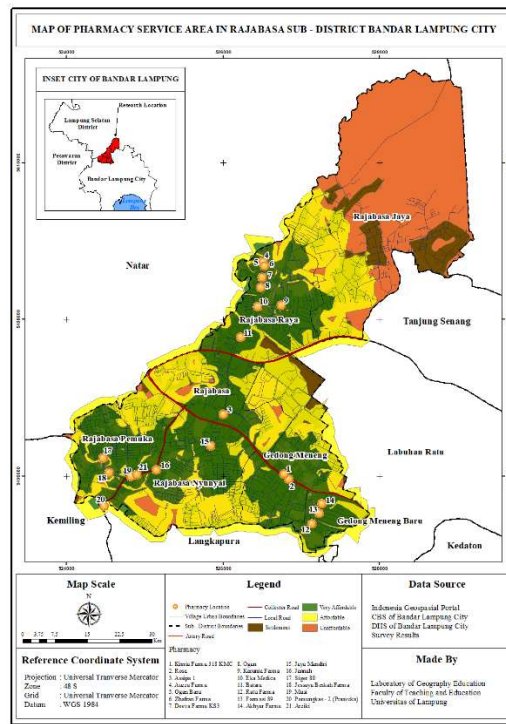
Figure 2. Map of Pharmacy Service Area in Rajabasa District, Bandar Lampung City

Figure 2, it can be seen that visually, in the subdistricts in Rajabasa District, there are several areas that cannot be reached by pharmacy services, for example, Rajabasa Jaya Subdistrict. Compared to other subdistricts, Rajabasa Jaya Subdistrict is the subdistrict with the most areas not covered by pharmacy services. This is because the area of Rajabasa Jaya Subdistrict is large and is even the largest area in Rajabasa District, but the area is still dominated by empty land and settlements are still rare. A part from that, in Rajabasa Jaya Subdistrict there are no community activity centers such as markets, hospitals, etc., where usually in these community activity centers you can find a pharmacy.

Meanwhile, Gedong Meneng Baru is the only subdistrict in Rajabasa District whose entire area can be reached by pharmacy services. This is because the area of Gedong Meneng Baru Subdistrict is small and is a densely populated area and is the center of community activities. Apart from that, the location of Gedong Menang Baru is between arterial roads or main roads connecting districts and is located on the border between Rajabasa District and Kedaton District, which makes this area from an economic perspective strategic for building a pharmacy. To find out in more detail the extent of pharmacy services in each subdistrict, below we will present table 9 of the area of pharmacy services by subdistrict in Rajabasa District.

Table 9. Areas of Pharmacy Services According to Subdistricts in Rajabasa District in 2024.

No.	Subdistrict	Areas (km²)	Areas of Pharmacy Service					
			Very Affordable (0 -750 m²)		Affordable (750 - 1.500 m²)		Not Affordable (>1.500 m²)	
			Area (km²)	(%)	Area (lkm²)	(%)	Area (km²)	(%)
1	Gedong Meneng	1,77	0,86	48,58	0,82	46,32	0,09	5,10
2	Rajabasa	1,22	0,57	46,72	0,61	50,00	0,04	3,28
3	Rajabasa Raya	1,52	1,16	76,31	0,35	23,02	0,01	0,67

4	Rajabasa Jaya	4,94	0,07	1,41	1,02	20,64	3,85	79,29
5	Gedong Meneng Baru	0,42	0,36	85,72	0,06	14,28	0,00	0,00
6	Rajabasa Pemuka	1,31	0,83	63,35	0,47	35,87	0,01	0,78
7	Rajabasa Nunyai	1,79	1,06	59,21	0,72	40,22	0,01	0,57
	Total	**12,97**	**4,91**	**37,86**	**4,05**	**31,23**	**4,01**	**30,91**

Source: Survey Results, 2024.

Table 9 shows that the area of pharmacy services in Rajabasa District is not evenly distributed, where there are still several subdistricts whose areas are not covered by pharmacy services. For more details, the following will explain the extent of pharmacy services for each subdistrict in Rajabasa District:

i. Almost all areas in Gedong Meneng Village are within the reach of pharmacy services. This can be seen from Table 19 that only 0.09 km^2 (5.10%) of areas and settlements in Gedong Meneng are not covered (>1,500 m^2) by pharmacy services out of the total area of Gedong Meneng which is 1.77 km^2. Then 0.82 km2 (46.32%) of areas and settlements in Gedong Meneng are included in the pharmacy service category with very affordable services (0-750 m^2). Meanwhile, the remaining area and settlements of 0.86 km^2 (48.58%) in Gedong Meneng Village are categorized as pharmacy services in the affordable service category.

ii. Almost all areas in Rajabasa Village are within the reach of pharmacy services. This can be seen from Table 19 that only 0.04 km^2 (3.28%) of areas and settlements in Rajabasa are not covered (>1,500 m^2) by pharmacy services out of the total area of Rajabasa which is 1.22 km^2. Then 0.61 km^2 (50%) of areas and settlements in Rajabasa Subdistrict are included in the pharmacy service category in the very affordable service category (0-750 m^2). Meanwhile, the remaining area and settlements of 0.57 km^2 (46.72%) in Rajabasa are included in the pharmacy service category in the affordable service category.

iii. Almost all areas in Rajabasa Raya Subdistrict are within the reach of pharmacy services. This can be seen from Table 19 that only 0.01 km2 (0.67%) of areas and settlements in Rajabasa Raya Village are not covered (>1,500 m^2) by pharmacy services out of the total area of Rajabasa Raya Village which is 1.52 km^2. Then 0.35 km^2 (23.02%) of areas and settlements in Rajabasa Raya Subdistrict are included in the pharmacy service category in the very affordable service category (0-750 m^2). Meanwhile, the remaining area and settlements of 1.16 km^2 (76.31%) in Rajabasa Raya Subdistrict are included in the pharmacy service category in the affordable service category.

iv. Almost all areas in Rajabasa Jaya Subdistrict are not within the reach of pharmacy services. This can be seen from Table 19 that 3.85 km^2 (79.29%) of areas and settlements in Gedong Meneng Village are not covered (>1,500 m^2) by pharmacy services out of the total area of Rajabasa Jaya Village which is 4.94 km^2, where this resulted in Rajabasa Jaya Village becoming the subdistrict that is most unserved by pharmacies in Rajabasa District. Then 0.07 km^2 (1.41%) of areas and settlements in Rajabasa Jaya Subdistrict are included in the pharmacy service category with very affordable services (0-750 m^2). While the remaining area and settlements are 1.02 km^2 (20.64%) in Rajabasa Jaya, it is included in the type of pharmacy service in the affordable service category.

v. All areas in Gedong Meneng Baru Subdistrict are within the reach of pharmacy services. This can be seen from Table 19 that there are no areas and settlements in Gedong Meneng Baru Village that are not covered (>1,500 m^2) by pharmacy services out of the total area of Gedong Meneng Baru which is 0.42 km^2, which makes Gedong Meneng Baru is the only subdistrict in Rajabasa District where all areas and settlements are covered by pharmacy services. Then 0.36 km^2 (85.72%) of areas and settlements in Gedong Meneng Baru are included in the pharmacy service category with very affordable services (0-750 m^2). Meanwhile, the remaining area and settlements of 0.06 km^2 (14.28%) in Gedong Meneng Baru Village are included in the pharmacy service category in the affordable service category.

vi. Almost all areas in Rajabasa Pemuka Subdistrict are within the reach of pharmacy services. This can be seen from Table 19 that only 0.01 km^2 (0.78%) of areas and settlements in Rajabasa Pemuka Subdistrict are not covered (>1,500 m^2) by

pharmacy services out of the total area of Rajabasa Pemuka Subdistrict which is 1.31 km². Then 0.83 km2 (63.35%) of areas and settlements in Rajabasa Pemuka Subdistrict are included in the pharmacy service category in the very affordable service category (0-750 m²). Meanwhile, the remaining area and settlements of 0.47 km² (35.87%) in Rajabasa Pemuka Subdistrict are included in the pharmacy service category in the affordable service category.

vii. Almost all areas in Rajabasa Nunyai are within the reach of pharmacy services. This can be seen from Table 19 that only 0.01 km² (0.57%) of areas and settlements in Rajabasa Nunyai are not covered (>1,500 m²) by pharmacy services out of the total area of Rajabasa Nunyai which is 1.79 km². Then 1.06 km² (59.21%) of areas and settlements in Rajabasa Nunyai Village are included in the pharmacy service category in the very affordable service category (0-750 m²). Meanwhile, the remaining area and settlements of 0.72 km² (40.22%) in Rajabasa Nunyai are included in the pharmacy service category in the affordable service category.

From the broad description of pharmacy services per subdistrict in Rajabasa District above, it can be concluded that Gedong Meneng Baru Village is the only subdistrict in Rajabasa District where all areas and settlements are within the reach of pharmacy services in accordance with SNI-03-1733-2004 Regulations. All areas and settlements in Gedong Meneng Baru Subdistrict are within the reach of pharmacy services because Gedong Meneng Baru Subdistrict has a fairly small administrative area, namely 0.42 km², supported by a fairly large number of pharmacies for a subdistrict area of that size, namely as much as 3 pharmacy units.

Rajabasa Jaya Village is a subdistrict in Rajabasa District where many areas and settlements are not reached by pharmacy services, namely almost 80% of the total area of 4.94 km2. This is because Rajabasa Jaya Subdistrict is the subdistrict with the largest area in Rajabasa District, but there is not a single pharmacy found in this subdistrict. Apart from that, in Rajabasa Jaya Subdistrict there are no community activity centers such as markets, hospitals, etc., where usually in this community activity center you can find a pharmacy. The remaining 20% of areas and settlements in Rajabasa Jaya Village can still be reached by pharmacies located on the borders of Rajabasa Raya.

Overall, almost all areas and settlements in Rajabasa District are within the reach of pharmacy services in accordance with SNI regulations 03-1733-2004. This can be seen from the 12.97 km² total area of Rajabasa District, a total of only 4.01 km² of areas or settlements which are not within the reach of pharmacy services or if the percentage is 30.91% of the total area of Rajabasa District. Meanwhile, 8.96 km² or the equivalent of 69.09% of the total area of the Rajabasa District area and its settlements are within the reach of pharmacy services, with details of 4.91 km² (37.86%) of its areas and settlements being in the very affordable category, and 4.05 km² (31.23%) areas and settlements are in the affordable category.

C. Discussion of Research Results

1. Standard Number of Pharmacies and Total Population Supporting Pharmacies in Rajabasa District, Bandar Lampung City

The standard number of pharmacies and pharmacy support population varies by country and region. There are no global standards that are universally applied. However, many states have regulations or guidelines to determine the number of pharmacies needed based on population needs. In general, several factors to consider in determining the number of pharmacies are:

1) Population Density: Areas with dense populations tend to have more pharmacies to serve the health needs of their residents.

2) Health Accessibility: The location of the pharmacy should also be considered to ensure easy access for everyone to get necessary medicines.

3) Availability of Other Health Services: Determining the number of pharmacies can also be influenced by the availability of other health facilities such as hospitals, clinics or other health practitioners.

4) Special Needs Populations: Populations with special needs such as the elderly, vulnerable groups, or rural areas may require a greater number of pharmacies to meet their needs.

In practice, government health agencies or regulatory bodies often develop guidelines or regulations to determine the number of pharmacies appropriate to local needs. This can be a mathematical calculation based on a population, or a direct evaluation of a population's health needs. For example, in some countries, such as the United States, there are regulations

governing the number of pharmacies based on population and geographic area, while in other countries, such as Sweden or the United Kingdom, centralized health care systems may dictate the location and number of pharmacies required. To obtain specific data on the number of pharmacies and supporting population in an area, you can usually contact your local health agency or the government agency responsible for health regulation.

Currently, public awareness of the importance of health is increasing and this has caused self-medication to be increasingly carried out by the public. This makes the presence of pharmacies in the community increasingly important and the information provided by pharmaceutical staff in pharmacies is very much needed by the community. Pharmacies as a type of health service facility in the construction planning process need to pay attention to several requirements in building a pharmacy, where one of the requirements for building a pharmacy is the need to pay attention to the location.

It is important to pay attention to the location of a pharmacy because location is closely related to the distribution of services for the drug and pharmaceutical needs of the population in a place. Pharmacies that are evenly distributed and easy to reach tend to be able to meet the drug and pharmaceutical needs of the population. Meanwhile, pharmacies that are located in clusters and are difficult to reach will tend to find it difficult to meet the population's drug and pharmaceutical needs. A part from the location of the pharmacy, what is needed to fulfill the population's drug and pharmaceutical needs is the number of pharmacy units in each place, where determining the appropriate number of pharmacies and according to standards requires taking into account the population. The ratio of the number of pharmacists to the population can be assumed to determine the achievement of pharmacy pharmaceutical services compared to the population, considering that one pharmacy has at least one pharmacist.

When related to pharmacies, determining the standard number of pharmacies in a place is closely related to the population and the number of supporting residents. The higher the population in a place, the greater the number of standard pharmacies needed. Regarding determining the number of supporting population for a pharmacy, there are several differences in some literature:

1) [13] states that the standard number of pharmacies according to the BKKBN is 1:8,333 people, or in other words, 1 pharmacy is able to serve a population of 8,333 people.

2) [14] states that the standard number of pharmacies based on population is 1:10,000 people.

3) [15] states that WHO standards are identical to the meaning that each pharmacy serves 2,000 or 1:2,000 people.

4) The National Standards Agency in Indonesian National Standards (SNI) 03-1733-2004 concerning procedures for planning housing environments in urban areas states that the standard number of pharmacies based on the number of supporting residents is 1:30,000 people.

To determine the standard number of pharmacies required in Rajabasa District, we will use literature or regulations issued by the National Standards Agency, namely SNI 03-1733-2004 concerning procedures for planning housing environments in urban areas, where the supporting population for each pharmacy is 30,000 people. There are two categories in determining the standard for the number of pharmacies, namely meeting and not meeting. It is said to be compliant if the number of pharmacies is ≥ the standard number of pharmacies set, and it is said to be not compliant if the number of pharmacies is < the number of standard pharmacies set.

Rajabasa District as a research location has a population of 54,751 people spread across 7 subdistricts, then the number of pharmacies in this subdistrict is 21 units spread across 6 of the 7 subdistricts in Rajabasa District. Overall, seen from the subdistrict level, most of the subdistricts in Rajabasa District have a sufficient number of pharmacies where the average number of pharmacies is ≥ the standard number of pharmacy needs set, such as in Gedong Meneng, Rajabasa, Rajabasa Raya, Gedong Meneng Baru, Rajabasa Pemuka and Rajabasa Nunyai. This means that in these six subdistricts the population's medicine and pharmaceutical needs are met. Meanwhile, the only subdistrict in Rajabasa District whose number of pharmacies does not meet the standard number of pharmacy needs set is Rajabasa Jaya Subdistrict, where as a result of this the medicine and pharmaceutical needs of the population in Rajabasa Jaya Subdistrict are not met. From the explanation above, it can be concluded that of the 7 subdistricts in Rajabasa District, only 1 subdistrict has the number of pharmacies that does not meet the standard number, namely Rajabasa Jaya Subdistrict.

Furthermore, if we look at the subdistrict level, Rajabasa District, as a subdistrict in the northern region of Bandar

Lampung City, has the largest number of pharmacies compared to Tanjung Senang District and Labuhan Ratu District, the number of pharmacies meets the standard number. The population in Rajabasa District is 54,751 people. If the number of supporting residents is calculated based on SNI 03-1733-2004 regulations, namely 30,000 people, then the standard number of pharmacies required in Rajabasa District is 2 units, while the number of pharmacies in Rajabasa District is as many as 21 units. This indicates that the number of pharmacies in Rajabasa District meets the standard quantity, meaning that the population's need for medicines and pharmaceuticals is met, even experiencing oversupply or an excess of the standard quantity that has been set, namely 19 units.

2. Service Area of Pharmacies in Rajabasa District, Bandar Lampung City

To meet the population's drug and pharmaceutical needs, apart from determining the standard number of pharmacies, the distribution of pharmacy locations also needs to be considered. The location of these pharmacies will affect the pharmacy's ability to reach the surrounding areas or settlements. The closer the pharmacy is to residential areas, the easier it is for residents to fulfill their medication needs. Most residents also prefer to come to a pharmacy that is close to their home, as per the results of research conducted by [16] which states that 87.2% of pharmacy consumers visit the pharmacy closest to their home.

A part from location, things that influence the distance between pharmacy services are access or road conditions. The better the access or road conditions to get to a pharmacy, the more people will come to that pharmacy. This is in accordance with the results of research by [17] which states that consumers will prefer to shop at pharmacies that are closer and have easy access to locations. The next thing that influences the distance to which pharmacy services reach is the area, where the wider the area, the more areas and settlements that must be reached by pharmacy services [18].

In relation to the distance between the services of a facility, Walter Christaller's concept of central place theory explains that there is a range of goods or services or the maximum average distance traveled by residents to obtain certain goods or services. Regarding determining the distance of a pharmacy's service coverage, there are several differences in the literature:

i. [19] Ramadan (2021) states that based on the regulations of the Ministry of Health of the Republic of Indonesia, the assessment of the reach of health facility services is a maximum distance of 2.000 m^2.

ii. [20] Qato, et. al., (2017) explains that according to the US Department of Agriculture and Centers for Disease Control and Prevention, the distance a resident travels from home to the nearest pharmacy is 1 mile (1.609 m^2). If residents live more than 1 mile from the nearest pharmacy, they can be categorized as having low access or not being reached by a pharmacy.

iii. [21] Meshkini, et. al., (2014) states that the maximum distance between the services of a pharmacy from the residences of the surrounding population is 3.000 m^2.

iv. The National Standards Agency in Indonesian National Standards (SNI) 03-1733-2004 concerning procedures for planning housing environments in urban areas specifically states that the distance between the services of a pharmacy and the residences of the surrounding population is a maximum of 1.500 m^2.

In determining the distance needed for pharmacy services in Rajabasa District, this research will use literature or regulations issued by the National Standards Agency, namely SNI 03-1733-2004 concerning procedures for planning housing environments in urban areas, where the service coverage distance from each pharmacy is 1.500 m^2. There are three categories in determining the distance to reach pharmacy services, namely very affordable, affordable and not affordable. It is said to be very affordable if the existing area and settlement is within a distance of 0-750 m^2 from the pharmacy location, affordable if the existing area and settlement is within a distance of 750-1.500 m^2 from the pharmacy location, and not affordable if the existing area and settlement is within distance >1,500 m^2 from the pharmacy location. Rajabasa District as a research location has an area of 12.97 km^2. Overall, looking at the subdistrict, 4.01 km^2 or the equivalent of 30.91% of the total area in Rajabasa District is not covered by pharmacy services. This shows that Rajabasa District, which is the district with the largest number of pharmacies in the northern region of Bandar Lampung City, with a total of 21 pharmacies alone, still has several areas and settlements that are not within the reach of pharmacy services in accordance with SNI-03-1733-2004 Regulations.

The thing that causes some areas in Rajabasa District to be unreachable by pharmacy services is because most pharmacies in Rajabasa District tend to be concentrated in certain locations, such as in areas close to busy centers such as markets or city centers. The conditions in Rajabasa District are in accordance with the results of research from [22] which states that in

Banyumas Regency the distribution of pharmacies is still concentrated in areas close to markets, hospitals and the city center. However, this is not without basis, in terms of choosing a location for pharmacy construction, investors will usually choose a location that is busy and has the prospect of reaching a large number of consumers [23, 24].

Areas in Rajabasa District that were found to have health service facilities in the form of pharmacies were areas that were centers of population activity, areas that were densely populated, and areas where accessibility or road conditions were easy and plentiful. This describes the six subdistricts in Rajabasa District that have pharmacies, namely Gedong Meneng, Rajabasa Raya, Rajabasa, Gedong Meneng Baru, Rajabasa Pemuka and Rajabasa Nunyai. The pharmacies in the six subdistricts tend to be clustered or not evenly distributed throughout the existing areas and settlements. Rajabasa Jaya Subdistrict is the only subdistrict in Rajabasa District that does not have a pharmacy. The cause of this condition is because Rajabasa Jaya is one of the new subdistricts in Rajabasa District, this means that there are still very few settlements and population activity centers. The absence of a pharmacy in Rajabasa Jaya also results in many areas and settlements not being reached by pharmacy services, where of the Rajabasa Jaya area of 4.94 Km^2, almost 80% of the area is not reached by pharmacy services, especially in the northern area of the Village. Rajabasa Jaya. This results in the population's medicine and pharmaceutical needs not being met in Rajabasa Jaya Subdistrict, where lack of access and unfulfillment of the population's medicines can result in increased morbidity and mortality that could have been prevented [25, 26].

V. CONCLUSIONS

Based on the results and description of the discussion of the research that has been carried out, the following conclusions will be drawn:

1. The number of pharmacies in Rajabasa District meets or is in accordance with the population in accordance with SNI regulations 03-1733-2004. It is said to be fulfilled because the population in Rajabasa District is 54,751 people, where with this population the need for the number of pharmacies in Rajabasa District is 2 units, while in Rajabasa District there are 21 pharmacy units spread across 6 sub-districts. This also proves that Rajabasa District is experiencing an oversupply (excess) of pharmacies of 19 units of its total needs.

2. Almost all areas and settlements in Rajabasa District can be reached by pharmacy services in accordance with SNI 03-1733-2004 regulations, where of the 12.97 km^2 total area of Rajabasa District only 4.01 km^2 (30.91%) of areas and settlements are not covered by pharmacy services. Meanwhile, 8.96 km^2 (69.09%) of areas and settlements in Rajabasa District are within the reach of pharmacy services, with details of 4.91 km^2 (37.86%) of areas and settlements in the very affordable category, and 4.05 km^2 (31, 23%) of the areas and settlements are in the affordable category.

ANKNOWLEGMENT

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