APPLICATION OF THE SIMPLE ADDITIVE WEIGHTING (SAW) METHOD IN THE DETERMINATION OF FOOD FOR PATIENTS OF HIGH BLOOD DISEASE

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Abstract

Hypertension is divided into primary (essential) hypertension or secondary hypertension. Hypertension is a major risk factor for stroke, myocardial infarction, heart failure, arterial aneurysm, peripheral arterial disease, and causes of chronic kidney disease. Even moderate increases in arterial blood pressure are associated with shorter life expectancy. Diet and lifestyle changes can improve blood pressure control and reduce the risk of health complications. Where the highest value for each food is the best food according to the criteria for each selected food. the user only selects the foods to be consumed then the application will perform calculations based on the value of the food criteria. So that the results obtained from the selection of previously selected foods. The use of the SAW method in selecting good food is very influential because it uses a method that can provide a value for each food selected based on its criteria. Where the highest value for each food is the best food according to the criteria for each selected food. The use of the SAW method in selecting good food is very influential because it uses a method that can provide a value for each food selected based on its criteria. Where the highest value for each food is the best food according to the criteria for each selected food. The use of the SAW method in selecting good food is very influential because it uses a method that can provide a value for each food selected based on its criteria. Where the highest value for each food is the best food according to the criteria for each selected food.

Keywords: Hypertension, SAW, Android

1. INTRODUCTION

Hypertension (HTN) or high blood pressure, also sometimes called arterial hypertension, is a chronic condition in which the blood pressure in the arteries increases. This increase forces the heart to work harder than usual to pump blood through the blood vessels. Blood pressure involves two measurements, systolic and diastolic, depending on whether the heart muscle is

contracting (systolic) or relaxing between beats (diastolic). Normal resting blood pressure is between 100 and 140 mmHg systolic and 60 to 90 mmHg diastolic. High blood pressure occurs when it is consistently 140/90 mmHg or higher. Hypertension is divided into primary (basic) or secondary hypertension. Hypertension is a major risk factor for stroke, myocardial infarction, heart failure, aneurysms, peripheral arterial disease and causes of chronic kidney disease with a shorter life expectancy. Diet and lifestyle changes can improve blood pressure control and reduce the risk of health complications. Based on this phenomenon and the many causes that make us vulnerable to hypertension, hypertension is one of the urgent problems.

Therefore, the authors found that the solution to this phenomenon is to provide several solutions to prevent hypertension, namely by implementing a good and correct lifestyle by reducing excessive sodium intake. The author will create an application system that can make good food choices for the consumption of people with hypertension. In the application, the user only selects the food to be consumed and then the application performs calculations according to the value of the food criteria. While the results obtained from the selection of previously selected food.

The use of the SAW method in choosing good food is very influential because it uses a method that can give value to each food selected according to its criteria. Where the highest value of each food is the best food based on the criteria of each selected food. The Simple Additive Weight (SAW) method is often referred to as the method of adding weight. The basic concept of the Simple Additive Weight (SAW) method is to find the total weighted performance score of each alternative on all attributes. An Android application is an application that enables mobility using a device such as a PDA, cell phone, or cell phone. DSS as a computerized system helps in decision making. DSS is an adaptive, interactive, and flexible computer information system,

2. Research Method
2.1 Research Stages

To assist in the preparation of this research, it is necessary to have a clear framework of the stages. This framework is the steps that will be taken in solving the problems that will be discussed.

2.2 Manual Calculation of the Simple Additive Weight Method

The decision support system for food selection in patients with hypertension takes into account several assessment criteria, the food selected and the compatibility ranking as shown in the table below

Table 1 Assessment Indicators

No.	Assessment criteria	Food selected	Match Rank
1.	Carbohydrate	Coffee	Very less
2.	Iron	Milk	Not enough
3.	Protein	Cucumber	Enough
4.	Fat	Apple	Well
5.	Vitamin	Durian	Very good

Explanation of the assessment criteria and suitability ranking.

Table 2 Carbohydrates

Carbohydrates (C1)	Score	Information
Very Less (SK)	1	Above 1g
Less (K)	2	0.6g – 0.8g
Enough (C)	3	0.4g – 0.6g
Good (B)	4	0.2g – 0.4g
Very Good (SB)	5	0g – 0.1g

Iron (C2)	Information
Very Less (SK)	
Less (K)	– 0.8g
Enough (C)	– 0.6g
Good (B)	– 0.4g
Very Good (SB)	

Proteins (C3)	Information
Very Less (SK)	
Less (K)	– 0.8g
Enough (C)	– 0.6g
Good (B)	– 0.4g
Very Good (SB)	

Table 3. Data

Vitamins (C5)	Score	Information
Very Poor (SK)	1	Above 1g
Less (K)	2	0.6g – 0.8g
Enough (C)	3	0.4g – 0.6g
Good (B)	4	0.2g – 0.4g
Very Good (SB)	5	0g – 0.1g

Rank the suitability of each alternative on each criterion.

Normalized Matrix (R)

$$
R = \begin{bmatrix}
1,000,250,25 \; 0.75 & 0.33 \\
1.001,000.25 \; 0.25 & 0.33 \\
1,000,501.00 \; 1.00 & 0.33 \\
1,001,001.00 \; 0.75 & 1.00
\end{bmatrix}
$$

1.00   0.25   0.25   0.25   0.33

Determining the results of calculations with the SAW method

V1 $= (1.00* 0.3) + (0.25* 0.2) + (0.25* 0.2) + (0.75* 0.15) + (0.33* 0.15) = 0.56$

V2 $=$ $(1.00* 0.3) + (1.00* 0.2) + (0.25* 0.2) + (0.25* 0.15) + (0.33* 0.15) = 0.64$

V3 $=$ $(1.00* 0.3) + (0.50* 0.2) + (1.00* 0.2) + (1.00* 0.15) + (0.33* 0.15) = 0.80$

V4 $=$ $(1.00* 0.3) + (1.00* 0.2) + (1.00* 0.2) + (0.75* 0.15) + (1.00* 0.15) =$

$$0.96$$

$$V5 \;=\; \frac{(1.00* 0.3) + (0.25* 0.2) + (0.25* 0.2) + (0.25* 0.15) + (0.33* 0.15) =}{0.49}$$

Ranking Each Alternative Using the SAW Method

Rank	Alternative	Results
1.	Coffee	0.56
2.	Sweetened condensed milk	0.64
3.	Cucumber	0.80
4.	Apple	0.96
5.	Durian	0.49

The greatest value is in the ideal solution (Vi) V4 so that alternative A4 is chosen as the best alternative. In other words, Apples will be chosen as a good food.
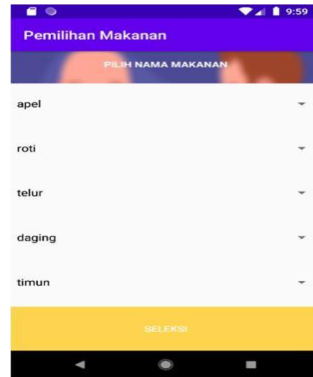
3. Results

3.1 Application Testing

Testing the application of food selection for patients with hypertension is used to test the system on one of the menus where the data used is the process of selecting food to be consumed by the user. How to use the application of food selection for people with hypertension is as follows:

1) The first step is for the user to run the application and the main menu will be displayed.

2) After the main menu appears, users can directly select the food selection menu on the main menu.

3) Then a new food selection menu will appear that can make food choices. Users simply choose the food available in the application to make a selection of which foods are good for consumption by people with hypertension.

Figure 2. Food Selection

4) Then after the user has finished selecting the food, a new form will appear, namely the results of the food selection.

Figure 2 Food Selection Results

5) In the display menu of the food selection results, the name of the food is listed with the value of the food. Where the highest food value is food that is good for consumption by people with hypertension.

4. Conclusions

The conclusions of this study are:

1) This application of food selection in people with hypertension can help people with hypertension in order to minimize the severity of the disease.
2) The application is designed with a simple display so that it is easy to use by anyone

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