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APPLICATION OF HUMAN NUTRITION NEEDS WITH HARRIS BENEDICT METHOD

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ABSTRACT

Very dense work activities take up a lot of time and energy, so many people don't pay attention to food patterns. Failure to pay attention to food will lead to illness. The need for the number of calories every human who enters the body is different from each other in other words must adjust one's physical state. Information on the number of calories is very complex so it is difficult for ordinary people to find out the information. A popular method for calculating the number of calories per day needed by humans is using the Harris-Benedict method. The recommended amount of calorie intake per day is to maintain normal body weight. This function of calculating the nutritional needs of humans functions to find out precisely and accurately the needs of calorie intake in humans according to height, weight, and age.

INTRODUCTION

The development of the IT world today has penetrated to all sides of human life. Competitive prices of computers and gadgets from various brands (brand) and application support that is user friendly are expected to help solve a variety of complex computing or the use of various applications for the purposes of science, education, economics, health, and so on. [1] The design of the application of information systems currently illustrates the factors that are mandatory as a compliment that is very important for information needs [2]. All lines of government and the private sector have used and have had a positive impact on the results of the development of information technology in the field of application at this time, no exception at health agencies.

Priority handling of nutritional problems is very specific and sensitive in the first 1000 days of life until the age of 6 years. In 2017, one of the Indonesian government's programs in the stunting prevention program at the national level through the National Mid-Term Development Plan Program (RJPM) targeting 2025 will reduce 40% the number of short children under five. Lack of nutrition in a long time, resulting in growth disorders in children is characterized by a child's height lower than the standard age. [3]

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To support the government program, the food consumed by humans is certain to contain nutrients in accordance with what is needed for daily activities. Food must contain nutrients that produce energy (calories) in the amount that has been determined in accordance with its recommendations [4]. The main factor of nutritional problems is actually the daily diet, this can be overcome by regulating the intake of good nutrition for consumption. But unfortunately, not many people know about good and proper dietary settings. [5] Everyone's nutritional needs are definitely different, there are many ways to find out one's nutritional needs, one of them is the Harris-Benedict method [6]. The Harris-Benedict method is a key element that determines a person's energy needs with the Basal Metabolism Rate (AMB) and physical activity. Basal metabolic rate is the minimum energy requirement (calories) needed by the body to undergo body mass [7].

Nutrition is a basic ingredient of food ingredients that has the function of an energy source that supports body growth, regulates metabolism, and plays a role in body health. According to the Indonesian Ministry of Health, nutritional needs are the minimum amount of nutrients needed by each individual. Every individual has different nutritional needs. Nutritional requirements depend on several factors, namely age, sex, weight, and height [8]. Also, an irregular eating pattern will have an impact on calorie intake needed so that it results in obesity or overweight and conversely lack of calorie intake will reduce weight. [9].

The problem that always arises in the community is the lack of consulting a nutrition specialist about diet and the type of food menu that has a nutritional intake for consumption besides the time limitation factor is not uncommon to be found that makes people forget the importance of nutrition in the body.

METHOD

The Harris-Benedict method used is to determine the number of calories (energy units) needed by each person per day. Basal metabolic rate (AMB) is expressed in kilocalorie units (kcal) [10]. Basal metabolic rate in this study uses the Harris-Benedict formula, to determine the basal metabolic rate between the sexes of men and women are distinguished, as shown in equation 1 and 2 below:

AMB for men

$$AMB = 66 + (13{,}7\ x\ W) + (5\ x\ H) - (6{,}8\ x\ A) \quad \text{..... (1)}$$

AMB for Woman

$$AMB = 66{,}5 + (9{,}6\ x\ W) + (1{,}8\ x\ A) - (4{,}7\ x\ A) \quad \text{..... (2)}$$

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Information :
W = Weight (kg)
H = Height (cm)
A = Age in years

Energy requirements for AMB are calculated according to normal or ideal body weight. How to set an Ideal Body Weight can use the Body Mass Index with equation 3 below:

$$IMT = \frac{Weight\ (Kg)}{Height\ (m)^2} \quad \text{..... (3)}$$

Weight assessment based on BMI using threshold can be seen in Table 1 below.

Table 1. Category Threshold Limits (BMI)

Body Condition	Category	Threshold Limit
Thin	Weight loss weight level	< 17,0
	Mild weight loss	17,0 – 18,5
Normal		>18,5 – 25,0
Fat	Light weight over weight	>25,0 – 27,0
	Over weight	>27,0

If the weight is judged to be less than the ideal body weight, then the energy needs are added as much as 500 kcal, whereas if more, reduced by as much as 500 kcal. Harris Benedict's calculation method will be implemented by utilizing the development of current information technology, in the form of application design. The designed application is a desktop-based application that was designed using Visual Studio 2015 programming language. It is intended to assist in achieving nutritional status according to the energy needed

.

RESULT AND DISCUSSION

The application of human nutrition needs with the harris benedict method was built using the visual studio programming language 2015. Implementation is described as the process of using the designed application, starting from the login form facility so that it can be used only for users who have access rights to the application being built. The following is the login form as shown in Figure 1 below:

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Image 1. Form Login

After logging incorrectly, then it will enter the main menu as shown in Figure 2 below. In this main menu, there are Member, Consultation, and Exit menus. Next to register, click on the Member menu Member and will enter the Member Input form as shown below, below is the Main Menu Form

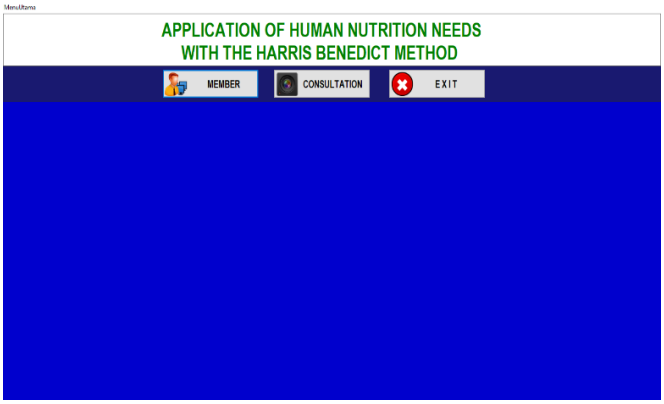

Image 2. Main Menu

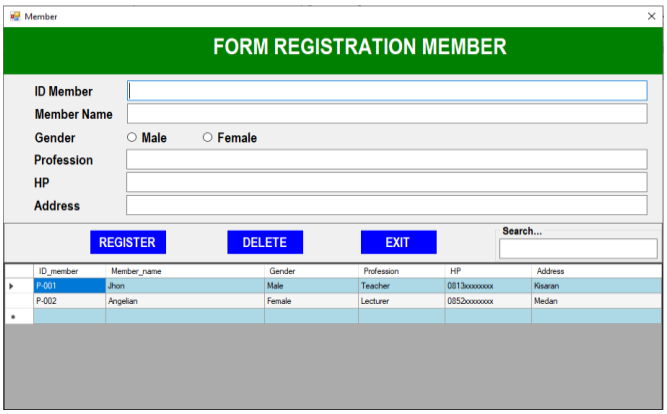

Image 3. Form Registration Member

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After registering, then enter the Consultation menu. In the Consultation Menu, you will see the calculation of human nutritional needs using the harris-benedict method, the following is the Consultation form:

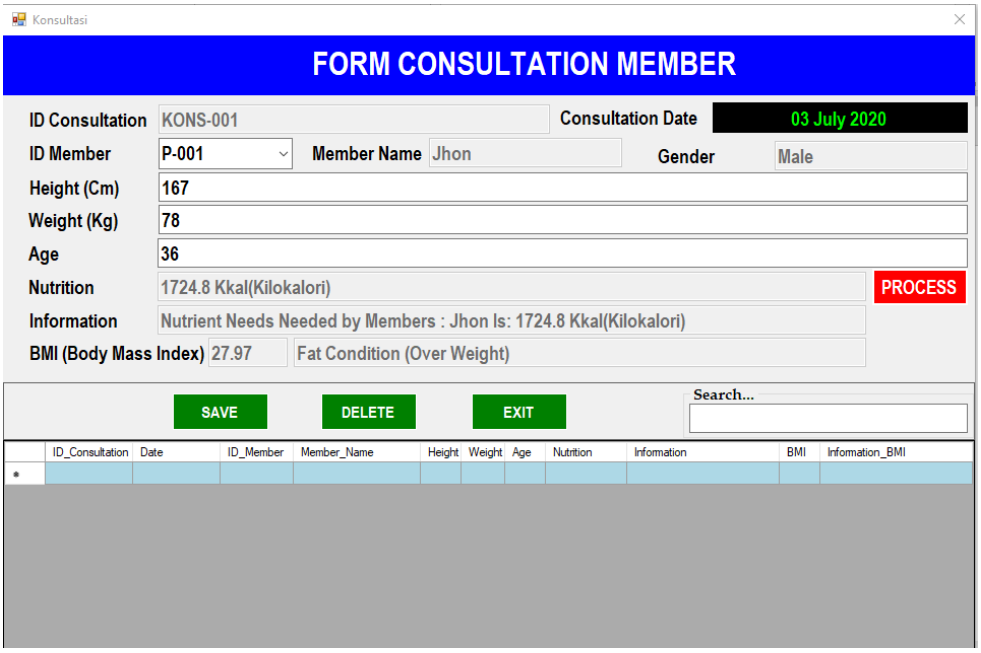

Image 4. Form Consultation Member

From the results of calculations with the Harris-Benedict method that the nutrition needed per day for members is 1724.8 Kcal (kilocalories) per day, where 1 gram of carbohydrate = 4 calories, 1 gram of fat = 9 calories and 1 gram of protein = 4 calories. With a BMI 27.97 with the description Over-Weight.

CONCLUSION

Based on the previous discussion and after the application of nutritional needs in humans with the desktop-based Harris-Benedict method, it can be concluded that with the application of meeting desktop-based nutritional needs can know the nutritional needs needed by someone every day as well as information about the results of weight assessment based on BMI (Body Mass Index). Nutrition needs application can provide some up to date information according to the needs per day. This desktop-based nutritional needs application can be a trusted container of information designed using the Harris-Benedict method. Desktop-based nutritional needs application can help the community in consulting their nutritional needs every day according to the calories needed.

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