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The Use of Practical Information System to Provide Information of Suitable Diet for Health

Erdhi Widarto N., MT

*Soegijapranata Catholic University
Bendan Dhuwur VI/1, Semarang, Central Java, Indonesia
erdhiwidarto@gmail.com*

*Kartika Puspa Dwiana, S.TP
Soegijapranata Catholic University
Bendan Dhuwur VI/1, Semarang, CentralJava, Indonesia
kartika_puspa2002@yahoo.com*

*Kartika Sari Subagio, S.TP
Soegijapranata Catholic University
Bendan Dhuwur VI/1, Semarang, CentralJava, Indonesia
anastasia_katarina@yahoo.com*

Nowadays, people give more attention to their health including their food intake. Unfortunately, this awareness is not supported by adequate knowledge on the food quality itself and how much they need to take thus causing a high case of malnutrition. Malnutrition or 'wrong diet' can be either an excessive consumption or insufficient consumption. Both cases of malnutrition can cause a lot of health problems such as osteoporosis, high blood pressure, diabetes, high cholesterol level, etc. and for extreme cases it may lead to death.

To get a healthy body, we need the right diet for our body, which may vary from one individual to another, since our body may have different need of the diet. There are several factors to consider each individual's need on certain diet affecting our body nutrition requirements such as age, sex, body weight, body height, and activity.

An information system is needed to help people getting an ideal diet which is suitable with their body needs. An interactive and practical website is made to fulfill this need. In this website, people

can input their data (age, sex, body weight, body and height) and know their nutrition requirements. Moreover, this website will provide some random daily food menus which are suitable for them.

Keywords - information system, random input, suitable diet, human's health

I. INTRODUCTION

Nowadays, approximately one billion people around the world are at the risk of having heart problem and stroke because of obesity and each year, 17 million people died because of those diseases. In Indonesia, heart problem is the leading cause of death (42.9%), followed by stroke (25.9%). Moreover, obesity usually followed by a lot of health problems such as high blood pressure, diabetes, high cholesterol level, cancer and gout.

The main reason of obesity is an unhealthy life style such as low activity and consumption of high calories food as well as excessive consumption. Unfortunately, most people do not know their body's need of

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consumption, which make them have an imbalance diet. The imbalance between energy expenditure and energy intake, however small it is, may lead into obesity. Another factor which may result in obesity is imbalance hormone. The decreasing production of thyroid hormone such as in menopause women will decrease body metabolism and increase the case of obesity.

To get a healthy body, people need the right diet (balance diet) for their body, which may vary from one individual to another, since their body may need different diet. In healthy person, there are several factors which affecting body nutrition requirements, such as age, sex, body weight, body height and activity. While people with certain health problems may need to have more factors to consider in their diet according to the health problem they have. Imbalance diet or malnutrition can be either an excessive consumption or an insufficient consumption. Both cases of malnutrition will result in a lot of health problems such as osteoporosis, diabetes, high blood pressure, high cholesterol level, etc. A balance diet will lead into a fit and healthy body and mind.

II. SIMPLE MEASUREMENT OF HEALTH

Simple health measurement about weight and its health risk is needed to assist in deciding of suitable diet for a person health.

A. Body Mass Index

Ideal (healthy) body weight is body weight with minimum risk to health and maximum longevity. Traditionally, healthy body weight can be evaluated by weight and height ratio. The current standard for evaluating body weight is Body Mass Index (BMI). BMI is calculated from body weight (kg) and body height (m). For adults, the ideal body weight has BMI of 18.5 to 24.9 kg/m². People with body weight in that range have the lowest health risks. While people with body weight in above or below this range, will have higher health risks and earlier death. BMI is chosen because it has

higher correlation to body fat than body weight and height ratio [2].

B. Waist Circumference

In evaluating the health risks associated with BMI, it is important to assess the location and proportion of body fat. Fat around the hips and thighs is mainly subcutaneous fat which carries less risk than the visceral fat. Visceral fat is fat that deposited around the organs in abdominal area. An increase in visceral fat is associated with higher health risks such as heart disease, high blood pressure, stroke and diabetes [2], [4].

Measuring waist circumference is an easy way to evaluate whether somebody carries too much visceral fat or not. Person with large waist circumference (>102 cm for male or >89cm for female) indicates a high amount of visceral fat. People with same BMI but with greater waist circumference will have higher health risk [4].

III. SUITABLE DIET FOR HEALTH

Every day, people need enough energy and enough of nutrients to be active and to keep healthy, because nutrition have three function in human body, i.e. to provide energy, to form body structures, and to regulate the body processes that keep someone alive. The nutritional requirements for each person may vary, depends on age, height, weight, sex, activity, and health status. People with bigger body size need more energy and nutrition to support their metabolism. And the more active a person the more energy needed to keep healthy [2], [4].

An ideal (balance diet) is a diet which can supply the energy in equal amount with the energy spent by someone. It also gives enough essential nutrients, such as vitamins and minerals to support a healthy body. When people eat a balance diet, he/she can keep their body condition as it is. People with high BMI (obese), who want to lose some of their weight, will need to decrease their energy intake, while still fulfilling their essential nutrients requirement [4].

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IV. EXPERT SYSTEM

An expert system is a system which can imitate and do the job of a real human expert, or in this case a nutritionist. Expert system consist of six component[3], i.e. :

- Rule-based systems
- Knowledge-based systems
- Intelligent agent (IA)
- Database methodology
- Inference engine
- System-user interaction (User Interface)

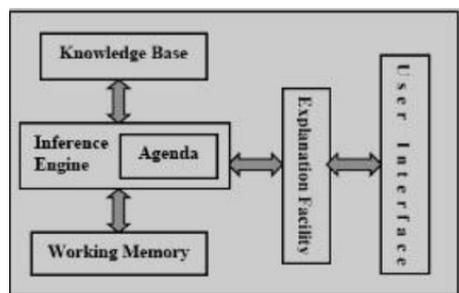


Fig.1 Expert System Component

From the component above, there are three main component, i.e., knowledge based-system, inference engine and user interface. In relation with knowledge based system, the important thing is the acquisition of the knowledge. Milton N.R. in his book said that there are three aspects in knowledge acquisition [1], i.e. :

1. Knowledge capture

Knowledge capture is technique which is used by an expert to get information. It consists of interview techniques, modeling techniques and specialized techniques.

2. Knowledge analysis

Knowledge analysis is a process to identify the element which is needed to build the knowledge base. Four important elements to construct the knowledge base are concept, attribute, value and relation.

3. Knowledge modeling

Knowledge modeling is a way to show and to analyze the data in knowledge base. It consists of several parts such as trees, matrix, map, timeline, frame and knowledge page.

V. SYSTEM MODELING

Suitable menu for each person depending on their body condition, such as age, sex, height, weight and activity. Slight difference in body condition will need different diet. Other factor which may influence diet is Body Mass Index (BMI) measurement. People with normal range BMI may follow directly the standard diet suggestion. While people in thin or obese range of BMI may need an altered from standard (either increased or decreased) diet suggestion. Because of that, the data of menu diet quite a lot, and an expert system is needed to analyze the data.

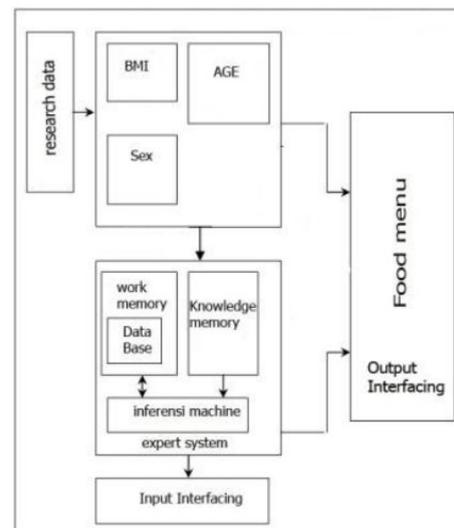


Fig. 2 Expert System Model

Interface input in expert system usually in the form of yes/no choice. In these system, to analyze age data, a hide yes/no system model is used. Age category is made to help detecting user age. This model also used in the input model of sex and activities.

This system used a forward chaining method in processing its data. Forward chaining method start by collecting the data such as age, sex, and activity to be processed which later at the final state will display the suggested menu according to the input data. This process starts by coding each of input

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data as given by user. The code then will be matched with the code in the knowledge base. This process will go on until the suitable match for the code input is found in the knowledge base. The matching code in the knowledge base is used to call forward the conclusion with certain code as a result of the input data. In this case, the conclusion is the ideal menu for the condition which is input before.



Fig. 3 Information System of Suitable Diet for Health

VI. CONCLUSIONS

To stay healthy, people need to consume an ideal (balance) diet, which may vary for each person depends on their age, sex, weight, height and activity. Because of it, people will need a practical information system which can give information based on their specific condition. To fulfill this need, an expert system computer is made. This system will search the menu diet which match with user condition.

REFERENCES

- [1] Daniel dan Virginia, G. Implementasi Sistem Pakar Untuk Mendiagnosis Penyakit Dengan Gejala Demam Menggunakan Metode Certainty Factor. *Jurnal Informatika*, Vol. 6, No. 1. 2010.
- [2] Mudambi, S.R. and M.V. Rajagopal. *Fundamentals of Foods, Nutrition and Diet Therapy 5th Ed.* New Delhi : New Age International(P) Ltd. New Delhi. 2007
- [3] Naser, A. dan Zaiter, A. An Expert System For Diagnosing Eye Disease Using Clips. *Journal of Theoretical and Applied Information Technology*. 2008
- [4] Smolin, S.A. and M.B. Grosvenor. *Nutrition and Weight Management 2nd Ed.* New York : Infobase Publishing. 2010.

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