Healthy food to support healthy life

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ABSTRACT

Healthy, happy, success and long life are everyone’s dream of being. To have these, proper nutrition is one of the basic needs that must be met—food composing of nutrients and non-nutrients that will influence the quality of food. Hence, Food must meet four conditions to be said as healthy food. It has to be adequate, balance in the composition of nutrients, calorie in control, and free or at least within the safety level of health hazard components. Yet, food does not affect directly on one’s health but the diet, though it takes time from unhealthy habit into getting the disease or vice versa. Since food has many functions in human life, moderation and variety becoming very important to compose a healthy diet. If these six principals are put into the habit, then fit, and well-being can be promised so far unless some other risk factors can affect health. Water has a crucial role in supporting the body function, and human cannot avoid drink in daily life. Still, beverage drinks can be easily slipped into the hazardous substrate that will influence on health. Knowledge on nutrigenomic is worth to be applied to have more on the personal approach of how food and diet can affect health.

INTRODUCTION

Long life and Happy can be said as the real underlying need in life, and being healthy, especially in life is part of getting all it.1,2 WHO defines health as a state of complete physical, mental and social well being not just absence from diseases and infirmity.3 To reach this, nutrition takes a vital role as nutrition can bring people into either healthy as well as unhealthy state.4,6

Nutrients are components in food; foods compose diet and diet influences health. Food is composing of nutrient and non-nutrient.7 The nutrient components can be grouped into macro-nutrient which consists of carbohydrate, protein and fat, and also micronutrient, i.e. vitamins and minerals. Besides, there are other non-nutrient that can also be available in food. Hence, some food can be used as medicine. Both, nutrients in food supported by the non-nutrient content, when it put into the habit, will direct the nutrition status and health of human.7,8

Healthy food shall compose of all nutrients and non-nutrients in proper composition. It shall adequately meet the human need to guarantee the best nutrition status of the people when it put into a daily habit.8 Besides, it shall also be safe and free from any hazardous component that gives harmful effect to human health.7,9

Single food does not directly affect human health, but the daily diet. The onset between malnourish and/or nutrient deficiency/excess until disease appearance requires a considerable length of time. It has to become a habit, ingesting lousy quality as well as quantity of food, for a while before it becomes a disease.8 Therefore, since the most important of food are the quality and quantity of the content, human shall think whenever they consume any food, what they can get from it. Having this said, some consideration shall be considered when ingesting and/or providing food are the following the amount, the frequency, the kind, the composition, and the way of cooking and/or processing.8,11 Also, the nutrigenomic pattern of any single people sometimes essential to themselves explicitly as it can influence to their specific health problem, but not to others.12

NUTRITIONALLY HEALTHY FOOD PRINCIPLE

Food shall be defined as any substance enters to the human body, ingested and/or eaten and will react with the body to provide energy for life and activity, building up and/or repairing tissue and regulating bodily process.5,8,11 The form can be solid or liquid, and it can also be simple or complex food. Single means one single meal, while complex means it contents several kinds of food.13 Within the nutrition point of view, there are three main principles required to say that food belongs to healthy food. Firstly, it has to be adequate. Adequate here means that the food shall provide enough nutrients needed by the body for the three purposes above. Hence, the amount or the portion and the frequency of meal need to be considered.14,15
Secondly, it has to be balanced in nutrient composition. As nutrients can be grouped into two main groups macro and micro and then each group can also be grouped into, carbohydrate, protein, fat, mineral, vitamin, water, it supposed to be balanced in all nutrient groups previously mentioned. Human needs nutrients in a particular number called recommended daily allowance or Daily intake. Food taken daily shall compose of all necessary nutrients; hence a balanced diet becomes very important to be said as healthy.

Thirdly, the intake calorie from food shall be in control. Human needs specific calorie to maintain their life and activity. Generally, the calorie intake can be calculated using the formula, and several formulas can be used to calculate the amount of calorie needed by the people.

Single food, either simple, as well as complex, does not affect human health unless it has a high content of human health hazard, but the diet. One can eat one or two times of lousy food in nutrient content and has not developed any effect on health, but when it becomes a habit, in one time the disease starts to develop into the clinical phase. However, when the food composing of a high dose of health hazard material, these can be the cause of a particular disease. For example, taking extra ice cream one or two cups sill not affect anything, but when it is taken daily, in one year, it might develop into increasing weight or overweight. Similarly, when food composing of very little salmonella poison, will not cause any disease, but when the concentration is high beyond human can afford it, it causes typhoid fever.

Besides, since food composing diet, and nutrition derived diseases is a chronic disease due to long term lousy habit in food nutrition, healthy food shall include variety and moderation. It needs consideration since human eats food regularly and variably and in food, there is non-nutrient content which includes toxin. Therefore, when people eats certain limited kind of food for an extended period, and that food contain the toxin, one time, that particular person can be intoxicating, due to toxin accumulation. Moderation is needed because food has several functions besides filling the human biological need. Diet can have social meaning, personal preference and others.

There are some other non-nutrient things need to be considered for food to become healthy as the following it has to be free from toxin either naturally occurred toxin in food or unnatural toxins develop from mismanaging food handling, genetically engineered food that no one knows the effect on health except hypothesis that has never been proven and also contamination from either bacterial, another pollutant such as heavy metal and/or free-radical species.

**ADEQUATE**

Adequacy is connected with the number of nutrients shall be consumed daily. Recommended daily allowance (RDA) or average daily intake (AI) or in Indonesia, it is called angka kecukupan gizi (AKG) has been used to explain the number of nutrients minimally needed by the body. For energy-producing nutrients, namely, the macronutrients compose of carbohydrate, protein and fat, the total calorie requirement must be firstly calculated before breaking down into the more specific nutrient needed. It simply can be calculated based on age, sex, weight and height plus total daily activity. Some formulas can be used to do so. The micronutrients, the amount of intake shall follow merely to the RDA or AKG, but it can be varying within the safety level.

Indonesia via the Departemen Kesehatan has made a determination of the global nutrients requirement for common Indonesian population, namely Peraturan Menteri Kesehatan Republik Indonesia (PMK) Nomor 28 Tahun 2019 tentang angka kecukupan gizi bagi masyarakat Indonesia and can be downloaded from the website.

In practical, since human eat food, not a nutrient, it is hardly difficult to transfer the nutrient requirement into the amount of food intake. Therefore, the easiest way to calculate whether the amount of food consumed is enough, over or under body requirement, is the body weight and body mass index. Bodyweight is the most sensitive way to predict nutritional adequacy while body mass index is the reliable tools to measure nutrition status.

Besides the amount of food consumed, the frequency of meal will also influence the intake. Having the purpose of the healthy food definition, which concentrate more on the effect of food for wellbeing, food nibbling has advantages and disadvantages. Nibbling means increasing the frequency of eating or in another word, eating more often. Nibbling helps people to control and maintain the blood glucose level and insulin sensitivity. However, it increases the risk of over calorie intake causing overweight or obesity. On the contrary, time-restricted feeding which part of intermittent fasting is recently introduced for weight loss, glucose tolerance, improve blood lipid level, also can delay the neoplastic-prone tissue landscape typical of ageing.

Way of cooking may influence the calorie-dense of food. Food cooked with oil will contain more calorie rather than food prepared with water.
Balance means here is we consumed all nutrients in the best composition for health.\textsuperscript{5,8,10} Hence, the topic that will be discussed is the kind and composition of food consumed.

WHO defining a balanced diet when it is composed of 50-60% carbohydrate, 10-15% of protein and 25-30% of fat, and vitamin and mineral intake following the recommended daily allowance (RDA).\textsuperscript{27} Indonesia put extra information on sugar that shall be taken maximally 5% of the total calorie intake.\textsuperscript{28} Looking at this composition; every nation develops its balanced diet such as the Mediterranean, western, Asian or even Indonesian.\textsuperscript{29-33} They call it a Food Pyramid. These food pyramids were made in consideration of the composition of nutrients daily and base on population habit and availability of food in a specific area.\textsuperscript{32,34} In this pyramid, people are given the portion that can be eaten per day.

Translating the food pyramid into practice is not easy either. Variety and moderation need to put in consideration since the purpose of eating are not only for life but also for pleasure, tools for communication, ceremony and else. Harvard School of Public Health had published a Healthy Eating Plate in which the portion of vegetable is higher than the grain, and the source of protein resource and fruit will be less.\textsuperscript{35} Another plate composition table suggests that healthy eating plate shall compose of 25% grain, 20% vegetables, 15% irrespective to either fruit, dairy product and legumes plus 10% of protein.\textsuperscript{36} There are many other models on one plate food composition, and all of its claims that it is balanced and healthy. Hence, we can conclude that variety and moderation are the principle to say whether food intake is balanced. The more variance the better as long as the energy of food consumed is in control. Balance food does not mean shall be filled in any meal, but it can also be a day.

Ways of processing and styles of cooking influence food balance. Most process foods compose more salt, sugar and/or fat components. Heating will destroy some vitamins and also reduce the mineral content as well as improving food digestibility and also improving antioxidant activity.\textsuperscript{5,7,8,37,38}

Liquid Nutrition

Since human composes more water in their body, people need to drink water in their daily habit. Water is essential for human metabolism, works as transport for substrates across the membrane, cellular homeostasis, circulatory function and also temperature regulation. The water resources for human body can come from the water they drink, the beverages and the water content in the food they eat.\textsuperscript{5,8,13,22} In the Indonesian food pyramid, it is mention that healthy adult needs at least eight glasses of water which means 2000 ml water. Dehydration in any kind is dangerous for human health. It causes many diseases; even acute dehydration is deadly.\textsuperscript{22}

People often ignore the drink they consumed; they thought that drink is not eating, and accordingly, do not calculate or often too calculate the nutrient and non-nutrient content in it. There will be many things available in liquid food, and people can also have health risk from those drinks.\textsuperscript{10,11,34}

Blended food composes of nutrients from the food used plus water; beverages mostly compose more sugar, water, vitamin, mineral and non-nutritional components; alcoholic beverages primarily compose more sugar.\textsuperscript{8,13,22} When people drink water, there will be no added calorie in it. However, should people drink beverages, they have to think and calculate the nutrients and non-nutrients available, especially the calorie content.

Food Processing

The purposes of process food are preserving the food for a more extended period, increase the palatability and digestibility and increase the economic value. They put some food addition to the food, such as preservative agent, colouring agent, salt, sugar and else.\textsuperscript{37-39}

Processing food includes cooking alter the nutrient composition.\textsuperscript{7,8,22} Industrial processing concentrates on how to preserve the food, improving the economic value and increase palatability. Food industries put some preserving agent, colouring agent, and to improve palatability mostly, they put either sugar or salt. Though there are regulations on food safety, risks from additives on health are still there. The closest and immediate possibility risks are effects due to over sugar and salt intake.\textsuperscript{5,7-9,15,22}

Home processing for personal and family purposes concentrate on improving palatability.\textsuperscript{5,7-9,22,37-39} A family usually use heating behaviour such as frying include stir-frying, steaming, boiling, grilling and baking. These behaviours alter the nutrition bioavailability besides increase palatability. Vitamin C, for example, will be reduced by cooking but, vitamin E will be increased, overheating in deep frying destroy the double bond of unsaturated fat and transform it into trans-fat. Therefore, food processing includes cooking will influence the nutrient availability and accordingly, it also affects the nutrient balance as well as the amount in food.\textsuperscript{37-39}
FOOD HAZARD

The non-nutrient component in food can also influence human health.\textsuperscript{8,17,18,39-41} Those components include phytochemicals, fibres, toxin, pollutants and sometimes bacteria and/or parasite.\textsuperscript{17,18,41} Most phytochemicals and fibres are beneficial for human health.\textsuperscript{8,41} There are many findings recently showing the beneficial effect of phytochemicals such as flavonoids, phenolic, tannins on human health since it provides antioxidant that fight against radical oxygen species production in human. Food hazard mostly coming from toxin, pollutant and bacteria/parasites in food. Food hazard mostly coming from toxin, pollutant and bacteria/parasites in food. The toxin in food can be naturally occurred such as cyanide in cassava or else but, it can also come from rotten food such as aflatoxin from moulded grain or nut or toxin from bacteria in food. Pollutant in food mostly humanmade, hence food can contain heavy metal such as Lead, Mercury or else. Likewise, pollutant, bacteria and/or parasites available in food is also humanmade. It comes from unhealthy food handler or rotten food.\textsuperscript{39-41}

The hormone in food, sometimes become food hazard, especially for those who eat that particular food. The hormone was usually given to livestock to increase the economic value of food production. However, when it is eaten quite often with a significant volume, it causes health hazard to whom eating it.\textsuperscript{42,43}

NUTRIGENOMIC

Healthy food does not fit for all. Human body contents of billions of cells containing DNAs. These DNA rings composing Gen give specific genetic information either for physic, health, even for body respond toward nutrients.\textsuperscript{44} Ninety-nine per cent of human DNAs are similar but there is 0.1% is specific for any single person, and it is called Single Nucleotide Polymorphism causing one person will be different from other.\textsuperscript{45,46}

Nutrigenomic is a scientific study that studies the dynamics, regulation and ways of a specific gene interacting with a compound or bioactive in a particular food.\textsuperscript{47} Hippocrates stated that, food would be converted into genetic information that is expressed to provide a different metabolic profile that will have an impact on diet and health. It is looking at the relationship between genetic factors and nutrients that have specific composition and which can induce gene expression in the body. It also studies the molecular links between nutrient stimulation and response from genes, so that it can be understood about how nutrition affects metabolic pathways and homeostasis control, how this regulation is disrupted in the early phases of feed-related diseases, and the extent of sensitivity of genotypes contribute to the disease in individuals.\textsuperscript{47}

Hence, this report can give individual information about healthy food specific for particular person base on their genomic response against food hazard.

SUMMARIES

From all description, we can summarise that

1. Human needs food for life, the nutrients and non-nutrients that composing the food will influence health and nutrition status.
2. Healthy food is defined as food that adequately fills the human need and composes all nutrient needed by the body. Also, food shall not contain food hazard that can also influence human health.
3. Water belongs to food, the existence is essential for human body function, but taking beverages shall calculate the nutrient content through water take higher concentration.
4. Nutrigenomic is a tool to know how food influence human-specific responds and vice versa.

REFERENCES


