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Common Beliefs Regarding Dieting Methods in Japan and Evidence-Based Recommendations



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Jun Kobayashi^{1,*}, Keiichi Ikeda²

¹*Faculty of Nutrition, University of Kochi, 2751-1 Ike, Kochi, Kochi 781-8515, Japan;*

²*Faculty of Pharmaceutical Sciences, Hokuriku University, 1-1 Taiyogaoka, Kanazawa, Ishikawa 920-1180, Japan*

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ABSTRACT

In Japan, a large proportion of the population has undertaken dieting at least once, and dieting approaches are diverse. However, some dieting methods are ineffective, while others can have negative impacts on health. In the current study, we describe various dieting methods and discuss the available scientific evidence about their effects. In addition, we present a range of recommendations regarding the most beneficial dieting methods.



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INTRODUCTION

A large proportion of the Japanese population has undertaken dieting for weight loss (Fig. 1)¹⁾. Dieting typically refers to the regulation of food and diet therapy. The regulation of food refers to food and drink customarily ingested by humans, while diet therapy refers to adjustment of dietary intake for maintaining health and physical appearance, as well as preventing obesity. Thus, dieting involves balancing the range of foods ingested, and regulating the amount. Depending on the aim, dieting can be used to achieve weight gain or weight reduction, and the primary purpose of dieting is typically to control eating habits to maintain a healthy lifestyle and body. However, many people in Japan associate dieting solely with weight loss, and it is common for dieting in Japan to involve only dietary restrictions.

Many dieting methods are currently used in Japan. However, some dieting approaches are ineffective, or even harmful. In the current paper, we describe a range of available dieting methods and make several recommendations. Below, the term “diet” refers to actions undertaken for “slimming” or “weight loss”.

Purpose of dieting and the Japanese context

Populations in developed countries tend to consume excessive amounts of sugar and fat, and it is common for a large number of people to suffer from obesity. As a result, most people who undertake dieting, including in Japan, do so with the intention of losing weight.

In Japan, it is widely believed that thinness implies health, and many television, magazine and fashion models have a particularly lean body type. The desire to lose weight can be increased by viewing such media, and the desire to achieve a slim body shape may prompt a person to attempt weight loss. However, some individuals desire weight loss but do not wish to reduce the amount of food they consume. Adjusting the amount of food consumed inevitably reduces caloric intake. However, many people wish to continue to eat the same amount, which has led to the development of zero- and low-calorie seasonings and foods. Some individuals may feel more satisfied with the process of dieting than the effects on their weight. In some cases, an excessive amount is consumed after vigorous exercise, potentially leading people to believe that dieting is ineffective.

Types of dieting methods

A range of representative dieting methods is shown in Table 1. The dieting approaches shown here do not include medical procedures and focus on methods that individuals can undertake themselves, without requiring instruction from health professionals. In Japan, it is common for dieting approaches to be promoted by celebrities *via* online media, television and magazines. In addition, many weight loss supplements are widely advertised. Table 1 shows a list of well-known dieting methods that have been in use for a long time. As shown in the right column of the table, some approaches are susceptible to rebound (returning to the original weight despite weight loss), and can increase the risk of diseases such as diabetes. Among these methods, reducing or eliminating any one of five major nutrients (carbohydrate, lipids, protein, vitamins, and mineral) can have negative impacts on health. Media stories sometimes feature cases of actors losing weight for a temporary role, or bodybuilders avoiding meals to prepare for an event. This approach is typically only undertaken for a short period of time, and often under the guidance of a doctor or nutrition expert. Importantly, it can be dangerous for this approach to be applied for an extended period of time. As shown in the table, methods involving exercise often have relatively positive health effects, but can be variable in terms of whether they are likely to be maintained over a long period.

Popular diets

The most popular diet methods in November 2018, as indicated by online search frequency, are shown in Table 2. Many of these methods involve exercise, while some involve dietary restrictions. The approaches listed in the table tend to emphasize the ease of performing at home and at night after work, in accord with typical Japanese lifestyle habits.

Many other diet methods are also used in Japan. A number of television programs have recently reported the effects of dieting involving bedrock bathing in a room with high humidity. However, bedrock bathing appears to have the same effects as a sauna, and there is no evidence for its effectiveness. During bedrock bathing, perspiration is increased by spending an extended period in a hot and humid place, and weight loss can occur as a result. However, this weight loss is only caused by a loss of moisture in the body and does not burn fat. It is commonly misunderstood that it is necessary to consume more energy derived from food for temperature regulation in winter. Importantly, a large amount of perspiration does not necessarily correspond to a high level of energy consumption. In addition, there is some

evidence that heat shock protein is induced by body temperature elevation, thereby improving immunity and causing weight loss³). However, because the induction of heat shock protein production is primarily an emergency function for cell repair and self-defense, there may be unintended effects of inducing this process for weight loss.

Another dieting method involves ingesting supplements or juice containing raw enzymes⁴). Marketing for this dieting method often claims that raw vegetables and fruit enzymes are good for maintaining intestinal bacterial flora and enzymes involved in improving digestive capacity. However, the effectiveness of this method is unclear. Because enzymes are proteins, ingesting raw vegetables is likely to have the same effect as ingesting protein-rich foods, with the additional effect of promoting defecation because it contains a large amount of moisture and substances that are difficult to digest.

Drinking zero-calorie beverages (particularly carbonated drinks) can induce a feeling of satisfaction even if a meal has not been consumed. Although there are reports that this method has an effect on diet⁵), other studies have reported that the feeling of satiety cannot be obtained without chewing and eating solid foods⁶). Moreover, many zero-calorie beverages contain artificial sweeteners. It was recently reported that artificial sweeteners increase the risk of disorders affecting intestinal bacterial flora and the feeling of hunger, inducing overeating⁷).

Dieting methods related to medical care

Next, we discuss dieting methods that are similar to medical care, and those that directly involve medical procedures. Partial resection of the stomach has been used to treat excessive obesity for a long time. This procedure can cause weight loss by reducing the absorption of nutrients from the stomach. However, this procedure is typically considered as a last resort, and the size of the stomach is generally not restored afterwards. This procedure is typically only performed in situations where obesity is life-threatening.

Diets involving parasites have been reported, but the mechanisms are not fully understood. There are anecdotal reports of supermodels orally ingesting parasite eggs as a weight loss technique, keeping the parasite in the gastrointestinal tract to reduce the absorption of energy from food. In the past, it was relatively common for people in Japan to infect themselves with parasites by intentionally orally ingesting eggs in raw foods, and many people were lean. In

Southeast Asian countries, parasitic infections are still prevalent, and malnutrition caused by parasites is common. Recent evidence suggests that changes in the immune responsiveness of the human body can alter the absorption rate of fat and improve obesity⁸⁾.

Some supplements contain ingredients that absorb fat, suppresses the absorption of fat by the body. For example, because cyclodextrin contains a lipophilic component in the center of its structure that absorbs fat, taking supplements before meals and between meals can reduce fat absorption. However, the amount of fat that can be suppressed is limited, and only a part of the fat content of a meal can be absorbed and suppressed.

Inappropriate diets and health impacts

As described above, an appropriate diet typically involves balanced eating habits and moderate exercise. However, there are a range of approaches to dieting that can be considered inappropriate.⁹⁾ First, although extreme dieting approaches such as fasting can have rapid effects, they may decrease the basal metabolic rate in the longer term. Moreover, these approaches are associated with rebound, because muscle mass decreases without being able to take in nourishment at the minimum level necessary for the human body. Second, some diets involve the consumption of a single food. Because dieting involving the consumption of one foodstuff, such as apples, boiled eggs or grapefruit, cannot provide a balance of nutrients, it is common for people to rebound. Third, the use of laxatives and diuretics as dietary aids can have negative impacts. Because internal water is lost by excretion, weight may decrease without a decrease in body fat. Dehydration can result from excessive use of diuretics and laxatives, which can harm health. Fourth, the inappropriate use of medicines and supplements may have negative health impacts. Some diet medications or supplements claim to cause weight loss just by consuming them. However, weight loss is only possible if calories-out exceed calories-in. Thus, medicines and supplements can only play a supporting role in the diet.

A range of health problems can be caused by inappropriate diets. First, osteoporosis is caused by a deficiency of magnesium, promoting calcium absorption and a lack of vitamin D. Because the bones are actively developed in the first 10 to 20 years of life, an increased risk of osteoporosis can be caused by inappropriate dietary habits in the teens and 20s. Second, eating disorders can result from inappropriate dieting. The feeding center and the appetite center in the hypothalamus of the brain control the appetite. However, if abnormal eating

habits continue because of inappropriate dieting, control can be disturbed and there is a risk of eating disorders such as overeating and refusal to eat. Third, gynecological problems can be related to diet. If nutrition is insufficient due to an imbalanced nutrient intake, ovary function can be impaired, and the amount of female hormone secreted can decrease. As a result, gynecological problems such as irregular menstruation, amenorrhea, and anovulation can occur, potentially causing infertility in the future.

Ideal dieting methods

Many Japanese people have dieted at least once, but it is common for dieting to rebound. Although it is common for people to equate dieting with weight loss, healthy dieting involves not only weight control, but also the regulation of fat and muscle mass. An appropriate dieting method can enable a person to develop a healthy body shape and maintain energy levels. For this purpose, it is necessary to set goals for body weight, body fat percentage, and timeframe¹⁰). Energy consumption of 7000 kcal is thought to correspond to approximately 1 kg of weight loss. Thus, it is considered that maintaining meals and exercise to less than several hundred kcal per day can help dieting persist over long periods.

When aiming to lose weight by exercise, it is considered important to combine aerobic exercise such as walking and running, and anaerobic exercise using the muscles. This combination is thought to burn fat and enhance basal metabolism.

When aiming to lose weight via dieting, it is necessary to be conscious of calorie control and balance, considering the balance with calories burned, and adjusting calorie intake accordingly. Although it is commonly misunderstood, ingesting protein can increase basal metabolism. Vitamins and minerals also play a role in improving energy metabolism, so should also be part of a balanced diet.

Recent evidence suggests that not only the amount and type of food to eat but also the order of eating affects the accumulation of body fat in relation to the increase in blood glucose levels¹¹). Importantly, several lifestyle factors can negatively impact on health. First, excessive alcohol consumption involves a high calorie intake and can cause deterioration of liver function, which plays an important role in metabolism. Second, metabolism can be reduced by a lack of physical exercise. Third, eating quickly is thought to be related to obesity. Ingesting food quickly without thoroughly chewing can lead to overconsumption of

food before appetite-suppressing hormones starts to work. Fourth, sleep affects health, and a consistent rhythm of getting up and going to bed is thought to have positive health impacts.

CONCLUSION

Many people in developed countries, including Japan, consume nutrition beyond the amount of energy required to maintain metabolism. In addition, a large number of individuals undertake dieting to maintain their physical form. This behavior may seem strange when considering the situation for people in developing countries.

Appropriate dieting should not involve an excessive load within a short timeframe. Rather, it is important to set reasonable weight loss goals and to maintain a regular balanced diet, exercise, and lifestyle habits. Sustaining this balance requires an ongoing awareness of the goals that are desired. Thus, it is important for individuals to understand that they are able to achieve their own long-term goals themselves, rather than facing a level of hardship that is difficult to maintain.

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Table 1 Dieting Methods

Method	Ingredients	Typical examples	Common unintended effects
Reduce nutrients	Reduce calorie intake	Fasting	Malnutrition, rebound, fatty liver, hunger
		Reduce snacking, Energy restricted food	Malnutrition, rebound, fatty liver
	Reduce carbohydrates	High protein food, carbohydrate restricted diet	
	Reduce lipids	Lipid restricted diet	
Replace nutrients	Replace carbohydrates with lipids and proteins	High protein diet, low sugar diet	
	Replacing carbohydrates with lipids	Low sugar diet	Hyperlipidemia, fatty liver
	Change lipid quality	Diet with nuts, eat fish	Malnutrition, hyperlipidemia
	Inhibit absorption of nutrients	Inhibition of sugar (e.g., gymnema tea, nutritional supplement)	Lack of evidence
		Inhibition of lipids (e.g., oolong tea, nutritional supplements)	Lack of evidence
	Replace food with water	Diet with water	Hunger, electrolyte abnormality, hyponatremia (water poisoning)
Replace food with something other than water	Diet involving a single food	Malnutrition, rebound, fatty liver, hunger, diabetes mellitus	
Increase energy consumption	Exercise	Physical strength training, walking	Overeating, arthralgia
	Increase	Diet tea	Rebound, lack of evidence

consumption by not exercising, increased basal metabolism	Diet that burns fat (such as those using exercise equipment)	Rebound, lack of evidence
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Excluding medical procedures

Including myths without scientific support

Table 2 Ranked recent popular diet methods

Rank	Name	Outline
1	30-day challenge	This method provides a way to manage the exercise amount for 1 month using a mobile application. For people who think that they cannot maintain a diet for a long period, but can diet for a short period of time, or who think that they will perform better than they did the day before. Although this method is the same as the exercise methods described below in terms of the number of burned calories being automatically calculated, the results of this method are thought to be easier to track.
2	Exercise to stimulate the body with the fingertips	This method involves pushing, pinching and stimulating while exercising, to increase consciousness of the location targeted for weight loss.
3	Protein diet	This method involves increasing the regular consumption of protein-rich meat and fish in meals. It is unknown whether other nutrients decrease as a result.
4	Home training	It may be difficult for some people to go to the gym, and exercise in the home could be useful for people who have trouble following a diet. If the exercise content of methods 6–8 is used, people may be able to undertake exercise without getting bored. Some celebrities train with personal trainers in their homes.
5	Prepare and save side dishes	It can be difficult to think about everyday meal menus when diets involve carbohydrate restrictions or other limitations. Therefore, preserved ingredients can be prepared, and particular seasonings can be used to maintain the diet.

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| 6 | Squat motion | Although squatting primarily involves the legs, slimming of the waist circumference, buttocks and thighs can also be expected. DVDs for squat training are available for purchase, and training classes are offered. |
| 7 | Landing platform movement | This method involves aerobic exercise that can be easily performed at home.
This method is easiest if steps are available. Because the load is not strong, the method is relatively easy to maintain. However, it may be difficult to achieve weight loss within a short timeframe because the exercise is not intense. |
| 8 | Abdominal muscle movement | With basic exercise, calories are consumed and muscles are modified. In Japan, it is becoming popular to train the internal muscles. Specialized equipment (i.e., training with machines that produce high speed vibrations) are via mail order. |
| 9 | Diet with protein supplements | This method involves the intake of high quantities of protein. If protein is ingested immediately after exercise, muscles can develop more easily, which can have a fat-burning effect. However, if exercise is not sufficient to match protein ingestion, the protein may replace other nutrients, with negative health impacts. |
| 10 | Diet with Japanese food | This method can be started easily by people who are not good at exercise. By increasing the range of foods of various colors consumed, nutrients can be ingested in a balanced way without special knowledge. |
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Summary of the contents of Reference 2)

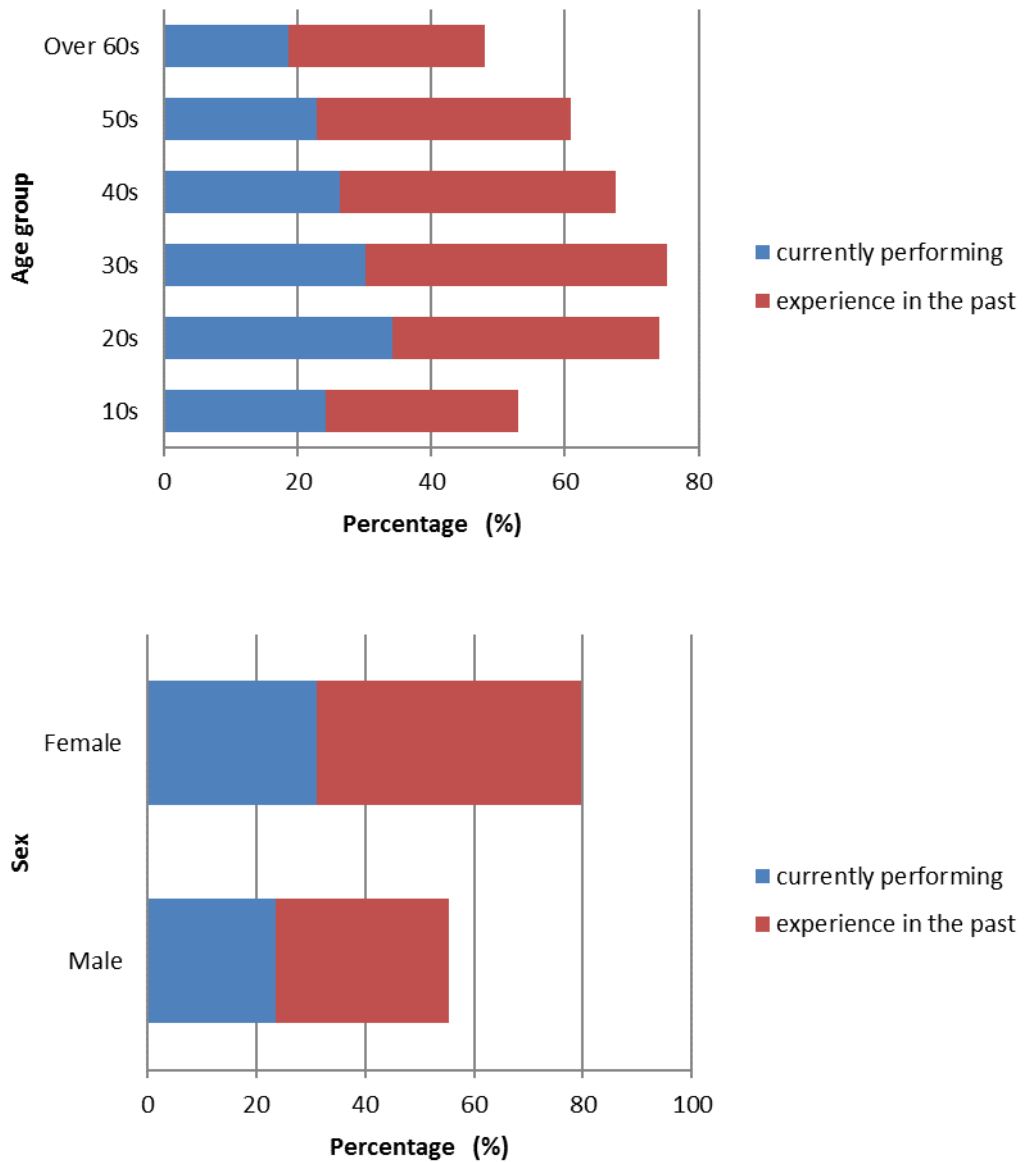


Fig. 1 Diet experience percentage by age (upper) and sex (lower)

The results of an online survey conducted in 2007¹.