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Mini Review

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The Japanese Diet should be Going to be an Optimal Diet for People's Healthy Longevity

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Abstract

Both the Japanese and Mediterranean diets are known to be healthy. Japan is a country where its people has the longest life expectancy in the world (81.3 years for men and 87.3 years for women in 2017). According to a qualitative systemic review of epidemiological publications, the Japanese dietary pattern is characterized by the dietary staple, side dishes and soup, and contains the top three categories of soybeans/soybean-derived products, seafood and vegetables, followed by rice and miso soup. The modern Japanese and Mediterranean diets are inferred to promote obesity and worsen metabolic risk factors. It is a concern that the Japanese diet seems to be westernized further to date. Before the average life expectancy reaches a peak prematurely in Japan, the Japanese diet should be going to be an optimal diet for people's healthy longevity.

Keywords: Japanese Diet; Mediterranean Diet; Life Expectancy; Healthy Longevity

Introduction

A traditional Japanese diet has been regarded as a healthy diet in view of people's longevity in Japan. The traditional dietary culture of the Japanese (washoku) was registered as a UNESCO intangible Culture Heritage in 2013. According to a qualitative systemic review of epidemiological publications, the Japanese dietary pattern is characterized by the dietary staple, side dishes and soup, and contains the top three categories of soybeans/soybean-derived products, seafood and vegetables, followed by rice and miso soup [1]. In this Mini Review, recent clinical studies on the Japanese diet in relation to clinical impacts are described, comparing with the Mediterranean diet (components including vegetables, legumes, fruits, nuts, whole grains, fish, monounsaturated fat-saturated fat ratio, alcohol and meat) that has been established as a healthy diet [2].

Average life expectancy of Japan and the Japanese diet

Japan is a country where its people has the longest life expectancy in the world (81.3 years for men and 87.3 years for women in 2017 by the Japanese Ministry of Health, Labour and Welfare). However, Japanese had a life expectancy of only less than 66 years before 1960 in the early post-World War II era. After that, a rapid improvement in population health and life expectancy was achieved by a democratic government the Allied occupation force established [3,4]. What has made Japan healthy is described by dividing the period into three phases: post war–1965, improved hygiene due to public health activities and economic growth; 1965-1980, hypertension control and reduced salt intake due to success in multiple strategies; and 1980-present, maintenance of egalitarian healthcare systems [4]. During these phases, the Japanese diet was changing as the Westernization of the diet. Carbohydrate intake per capita per day steadily decreased from 400 g in the late 1940s to 266 g in 2000. The intake of animal protein and total fat intake increased rapidly until around 1975, and remained at the high level [5].

Figure 1 shows the average life expectancy of Japan and the three other countries from 1990 to 2017 (https://www.globalnote.jp/post-3764.html). Italy and Greece are selected for the Mediterranean diet, and United States is selected for the Western diet Japan adopted. The four countries show increasing life expectancy from 1990 to date. The average life expectancy of Japan is clearly longer than that of the other countries every year, but appears to be approaching a peak as seen in that of United States. It is a concern that the Japanese diet seems to be westernized further to date [6]. Interestingly, it has been demonstrated that the Japanese diet of the year 1975 based on the National Health and Nutrition Survey delayed senescence and prolonged life span, compared with that of the year

1960, 1990 or 2005, in the senescence-accelerated mouse prone 8 mice [7]. The 1975 diet contained a greater variety of ingredients, and was higher in legumes, fruit, seaweed, seafood, seasonings and spices, and lower in juice and sweetened soft drinks, compared with the others. The average life expectancy of Italy is steadily increasing up to 2017, compared with that of Japan. Similarly in the experimental animal model, the 1975 Japanese diet (a low-fat and high-carbohydrate diet) was demonstrated to reduce accumulation of lipids in the white adipose tissue and liver, compared with the 2010 Italian diet (the modern Mediterranean diet, a high-fat and low-carbohydrate diet) [8]. At present, it is expected that resolving metabolic risk factors and smoking could add another three or more years to life expectancy of the Japanese people [4].

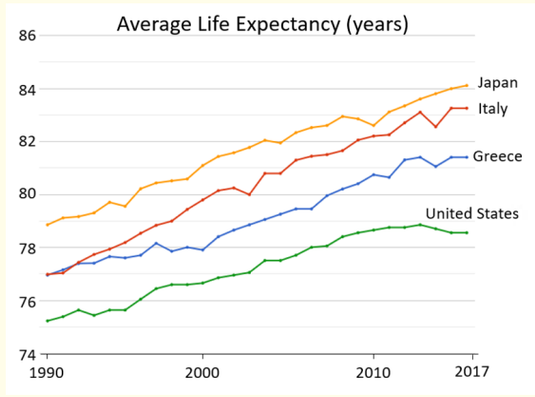

Figure 1: Average life expectancy of selected countries (1990-2017).

Recent clinical studies on the Japanese diet

In addition to politics and law to promote public health [3,4], it is easy to imagine that the intake pattern of dietary nutrients can

Reference	Study	Dietary patterns (components)	Clinical impacts
Ozawa M., *et al.* 2013 [9]	Cohort study (15 years) 1,006 people (60-70 years) in the Hisayama cohort Dietary patterns derived by reduced rank analysis	Dietary pattern 1 (high intake of soybeans and soybean products, vegetables, algae, and milk and dairy products; low intake of rice)	The dietary pattern 1 accounted for 54.3% of the total variance of all responsible variables in food intake. Higher adherence to the dietary pattern 1 was associated with reduced risk of dementia.
Okubo H, *et al.* 2017 [10]	Cross-sectional study 635 community-dwelling people (69-71 years) Dietary patterns derived by factor analysis	Plant foods and fish pattern (high intake of green and other vegetables, soy products, seaweeds, mushrooms, potatoes, fruit, fish and green tea) Rice and miso soup pattern (high intake of rice and miso soup; low intake of bread, fats, oils and ice creams) Animal food pattern (high intake of red meats, processed meats, chicken, shellfish, seafood and seasonings)	The three dietary patterns accounted for 24.9% of the total variance in food intake. The plant foods and fish pattern was associated with a better cognitive score. The other two did not relate to cognitive function.
Kanauchi M., *et al.* 2016 [11]	Cross-sectional study 1,048 employees and students (18-68 years)	Japanese-adapted Mediterranean diet score (0 to 13: daily consumption of grains, vegetables, fruits, legumes, fish and dairy products; weekly-limited consumption of potatoes, poultry, eggs, meat or meat products; less sweets, moderate alcohol and a ratio of 1.5 or more of monounsaturated to saturated fatty acids)	A higher score of Japanese-adapted Mediterranean diet was associated with a lower prevalence of overweight/obesity.
Htun NC, *et al.* 2017 [12]	Cross-sectional study 11,365 people (20-84 years) Japan National Health and Nutrition Survey 2012 Dietary patterns derived by principal component analysis	Traditional Japanese pattern (greater intake of miso, soy sauce, fresh vegetables and fruits, beans and potatoes) Westernized pattern (greater intake of bread, dairy products, butter, margarine and jam; low intake of rice and miso) Meat and fat pattern (high intake of meat, fat, sauce, mayonnaise and wheat products)	The three dietary pattern accounted for 5.8% of the total variance. Traditional Japanese pattern was associated with obesity; westernized pattern was associated with high LDL cholesterol; and meat and fat pattern was associated with obesity, high blood pressure and high LDL cholesterol.
Abe S., *et al.* 2019 [13]	Cohort study (20 years) 14,764 people (40-79 years) in the Ohsaki cohort	Japanese dietary index score (0 to 9: adherence to rice, miso soup, seaweeds, pickles, green and yellow vegetables, fish and green tea; non-adherence to beef and pork, and coffee)	A higher score of Japanese dietary index was associated with a lower risk of mortality and longer survival time. (Less coffee consumption was associated with an increased risk of all-cause mortality.)

Table 1: Recent clinical studies on the Japanese diet in relation to clinical impacts.

contribute to individual healthy longevity. Recent clinical studies on how the Japanese dietary patterns have impacts on health are listed in Table 1. As shown in the reference 9, a partially-westernized Japanese diet with a high intake of milk and dairy products and a low intake of rice had a beneficial effect on risk of dementia [9]. In the reference 10, it is suggested that the plant foods and fish pattern (not including milk and dairy products) had a beneficial effect on cognitive function [10]. The references 11 and 12 demonstrated that metabolic risk factors could be worsened by the modern Japanese diet [11,12].

In the reference 13, using a Japanese dietary index score (9 components: 1 point, more than median for rice, miso soup, seaweeds, pickles, green and yellow vegetables, fish and green tea; 1 point, less than median for beef and pork, and coffee), a higher score that means higher adherence to a Japanese diet was associated with a longer survival time in a 20-year follow-up cohort study [13]. The authors also reported that the Japanese dietary index score was positively associated with disability-free survival time in a 10-year follow-up cohort study (a better association was obtained when assessed without coffee) [14]. This Japanese dietary index score and a similar Japanese diet score are well correlated with nutrient density such as polyunsaturated fatty acids (or less saturated fatty acids), dietary fiber, potassium and vitamin C, but are also correlated with high sodium intake [15,16]. Although salt intake has decreased but still remains high (around 13 g per capita per day) in the modern Japanese diet, it is indicated that all-cause mortality in a general population is not associated with sodium intake but is inversely associated with potassium intake [17]. The Japanese Food Guide Spinning Top has been developed to help people implement the dietary guidelines for Japanese (by Ministry of Health, Labor and Welfare and Ministry of Agriculture, Forestry and Fisheries), and its usefulness has been reported [18-20]. At the same time, adherence to the food guide seems to be not necessarily related to favorable nutrient patterns or blood lipid profiles [21].

Conclusion

Both the Japanese and Mediterranean diets are known to be healthy, but their modern diets are inferred to promote obesity and worsen metabolic risk factors. It is a concern that the Japanese diet seems to be westernized further to date. Before the average life expectancy reaches a peak prematurely in Japan, the Japanese diet should be going to be an optimal diet for people's healthy longevity.

Conflict of Interest

The author has indicated no potential conflict of interest.

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