

Changing Dietary Pattern, Food Security And The Role Of Rice In Japan

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Abstract

Japan has one of the highest life-expectancy rates in the world. The traditional Japanese food and diet is primarily responsible for the good health of Japan's population. However, the dietary patterns of the Japanese have witnessed a considerable change in recent decades. There is a shift from a traditional diet to a westernized diet that is having an adverse impact on the health and nutritional well-being of the Japanese and the food security of the nation. The present study looks at the traditional Japanese diet, especially the role of rice as the mainstay of health and nutrition. The study explains how rice plays a pivotal role in supplying the much-needed calorie suggested by the Japanese government and maintaining its overall food security levels.

Keywords: *Food security, Rice, Nutrition, Changing Dietary Patterns*

I Introduction

Food security is closely linked with the dietary pattern, nutrition, and calorie intake. A healthy diet filled with nutrition can not only ensure the physical well-being of people but also increase overall human productivity. To this end, a nation needs to ensure food security for all. Food security was described in the 1996 World Food Summit as a state "when all individuals have access to adequate, safe, nutritional food at all times to support a physically active lifestyle." It also encompasses both physical and financial availability of food that fits people's nutritional needs and their food choices. The traditional national cuisine can play a vital role in realizing the goals of food security and food self-sufficiency. Being heavy in grains and vegetables, with modest amounts of animal products and soy, and limited dairy and fruit, the Japanese cuisine is regarded as one of the healthiest cuisines in the world. Japan has historically occupied a high status concerning its food and diet's health and nutrition quotient. As per a 2019 World Health Organization research, Japan routinely has the world's greatest longevity for men and women, with nutrition playing a pivotal role. The Japanese diet has played an essential role in lowering the danger of cardiovascular disease and stroke, and the Japanese have the least obesity rate among men and women (Kurotani et al., 2016). However, there is a discernible change in the dietary pattern of the Japanese. The most significant dietary shift is taking place in the move from rice to other grains and products. In the Japanese diet, rice has long

been a staple food that has provided food security in Japan while improving people's health and lifespan. The changes in the dietary patterns of Japan are thus an alarming concern for the future of Japanese people's health and nutrition, as well as for Japan's overall food safety.

In this context, it is pertinent to examine the dietary pattern and the changes in the dietary pattern that seem to threaten the overall food security of Japan. The present study revolves around the changing dietary patterns and looks at the role of rice in providing food sustainability for a heavily import-dependent nation of Japan. The paper is divided into three sections. The first section details the food production system in Japan by looking into the land use and agricultural cultivation that contributes to food self-sufficiency. The second section gives an account of the changing dietary patterns. It reveals the reasons contributing to a shift from the traditional diet in Japan that harms the Japanese's food and nutrition well-being. The third section delves into the critical role of rice in health and nutrition that has traditionally been the mainstay of the traditional diet in Japan and calls for the bolstering of rice production and consumption to accomplish food security. This paper focuses on these various aspects and how Japan's overall food security hinges on the importance of rice as among all other crops.

II Food Production and Consumption in Japan

The food production and consumption systems are intrinsic to the food security of a nation. Three pillars build the Food security of nations: Firstly, food supply refers to the availability of adequate amounts of foodstuff regularly. Food self-sufficiency measures the food security level of a nation based on domestic supply. Second, food availability refers to having enough means to purchase adequate foods for a healthy diet. Third, food usage entails proper use based on fundamental awareness about nourishment and health and sufficient sanitation and hygiene. Thus, the domestic agriculture sector plays an essential role in fulfilling the food security needs of Japan.

Japan is a small island nation. Due to the substantial mountainous cover, only 30 percent of the land remains for urban use and agriculture (Gilmour & Gurung, 2007). The share of agriculture in the Japanese economy is minuscule. It was 1.6 percent in 1995, which further went down to 1.2 percent in 2011 and reached 1.01 percent in 2019. Likewise, the share of agriculture in employment was 5.2 percent which also declined to around 3.4 percent in 2011 and 3.35 percent in 2020. Due to the limited land for cultivation, domestic food production alone cannot meet the people's food demands. Therefore, with a population of about 127 million, Japan is a major importer of agricultural products. In Japan, the area under cultivation is mostly for rice, wheat, and barley. Other important food crops such as wheat and soybean, fruits, tea, sugarcane, vegetables, and flowers grow in different agricultural regions in Japan. Fishing or aquaculture is another primary source of food for Japan, and it has one of the highest consumption rates of fish. Livestock rearing is also a massive market with the rising demands for meat and poultry products.

Presently, agriculture in Japan is symbolic of the part-time farmers who grow rice and earn their primary income from non-farm sectors. The core of agricultural structure in Japan is a continuity of

practices from the historical times, and it is rice cultivation that predominates the farming practices. Farmers in Japan are defined according to the size of the land they cultivate and the income from farming. This categorization of farmers helps in understanding the agricultural sector in Japan, its contribution, challenges, limitations, and role in fulfilling Japan's food security needs.

The MAFF classifies the farm household into two categories. 1) Commercial and 2) Non-commercial farm households. There has been a reduction in commercial farm households in the from 2.97 million in 1990 to 1.04 million in 2020. The business farm households produce only 38 percent of the rice as the primary income is from vegetables and livestock. With their primary income from non-farm sectors, the majority of the part-time farmers do not focus on improving their productivity or investing in their farms. Some part-time farmers cultivate their land keeping to family traditions, and for some others, rice is cheaper from their fields than purchasing it from the supermarket. Consequently, the decline in the number of full-time farmers adds to the overall problem of food security and food self-sufficiency. Part-time farmers cannot increase food production to the required level. Most of them grow rice for family consumption, which does not necessarily contribute to Japan's overall food self-sufficiency needs.

Table 1. Rice production volume in Japan 2010-2019

Year	Production Volume (Million Tons)
2010	8.48
2011	8.40
2012	8.52
2013	8.61
2014	8.44
2015	7.99
2016	8.04
2017	7.82
2018	7.78
2019	7.76

Source: Statistical Yearbook of Japan, 2020

While there is a self-sufficiency in rice production in Japan so far, the trend indicating a decline in the volume of rice production is alarming for the food security of Japan. This is symptomatic of the changes in the dietary patterns of the new generation Japanese.

III Changing Dietary Patterns and Impact on Food and Nutrition

With the fast-changing world and the increasingly interconnected lives of people, there has been a need to “*safeguard agricultural and culinary traditions, encourage domestic or local food*”

economies, and avert negative developments related to food and agriculture globalization.” (Maurice, 2017). Japan is the third primary market for American consumption foods after Canada and Mexico. Exports of consumption ready meals in the United States were US\$6.3 billion in 2020, down only 1% from 2019. With a total value of US\$2.5 billion in 2020, Japan is also the third biggest export market for packaged products in the United States, down 7% from the preceding year. Treated Greens & Pulses; Ready Seafood; Confectionaries & Components; Packaged Milk Products; Alcoholic Drinks; Crafted Meats; Non-Alcoholic Liquors; Canned, Dried & Frozen Fruit were among the top processed foods supplied to Japan in 2020. (Food Export Association of Midwest USA, 2020)

Washoku is a meal pattern that consists of soup, rice, and three other servings of food dishes that consist of animal-derived fats but are low in fat content. To cook a traditional Japanese meal thus requires "dashi, a soup stock most often made from kombu kelp and katsuobushi (dry-smoked bonito). Dashi is not served on its own, but serves as the base for soups (including miso soup), boiled vegetable and fish dishes, and even Japanese-style omelets.” The health benefits and general quality of Japanese food, particularly the traditional cuisine of seafood, veggies, fermented meals, and grains, to name a few, have an astounding array of fresh and healthful foods. (Barrett and Notaras, 2012).

In Japan, the change in dietary patterns is taking place due to a decline in traditional Japanese food, known as Washoku. There have been several studies that have highlighted this as a crisis for the traditional Japanese diet. Many scholars and food activists have perceived this decline in households preparing washoku as a threat to the food security of Japan (Valaskivi, 2013; Kim, 2015; Rath, 2016). With the concerted efforts of the researchers, food experts, chefs, and government officials, November 24th has been promoted as *Washoku no Hi* (Washoku Day). This move is quite suggestive of the impact of changes in traditional foodways on Japanese food tradition. According to the MAFF, an increase in the intake of animal livestock and processed food has caused adverse effects on the younger generation's health. Obesity, hyperlipidemia, diabetes mellitus, and some forms of cancer are all risks associated with this eating trend. A host of specific reasons have contributed to the change in dietary patterns in Japan away from the traditional diet.

Cultural Influence on Western Diet

Western food has had a massive influence, especially in the fast-food domain, on Japanese food consumption. Several food products sold by Western MNCs have been able to spread and corner a sizable proportion of the Japanese market. As of 2017, McDonald’s operates about 3000 outlets, KFC has a considerable presence in Japanese Christmas celebrations, and Starbucks has opened more than a thousand cafes (Maurice, 2017). As per Reiko Ogata, director-general of Dentsu's Solution Intelligence Center's worldwide marketing section, "Coca Cola, McDonald's, and multinationals are the ones that have the most dominant advertising expenditure these days.....Coke especially has used its position as the official sponsor of the Olympic torch relay to heavily promote its awareness in Japan in the lead-up to the postponement of the Games.”

(Sawatzky, 2020). Global food companies have used digital marketing and mass campaigns in media to rise in the Japanese market, even nibbling away the small Japanese brands. Their capacity to create and sell at a lower cost due to economies of scale also operates in their favour.

Growth of Imported Food Products in Convenient Stores

With the increasing presence of Western food giants and western cultural influence, there has been an influx of western food products in convenience stores. Supermarkets have a wide variety of imported ready-to-eat or frozen and canned food items that provide the ordinary consumer a plethora of choices for an easy meal. For example, Nestle sells its standard instant coffee, pet food, and even KitKat with Japanese flavors of cantaloupe and green tea. However, the consumption of these foods has been resulting in long-term adverse health effects, as reflected in the rise in the prevalence of obesity and diabetes (Kanazawa et al., 2002). Apart from health concerns, these changes in food consumption pattern away from home-cooked traditional meals signals a more profound shift in the palates of the Japanese people and the norms and values that govern consumption preferences. Japanese have become aware and accustomed to different tastes, which are new and foreign and come from varied cuisines globally, ranging from Mexican, Moroccan, Indian, and Turkish to Thai and Italian.

Changes in Family Structure and Household Size

A constant spike in the size of single-person homes is indicative of the change. In Japan, the median number of persons per private family has steadily decreased from 3.41 in 1970 to 2.27 in 2020. The growth in small households and solo-person homes is primarily responsible for this declining trend. (Statistics Bureau Japan). Relationship breakdown, separation, second marriage, out-of-wedlock childbearing, and dual-earner households have transformed the family structure. Food choices, dietary behaviors, and food intake are all influenced by family, which is a distal or closest correlated food environment. (Dale and Smith, 2006). Late dinners have become a common phenomenon. Scholars have examined the impact of family commensality or eating of meals together with family on health outcomes and healthy eating and the reduced size of households with an increased prevalence of ill-health (Turagabeci et al., 2007).

A decline in Rice Consumption

As the most important food crop and staple food, annual rice consumption in Japan used to be 12 million tons, but it came down to about 8 million tons. Today the diet is becoming increasingly westernized, and the total amount of rice consumption has been falling since the 1970s. The annual per capita consumption of rice declined from 120 kgs in the 1960s to 62 kgs (Kuniko, 2009). According to the Ministry of Agriculture, in 2022, rice output is expected to slip below 7 million tons for the first time, with 6.92 million tons projected. With changing dietary preferences, rice consumption has fallen sharply compared to other foods like dairy and meat products. Additionally,

between 1962 and 2016, fats and oils usage increased 2.7-fold from 5.3 to 14.2 kilograms, meat intake increased 4.2-fold from 7.6 to 31.6 kilos, and milk and milk products usage increased 3.2-fold from 28.4 to 91.3 kilograms.

Use of Grains other than Rice in Childhood Diet

Exposure to nutrition in childhood, both at home and school, substantially impacts children 's early tastes and consuming behaviors by making certain foodstuffs accessible and serving as positive examples for eating patterns. Due to work-related demands, making a quality home-cooked dinner from the base is frequently challenging in dual-earner homes. The Japanese eating pattern has a middle-ground nature. It falls between Asian nations, which eat more grains, and European and American countries, which eat much meat, milk, milk products, and fats. It is notable for its high egg and fisheries product consumption. The current trend in the ratio by nutritional calories reveals a drop in carbohydrate ratio and a rise in fat ratio. It comes nearer to the eating habits of Europeans and Americans (MAFF 2001).

Increased Intake of Meat and Meat Products

The Japanese's food diversification basket of food consumption from 1950 to 2010 reflects the shift from rice to consuming more meat and meat products. A high level of oil consumption shows a high intake of fried foods. These goods and by-products have raised the import level of the food as they are not available through domestic production (MAFF, Food Balance Sheet). Although the fetish with meat consumption began with an increase in beef consumption in the 1990s, the type of meat preference has subsequently changed from beef to pork and chicken over the decades. OECD and UN FAO have estimated that the consumption of pork meat in Japan will register a per capita increase of 2.8 percent by 2024. Studies have established the correlation between a heavy meat intake and fatality from all causes and fatality from heart disease, particularly among Japanese males (Saito et al., 2020).

Table 2. Change in Dietary Patterns (1995-2018)

Food Consumption Per Capita (Kg), 2010-2018							
	1995	2000	2005	2010	2015	2017	2018
Rice	67.8	64.6	61.4	59.5	54.6	54.1	53.5
Wheat	32.8	32.6	31.7	32.7	32.8	33.1	32.2
Potatoes	16.0	16.2	14.8	14.8	15.7	17.4	15.9
Pulses	8.8	9.0	9.3	8.4	8.5	8.7	8.8
Vegetables	106.2	102.4	96.3	88.1	90.7	90.0	90.3
Fruits	42.2	41.5	43.1	36.6	34.9	34.2	35.5
Meat	28.5	28.8	28.5	29.1	30.7	32.7	33.3
Chicken Eggs	28.5	28.8	28.5	16.5	16.9	17.4	17.4

Cow Milk and Milk Products	91.2	94.2	91.8	86.4	91.1	93.4	95.2
Fishes and Shellfishes	39.3	37.2	34.6	29.4	25.7	24.4	23.7
Sugar	21.2	20.2	19.9	18.9	18.5	18.3	18.1
Oils and Fats	14.6	15.1	14.6	13.5	14.2	14.1	14.1
Soy Sauce	9.0	8.2	7.2	6.5	5.9	5.7	5.6

(Source: Data obtained by the author from the Statistics Bureau of Japan from various years)

IV Role of Rice in Food Security of Japan

In Japanese culture, rice occupies a deep significance in terms of historical traditions and social life. It is a mark of providence, blessing and joy for the Japanese. As the most important crop, the cultivation of rice in Japan has been one of the essential means to feed and sustain the population through ages. Rice has a major role to play in sustaining the domestic production for domestic consumption and national food security. A number of reasons point towards the significant role of rice in Japanese food adequacy and nutritional well-being.

To begin with, rice has been the mainstay of the Japanese diet and nutritional intake. Of all the varied varieties of rice present, the Japonica is the preferred variety grown and eaten in Japan. Delicate taste, subtle smell, and rich moistness characterize Japonica rice. Refined rice is virtually entirely starch once the outermost part of bran is removed, making it easier to digest. Rice's nutrient elements are essential for maintaining a wholesome Japanese diet. The carbohydrate is the most crucial component, but it also has a decent mix of proteins, iron, vitamin supplements B1 and E, and nutritional fiber. This self-contained balance of rice and the meals it makes up is one of the signature points of Japanese food.

In terms of health and nutrition, a rice-centered cuisine has been linked to positive health outcomes in Japan. Researchers from Hokkaido University and Tenshi College undertook a continuous assessment of Japanese rice-based cuisine and its influence on physical and mental health. Their findings revealed links between rice intake and higher quality of life (vitality) and sleep quality. The most effective diet for avoiding cognitive deterioration was rice with miso soup (Koga, 2017). With regard to long-term health benefits, the direct influence of rice consumption is more significant than its indirect influence. Consumption of rice and miso combined may be highly beneficial to one's health. The Japanese Food Spinning Top, which is guidance for a balanced diet for the Japanese, includes both rice and miso as top components. As a result, the government has advised raising awareness and encouraging individuals to make healthier choices involving an increased intake of rice.

Most importantly, Japan is a major rice producing nation. Between 2016-21, the annual average rice production in Japan has been 7.711 thousand tonnes and is ranked tenth in the world. The significant agricultural activity, paddy cultivation, is carried out both as double cropping and a single crop. Japan's temperate marine climate is conducive to growing rice with long spells of the

rainy season. Rice is sown twice: first in early summer when the southwest rainfall begins to fall, and again in October, when the gusts have died down. Rice planting season begins with the summer rainfall. The warmer regions of the main islands of Honshu, Kyushu, and Shikoku are conducive to growing rice. Currently, the northeastern part of Japan, the Tohoku region, produces the best variety of rice (Statistical Handbook, 2014). Therefore, a steady rice production volume is very important for domestic consumption needs and for the food security in the medium to long term.

The Japanese government has persistently subsidized and incentivized rice production in Japan, mainly carried out by small farm households (Hayami and Godo, 1997). A high domestic consumer demand for rice can easily be met by domestic production. However, with the change in diet preferences and the diversification in staple grain intake, there is a supply and demand mismatch in rice production and consumption. At times, rice output exceeds the demand and calls for export of surplus rice. In addition to this, international trading agreements mandate import of rice to a certain quota (Fukuda et. al., 2003). Thus, the overall food security of Japan is being disturbed owing to a shift from rice consumption to other grains. Thus, it is all the more important for Japan to make rice an integral component of Japanese diet and cease the changes in dietary preferences towards unhealthy choices.

V Conclusion

Since Japan is a leading importer of agricultural products, food security is a critical concern for the island nation. Food security is also linked to the dietary patterns and the composition of food consumption. In Japan, the changes in dietary intake away from traditionally home-grown rice to other grains as well as the influence of western food has not only affected the health and nutrition of the Japanese but also poses a threat to national food security.

Rice can play a pivotal role in food self-adequacy and nutritional wellbeing of Japanese population as it still forms the base of the Japanese diet. Though consumption has remarkably declined and has reflected a negative effect on the general populace, its place on the table still holds up. The Japanese government has implemented several recommendations to improve consumption to maintain a steady level of food self-sufficiency levels. To improve the food self-adequacy proportion and possibilities, domestic rice market bases must be strengthened by cultivating and safeguarding business farmers, integrating and amplifying farmland, increasing the intake of domestic farm commodities, and strengthening connections around crop production and the food sector, among other things. In general, there is a need to rejigger the Japanese farming sector and also create policy nudges for the population to switch to healthier options including the highly nutritious japonica rice in everyday food consumption. More research is needed to frame innovative sustainable policies for the production, distribution and marketing of food items.

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