

## Abstract

### Lifestyle factors that link to overweight and food choice.

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In Japan, as a super-aging society, extending healthy life expectancy has been recognized to be important. To realize that, it is necessary to decrease health gaps among individuals and to improve the factors that might attribute to individual's health.

Many non-communicable diseases (NCDs) have huge effects on both life expectancy and healthy life expectancy of Japanese people. The onset and progression of these diseases are strongly linking to individuals' lifestyles. Although lifestyles likely depend on individuals' habits, they might be also affected by the environment. Therefore, it is needed to explore the environmental factors that are associated with our health.

Eating habits are one of lifestyle factors that are closely related to our health conditions. And socio-economic factors, such as income, education and occupation status have recently become recognized to be important environmental factors affecting eating habits. However, which socio-economic factor is associated with 'healthy' eating habits is not fully examined in Japanese population. Eating out is an environmental factor that also affects individuals' eating habits, and is known as a risk factor for obesity because of the large portion size and high energy dense of the meals served away from home. However, the association between the frequency of eating out and overweight still remains unclear in Japanese people.

In this study, we cross-sectionally examined 1) whether socioeconomic factors affects body mass index, or the intakes of vegetables and fruits, that is often used as an index of 'healthy food choices', , and 2) whether frequency of eating out affects individuals' food choice and body mass index, in 5000 Japanese participants.

#### 1) The association between socioeconomic difference and vegetables and fruits, and overweight

In the current study, we examined whether higher socioeconomic status was associated with overweight. In addition, the association between socioeconomic factors and higher intake of vegetables and fruits was also examined. As the results, lower household income and education level were independently associated with overweight in women, while only lower education level was associated with overweight in men. In men, higher household income, higher education level, current employment status and living with family were independently associated with higher vegetable intake. The fruits intake was not associated with any socioeconomic difference. On the other hand, in Japanese women, current employment was significantly associated with lower vegetable and fruits intake. From these results, it is suggested that socioeconomic factors that affect

food choice and body weight might be different between men and women. Therefore dietary intervention for NCDs or overweight should be done in consideration of the individual's socioeconomic status. Especially in women, worksite-based intervention might be needed because occupation could be a barrier to a healthy diet.

## 2) The association between eating out and overweight or dietary intake

Eating out is a kind of dietary habits that depends on environment factors. In this study, we examined whether high frequency of eating out at evening is associated with overweight. Moreover, dietary intakes were compared among the groups categorized by the frequency of eating out. The results showed that frequent eating out was associated with overweight in women. On the other hand, in men, no significant association was seen between frequency of eating out and overweight. Regarding to the dietary intakes, vegetables, mushrooms and seaweeds intakes were lower in the group with high frequency of eating out in women. From these results, the effect of eating out on food choice or on overweight could be stronger in women than in men.