Monitoring Obesity Trends in Health Japan 21

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Summary  Prevention of non-communicable diseases is more important than ever especially for the elderly to live a healthy life in the super-aged society of Japan. In 2000, the Ministry of Health, Labor and Welfare of Japan started Health Japan 21 as goal-oriented health promotion plan like Healthy People in the US and the Health of the Nation in the UK. Its second term started in 2013 with the aim of prolonging healthy life expectancy and reducing health inequalities. Improvement in both individuals’ lifestyle and their social environment will help achieve the goal of the 2nd Health Japan 21. The National Health and Nutrition Survey (NHNS) is conducted every year to monitor the health and nutritional situation of the Japanese using a representative population. The NHNS data are useful for target setting and evaluation of the 2nd Health Japan 21, and the NHNS has shown an increasing trend of overweight (BMI≥25) only for male adults in the most recent 10 y. In contrast, the dietary intake survey of the NHNS shows a decreasing trend of total energy intake both in male and female adults aged 69 y old or younger, and the trend for physical activity is not well known. Thus, we need further investigations on the causes of the obesity trend in Japan.

Key Words  Health Japan 21, National Health and Nutrition Survey

The Health Japan 21 and Trends of Overweight in the NHNS

The Health Japan 21 and its second term have employed three indicators for the target item of “increase in the number of people maintaining a desirable body weight”: overweight (BMI≥25) in men aged 20 to 69 y old, overweight in women aged 40 to 69 y old and underweight (BMI<18.5) in women aged 20 to 29 y old. The percentage of overweight in men aged 20 to 69 y old is steadily increasing, whereas the percentage of overweight in women aged 40 to 69 y old is gradually decreasing (Fig. 1) (3). The percentage of underweight in women aged 20 to 29 y old has not changed substantially.

Target values for three indicators on overweight and underweight in the Health Japan 21 and results of the NHNS are summarized in Table 1. The National Nutrition Survey (NNS) was replaced with the NHNS in 2003 and the results of the NNS in 1997 were adopted as baseline data for Health Japan 21. Target values of the Health Japan 21 were set in 2000, and they were used for the final evaluation of Health Japan 21 in comparison of the results of the NNS in 1997 and the NHNS in 2009. As described above, the percentage of overweight in men aged 20 to 69 y old increased, whereas the percentage of overweight in women aged 40 to 69 y old decreased. The percentage of underweight in women aged 20 to 29 y old remained roughly the same. Thus, none of the indicators achieved the target, and the final evaluation of this target fell into the category of C for “not changed” (1).

Following the final evaluation of Health Japan 21, targets for the second term of Health Japan 21 were developed and the same three indicators were employed.
A close Look at the Trends of Overweight in Japan

In the percentages of overweight by age group in the NHNS in 2011 (3), sex difference was observed in the age group with the highest percentage of overweight: men aged 40 to 49 y old and women aged 70 to 79 y old. Thus, the older the women were, the higher the percentage of overweight.

Trends of overweight by age group are shown for men (Fig. 2-1) and for women (Fig. 2-2), separately (4). In men, an increasing trend was observed in all age groups, and the trends were all statistically significant ($p < 0.001$). For men aged 30 y or older, a 10 percentage point increase on average was observed from 1980 to 2012. For men aged 20 to 29 y old, the trend was increasing from 1980 to 2012 ($p < 0.001$), but it has become flat since 1990. For women aged 20 to 29 and 30 to 39 y old, the trends were unchanged. For women aged 40 to 49 ($p < 0.001$), 50 to 59 ($p < 0.001$), and 60 to 69 ($p = 0.03$), slow but statistically significant increasing trends were observed. For women aged 70 y or older, the trend was increasing from 1980 to 2012 ($p = 0.001$), but it has been decreasing since 2000 ($p = 0.01$).

Funatogawa et al. analyzed the data of the NNS and the NHNS to examine the effect of birth cohort on the trends of BMI (5). In the age-cohort model, a steep rise of BMI from age group of 20 to 29 y old to age group of 30 to 39 y old was observed both in men and women. In addition, the highest BMI was observed in the most recent cohort (born between 1971 and 1980) in men and in the birth cohort born between 1931 and 1940 in women. In the age-period model, the highest BMI was observed in the most recent survey between 1996 and 2005 in men but no simple pattern was observed in women due to the interaction between survey year and age group.

Trends of Energy Intake in Japan

Trends of total calorie intake by age group are shown by sex in Figs. 3-1 and 3-2. Decreasing trends were observed in all age groups below 70 both in men and in women. This observation does not coincide with the sex difference in the trends of overweight of BMI described above.

The NHNS has data of the prevalence of exercise habit and step counts as indicators of physical activity. However, these two indicators capture different aspects of physical activity, and they do not show the same trend. So, the trends of physical activity cannot be well described using the data of the NHNS, and hence the trends of overweight are not well explained from the perspective of energy balance.

Conclusions

The percentages of overweight are increasing in men but not in women in all age groups. Total calorie intake is reported to be decreasing in all age groups below 70 y old, and the trends of physical activity are not well described. Further investigations on the causes of obesity trends in Japan are necessary.

REFERENCES


Table 1. Target values for three indicators of “increase in the number of people maintaining a desirable body weight” in Health Japan 21 and results of the National Health and Nutrition Survey.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>NNS 1997</th>
<th>HJ21 Target</th>
<th>NHNS 2009*</th>
<th>NHNS 2010</th>
<th>2nd HJ21 Target (2022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight, men 20–69</td>
<td>24.3%</td>
<td>15%</td>
<td>31.7%</td>
<td>31.2%</td>
<td>28%</td>
</tr>
<tr>
<td>Overweight, women 40–69</td>
<td>25.2%</td>
<td>20%</td>
<td>21.8%</td>
<td>22.2%</td>
<td>19%</td>
</tr>
<tr>
<td>Underweight, women 20–29</td>
<td>23.3%</td>
<td>15%</td>
<td>22.3%</td>
<td>29.0%</td>
<td>20%</td>
</tr>
</tbody>
</table>

* Final evaluation of HJ21: C (Not changed).
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Fig. 2-1. Trends of overweight by age group (men). Overweight (and obese): BMI ≥ 25.

Fig. 2-2. Trends of overweight by age group (women). Overweight (and obese): BMI ≥ 25.

Fig. 3-1. Trends of total calorie intake by sex and age group in the NHNS (men).

Fig. 3-2. Trends of total calorie intake by age group in the NHNS (women).
