Session 5

# Post-2015 Contemporary Issues*1
## —The example of obesity—

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In this presentation, I would like to share with you a view of the health issues in the near future after 2015. What kind of society and what types of problems are going to confront us?

First, I will talk about the Millennium Development Goals, which were mentioned by previous speakers. There are three health-related goals with the target year of 2015. Furthermore, it was agreed at Rio+20 to establish major sustainable development goals that are universally applicable to all countries from 2015 onward. Sustainable development means development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

This slide shows a view of the world we live in today (**Slide 1**). In 2000, the year the Millennium Development Goals were established, we were facing acute problems needing urgent responses: civil wars, famines, debt crisis, north-south disparity, AIDS, etc. Now, 15 years later, while we still have a north-south disparity, we seem to have entered a period where the entire world needs to address more chronic or structured problems such as disparities within countries, youth unemployment, the frequent occurrence of disasters associated with climate change, the aging of society, and chronic diseases.

In that context, here we are looking into obesity, which is a chronic condition. The present situation of obesity in the world is as follows. Of the population aged 20 and older, more than 1.4 billion people are overweight, and of these people, 200 million men and 300 million women are obese. Forty million children aged five and under are overweight. As has been pointed out, this situation is likely to increase the risks for future diabetes, heart disease, and cancer, and may drive the developing world into the problem of the double burden of infectious and chronic diseases.

At present, the prevalence of overweight people, defined as a BMI of 25 or higher, in the US, Australia, and other developed countries has reached 60 to 70%. In low-income countries such as Mexico, South Africa, Fiji, and Brazil are also seeing increases in the percentage of overweight and obese people. We can see that obesity is emerging as a problem imposing a double burden on developing countries and also an issue affecting them in common with developed countries (**Slide 2**).

When did this situation begin? The obese population has increased rapidly since 1980. Today, one out of five people in the world is said to be overweight. This situation has expanded at a much greater speed than the AIDS pandemic (**Slide 3**). We might be in a situation in which the

*1 This article is a revised transcript of the presentation delivered by the author at the Takemi Program 30th Anniversary Symposium, which was held at the JMA Auditorium, Tokyo, on November 23, 2013.
Due to space limitations, not all of the slides shown in the original presentation appear in this article.

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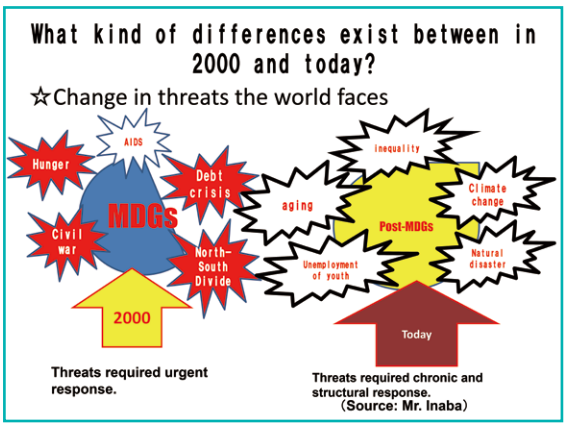
(Slide 1)



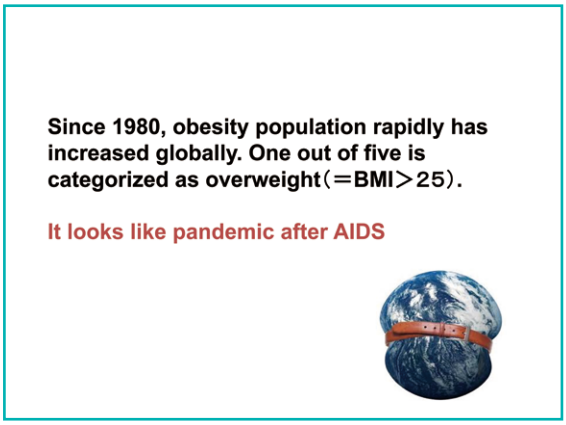

(Slide 2)

| Country | Over weight (BMI≧25(%)) | | Obesity (BMI≧30(%)) | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| India | 10.0 | 12.5 | 1.3 | 2.5 |
| The Philippines | 24.5 | 29.1 | 4.5 | 8.3 |
| China | 25.1 | 24.9 | 4.6 | 6.5 |
| Brazil | 53.5 | 52.0 | 16.5 | 22.1 |
| Fiji | 60.1 | 72.9 | 21.3 | 42.2 |
| South Africa | 62.0 | 73.6 | 23.2 | 42.8 |
| Mexico | 67.8 | 70.3 | 26.7 | 38.4 |

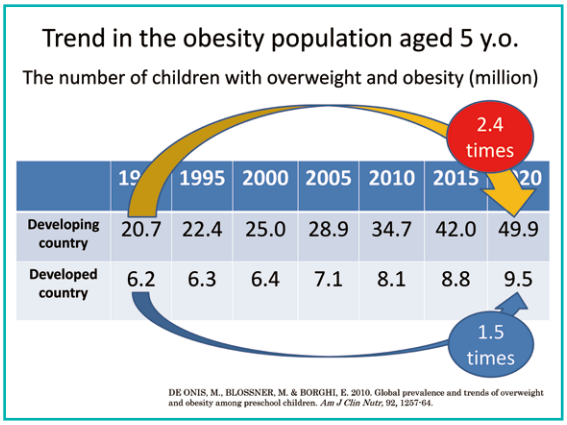
| Country | Overweight (BMI≧25(%)) | | Obesity (BMI≧30(%)) | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| Japan | 25.9 | 15.9 | 5.5 | 3.5 |
| Italy | 58.3 | 40.1 | 19.3 | 14.9 |
| German | 62.8 | 46.6 | 23.1 | 19.2 |
| Australia | 66.5 | 56.2 | 25.2 | 24.9 |
| USA | 72.5 | 66.3 | 30.2 | 33.2 |

Global status report on non communicable diseases, WHO, 2010

(Slide 3)




(Slide 4)




entire world will suffer from obesity. This figure shows the percentage of obese adults against a time axis. You can see that the rate of obesity has increased at an extremely fast pace.

This slide shows calorie consumption by region. In North America and Western Europe, daily energy intake exceeds 3,500 kcal. The world average was 2,800 kcal in 2009, and obesity has increased in this situation. This slide shows per capita GDP and per capita consumption. As per capita nominal GDP goes up, so does energy intake. Accordingly, there are obese people in developed countries. Obesity has also been increasing even in countries with low per capita consumption. Despite low energy intake in the national average, an increasing number of people are consuming a lot of calories. This means that some people are consuming few calories.

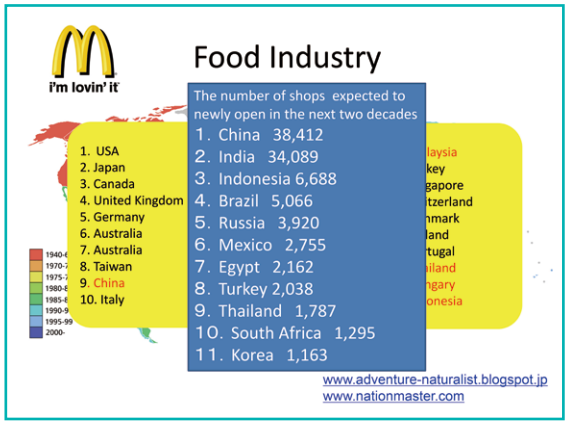
Looking at obesity and income disparity, this slide shows the result that obesity increases as economic disparities grow.

The world seen from this perspective may be paradoxical in a sense. While 2.4 billion people (34%) are overweight, one billion people in the world are starving. The two opposite conditions exist side-by-side within the same world, within a region, and within a country. This is the reality of the world today.

The results of a study on homeless people in Boston in the US showed that one in three falls under the category of clinical obesity. It wasn't very long ago that being thin indicated malnutrition, but it has been pointed out that nowadays obesity could be disguised malnutrition.

This figure shows the trends in the obese population aged 0-5. The childhood obesity pop-

(Slide 5)




ulation in developing countries stood at about 20 million in 1990, grew to 35 million in 2010, and is estimated to approach 50 million in 2020 (**Slide 4**). Childhood obesity is a cause of adult obesity and maternal obesity is a cause of childhood obesity. Moreover, childhood obesity has a long-term impact lasting into future generations. If obesity is a cause of many chronic diseases, we may be holding a time bomb that could result in a dramatic increase in health problems in the future.

Meanwhile, globalization has brought about many changes. This slide shows the global distribution of McDonald's restaurants. The highest numbers of outlets are in developed countries, with the US in the top place and Japan in second followed by Canada, the UK, and Germany. However, if we take into account McDonald's prospects of future expansion potential over the next 20 years, we get a list including developing countries: China could easily accommodate 38,000 economically viable outlets while India could have about 34,000 (**Slide 5**).

This slide shows obesity and fat accumulation within that context. Interestingly, it has been pointed out that the metabolic changes triggered by obesity closely resemble the changes in energy metabolism occurring in hibernating animals. The adaptive changes occurring in obesity-prone people are considered to have evolved from the adaptive process that would enable us to endure long periods of food shortage. However, in this age of plenty, it is highly likely that this has become a maladaptation, what is technically known as the mismatch paradigm. The world today may have this kind of complicated health problem.

Obesity has been around since the distant past. As a rare phenomenon, obesity is thought to have been a symbol of beauty and wealth, as exemplified by the Venus statue from a site in Germany that is over 20,000 years old, and a portrait of Daniel Lambert of England depicting a person who might be the fattest individual known at that time. So, these symbolized beauty and wealth.

Keeping that situation in mind, lastly I would like to give you some near-future issues indicated by obesity. The world has been seeing a rapid increase in obesity since 1980. At present, between one and 1.3 billion people fit the definition of obesity. This appears to be the next pandemic following on from AIDS. There are clusters in the distribution of obesity like those seen with infectious diseases. Assuming there is a cultural infection factor, we might be able to apply infection epidemiological and mathematical models that we have cultivated in the area of infectious diseases. In America, obesity has increased rapidly since 1980. There are 12 million Americans with a BMI over 40. There are said to be about one million Americans with a BMI over 70. Sixty-three percent of adult women are overweight and a half of this group are said to be obese. However, these percentages are leveling out. Does this mean we have reached saturation of obesity in the modern environment? What will happen in Japan in the future? How will obesity spread in the world? We need to address these issues. Meanwhile, in the South Pacific, obesity and type II diabetes affects 70% and 40% of people, respectively. What should we think about this problem? It has been pointed out that the people in Tibet and other high-lying lands who are adapted to higher altitudes are more likely to have a greater risk for obesity and diabetes. This may be explained by the possible involvement of thrifty genes or as an example of past adaptation turning into modern maladaptation. On the other hand, gut peptides that suppress eating and influence obesity have an antibacterial effect, and the relationship between obesity and infectious disease has been gathering attention recently. How should we approach these problems? Finally, here is something to consider that may be a little more fundamental. Human babies have the highest amount of body

fat among mammals, and some authors consider this a necessary adaptation to support our large brains. This abundance of adipose tissues has an effect on the immune system and has been suggested to have a protective effect against infection. Is adapting to obesity in the future the direction in which humanity should evolve? The time has come for us to confront these issues.

**Comment**

Keiji TAKEMURA[2]

Actually, I brought here is a book written by Dr. Yamamoto, a paperback book entitled Infectious Diseases and Civilization published by Iwanami Shoten. His previous book treated new-type influenza, and I expect that his next book from Iwanami will cover the topic of this speech.

What are our future prospects when faced with the obesity problem? Genetically modified foods such as wheat and cornstarch are being imported into Japan. There is a cornstarch plant in Nara. When I visited it on an industrial health tour, I asked whether the corn they were using was genetically modified, but they did not answer, claiming that it was a trade secret. When we were children, there was a school break during the rice-planting season. Children of rice farming families helped to plant rice from the time they were in kindergarten and elementary school. Even children of non-farming families were told to help with cleaning the house, and so they too worked hard, moving their bodies a lot. Food supply was basically insufficient up until about 1965 or 1975, but nowadays, high energy intake has become a major problem due to various factors. The government, educators, and we who are engaged in healthcare now have to do our best to address this problem.

Masao Fukasawa, who would become the mayor of Sawauchi Village in Iwate Prefecture, moved to Taiwan with his wife. She died there, and he later returned to Japan, leaving his children behind. Considering he had to do something for his home village, he campaigned for and achieved zero infant mortality in Sawauchi Village. Doctors are important, but it is the role of local medical associations to enlist everybody, including public health nurses, all residents, rice sellers, confectionery shops, etc. so that all these people work together to build a healthy community. I am always saying this at the Rotary Club meeting, but I can never seem to find common ground with businessmen. Nevertheless, I want to keep pushing forward and addressing the problems of today and the future.

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