

Topics: Recent topics in public health in Japan 2022

< Review >

Sustainable development goals for non-communicable diseases in Japan:
Current issues and challengesKODAMA Tomoko¹⁾, YOKOYAMA Tetsuji²⁾, MIURA Hiroko³⁾¹⁾Department of International Health and Collaboration, National Institute of Public Health, Japan²⁾Department of Health Promotion, National Institute of Public Health, Japan³⁾Division of Disease Control and Epidemiology, School of Dentistry, Health Sciences University of Hokkaido**Abstract**

The UN Sustainable Development Goal 3 (SDG3) states to reduce by one third premature mortality from non-communicable diseases (NCD) through prevention and treatment and promote mental health and well-being by 2030. In addition, NCD control has become an important area in the Universal Health Coverage (UHC), including diabetes, hypertension, cardiovascular diseases and cerebrovascular diseases. This article outlines the national situation and challenges in non-communicable diseases in line with global trends.

keywords: Sustainable Development Goals, non-communicable diseases, universal health coverage

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I. Introduction

The Sustainable Development Goals (SDGs), adopted in September 2015, are international goals that aim to create a sustainable and better world by 2030. The SDGs consist of 17 goals and 169 targets, and aim to “leave no one behind” [1]. The UN Sustainable Development Goals (SDGs) set out in SDG 3 Health Indicators to reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being by 2030 [2]. The indicators for monitoring are Mortality rates attributed to cardiovascular disease, cancer, diabetes and chronic respiratory disease (3.4.1) and Suicide mortality rate (3.4.2). Also, in SDG 3.8.1: for achieving Universal health coverage, three NCD-related indicators, such as unraised blood pressure, fasting blood plasma glucose, and tobacco non-smoking are included among the 14 tracking indicators for Service Coverage Index [3].

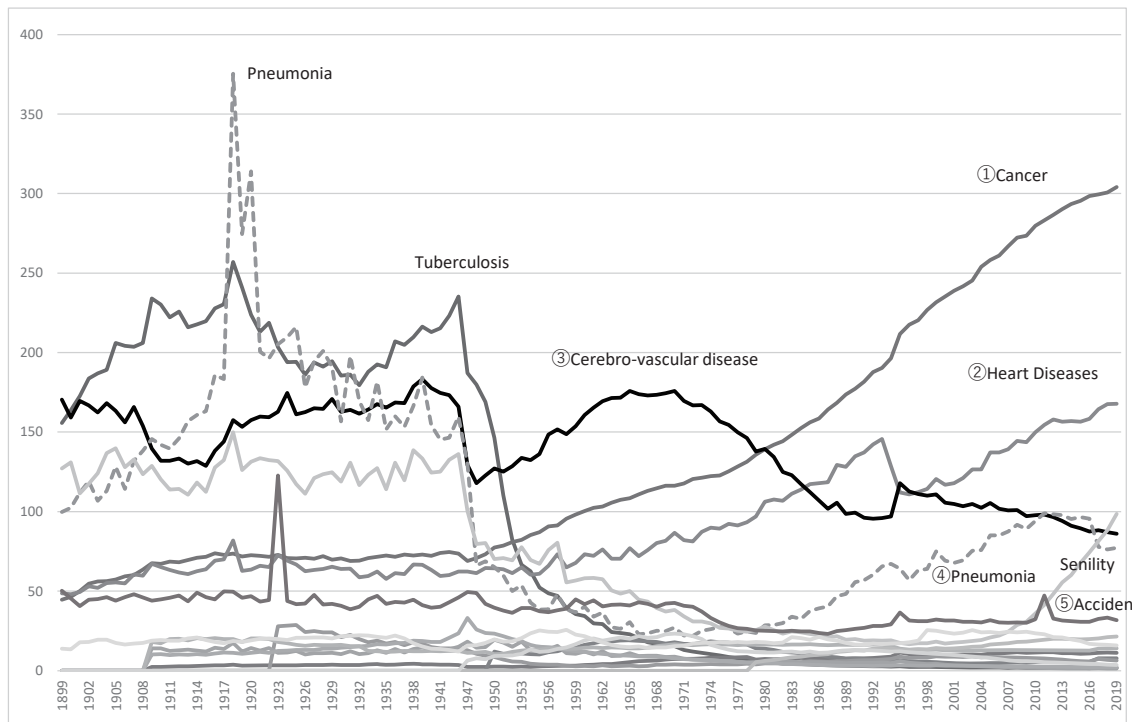
NCD control in Japan can be traced back to the implementation of the Nutrition Improvement Law in 1952 [4]. At that time, the main focus was on improving nutrition

and preventing disease among the post-war population; in early 1960s, it was pointed out that mortality rates for stroke, cancer and heart disease increased after the age of 40. Those were considered to be related to lifestyle, then it was officially called “lifestyle-related diseases” for cancer, heart disease, stroke and diabetes [5]. For those diseases, the target was set by the national health promotion campaign “Health Japan 21” launched in 2000. Since 2013, the second term of “Health Japan 21” has set 53 targets in five areas, including prevention of lifestyle-related diseases and maintenance and improvement of social life functions, with the ultimate goal of extending healthy life expectancy and reducing health disparities [6]. In this article, we describe the recent status and challenges of NCDs in Japan, referring to the UN SDGs.

II. Main causes of death in Japan

Figure 1 shows the causes of death in Japan. In the early 1900s, pneumonia and tuberculosis were the leading causes. In particular, pneumonia, which peaked in 1918, is known to

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Source: reference[7]

Figure 1 Long-term changes in causes-specific mortality rate in Japan (per 100,000 population)

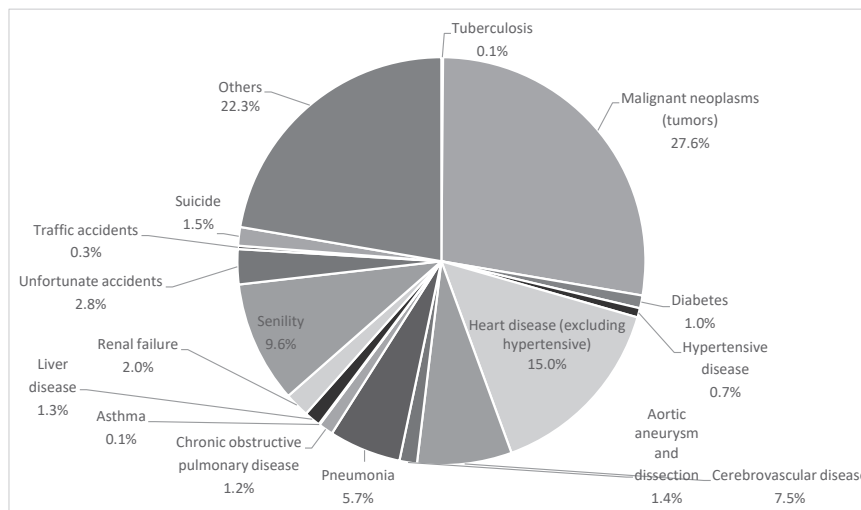


Figure 2 The causes of death in Japan from vital statistics 2020

have been caused by the Spanish flu, which spread throughout the world [7]. Deaths from cerebrovascular disease (stroke) were the third most common cause of death at that time. After the World War II, cerebrovascular disease became the most common cause of death from 1950 onwards, however, cancer (classified as “malignant neoplasms” in Vital Statistics) gradually increased and became the leading cause of death after 1979. Heart disease has also gradually increased since 1960 and is currently the second leading cause of death in Japan.

According to the cause of death selection rules, one cause of death (the disease or injury that directly caused the series of events that led to death) is selected from the multiple diseases listed on the death certificate in the Vital Statistics. It should be noted that coding changes happened, for example, ICD-9 was applied since 1979 and changed to ICD-10 since 1995. Then the editions of ICD-10 were revised in 2006 and 2016. Therefore, the mortality rates in figures were not naturally curved around those years [8].

Figure 2 shows the proportion for each cause of deaths

in Japan [9]. Malignant neoplasms account for the largest proportion of all deaths (28%), followed by heart disease (excluding hypertensive diseases) (15%), senility (10%) and cerebrovascular diseases (8%). In summary, about 60% of all deaths in Japan are caused by non-communicable diseases.

III. International comparison of mortality in NCDs in Japan

Age standardized mortalities were calculated by sex for NCD (Cancer (Malignant neoplasm), Ischemic Heart Diseases (IHD), Acute Myocardial Infarction (AMI), Cerebrovascular diseases) since 1950 in Australia, Canada, Finland, France, Italy, Japan, Portugal, Spain, Sweden, U.K., and U.S.A. As for the data of Malignant neoplasm, those of stomach and breast were reiterated to identify the characteristics of Japanese data. All raw data was obtained from WHO Mortality Database and standardized by the World Standard Population as of June 2021[10].

Figure 3 shows the mortality rates from malignant neoplasms (cancer). For all cancers, the male mortality rate peaked in the 1990s in most countries and has been on a downward trend since then. Japan's mortality rate peaked in 1995 and has been falling since then, although it is still slightly higher than the rates in Sweden, Australia and Finland (Fig. 3-1). Mortality rates are lower in female than in male, and Japan has the lowest mortality rate of the 11 countries. For stomach cancer, on the other hand, the rate is clearly higher in Japan (Figure 3-2). However, the rate has fallen to one-fifth of its peak in male and one-sixth in female, which is a significant improvement. For breast cancer, the UK has the highest mortality rate of the 11 countries. While rates in all countries peaked in 1990 and have been on a downward trend since then, rates in Japan have been increasing slowly since 1970, and as of 2018 there is no clear downward trend (Figure 3-3).

The mortality rate for ischemic heart disease remains low in both male and female in Japan and is not on the increase (Figure 4-1). Cerebrovascular diseases, which have historically had the highest mortality rates in Japanese male, peaked in the 1960s and have declined sharply since then, in line with other countries except Portugal (Figure 4-2). The rate has declined sharply since its peak in the 1960s. Japanese female have also experienced a similar decline in mortality from cerebrovascular diseases (Figure 5).

We did not calculate the mortality rate of chronic obstructive pulmonary disease (COPD) in this article, because diagnostic criteria are likely to be inconsistent between countries and over time.

IV. Definition of non-communicable diseases and recent national measures (Acts and policies)

As mentioned above, a change in the structure of disease from infectious to non-communicable diseases was observed in Japan from the 1950s after the Second World War. Since then, Nutrition Improvement Act was enforced in 1952 to improve nutrition, prevent diseases and actively promote health [3]. This Act provided for the implementation of national nutrition surveys, nutritional guidance by local authorities, testing of the nutritional content of food and labelling of nutritional content. This Act was repealed on May 1, 2002, when the Health Promotion Act came into force. Table 1 shows the Acts and policies related to non-communicable diseases (NCDs) control in Japan.

The Health Promotion Act takes over the contents of the Nutrition Improvement Act, but incorporates the concept of health promotion not only from the perspective of improving nutrition to prevent lifestyle-related diseases, but also through improving lifestyle habits such as exercise, drinking and smoking [11]. It also sets out guidelines regarding the implementation of health check-ups, the National Health and Nutrition Survey, and the health guidance, and also the prevention of passive smoking (partially amended in July 2018: to be enforced in April 2020). In addition, in order to prevent lifestyle-related diseases, which account for about 60% of deaths in Japan, health examinations focusing on metabolic syndrome are conducted for people aged between 40 and 74.

This specific health checkup and specific health guidance system is implemented based on the "Act on Assurance of Medical Care for Elderly People (Act No. 80 of 1982)"[15], and medical insurers are the main implementers. The specific health guidance is provided by specialized staff (public health nurses, dietitians, etc.) to those who have a high risk of developing lifestyle-related diseases based on the results of the specific health checkup, and who can expect many preventive effects of lifestyle-related diseases by improving their lifestyle [20]. On the other hand, it is answered that health checkups and health guidance for welfare recipients who do not have medical insurance (excluding those who have employee insurance) will be conducted by municipalities based on the Health Promotion Act. This means that the costs will be borne by the general account [21]. Therefore, all Japanese citizens are basically covered by the health check-up and health guidance, which is in line with the philosophy of universal health coverage (UHC).

Cancer was the first disease related to lifestyle-related diseases to be legally positioned [16]. The Cancer Control Act stipulates the responsibilities of the national gov-

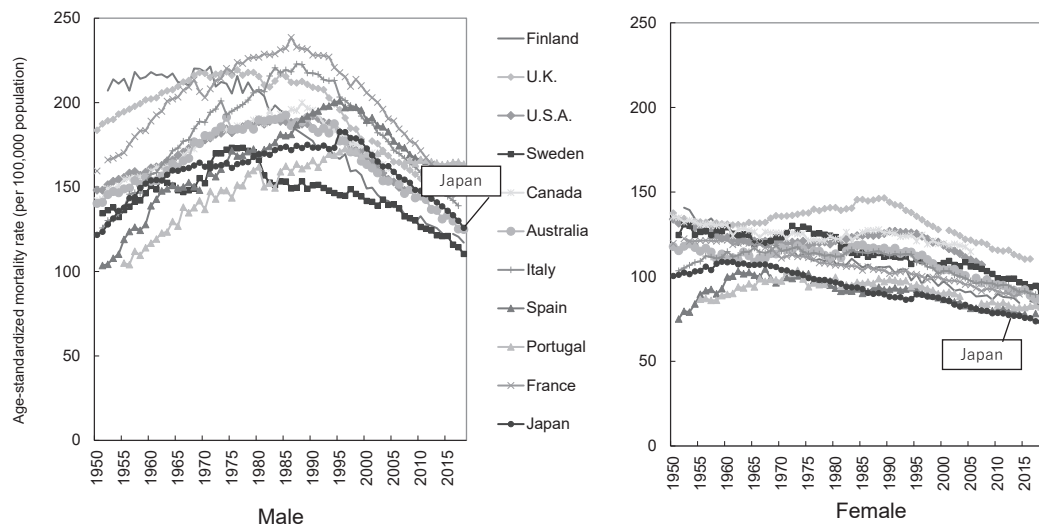


Figure 3-1 Age-standardized mortality rate of Malignant neoplasms

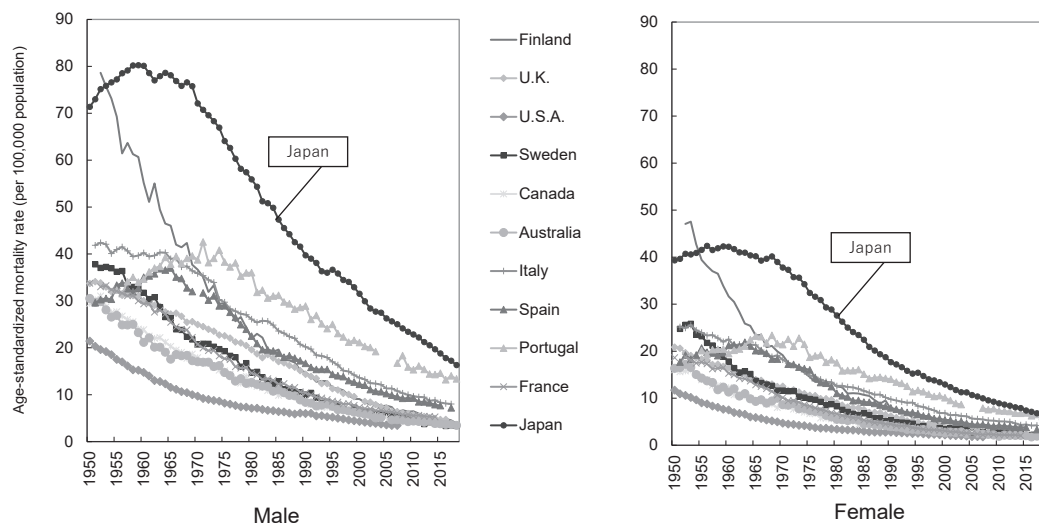


Figure 3-2 Age-standardized mortality rate for Malignant neoplasm of stomach

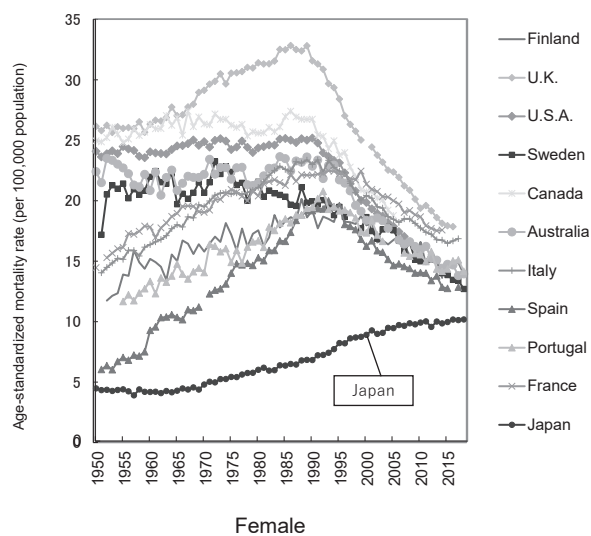


Figure 3-3 Age-standardized mortality rate of Malignant neoplasms of breast

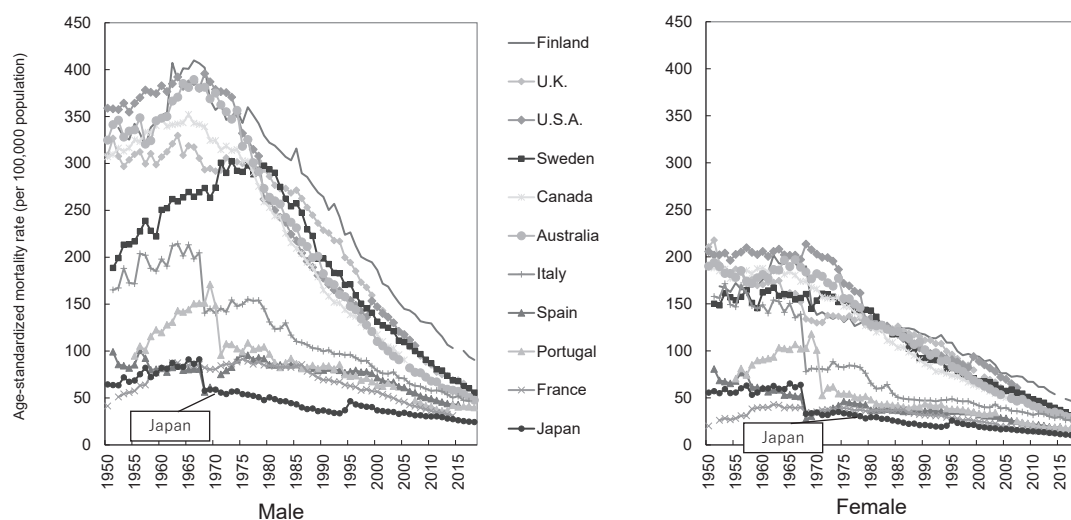


Figure 4-1 Age-standardized mortality rate of Ischemic heart disease

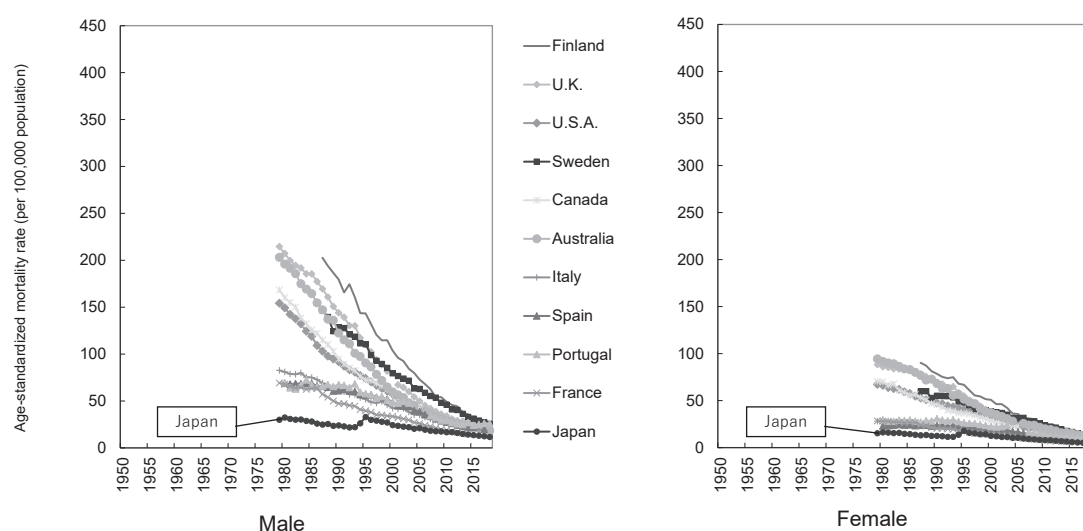


Figure 4-2 Age-standardized mortality rate of Acute myocardial infarction

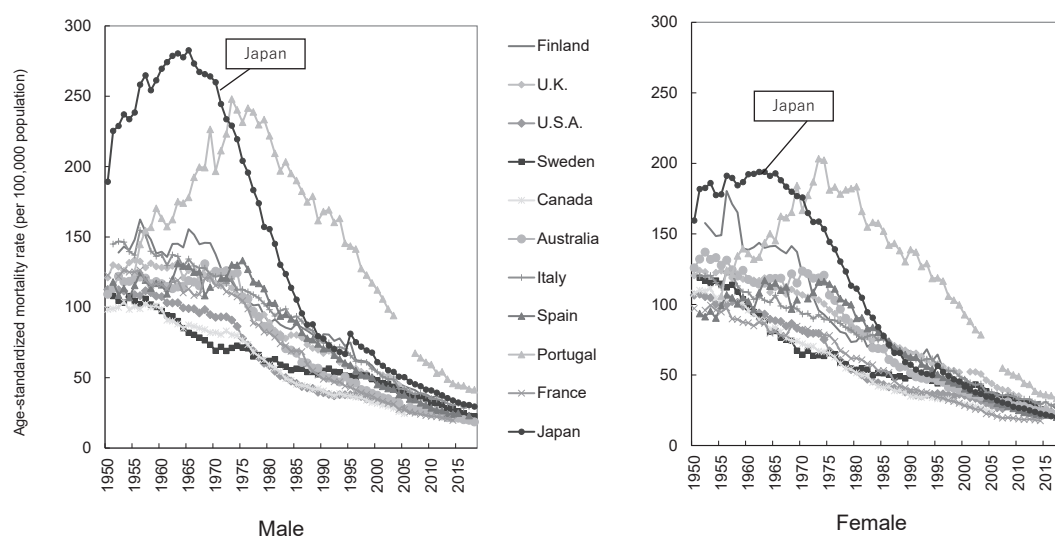


Figure 5 Age-standardized mortality rate of Cerebrovascular diseases

Table 1 Acts and policies related to non-communicable diseases (NCDs) in Japan

		ref.
1900	Act for Prohibiting Minors from Smoking*	[12]
1952	Nutrition Improvement Act* (discontinued in 2002)	[4]
1978	<i>National Health Promotion Measures</i>	[13]
	First term	[14]
1982	Act on Assurance of Medical Care for Elderly People [§]	[15]
1988	Second term (<i>Active 80 Health Plan</i>)	
2000	Third term (<i>Health Japan 2 1</i>)	
2002	Health Promotion Act[¶]	[11]
2006	Cancer Control Act	[16]
2013	Fourth term (<i>Health Japan 2 1 -second term</i>)	[17]
2018	Stroke and Cardiovascular Disease Control Act*	[18,19]

*No official English name has been defined.

§ : including basic guidelines for specific health check-ups for the people aged from 40 to 74 years since 2008.

¶ : legalization of Health Japan 21.

ref. ; reference URL or documents.

ernment, local governments, medical insurers, citizens, doctors, etc., based on cancer research and dissemination of results, appropriate medical care, and patient-centered care, and is implemented based on the Basic Law for the Promotion of Cancer Control [22]. It is expected to develop, standardize, and equalize cancer treatment in Japan through a network centered on the Cancer Centers [23].

For cardiovascular diseases, the Stroke and Cardiovascular Disease Control Act was enacted in 2018 [18] and came into effect in December 2019. Based on this, the government formulated the Basic Plan for Cardiovascular Disease Control in October 2020. This plan aims to increase healthy life expectancy by more than 3 years and decrease age-adjusted mortality rate by 2040 by (1) preventing cardiovascular diseases and disseminating correct knowledge, (2) improving service delivery systems for health, medical care and welfare, and (3) promoting research on cardiovascular diseases. It is being promoted comprehensively from 2021 [24].

V. Current issues and challenges for NCD in Japan

Currently, WHO is promoting health around the four leading NCDs [27], and these diseases are also the focus of SDG 3. On the other hand, many high-income countries have already seen a decline in mortality. In practice, therefore, monitoring, as in Japan's Health Japan 21, is likely to be effective. Table 2 shows the original targets and mid-term achievement for the prevention of onset and progression of life-style related diseases in second term of Health Japan 21. There are 2 targets for cancer, 5 targets

for cardiovascular diseases, 6 targets for diabetes, and 1 target for COPD. Among these 14 targets, half of them were improved and the others were not changed. However, the committee of evaluation concluded that four targets which has shown improvement already such as, "Reduction in age-adjusted mortality rate of cancer under age 75", "Increase in participation rate of cancer screenings", and "Increase in participation rates of specified health checkups and specified health guidance for cardiovascular diseases and Diabetes" would not likely to reach the target value at the final evaluation in 2022.

Although there are no current indicators for aging, it was already pointed out that this area is essential to the SDGs [28]. There is already well known tool for measuring the potential of older people for active and healthy ageing across countries adopted by The United Nations Economic Commission for Europe (UNECE) [29]. It measures the extent to which older people are capable of living independently, participating in paid employment and social activities and ageing actively. Miura described that it is possible to collect the necessary data for calculating the AAI to some extent by using existing statistical data, however, there were some items for which the age group is 55 years or older, and some items for which there is no approximate data, such as Political Participation [30]. Therefore, additional surveys and estimates are considered necessary to calculate the exact AAI in Japan.

The four major diseases currently covered by the SDG3 are "preventable (to some extent)" NCDs that can be reduced through lifestyle modification and early screening. On the other hand, in the community and in healthcare settings, there are still some diseases that are not treatable

Table 2 Targets and mid-term achievement for the prevention of onset and progression of life-style related diseases
<The fourth term of National Health Promotion Movement (Health Japan 21-second term)>

	Indicators	Current data	Target	Mid-term Achievement
Cancer*	1. Reduction in age-adjusted mortality rate of cancer under age 75 (per 100,000)	84.3	73.9	aΨ
	2. Increase in participation rate of cancer screenings	Gastric: M 36.6% F 28.3% Lung: M 26.4% F 23.0% Colorectal: M 28.1% F 23.9% Cervical: F 37.7% Breast: F 39.1%	50% (40% for gastric, lung, and colorectal cancer) (2016)	aΨ
Cardiovascular Disease	1. Reduction in age-adjusted mortality rate of cerebrovascular disease (CVD) and ischemic heart disease (IHD) (per 100,000)	CVD: M 49.5 F 26.9 IHD: M 36.9 F 15.3	CVD: M 41.6 F 24.7 IHD: M 31.8 F 13.7	a
	2. Improvement of hypertension (reduction in average systolic blood pressure)	M 138 mmHg F 133 mmHg	M 134 mmHg F 129 mmHg	a
	3. Reduction in percentage of adults with dyslipidemia	Those with total cholesterol over 240 mg/dl M 13.8% F 22.0% Those with LDL cholesterol over 160 mg/dl M 8.3% F 11.7%	Those with total cholesterol over 240 mg/dl M 10% F 17% Those with LDL cholesterol over 160 mg/dl M 6.2% F 8.8%	b
	4. Reduction in number of definite and at-risk people with metabolic syndrome	14,000,000	25% less than 2008	b
	5. Increase in participation rates of specified health checkups and specified health guidance**	Specified health checkups 41.3% Specified health guidance 12.3%	Specified health checkups 70% (national) Specified health guidance 45% (national)	aΨ
Diabetes	1. Reduction in complications (number of patients newly introduced to dialysis due to diabetic nephropathy)	16,247	15,000	b
	2. Increase in percentage of patients who continue treatment	63.70%	75%	b
	3. Decrease in percentage of individuals with elevated blood glucose levels (HbA1c (NGSP) ≥ 8.4%)	1.20%	1.00%	a
	4. Prevent increase in number of diabetic persons	8,900,000	25% less than 2008	b
	5. Reduction in number of definite and at-risk people with metabolic syndrome	14,000,000	25% less than 2008	b
	6. Increase in participation rates of specified health checkups and health guidance**	Specified health checkups 41.3% Specified health guidance 12.3%	Specified health checkups 70% (national) Specified health guidance 45% (national)	aΨ
COPD	Increase recognition of COPD	25%	80%	b

M: Male; F: Female; COPD: chronic obstructive pulmonary disease

*These rates represent individuals who are between 40 and 69 years old (for cervical cancer age of individuals is between 20 and 69 years).

** The target values vary by insurers. In table, national target was shown by authors according to the second period of medical cost adjustment plan.

a: Improved, b: No change, c: Getting worse, d: Difficult to assess.

Ψ: In their current state, those are unlikely to reach the target by the final assessment [ref. 25]

Source: ref [25].[26]

due to ageing, neurodegenerative diseases, genetic disorders and dementia. There are also a number of conditions that require rehabilitation and care, such as cerebral palsy, post-stroke syndrome and traumatic spinal cord injury. This is not just the case in high-income countries. The SDG 3.8 Universal Health Coverage (UHC) means “access for all to appropriate health promotion, prevention, treatment and functional recovery services at a cost they can afford”[31]. We hope that such wide range of diseases will be covered in SDGs in the future.

VI. Conclusion

In this article, we have outlined NCD measures (cancer, diabetes, cardiovascular diseases, and COPD) in Japan and overviewed global trend. These diseases are also an important area in Universal Health Coverage referred in SDG 3.8. Japanese government implements initiatives such as in Health Japan 21, which includes not only outcome targets such as mortality rates, but also process indicators such as increase in participation rates of specified health checkups

and specified health guidance so forth. We expect further improvement in health related to NCD globally by strengthening national policies in line with SDGs.

Acknowledgement

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<総説>

日本における非感染性疾患の持続可能な開発目標（SDG）
—課題と展望—

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抄録

国連の持続可能な達成目標（SDGs）ではSDG3保健指標において、2030年までに非感染性疾患（NCD）による早期死亡率を、予防や治療を通じて3分の1減少させ、精神保健及び福祉を促進することを掲げている。またNCDはSDG3.8ユニバーサル・ヘルス・カバレッジにおいても重要な領域となっている。本稿では、非感染性疾患の国内状況と課題について、世界的な動向と合わせて概説する。

キーワード：持続可能な開発目標，非感染性疾患，ユニバーサル・ヘルス・カバレッジ