

## 健康寿命の国際的な指標化に関する検討

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### 研究要旨

JA EHLEIS（健康・平均寿命情報システムに関する欧州共同事業）に参画して、国際的な指標化に関する検討を行うことが本研究の主目的である。併せて、日本における健康寿命の状況を海外に報告するとともに、国際的な健康寿命に関する動向を情報収集し、健康寿命の算定、活用に関する国際的ハーモナイゼーションを図ることを目的とした。2013年4月に開催された会合において、健康日本21（第二次）、健康寿命の将来予測の結果、欧州で算定されている健康寿命指標についての日本における値の推定結果、日本における所得及び学歴による平均寿命格差の推定結果についての報告を行った。また、新しい指標の開発に向けて提案を行うなど、議論に参画した。さらに、日本の健康寿命に関する情報について英語による発信をして欲しい旨の要望を得たため、健康日本21（第二次）参考資料の健康寿命に関する部分について英語訳を行った。

### 研究分担者

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可能である。どのような健康寿命が有用であるかについては、保健医療状況の変化など時代の変遷にもなまって変わってくる可能性がある。そこで、JA EHLEIS（Joint Action European Health and Life Expectancies Information System、健康・平均寿命情報システムに関する欧州共同事業）では、国際的な連携によって、健康寿命をベースとした新しい総合健康指標の開発に取り組んでいる。

### A. 研究目的

健康寿命は、健康日本21（第二次）において、最も代表的な健康指標として採用されており、日本国内における都道府県別の比較や、また年次による推移が検討されている。健康寿命はもともと国際的に開発された指標であることから、国際的な比較を行うことにより、諸外国と比較した日本の特徴を明らかにすることができる。その結果は、これからの日本の保健施策を検討する上でも有用であると考えられる。

一方、健康寿命は、健康日本21（第二次）で使用されている「日常生活に制限のない期間の平均」や、「自分が健康であると自覚している期間の平均」の他にも、何を健康／不健康と定義するかによって、さまざまな指標の算定が

このJA EHLEISに参画して、国際的な指標化に関する検討を行うことが本研究の主目的である。併せて、日本における健康寿命の状況を海外に報告するとともに、国際的な健康寿命に関する動向を情報収集し、健康寿命の算定、活用に関する国際的ハーモナイゼーションを図ることを目的とした。

### B. 研究方法

2013年4月17～19日に、フランス・パリにおいて開催された、JA EHLEIS（健康・平均寿命情報システムに関する欧州共同事業）に、参

加の招聘に応じて参画した。日本の状況を報告するとともに、欧州及び米国での状況について情報収集し、新しい総合健康指標の開発に向けての検討を行った。さらに、プロジェクトリーダーである Dr. Jean-Marie Robine (Institut national de la santé et de la recherche médicale, France、フランス国立衛生医学研究所) と日本の健康寿命の状況について個別の意見交換を行った。

さらに、JA EHLEIS において、日本の健康寿命に関する情報について、英語による発信をして欲しい旨の要望を得たため、健康日本21 (第二次) 参考資料の健康寿命に関する部分について英語訳を行った。その他の日本における健康寿命に関する情報についても、順次、英語による情報発信を行っていく予定にしている。

### C. 研究結果

2013年4月に開催された会合において、“Healthy Life Expectancies in Japan” と “Concept for a new Global Disability Indicator” の2本の報告を行った。“Healthy Life Expectancies in Japan” においては、健康日本21 (第二次)、前年度の「健康寿命における将来予測と生活習慣病対策の費用対効果に関する研究」班による健康寿命の将来予測の結果、欧州で算定されている健康寿命指標についての日本における値の推定結果、日本における所得及び学歴による平均寿命格差の推定結果についての報告を行った。なお、JA EHLEIS では欧州各国の健康寿命について、「日常生活に制限のない期間の平均」(Global Activity Limitation Indicator (GALI) に基づく Life expectancy without activity limitation)、「慢性疾患の無い期間の平均」(Life expectancy without chronic morbidity)、「自分が健康であると自覚している期間の平均」(Life expectancy in very good or good perceived health) の3つの指標について、毎年算定している。

“Concept for a new Global Disability Indicator” においては、事前にメール上で意見交換し、作成された working paper などについての議論を行った。事前の検討においては、ICF (International Classification of Functioning, Disability and Health) における参加 (participation) に焦点をあてた総合健康指標の開発が重要ではないかという議論が出たため、それを中心とした意見を報告した。また、現在、欧州で使用されている3つの健康寿命指標について、改変の必要性の有無などについての意見を述べた。さらに、参加に焦点をあてた指標として「閉じこもり」または「社会的孤立」の指標化についての提案を行った。

なお、この会合には、EU 各国 (20 개국 +  $\alpha$ )、欧州委員会 (Eurostat、SANCO)、OECD などの公衆衛生研究所・行政・大学関係者などが参加した。EU 域外からは、米国 (CDC) と日本が招聘されて参加した。

最後に、健康日本21 (第二次) 参考資料の健康寿命に関する部分の英語訳の結果については、本報告の後ろに掲載している通りである。なお、この翻訳は、当分担研究班の責任において行ったものであり、厚生労働省による公式訳ではない。ただし、健康日本21 (第二次) (厚生労働省告示第四百三十号 (平成24年7月10日) 国民の健康の増進の総合的な推進を図るための基本的な方針) の公式訳で使用されている用語についてはそれに準拠して翻訳を行った。

### D. 考察

JA EHLEIS の会合において、日本と欧州の健康寿命の比較を報告した際に、特にスウェーデンとの比較で日本の平均寿命は長いのに対し、健康寿命が短い結果となったことについて、日本における延命治療などによる部分があるのではないかというコメントが寄せられた。また、所得や学歴による平均寿命格差の状況については、欧州と比較して驚異的に格差が小さいとい

うコメントが寄せられた。

会合における新しい総合健康指標の検討に関しては、狭い意味での参加だけではなく、活動 (activities) なども含めたより広い ICF の概念を考慮した指標とするのが良いのではないかと意見が出された。そのため、提案を行った閉じこもりや社会的孤立などについては、米国 CDC などでも検討されている、activity of daily living (ADL) の要素に着目した健康寿命についての検討を深めてはどうかという意見などが出された。

健康日本21 (第二次) 参考資料の健康寿命に関する部分の英語訳については、その情報提供によって、日本における健康寿命の検討状況などについての国際的な理解が得られる一助になると考えられた。

## E. 結 論

JA EHLEIS (健康・平均寿命情報システムに関する欧州共同事業) に参画し、健康寿命の国際的な指標化に関する検討を行うと共に、日本と欧米との健康寿命の状況などについての情報交換を行った。

## F. 研究発表

### 1. 論文発表

なし

### 2. 学会発表

- 1) T Ojima, S Hashimoto, I Tsuji, H Tsutsui, T Noda, M Nakamura, K Kondo, M Lagergren, H Van Oyen, JM Robine. Healthy Life Expectancy in Japan and comparison with EU. 6th European Public Health Conference, 2013, Brussels, Belgium.

## G. 知的財産権の出願・登録状況

### 1. 特許取得

なし

### 2. 実用新案登録

なし

### 3. その他

なし

## **Extension of healthy life expectancy and reduction of health disparities**

Reference Material for Health Japan 21 (the second term)

### **i. Introduction**

Healthy life expectancy is defined as the length of life that an individual lives without limitation in daily activities due to health problems. Extension of healthy life expectancy is given as one of the goals presented in Health Japan 21. At the time, however, clarity was lacking in the concept of healthy life expectancy and methods of estimating it, and no specific figure or goals for healthy life expectancy were presented.

With recent developments in research, however, there is growing consensus with regard to the concept of healthy life expectancy and methods of estimating it. Health Japan 21 (the second term) shows current figures for healthy life expectancy as well as how those goals are viewed.

### **ii. Basic philosophy**

#### **(i) Extension of healthy life expectancy**

Extension of healthy life expectancy is a core issue in Health Japan 21 (the second term), and its inclusion as an indicator is essential to the program. Showing current figures for healthy life expectancy and regularly estimating subsequent changes are beneficial in managing the progress of a national health promotion movement.

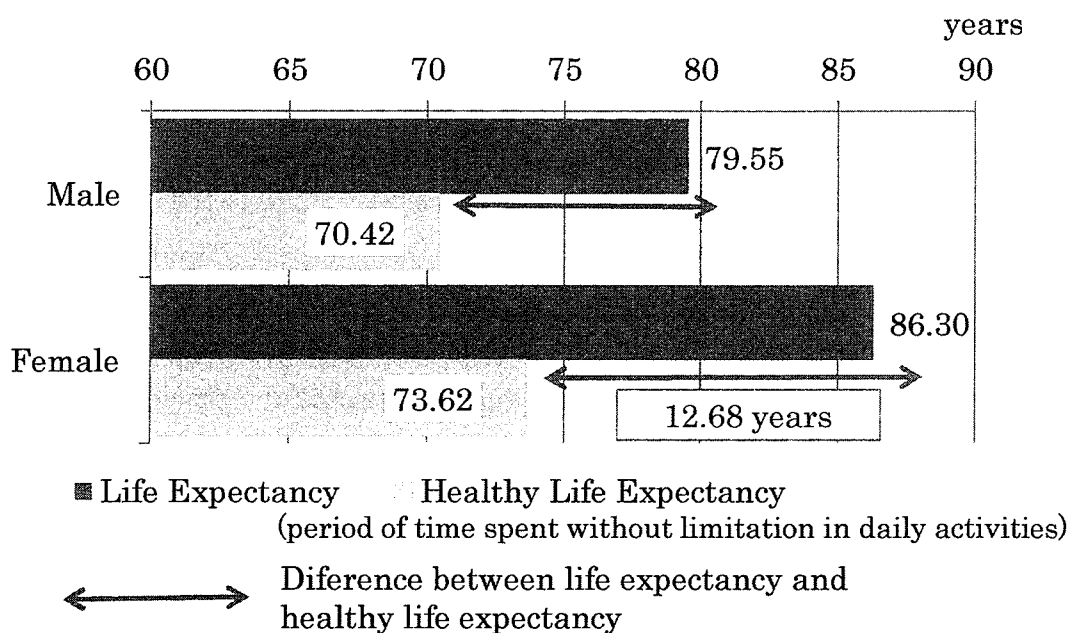
Various definitions of healthy life expectancy and ways of estimating it exist. First, with regard to the definition of healthy life expectancy, a mutually complementary evaluation is possible by taking the more objective “average period of time spent without limitation in daily activities” as the main index, and the more subjective “average period of time individual consider themselves as healthy” as a secondary index. Next, for the method of estimation, calculations based on Comprehensive Survey of Living Conditions data (disability-free life expectancy using the Sullivan method) are thought to be the most appropriate based on considerations of consistency and feasibility with current public statistics and other factors.

In setting target values, the focus is on the difference between life expectancy and healthy life expectancy. The difference between life expectancy and healthy life expectancy is the “unhealthy period” an individual spends with limitation in daily activities. The difference between life expectancy and healthy life expectancy (period of time spent without limitation in daily activities) was 9.13 years in men and 12.68 years in women in 2010 (Figure 1).

If this difference with healthy life expectancy grows as life expectancy increases, the period during which large expenditures for medical care and care benefits are consumed will become longer. If the difference between life expectancy and healthy life expectancy can be reduced by

preventing disease, promoting health, and avoiding the need for care, we can expect not only to prevent decreases in individuals' quality of life, but also to reduce the social security burden. It is very important that we approach this problem from the perspective of launching a new national health promotion movement that also contributes to a sustainable social security system.

Figure 1. Difference between life expectancy and healthy life expectancy



(Sources: Life expectancy (2010): “Complete Life Table 2010” by Ministry of Health, Labour and Welfare; healthy life expectancy: Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases”)

### (ii) Reduction of health disparities

The health disparities are defined as differences in health status among a population due to region and socioeconomic status. Given that data on regional disparities are collected with considerable accuracy, and that effects can be expected when local governments advance their own independent efforts after identifying the gaps between themselves and other local governments, the focus in current plans is placed on regional disparities.

For each local government, identifying and analyzing factors in the healthy life expectancy gap, and thinking of strategies to extend healthy life expectancy, are important in advancing health promotion.

Various indices may be considered in elucidating existing health gaps between local

governments and strengthening efforts to close those gaps, but the most important is healthy life expectancy.

### iii. Present status and goals

#### (i) Extension of healthy life expectancy

Target measure	Average period of time spent without limitation in daily activities
Present status	Men 70.42 years, women 73.62 years (2010)
Goal	To extend healthy life expectancy more than the increase of life expectancy* (2022)
Data source	Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases” Note: Estimations based on Comprehensive Survey of Living Conditions

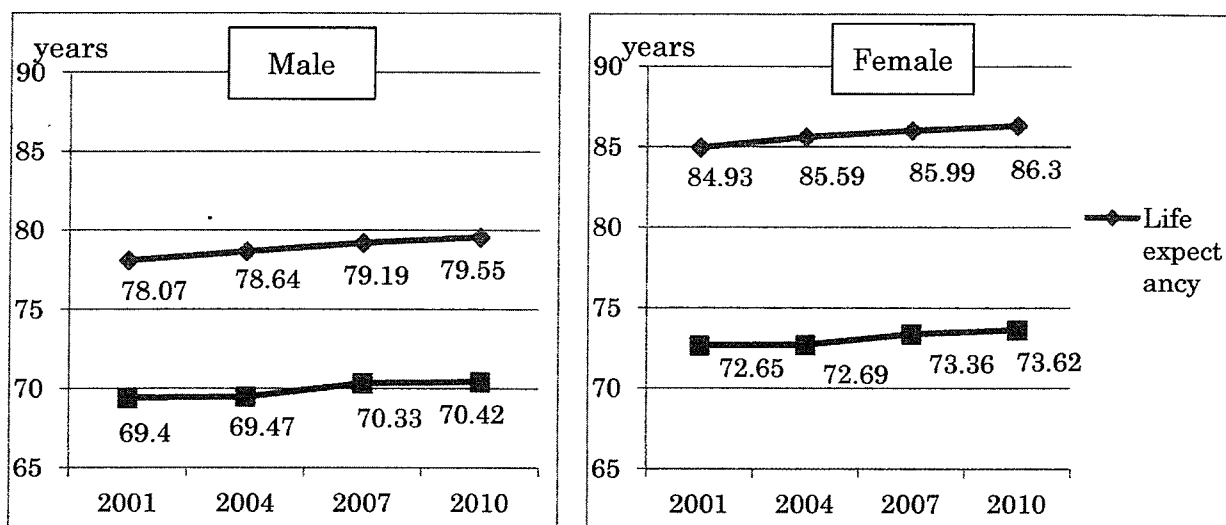
\*To accomplish the above goals, not only the “average period of time spent without limitation” but “average period of time individuals consider themselves as healthy” should also be taken into account.

“Average period of time spent without limitation in daily activities” was calculated using the Sullivan method, with basic data taken from the Comprehensive Survey of Living Conditions and Life Table (see below for the calculation method). The figures used in current values were calculated based on the Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases.”

A comparison of period of time spent without limitation in daily activities (healthy life expectancy) between 2001 and 2012 revealed that it rose from 69.40 years to 70.42 years in men, an increase of 1.02 years, and from 72.65 years to 73.62 years in women, an increase of 0.97 years. Meanwhile, life expectancy during those years rose from 78.07 years to 79.55 years in men, an increase of 1.48 years, and from 84.93 years to 86.30 years in women, an increase of 1.37 years (Figure 2).

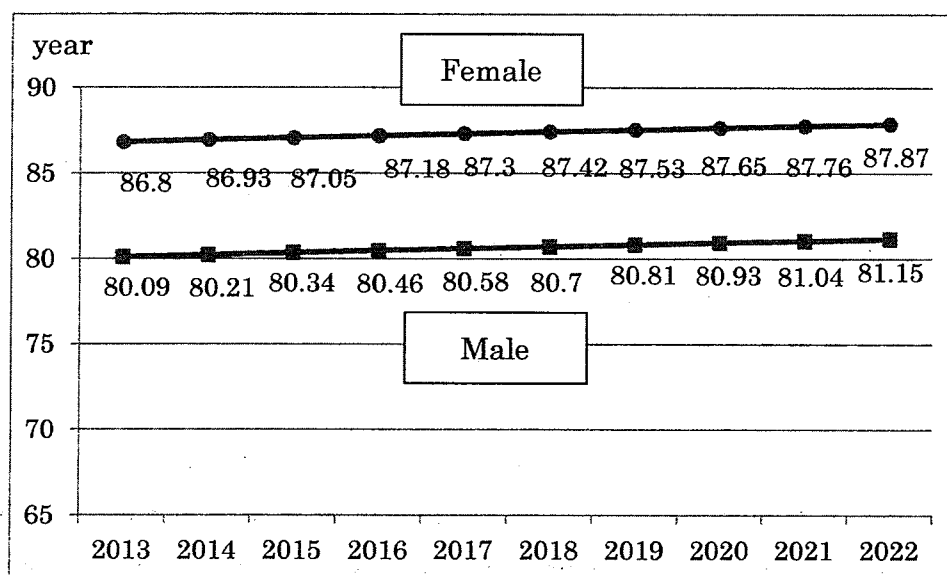
According to the Population Projection of Japan (January 2012 estimates) by the National Institute of Population and Social Security Research, life expectancy in the years from 2013 to 2022 is predicted to rise from 80.09 years to 81.15 years in men, an increase of 1.06 years, and from 86.80 years to 87.87 years in women, an increase of 1.07 years (Figure 3).

Figure 2. Trends in life expectancy and healthy life expectancy



(Sources: Life expectancy: Ministry of Health, Labour and Welfare’s “Abridged Life Table” in 2001, 2004, and 2007, “Complete Life Table” in 2010; healthy life expectancy: Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases”)

Figure 3. Life expectancy projection (2013–2022)



(Source: “Population Projection of Japan (January 2012 estimates)” by National Institute of Population and Social Security Research)

It is predicted that in the future not only the period of health but also the period of unhealth will become longer as life expectancy increases. Therefore, greater efforts to promote the health of citizens are important, so that the healthy life expectancy is extended by more than the increase of

life expectancy (delay the time when people reach an unhealthy state). In this way we can aim to shorten the unhealthy period. At present, however, there is little evidence to infer how much, and through which prevention measures, lifestyle-related diseases can be decreased, and by how much this will extend healthy life expectancy. Further advances in research are needed.

Therefore, the goal was taken to be “to extend healthy life expectancy more than the increase of life expectancy.” For healthy life expectancy, it is also important to try to extend the “period of time individuals consider themselves as healthy” together with the “period of time spent without limitation in daily activities.” The period of time individuals consider themselves as healthy was compared between 2001 and 2010, and found to rise from 69.55 years to 69.90 years in men, an increase of only 0.35 years, and from 72.94 years to 73.32 years in women, an increase of only 0.37 years. Although these amounts of increase do not reach the targeted amount of exceeding the increase of life expectancy, they are noted because in the next 10 years it will be necessary to be mindful of trying to also achieve a certain extension in the period of time individuals consider themselves as healthy together with extension in the period of time spent without limitation in daily activities.

#### (ii) Reduction of health disparities

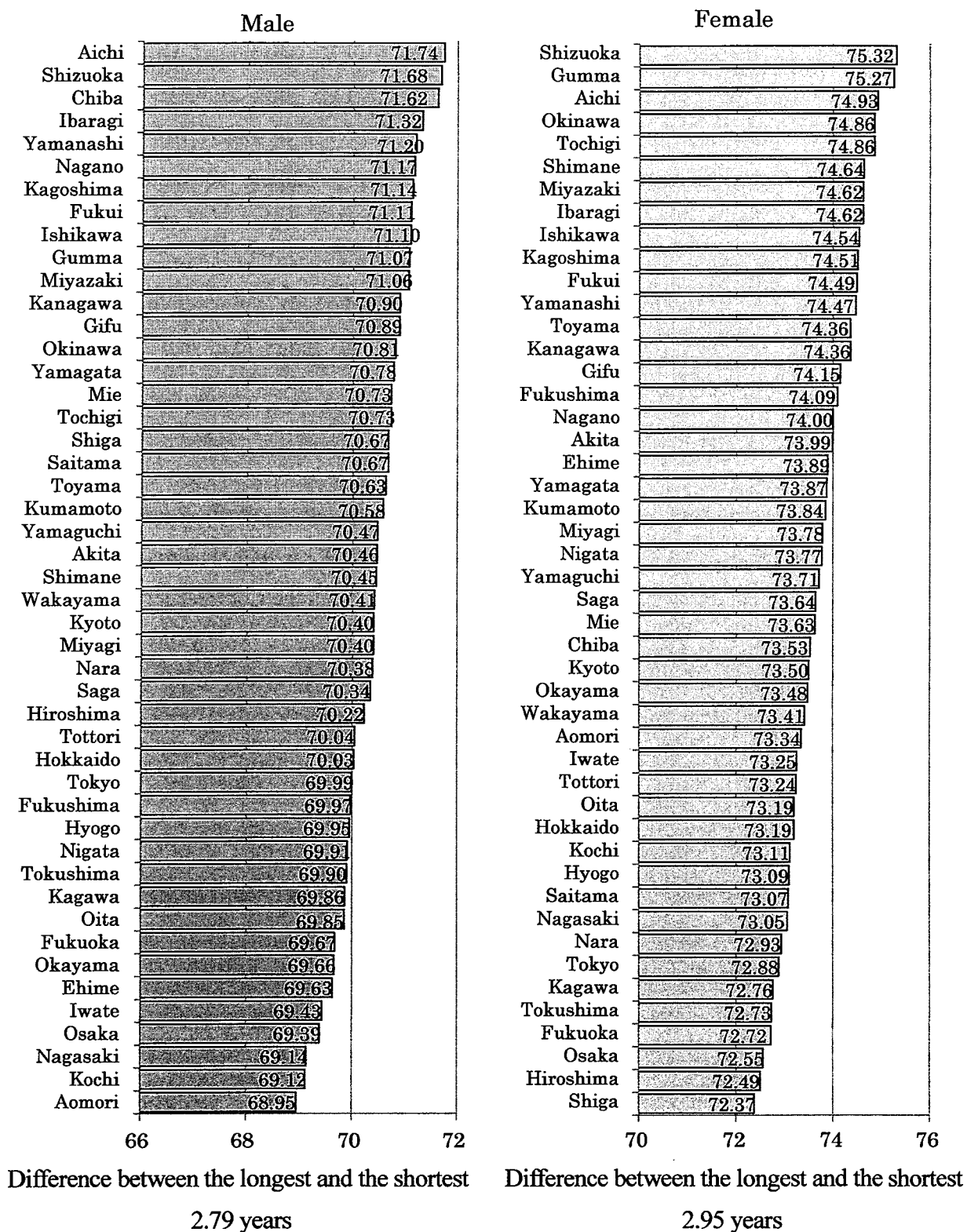
Target measure	Reduction in gap among prefectures in average period of time spent without limitation in daily activities
Current status	Men 2.79 years, women 2.95 years (2010)
Target	Reduction in gap among prefectures (2022)
Data source	Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases” Note: Estimations based on Comprehensive Survey of Living Conditions

In 2010, the places where average period of time spent without limitation in daily activities were longest were Aichi Prefecture for men (71.74 years) and Shizuoka Prefecture for women (75.32 years). The shortest were Aomori Prefecture for men (68.95 years) and Shiga Prefecture for women (71.37 years). These are differences of 2.79 years for men and 2.95 years for women (Figure 4).

Reduction in gap among prefectures was established as a goal. In working to achieve this goal, however, we must assume that the figure for the prefecture with the longest healthy life expectancy is the goal each prefecture is working toward as it makes efforts to extend healthy life expectancy.



Figure 4. Average period of time spent without limitation in daily activities by prefecture (2010)



(Source: Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases”)

### <Method of calculating healthy life expectancy>

#### Method of calculating “average period of time spent without limitation in daily activities”

“Average period of time spent without limitation in daily activities” is calculated using the Sullivan method (a method widely used to calculate healthy life expectancy), with information from the Comprehensive Survey of Living Conditions and Life Table as basic data. Thus, a response of “No” to the question, “Do health problems currently have some effect on your daily activities?” in the Comprehensive Survey of Living Conditions is taken to indicate limitation-free daily activities, and the percentages of people without limitation in daily activities were obtained for each sex and age group. The stationary population and number of survivors were obtained from Life Table. The percentage of people without limitation in daily activities was then multiplied by the stationary population for each sex and age group to obtain the stationary population without limitation in daily activities. Next, the totals for given age groups were divided by the number of survivors to obtain the “average period of time spent without limitation in daily activities.”

In prefectures, Comprehensive Survey of Living Conditions data, prefectural population, and number of deaths are used as basic data. The percentages of people without limitation in daily activities in each prefecture by sex and age group are obtained from the Comprehensive Survey of Living Conditions. Using the life table methodology of Chiang (a widely used method of calculating life tables), the stationary population and number of survivors in the prefecture are obtained. The average period of time spent without limitation in daily activities is obtained using a method similar to the above from the percentage of people without limitation in daily activities, stationary population, and number of survivors.

In municipalities, when surveys are conducted in conformance with the Comprehensive Survey of Living Conditions, the basic data are taken to be the percentages of people without limitation in daily activities by sex and age group according to those surveys, the population of the municipality, and the number of deaths. The “average period of time spent without limitation in daily activities” can be obtained using the same method as for the prefectures. When a survey is not conducted and existing data are used, care information from long-term care insurance, the population, and the number of deaths in the municipality are used as basic data. “Average period of time spent independent in daily activities” (an index like “average period of time spent without limitation in daily activities”) can then be obtained with a method similar to the above. In municipalities with small populations, the addition of a certain handling method needs to be considered in calculating the index (taking the number of deaths in multiple years, using 95% confidence intervals of the index, etc.). In municipalities with very small populations calculation of the index is difficult.

**Note: Method of calculating “average period of time individuals consider themselves as healthy”**

“Average period of time individuals consider themselves as healthy” is calculated using the Sullivan method with information from the Comprehensive Survey of Living Conditions and Life Table as basic data. Responses of “Good,” “Rather good,” or “Ordinary” to the Comprehensive Survey of Living Conditions question of “How is your current state of health?” are taken to indicate that individuals consider themselves as healthy. Using the percentage of these responses, “average period of time individuals consider themselves as healthy” is obtained using the same method as for “average period of time spent without limitation in daily activities.” In prefectures, “average period of time individuals consider themselves as healthy” is obtained with the same method as for “average period of time spent without limitation in daily activities.”

In municipalities, similar to “average period of time spent without limitation in daily activities,” it is possible to obtain the “average period of time individuals consider themselves as healthy” in cases when a survey is conducted by taking the percentage of individuals that consider themselves as healthy by sex and age group from the survey, the municipal population, and the number of deaths as basic data. In municipalities with small populations, the addition of a certain handling method needs to be considered in calculating the index. In cases when a survey is not conducted, calculation of the index is difficult. This is because municipalities have no index similar to “average period of time individuals consider themselves as healthy” in their existing data. Calculation of the index is also difficult for municipalities with very small populations.

(Source: Health and Labour Sciences Research Grants “Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases”)

## Results of the calculation in 2010

Prefecture	Average period of time spent without limitation in daily activities		Average period of time individuals consider themselves as healthy	
	Male	Female	Male	Female
Hokkaido	70.03	73.19	69.33	73.08
Aomori	68.95	73.34	68.89	73.46
Iwate	69.43	73.25	68.81	72.40
Miyagi	70.40	73.78	70.80	73.35
Akita	70.46	73.99	69.56	73.07
Yamagata	70.78	73.87	70.81	73.44
Fukushima	69.97	74.09	69.66	73.58
Ibaragi	71.32	74.62	71.09	73.99
Tochigi	70.73	74.86	69.94	74.33
Gumma	71.07	75.27	70.35	74.77
Saitama	70.67	73.07	70.62	72.98
Chiba	71.62	73.53	71.32	73.53
Tokyo	69.99	72.88	69.89	73.08
Kanagawa	70.90	74.36	70.85	74.12
Nigata	69.91	73.77	69.36	73.92
Toyama	70.63	74.36	69.42	73.72
Ishikawa	71.10	74.54	70.12	73.18
Fukui	71.11	74.49	70.23	74.34
Yamanashi	71.20	74.47	70.49	74.77
Nagano	71.17	74.00	70.76	73.56
Gifu	70.89	74.15	70.32	73.29
Shizuoka	71.68	75.32	71.01	74.86
Aichi	71.74	74.93	70.60	73.37
Mie	70.73	73.63	70.21	73.07
Shiga	70.67	72.37	70.10	73.03
Kyoto	70.40	73.50	69.56	73.31
Osaka	69.39	72.55	68.69	72.12
Hyogo	69.95	73.09	68.98	72.72
Nara	70.38	72.93	71.10	74.03
Wakayama	70.41	73.41	70.44	73.76
Tottori	70.04	73.24	69.67	72.67
Shimane	70.45	74.64	69.62	74.23
Okayama	69.66	73.48	69.20	73.73
Hiroshima	70.22	72.49	68.97	72.59
Yamaguchi	70.47	73.71	68.92	72.24
Tokushima	69.90	72.73	69.03	72.45
Kagawa	69.86	72.76	69.27	72.86
Ehime	69.63	73.89	68.70	73.45
Kochi	69.12	73.11	68.64	71.92
Fukuoka	69.67	72.72	68.89	72.14
Saga	70.34	73.64	69.80	73.28
Nagasaki	69.14	73.05	69.19	73.73
Kumamoto	70.58	73.84	69.66	73.76
Oita	69.85	73.19	69.13	72.85
Miyazaki	71.06	74.62	71.55	75.31
Kagoshima	71.14	74.51	70.77	74.70
Okinawa	70.81	74.86	70.46	73.84
All Japan	70.42	73.62	69.90	73.32

(Source: Health and Labour Sciences Research Grants "Study on future predictions of healthy life expectancy and cost-effectiveness of measures to prevent lifestyle-related diseases"  
<http://toukei.umin.jp/kenkoujyumyou/>)

#### iv Measures needed for the future

All of the activities presented in Health Japan 21 (the second term) are things that will contribute to extending healthy life expectancy. Monitoring the shifts in healthy life expectancy is therefore important in terms of managing the progress of this plan. Healthy life expectancy therefore should be calculated, and its trends investigated, each time a large-scale survey is conducted every three years in the Comprehensive Survey of Living Conditions.

While healthy life expectancy in each prefecture is calculated and announced, calculation of the healthy life expectancy in each municipality in the prefectures is desirable for the nation as a whole. Using each type of survey and statistic, it also would be desirable for prefectures to clarify the status of the health disparity in municipalities in their prefecture and make efforts to close those gaps. Doing this, however, requires a high level of statistical knowledge and skill in terms of the calculation procedures used in life tables and the handling of data in municipalities with small populations. Technical support for prefectures (training sessions, publicly available calculation software, etc.) should be provided.

In approaching the issue of extending healthy life expectancy, the roles of promoting health and preventing disease are extremely important. Various other approaches are also needed, including early detection of disease, prevention of increasing disease severity with proper treatment management, prevention of the need for care, and provision of care services. Systems need to be developed for the seamless, integrated provision of these approaches matched to the health level and risks and health, welfare, and care needs of each person.

In the coming years the health disparity will also need to be monitored from perspectives other than healthy life expectancy. Aggregation of data from the various surveys carried out by the national government (Comprehensive Survey of Living Conditions, National Health and Nutrition Survey, Patient Survey, Survey of Long-term Care Benefit Expenditures) would help to enable comparisons of things such as lifestyle, health status, disease, and use of long-term care insurance in each prefecture, and is encouraged. It is also desirable that results of those comparisons be announced.

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