

2016 Survey on Public Awareness of Medical ICT in Japan

Health and Global Policy Institute
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I. Summary

HGPI conducted a survey on public awareness of Information and Communication Technology (ICT) in medicine in November and December 2016. Specifically, this survey asked about the public's opinion on telemedicine¹, personal medical data management, and the application of artificial intelligence (AI) in medicine.

(1) Main Survey Results

- This study surveyed health patients as well as patients with untreated chronic diseases. More than half of the untreated chronic disease patients surveyed by this study supported the use of telemedicine for preventative activities or patients in a stable condition. 58% of untreated patients said they believed that telemedicine could reduce the frequency of their hospital visits and make it easier to commit to continuous long-term treatments.
- Main causes for interrupting long-term treatment² included: 1. The trouble of making frequent hospital visits; 2. Changes in environment; and 3. Cost. Additionally, survey participants with a yearly income of 4 million yen or less answered that costs of treatment were the largest burden for them when committing to long-term treatments.
- Younger survey participants were willing to cooperate with Government-run health and medical data collection and management initiatives, whereas older generations were more willing to contribute to data collection conducted by institutions other than the Government, such as hospitals and non-profit organizations.

(2) Healthcare policies derived from survey results (future point for discussion)

The following section lists and analyzes points for discussion on the application of ICT in medicine derived from this survey.

- There is the possibility that telemedicine could eliminate obstacles that cause people to terminate their medical treatments. However, as the main cause that respondents listed for terminating treatments was cost, there needs to be a discussion on how to limit the share of costs that individuals are expected to carry as well.
- The definition of telemedicine is broadening from "healthcare that uses telephones to serve patients receiving long-term treatment living in areas with limited resources" to "healthcare that utilizes advanced communication technology such as video calls and chat services."
- There is a fairly large gap between generations in their opinions on medical data management. Nevertheless, from the perspective of long-term sustainability, it is crucial that methods of data management that suit the social values and habits of the next generation be established.

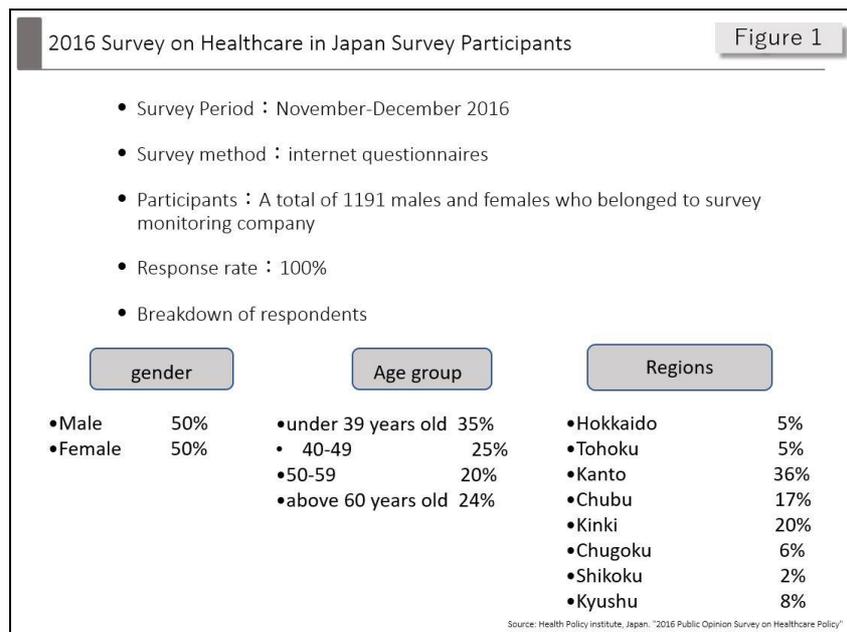
¹ "Telemedicine" refers to the practice of medicine from a distance using telecommunication and information technology.

² "Interrupting long-term treatment" here refers to situations in which patients with chronic diseases, such as lifestyle-related diseases, stop making frequent hospital visits.

II. Overview of the Survey

This survey was conducted over the Internet. Respondents comprised 1,191 males and females over 20 years of age. The survey period was from November 2016 to December 2016 (figure 1).

As Internet-based surveys can only survey those who are able to use the internet and who, as such, have a certain degree of internet literacy and education, the nature of internet-based surveys creates a certain degree of sampling bias³. This needs to be kept in mind when interpreting the results of this survey.



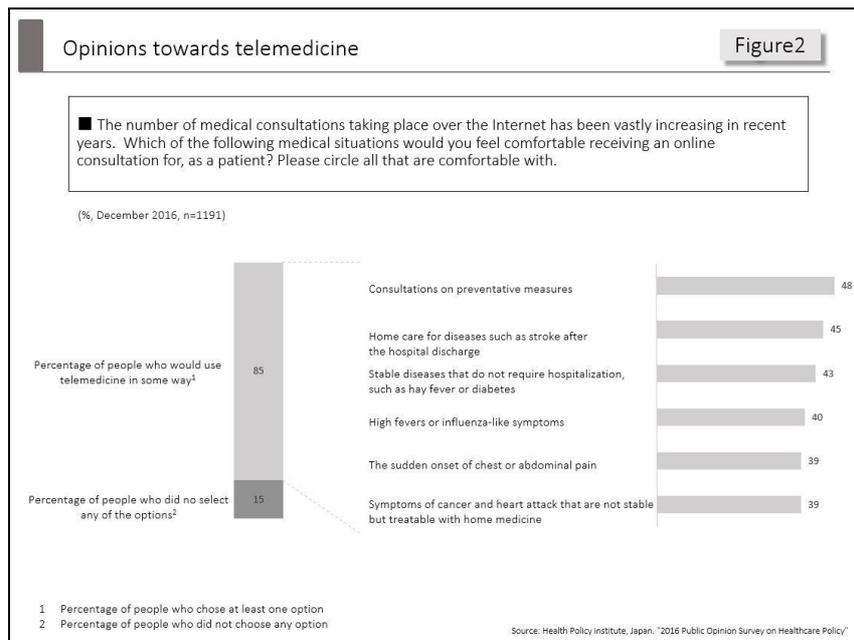
³ Smith MA, Leigh B. Virtual subjects: using the Internet as an alternative source of subjects and research environment. Behav Res Meth Instrum Comput.1997;29:496–505.

III. Survey results

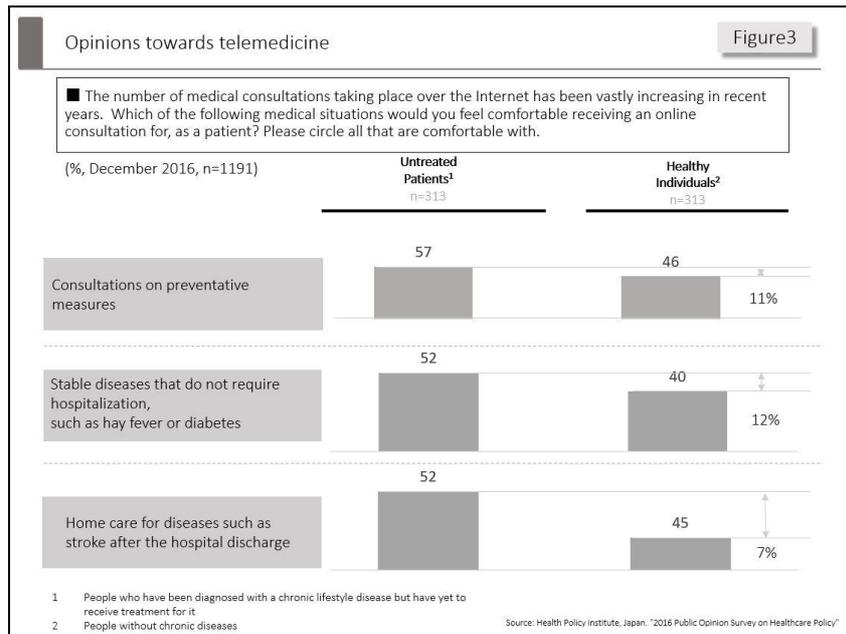
(1) Survey Results related to Telemedicine

- The majority of untreated chronic disease patients⁴ supported the use of telemedicine in general. Telemedicine may induce them to start treatment.

More than half of the untreated chronic disease patients surveyed by this study supported the use of telemedicine for preventative activities or patients in a stable condition. (Figure 2, 3)

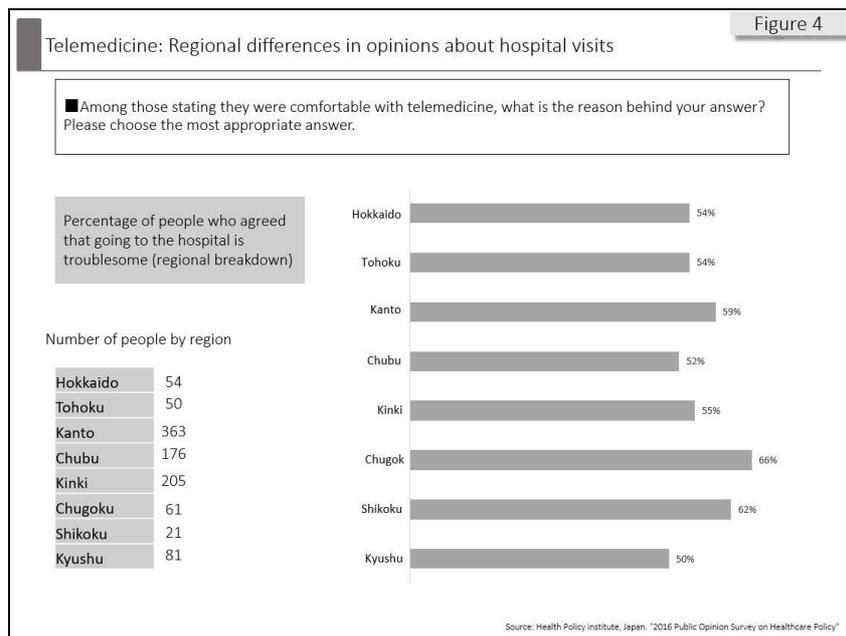


⁴ "Untreated chronic disease patients" refers to one of groups surveyed by this study; specifically, a group comprising respondents who stated that they had a chronic disease, such as a lifestyle-related disease, but for could not start treatment for some reason.



58% of untreated chronic disease patients cited the trouble caused by frequent hospital visits as a reason for why they wanted to try using telemedicine.

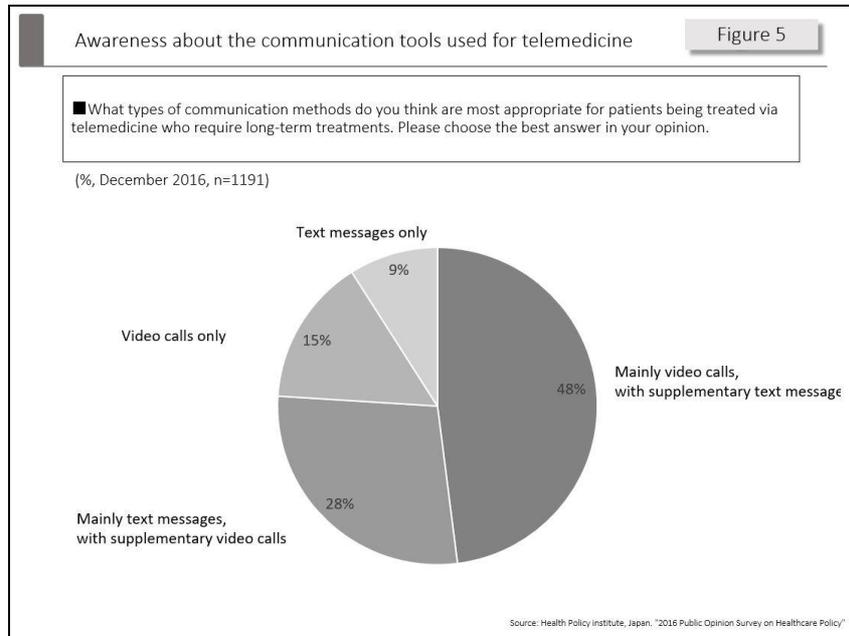
As a whole, this reason was selected by more than 50% of survey participants in every study area⁵. (Figure 4)



⁵ "Every study area" here means, specifically, Hokkaido, Tohoku, Kanto, Chubu, Kinki, Chugoku, Shikoku, and Kyushu.

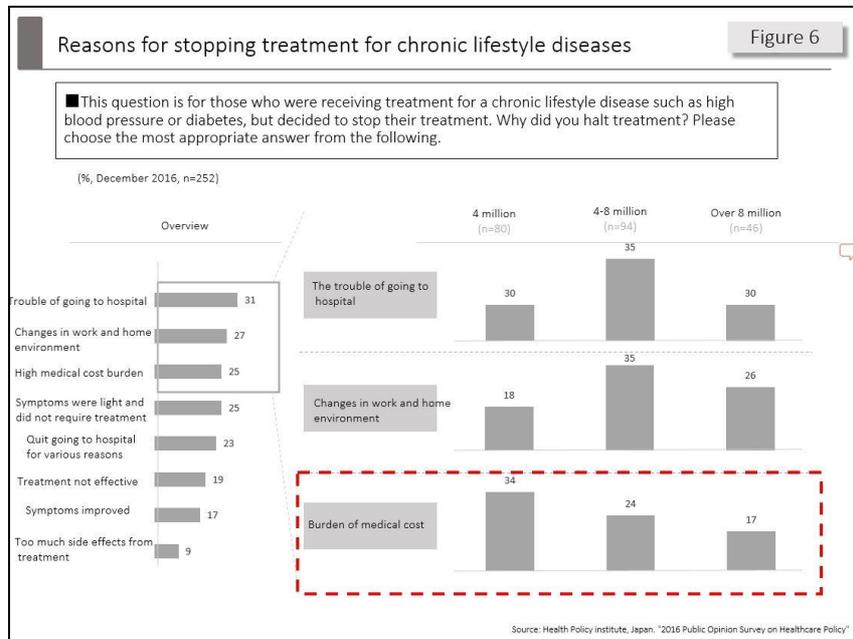
- Just under 50% said that they would like to use mainly video calls supplemented by chat systems when receiving telemedicine consultations.

A total of 48% of respondents stated that if they were to receive a telemedicine consultation, they would prefer to do so mainly via a video call with a chat system as a backup. On the other hand, 28% replied that they preferred the opposite (the use of mainly chat systems with supplemental video calls). A further 15% preferred to only use video calls, while 9% preferred only chat systems. (Figure 5)



- The major cause for interrupting chronic disease treatment was the trouble of making frequent hospital visits. However, cost was the largest burden in committing to treatments among respondents making an annual income of 4 million yen or less.

The most frequent causes for interrupting chronic disease treatments were "The trouble of making frequent hospital visits," followed by "Changes in environment," and "Cost." A total of 25% of respondents said they had ceased receiving treatments for their own diseases due to cost. In particular, 34% of participants with a yearly income of 4 million yen or less answered that the cost was the largest burden in committing to treatment. (Figure 6)

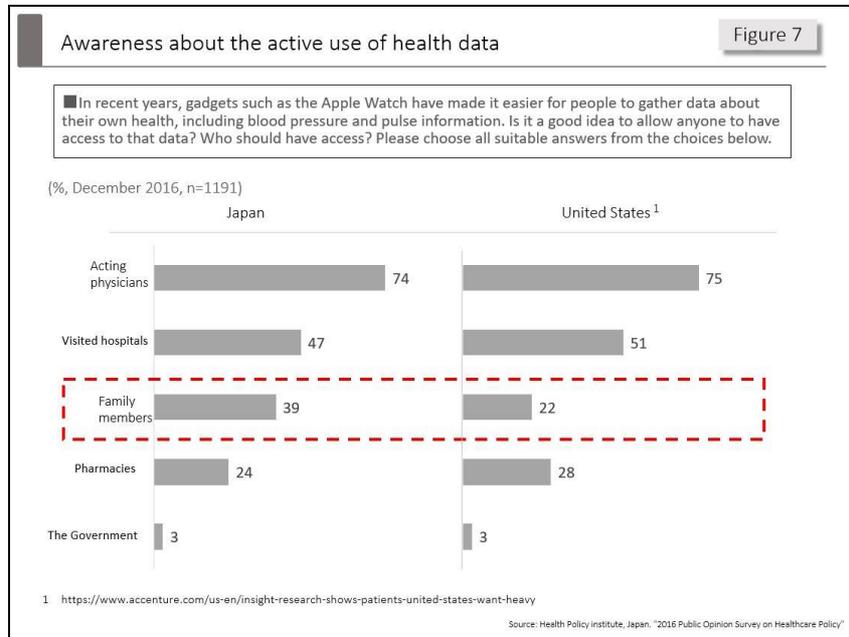


■ Comments

- ✓ Telemedicine has the potential to eliminate causes of treatment interruption, such as "the trouble of making frequent hospital visits" and motivate untreated chronic disease patients to seek medical care.
- ✓ In the past, it was thought that there would only ever be demand for telemedicine among those living in isolated areas, such as remote islands. However, over 50% of the respondents from every study area stated that they felt telemedicine could solve the troubles they faced due to needing to make frequent hospital visits. Telemedicine has the potential to alleviate "the trouble of making frequent hospital visits" in every region.
- ✓ Even using telemedicine, there is the possibility that cost burdens will still cause people to interrupt their treatments. Innovation on the part of service providers is needed in order to suppress the costs that the patients using telemedicine have to pay and maintain the sustainability of the medical system.

(2) Survey results on personal health and medical data management

■ Japan people have a more positive view of health data⁶ sharing with family members than those from the United States. A similar survey was conducted in the past in the United States.⁷ In both the United States and Japan, the proportion of respondents who said they were willing to share health data with their family doctors exceeded 70%. Similarly, the degree of acceptance toward sharing data with other stakeholders was not high in either country. The proportion of people saying that they would share data with their family was 17% higher in Japan than in the United States. (Figure7)



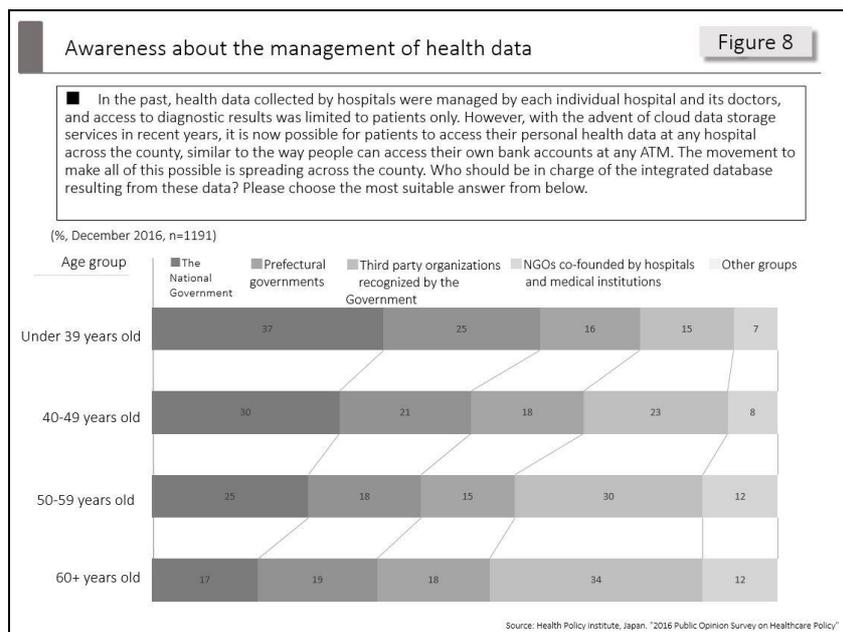
⁶ "Health data" here refers to personal data, such as blood pressure and pulse data that can be measured by products such as the Apple Watch.

⁷ <https://www.accenture.com/us-en/insight-research-shows-patients-united-states-want-heavy>

- On the management of medical data,⁸ young respondents answered that they preferred the Government manage data, while older respondents preferred non-profit organizations.

When asked who should manage medical data, 37% of the younger generation (under 39 years of age) and 17% of the older generation (over 60 years of age) answered that the national Government should manage personal medical data (Figure 8). The proportion of people wanting municipal governments to manage the data was 25% among the younger generation (12 points less than the proportion preferring the national Government), and 19% among the older generation (2 points more than the proportion preferring the national Government). (Figure 8)

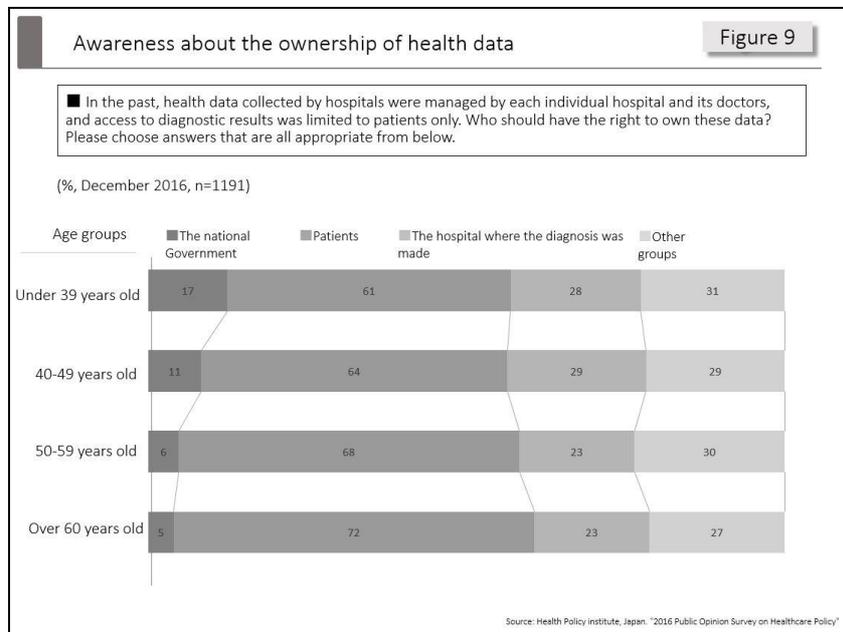
In comparison, 15% of the younger generation and 34% of the older generation preferred management by an NPO-hospital alliance. (Figure 8)



⁸ "Medical data" refers to information generated during a medical examination.

■ **There is a clear gap between generations in opinions about medical data ownership**

Asked about who owns medical data, 17% of the younger generation (under 39 years of age) and 5% of the older generation (over 60 years of age) responded that the national Government owns the data. The belief that the Government owns the data is inversely proportional with age. (Figure 9) Conversely, 61% of the younger generation and 72% of the older generation replied that medical data is owned by the patient. The proportion of respondents believing this increased with age. (Figure 9)



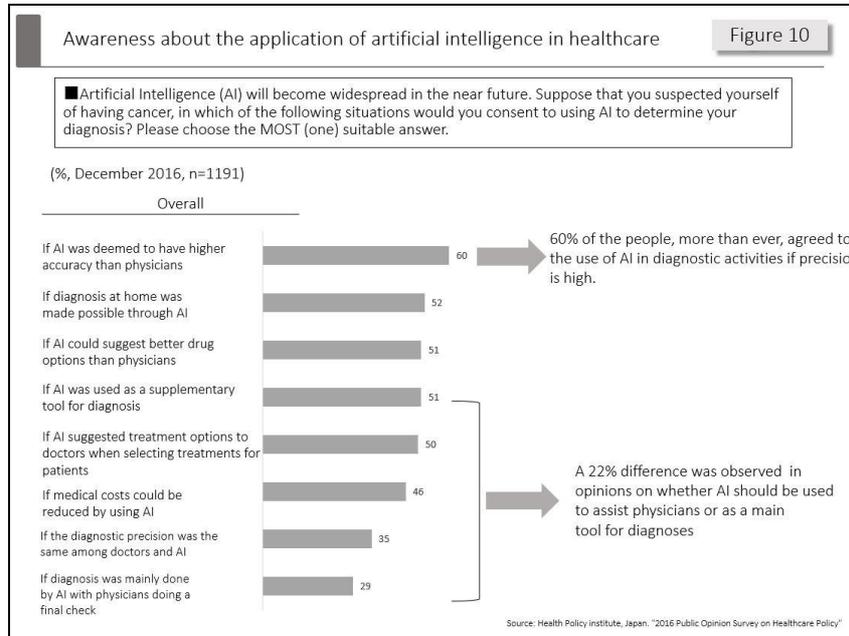
■ **Comments**

- ✓ The fact that Japanese people have a more positive opinion about sharing health data with their families compared to respondents from the United States is possibly due to reasons related to nursing and care. It is very uncommon for people in Japan to live or age alone. As such, it is important for families to actively share health data.
- ✓ There was a difference among generations in opinions about who should own and manage medical data. From a long-term prospective, it is crucial that a method of data management suiting the social values and habits of the next generation.
- ✓ When this survey was conducted in 2015,⁹ the results showed that people trusted local governments more than the national Government. However, in the current survey, a higher proportion of people in the younger generation trusted the national Government over local governments.

⁹ Edelman trust barometer 2015 <http://www.slideshare.net/EdelmanJapan/2015-44765540>

(3) Survey results on the use of artificial intelligence (AI) in medicine

■ **The most important aspect of AI is accuracy. Over 60% of respondents supported the use of AI in medicine if the AI was precise.** A total of 35% of respondents said they would support the use of AI in medicine if the AI showed the same diagnostic accuracy as a doctor. (Figure 10) In questions supposing that the AI had higher accuracy than physicians, 60% of respondents agreed to be diagnosed by an AI, an increase of 25 points. (Figure 10) While 51% supported the use of AI as a tool to supplement a doctor’s judgement, only 29% said they wanted to use AI as a main tool for diagnoses. (Figure 10)



■ **More untreated chronic disease patients than healthy patients¹⁰ supported the use of AI in medicine**

Compared to the health patient group, the untreated chronic disease group had a higher demand for the use of AI in medicine. Untreated chronic disease patients were more supportive than healthy patients of AI both “If AI was deemed to have higher accuracy than physicians,” (11% support among untreated patients) and “If AI was used as a supplementary tool for diagnosis” (18% support).

■ **Comments**

- ✓ Since accuracy is an important factor when introducing AI into a clinical practice, there is a need for investigations into the accuracy of AI.
- ✓ It is easier for people to accept the use of AI at the introductory stages if the AI is used only to support physicians, with the final diagnoses being made by the physicians.

¹⁰ “Health patients” refers to respondents who did not report any chronic diseases when asked.

IV.2016 Survey on Public Awareness of Medical ICT in Japan

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