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# Comparison of Japanese and Finnish Attitude Regarding Technology Use in Nursing-care Service

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**Abstract.** The population aging rate is increasing annually in Japan and Finland. To support and sustain the elderly nursing-care services, use of new technologies such as robotic devices and IT-based system is more active than before. And, we considered that the it is necessary to internationally understand the expectations for and problems for the future nursing-care services and global technology development. In this context, we conducted the same inquiry survey in Japan and Finland, and aimed to compare find international differences of attitudes regarding nursing-care services among countries. The authors found that Finnish active seniors wanted to live their home with home care service and were more acceptable to technologies than their Japanese counterparts.

**Keywords:** Elderly-care, Inquiry survey, Technology use, Japan, Finland

## 1 Introduction

In Japan, elderly people aged 65 or older constituted 25% of the total population in 2013. Moreover, 18.5% of the Finnish population was over the age of 65 in 2012 [1]. The rate of elderly people is increasing year by year in both countries. Moreover, one of the important issues in aging societies is elderly nursing-care. For example, typical nursing-care services in Japan are categorized into facility-based long-term care service, home-based care services, and day service. Elderly individuals use the nursing-care services according to their care plans designed by care managers to meet their conditions and needs. As reported by the Ministry of Health, Labour and Welfare, 4.4% of the population between 65 and 74 years of age and 31.8% of the population over 75 of age old use nursing-care services covered by public care insurance [2][3]. In addition, many elderly people are supported by their families instead of nursing-care services. Therefore, the potential needs for nursing-care services are bigger than what is currently available.

To support and sustain the elderly nursing-care services, new technologies such as robotic devices and IT-based system are being used more actively than before. Many companies are developing new devices; for example, Fuji Software developed small

humanoid robot, which could talk and play games with elderly people [4][5]. For the smooth installation of these new technologies, we believe that the technologies should satisfy the needs of elderly people and care staff working as service providers.

A Japanese and Finnish collaborative project called “Meaningful Technology for Seniors: Safety, Comfort and Joy-Models of Digital and Human Networks (METESE)” was launched in 2015 [6][7]. As the first step, we conducted an attitude survey about nursing-care services among elderly people and care workers in Japan. We found that most agreed to and highly expected technology use in nursing-care services, and that experience of nursing-care affected people’s attitudes toward future nursing-care services and technologies in nursing-care services [8]. However, each country and region have different lifestyle and culture. Therefore, we could not make international model for the technology use in nursing-care services. This is the biggest limitation in the previous research. We have been considering that the international model would contribute for globalization of technology development, and would be helpful to develop internationally competitive technologies, products and services. In this context, we conducted the same attitude surveys in Japan and Finland, and aimed to compare find international differences of attitudes regarding nursing-care services among countries as the second step. In this paper, we have reported the comparison of attitude regarding technology use in nursing-care service between Japanese and Finnish elderly people.

## 2 Methodology

The authors conducted inquiry surveys to find attitude gaps between Japanese and Finnish elderly people. We selected “active seniors,” who lived by themselves and received neither formal nor informal care, as the respondents because we considered that active seniors were future users of technologies for nursing-care services, and their needs were important for technology development.

The inquiry survey about attitudes toward nursing-care services and technology use was conducted via the Internet. The survey consisted of 20 inquiries. All inquiries were designed by the authors based on preliminary interviews with elderly people and care workers. The participants selected answers from a list. In this paper, we reported four inquiries as shown below.

Q1. When you need elderly-care, who do you want to care you most?

Q2. When you need elderly-care, which service do you want to use most?

Q3. Please select support devices you may use in order to live in your house independently. (Multiple answers are accepted)

Q4. Please select support devices you can allow caregivers to use for you in the future. (Multiple answers are accepted)

The participants were collected by a monitor company in Japan, and by VTT in Finland. The monitor company and VTT reached based on their registers and contact network.

### 3 Results and Findings

As the overall results of inquiry survey, 219 Japanese and 115 Finnish active seniors responded to our survey. And, each respondent answered the all inquiries. Then, we applied Pearson's chi-square test to compare the differences in population rates between the two groups. Additionally, we applied residual analysis to Q1 and Q2. For the statistical analysis, we used SPSS 24.0.

#### 3.1 Expectation for future life style (Q1 and Q2)

First, we compared the participants' preferences about service providers (Q1) and service types (Q2) as the future expected life style.

As a result, we confirmed significant differences between Japanese and Finnish active seniors ( $p < 0.001$ ) in Q1, as shown in Fig.1. The residual analysis showed significant differences in spouse, child or spouse of child and professional caregivers or nurses. Japanese active seniors wanted to receive care from their spouse, and Finnish ones wanted their children or professional caregivers to care for them.

We also confirmed significant differences between two countries ( $p < 0.001$ ) in Q2, as shown in Fig.2. The residual analysis showed significant differences in facility care service and home care service. Japanese active seniors wanted to use facility care service and Finnish ones wanted to use home care service.

The survey results showed that Japanese active seniors preferred to take informal care by the spouse, and Finnish active seniors preferred to live their home with home care service.

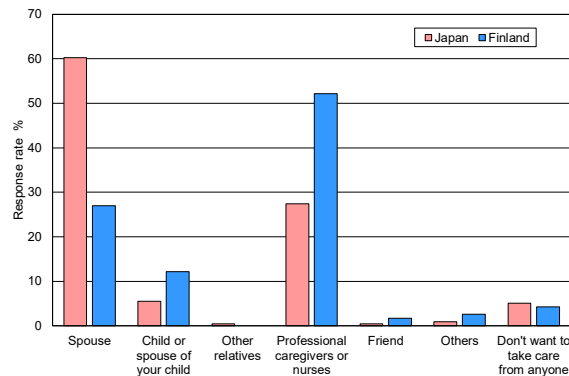
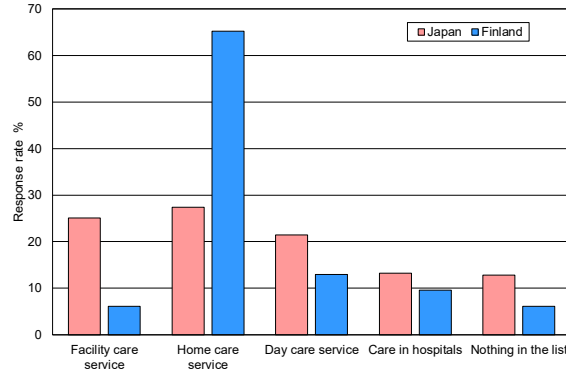


Fig. 1. Survey results of Q1



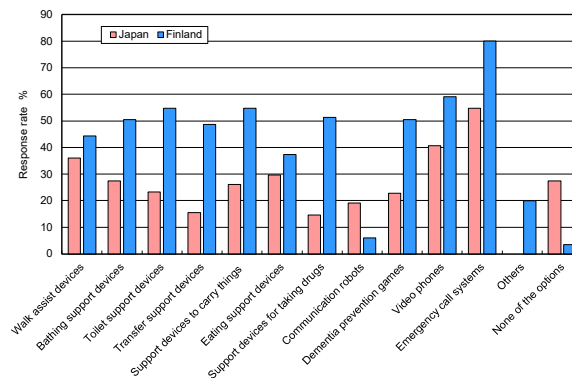
**Fig. 2.** Survey results of Q2

### 3.2 Technology use in nursing-care (Q3 and Q4)

We compared the Japanese and Finnish attitudes about technologies such as robotic devices and information devices that might be used by them (Q3) and that might be used by caregivers in their nursing-care services (Q4).

As a result, we found significant differences in bathing support devices, toilet support devices, transfer support devices, support devices to carry things, support devices for taking drugs, communication robots, dementia prevention games, video phones emergency call systems, others and none of the options ( $p < 0.05$ ) in Q3 and Q4, as shown in Fig.3 and 4.

As the Finnish active seniors responded that they wanted to use all individual devices except for communication robots more than Japanese active seniors, and Japanese active seniors responded “None of the options” more than counterparts did, it is considered that Finnish active seniors were more acceptable to technology use in nursing-care services.



**Fig. 3.** Survey results of Q3

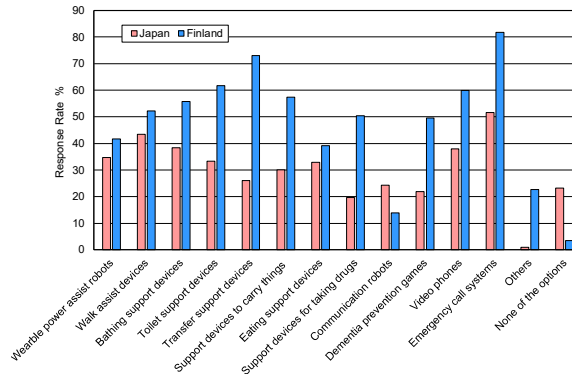


Fig. 4. Survey results of Q4

### 3.3 Discussions

In the inquiries for life style, we asked the expected service providers and expected place to live when the respondents take nursing-care service. And, we found the significant difference between two countries. Obviously, each country has individual culture, and concept of value may be influenced by countries and culture. We considered that attitudes to the expected life-style were affected by the culture ad concept of value based on the countries.

In the inquiries for technology use, we asked the expected technologies used in nursing-care service. And, we also found that Finnish active seniors were significantly more acceptable to technology use in nursing-care services, and considered that the difference was caused by the expected life style. In the current long-term care facilities, professional caregivers and nurses provide nursing-care services, and support technologies are not popular at those facilities. When the elderly imagines their life style there, it would be difficult to imagine the nursing-care service with technologies such as robotic devices. However, when the elderly imagines their life style in their homes, professional caregivers cannot fully cover the elderly's support. Mainly, the elderly life by themselves. Thus, we considered that the elderly would like to cover the part of their life support using technologies, and that life style in elderly's home with home care service increased the expectation to the technology use.

However, there are some possible limitation. The first limitation is number of countries. We just conducted in two countries. It is not enough to propose the international model of elderly's attitude. The second limitation is technology bias between the respondents and population. This survey was conducted on the Internet. Thus, the respondents were expected to be already familiar with technologies. And, it is considered that this bias would affect to the results. The response rate of Q3 and Q4 would be higher than ordinal persons. Further investigation is needed to clarify other potential biases. The authors considered that existence or non-existence of the significant differences between the two countries was meaningful. However, when we refer the absolute values in the results, we should take account this limitation.

## 4 Conclusions and Future work

We conducted an inquiry survey on the Internet to Japanese and Finnish active seniors, and compared part of the results between them to find international differences about their attitudes toward elderly nursing-care. The authors found that Finnish active seniors wanted to live in their homes with home care services and technologies more than their Japanese counterparts.

In the field of nursing-care service, many companies have developed products for domestic use because we have not internationally compared the elderly's attitude. We expect that clarification of the elderly's attitudes in the two countries would be helpful to determine target user and environment and to develop new technologies, products and services for international use.

Finally, we selected active seniors as the survey target in this paper. But, there are several stakeholders around the nursing-care service such as formal and informal carers. In the next step, we would like to internationally compare their attitudes, and find international needs for technologies in nursing-care service.

## Acknowledgement

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