

Approaches for Promoting Telemedicine Utilization in Japan

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Abstract— Telemedicine comes in many shapes. It aims to offer many benefits to both patients and clinicians, but until today, it is not widely utilized. This study aims to investigate public willingness to use telemedicine service, and identify cases/situations it is preferred to use for. It also identifies community views to increase actual use of telemedicine. To achieve our goals, 84 participants in the age ranging from 20 to 64 years were randomly selected, and data were collected from them using a questionnaire. The survey results reveals that all participants had never experienced telemedicine despite COVID-19 state of emergency. Less than half (46%) of participants stated their willingness to use the current telemedicine service. About 77% of participants preferred to use telemedicine service in a state of a personal emergency “with mild illness”. This study also indicates two approaches to promote telemedicine utilization. First approach aims to expand the scope of telemedicine, so that encompasses various issues/conditions, which currently concern the community. Second one focuses on improving a telemedicine platform through 6 actions relevant to the service usability, availability, value, and accessibility. At present, there are many issues impact on telemedicine growth in Japan. Learning about the community’s views and needs play an important role in increasing the use of telemedicine service.

Keywords - *Online Healthcare; Telemedicine; Service Development; Public Needs*

I. INTRODUCTION

Telemedicine provides healthcare services when patients and healthcare providers are at different locations using Information and Communication Technologies [1]. Since 2018, telemedicine has been covered by Japanese insurance, but the incentive to promote telemedicine is weaker than that of other countries partially due to free access to medical institutions and other issues [2]. In April 2020, the COVID-19 crisis has prompted Japan to ease regulations on telemedicine [3]. However, the use of deregulated telemedicine has been sluggish compared to the US and UK. In Japan, only 15% of medical institutions have deployed telephone or online consultations [4]. Therefore, this study investigates public willingness to use current telemedicine services. Furthermore, it identifies community perspectives and needs to develop telemedicine program and increase the rate of its usage. The rest of this paper is organized as

follows. Section II explains the method of this study. Section III shows the major results of the survey. Section IV includes discussion and limitation of a study. Section V includes conclusion.

II. METHOD

To achieve our goals, a semi-structured questionnaire (9 multiple-choice questions) was undertaken with 84 participants (63 Female and 21 male) between February and April 2021. Selecting the survey participants was based on their busy works with limited vacations time (about 10 days in a year) to visit hospitals. Participants were provided with an explanation of telemedicine and all information regarding the study, including the reasons for undertaking the survey. The questionnaire sheets had been given to the person in charge of the department by hand in order to distribute it to all the employees. Based on the literature review [5] [6], the questionnaire was designed, and then piloted on 5 individuals. From the responses of 5 people, the questions were revised and determined. Probing questions were used to determine the best patterns and circumstances for making telemedicine services more usable and efficient. Ethical approval for this study was obtained from the Kyushu University Hospital, permission no 2021-15.

III. RESULT

A total of 84 administrative employees of which female (63) and male (21) completed the questionnaire. The following are the main results of the questionnaire.

A. *The Characteristic of Participants*

The participants’ ages are ranging from 20 to 64 years. They are administrative employees working (full-time job) in different business sectors at 2 public universities in the Fukuoka city. The results of this survey indicated that all participants have no physical disabilities, and are not telemedicine users. Fifty-nine (70%) of them are somewhat aware of telemedicine. The majority (29%) visit the hospitals about 2 times a year (Table 1).

B. *Opinions Towards the Use of Telemedicine Service*

The participants were asked about their willingness to use telemedicine service (see Figure 1). Less than half (46%) of participants answered with “yes”. About 37 (44%) of participants chose “I’m not sure”, and 8 (10%) of them

TABLE I. CHARACTERISTICS OF PARTICIPANTS (N=84)

Gender N=84	Age N=84	Physical Disability	City	Occupation Administrative Employee N=84	Hospital Visit in a year N=84	Awareness of Telemedicine	Experience of Telemedicine
Female N 63 (75%)	20-29 17 (20%)	No	Fukuoka	University A N 53 (63%)	Once a week 52 times 2 (2%)	Very much	No
	30-39 16 (19%)			University B N 31 (37%)	Once every 2 weeks 26 times 2 (3%)	N 14 (17%)	
	40-49 28 (34%)			Once a month 12 times 16 (19%)	Somewhat		
	50-59 17 (20%)			Once every 2 months 6 times 6 (7%)	N 59 (70%)		
Male N 21 (25%)	60-69 6 (7%)				Once every 6 months 2 times 24 (29%)	Not at all	
					Once a year One time 12 (14%)	N 11 (13%)	
					No visit 0 0		
					No answer — 22 (26%)		
100%	100%	100%		100%	100%	100%	

responded with “no”. Regarding the situations/cases which the participants may use a telemedicine for, 65 (77%) of them would prefer to use the service in the state of a personal emergency “mild illness”, while 30 (36%) participants might use the service when it is imposed by policies or other means. Twenty-five (30%) participants answered that when a hospital is far from home, while 15 (18%) participants responded that it might happen for prescription renewals and chronic care management. A few (7%) participants indicated that in all cases, they will not use telemedicine, and 3 (4%) participants chose “other”.

C. Expanding the Scope of Telemedicine

The participants were asked about their issues/concerns, which could be well addressed through online care services (see Figure 2). The majority (62%) of participants indicated that telemedicine is a good tool for virtual visits to inpatients by their loved ones and/or conducting remote follow-up meetings with the family members who are unable to be with their hospitalized patients. Forty-two (50%) participants stated that telemedicine could be effectively used for following up care, including post-operative follow up, while 39 (46%) participants mentioned that the service is a suitable way to educate people about lifestyle diseases. Twenty - two (26%) participants indicated that telemedicine can be used for patients on board (such as emergency medical care on the express train or at the sea by providing medical advice for the passengers on board ships), while 19 (23%) participants stated their needs to school-based telemedicine program for providing access to high-quality healthcare in the school setting. A few (12%) participants mentioned the need to use telemedicine for birth control counselling. Eight (10%) participants chose “other”.

D. Actions to Improve a Telemedicine Platform

All participants were asked about their needs, views and suggestions to improve a telemedicine platform (see Figure 3). The majority (49%) indicated the importance of creating a user-friendly telemedicine program. Twenty-four (29%) participants suggested to provide telemedicine in higher number of hospitals and be for all, while 21 (25%)

participants requested to make the service available at any time “24 hours a day, and 7 days a week”. Twenty (24%) participants indicated the necessity to offer many value-added programs to telemedicine patients as a part of their wellness programs, while 18 (21%) participants requested to make the services easy to access without having Internet connection problems. About 17 (20%) participants responded that telemedicine must consider desires and needs by age demographic. Ten participants (12%) chose “other”, such as recommended that telemedicine be held to the same standards of in-person care, and establish unique patient engagement strategy that focuses on creating greater awareness of telemedicine’s potential and its usage.

E. Usability in a Telemedicine Meeting

Regarding the most suitable and trustful healthcare delivery model (see Figure 4), the survey results revealed that the majority (74%) of participants preferred home-based telemedicine, while 12 (14%) participants chose mobile medical clinic, and a few (12%) participants selected the hospital-based telemedicine. Regarding the better mode for communication, we found that the majority (73%) of participants preferred video call, while 17 (20%) participants chose voice call, and a few (7%) participants selected “other”. About the most adequate device for a telemedicine visit, the majority (38%) preferred smartphone “using a video call service”, while 30 (36%) participants chose PC/tablet, about 24% of participants preferred smartphone “a voice call only”, and a few (2%) of them chose “other”.

IV. DISCUSSION

Telemedicine services have the advantage of ensuring the health of inaccessible local residents and increasing convenience [7] [8]. Studies have shown that remote monitoring approaches are as effective as – and in some cases better than – in-person care for many chronic conditions [9] [10]. However, all participants were not telemedicine users, even in a state of public health emergency due to the SARS-CoV-2 outbreak.

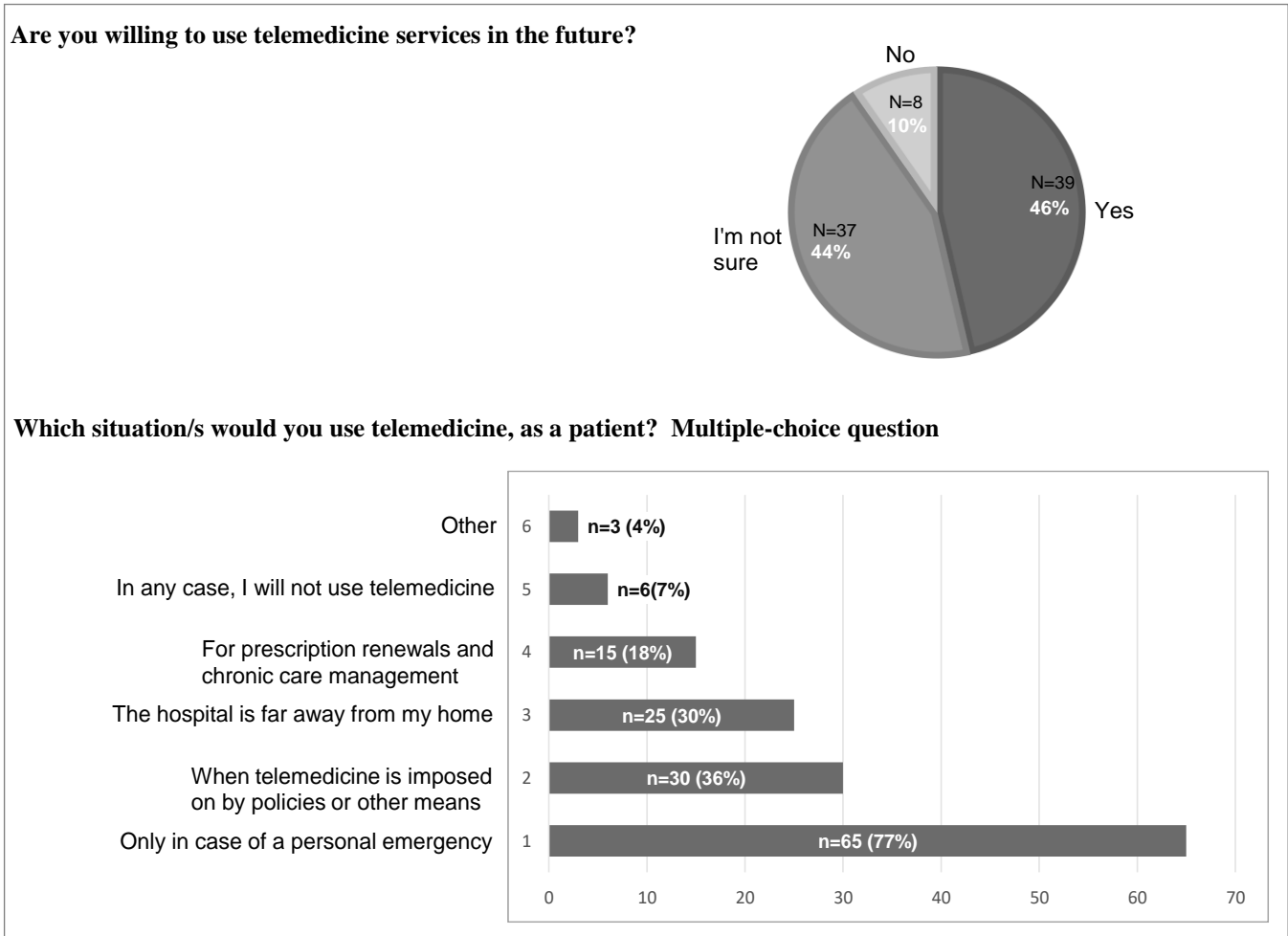


Figure 1. Telemedicine utilization in Japan (N=84)

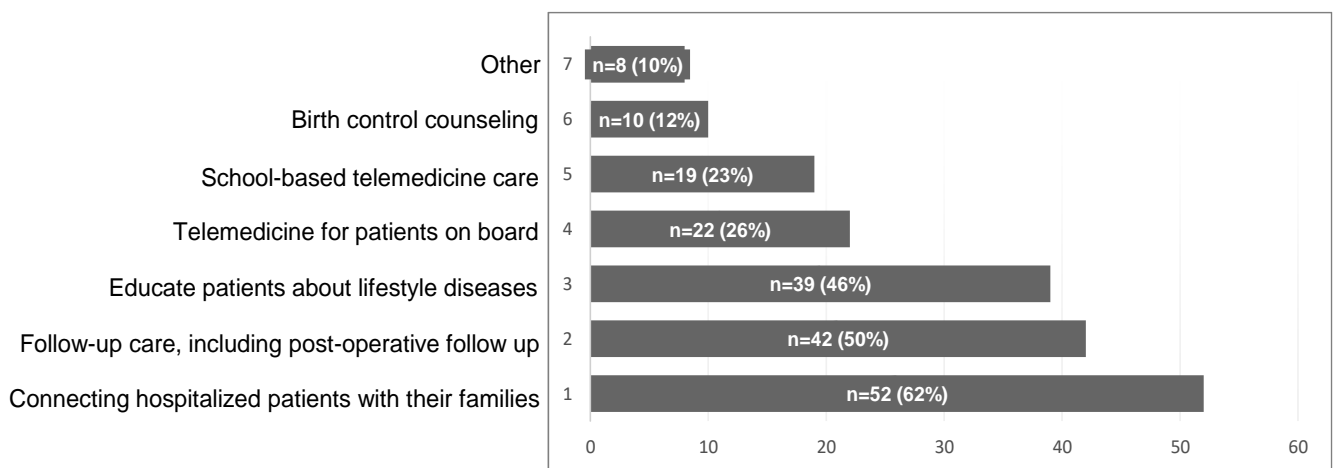


Figure 2. Issues that require telemedicine utilization (N=84) - multiple-choice question

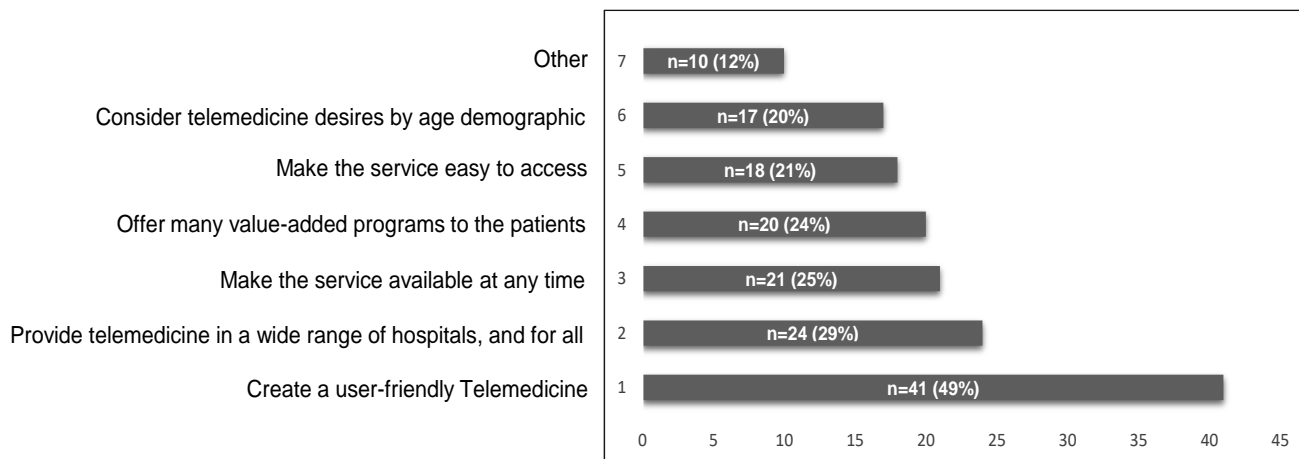


Figure 3. Key actions to improve current telemedicine program (N=84) - Multiple-choice question

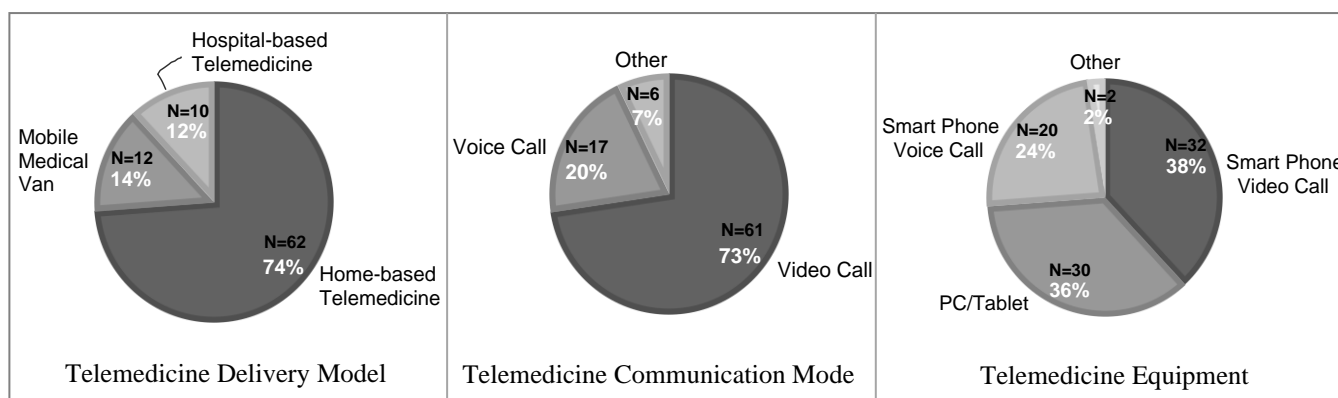


Figure 4. Best model of telemedicine usage (N=84)

Further, less than half (46%) of them stated their willingness to use the telemedicine service. In Japan there is a strong cultural bias towards face-to-face consultation, but the servicing rural and remote areas by doctors is increasingly difficult so there is an urgent need to increase the uptake of telemedicine [2]. In terms of telemedicine growth and development, studies reported that the service should deliver care that respects the patients’ preferences and values - responds to needs in a person-centered manner [11] [12]. Based on the participants’ responses, there are two approaches to potentially increase the use of telemedicine in Japan. First one aims to expand telemedicine capabilities. This is by identifying community issues and concerns that can be addressed through online care services. In other words, it is better going beyond traditional home diagnostic and monitoring activities to include further medical care forms where the individuals’ abilities are restricted. The survey results revealed that most (62%) participants indicated that telemedicine is a good tool for virtual visits to inpatients by their loved ones and/or conducting remote follow-up meetings with the family members who are unable

to be with their patients at hospitals. In our previous study the same suggestion had been stated by the majority of Japanese physicians [13]. The second approach is about understanding people’s requirements, preferences and views to improve a telemedicine platform. From the participants’ responses, there are 6 key actions suggested to higher use of a telemedicine program. Regarding the first action, the majority (49%) stated the importance of creating telemedicine equipment as user- friendly as possible. The usability issue is one of the seven core principles that underlie the development of successful telemedicine systems [14]. Furthermore, to make a telemedicine easier and safer, be mindful of the importance of site in which virtual encounters occur [11]. The survey results indicated that most participants preferred to conduct a telemedicine appointment at home by using video call over the smartphone. Similar findings showed in another survey that the majority of Japanese participants preferred video call with supplementary text message as a communication tool used for telemedicine [15]. On the other hand, studies pointed out that home-based telemedicine system via video

conference can be of great benefit to patients in terms of convenience, reliability, health care availability, and cost savings. However, there are some issues affecting the efficiency of this system and should be well considered and addressed, such as privacy and security concerns, patient age, patient and healthcare professional's capabilities to use digital technology, Internet speed, network signal, audio quality, and technological compatibility [16] [17] [18]. In addition, a recent study indicated the necessity of the apps being easy to use for patients and staff, providing smooth access to important functions [19]. Regarding this point, further study stated that a user-friendly device which is easy to use by patients with low digital literacy is helpful, and a system allows medical personnel to remotely control the equipment could be an option [10]. Second action, 24 (29%) participants suggested providing the telemedicine services in the greater number of hospitals/clinics. In Japan, there is a slow spread of telemedicine in the hospitals. A high percentage of hospitals are not offering the service due to many issues, such as the lack of infrastructure and uncertainty about reimbursement [20]. A study reported that among the 110,898 medical institutions that exist, the number of medical institutions implementing telemedicine increased slightly from 10,812 (9.7%) in April 2020 to 16,202 (14.6%) in June. Of this number, only 6,801 (6.1%) medical institutions implement telemedicine for a patient's first visit [21]. The third action is about the service availability seven days a week. The current study findings showed that twenty-one (25%) participants requested to offer telemedicine services for patients at any time, day or night. This might be because there are sometimes difficulties to find an appropriate major hospital/clinic to visit in case of an emergency in Japan [22] [23]. Confirmation on that, 65 (77%) participants would prefer to use telemedicine services in a state of a personal emergency. Regarding the fourth action, 20 (24%) participants recommended offering many value-added programs to the telemedicine patients as a part of their wellness programs. The fifth action, 18 (21%) participants clarified the importance of fast Internet speed for transmitting patients' files, records, pictures, and videos. A study reported that 18 factors inhibit the dissemination of telemedicine service in Japan, including network speed [24]. Most of the telemedicine applications require a high speed and reliable Internet bandwidth to run smoothly. Unreliable and low wideband Internet pose barriers in smooth delivery of telemedicine service [25]. Last action, 17 (20%) participants stated the necessity of considering telemedicine desires by age demographic because not all generations have same requirements towards telemedicine. A study reported that age plays a large role in consumer healthcare trends and telemedicine usage. Understanding consumer telemedicine trends by age group may be the key to increasing awareness and the use of telemedicine [26]. Based on the mentioned above, it can be said that telemedicine success and growth begin with the individuals' satisfaction. Patients will start demanding more use of telemedicine that is when the service satisfies their needs and expectations.

Regarding the limitation of this study, the survey was conducted with limited number of Japanese participants. The results cannot be generalized beyond the participants of a study. The participants expressed their own perspectives to develop the current telemedicine platform, and these may not express views of the majority of Japanese people.

V. CONCLUSION

At present, telemedicine plays an important role to help individuals avoid direct physical contact and thus reduces the risk of COVID transmission. This study discussed public willingness to use a telemedicine program, and in what situations/cases it is preferable to use for. It also identified two approaches to promote the use of telemedicine program in Japan. The first approach aims to expand the scope of telemedicine, so as to address many issues which concern the society. Regarding the second approach, it focuses on developing a telemedicine program by understanding the public's views and needs. Based on the participants' feedback, this study pointed out that 6 actions can improve a telemedicine platform, and possibly raise the rate of its usage. The key actions are concerning telemedicine usability, availability, value, and accessibility.

Overall, the growth of telemedicine requires fully understanding of the individuals' needs. Therefore, additional studies are needed to explore the demands and perspectives of different groups of people, including elderly and people with disabilities.

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