

Letters to the editor

The use of information and communication technology in Japanese rural clinics

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Abstract

High-speed information and communication technology (ICT) networks stretch all over Japan. However, their utility in facilitating rural healthcare remains uncharacterized. A nationwide questionnaire survey was sent by mail to 1,018 rural clinics constructed in a public manner in municipalities throughout Japan. ICT use was classified by type, including a doctor-to-doctor manner. Only 19% of the 303 clinics surveyed (with a response rate of 30%) used ICT. Specifically, 50% used it in a doctor-to-doctor manner, while 35% used it to obtain electronic medical records. Differences in proficiency levels among ICT users were cited by 21% of the respondents as a major problem associated with ICT use. In Japan, the prevalence of ICT use for rural healthcare appeared low. We suggest a policy reform to facilitate ICT use in rural healthcare.

Key words: rural medicine, remote medicine, telemedicine, telehealth

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Dear Editor

In rural regions, where access to medical services is often difficult, the use of information and communication technology (ICT) in healthcare is drawing interest^{1–3}. Varied approaches to ICT use have been known, such as for telemedicine to connect to medical facilities^{4,5}. Indeed, a recent report described the efficacy of telemedicine for patient care in rural areas⁶. While the Japanese popularly use ICT tools such as mobile phones, to our knowledge, no survey has yet assessed ICT use in Japanese rural clinics. This

study investigated the current state of ICT use in Japanese rural clinics to understand the application of such ICT tools in rural healthcare better.

In February 2020, a questionnaire survey was mailed to all Japanese rural clinics (n=1,018). Rural clinics are defined as those established in areas with a population of $\geq 1,000$, residing within a radius of approximately 4 km from the central community and where reaching major medical facilities would take over half an hour even when using ordinary transportation⁷. The questionnaire survey investigated the following: the presence or absence of use of ICT (i.e., internet-based systems), its types (doctor-to-doctor [D-to-D], doctor-to-patient [D-to-P], doctor-to-nurse [D-to-N], electronic medical record evaluation, and others), and ICT use-associated problems. We based partly our questionnaire on a previous study⁸. A re-request was mailed to clinics that had not responded to the survey. This study was approved by the Jichi Medical University Ethics Review Committee (No. 19-137).

The survey was completed by 303 clinics out of 1,018 clinics (response rate, 30%). ICT use was identified in 58 (19%) clinics and their use in the clinics was classified as

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follows: D-to-D in 29 (50%), electronic medical record evaluation in 20 (35%), D-to-N in 13 (22%), D-to-P in 8 (14%), and others in 4 (6.9%). Table 1 illustrates the problems associated with ICT use. The most common problem was the difference in proficiency levels among ICT users (n=17, 30%).

This survey revealed that only 19% of rural clinics in Japan employed ICT mainly for telemedicine and electronic medical record evaluation. Examining the situation in other countries, 59% of the health centers in rural China used telemedicine⁹, while 82% of ambulatory units in rural America used ICT to obtain electronic health records¹⁰. Approximately, over 40% of the clinics throughout Japan have used ICT to obtain electronic medical records¹¹. This suggests that ICT utility has not spread to many rural clinics in Japan. Specifically, the benefits of ICT in rural areas have become recognized since the outbreak of the COVID-19 pandemic¹². Thus, it seems important to both expand and facilitate ICT use for Japanese rural clinics.

This survey identified the D-to-D type of ICT use as the most frequently used mode of ICT, while the D-to-P type was uncommon. The frequent use of the D-to-D type can be attributed to the uneven distribution of specialists (i.e., radiologists) between urban and rural areas; therefore, doctors in rural clinics often consult with specialists who use the D-to-D type¹³. The infrequent use of the D-to-P type may be attributed to the delay in the development of broadband systems in Japanese rural environments (e.g., housing)¹⁴, and rural clinics tend to treat older patients who may be unfamiliar with ICT¹⁵. The present findings may be attributed to such rural area-specific factors.

The most frequently reported concern associated with ICT use was the difference in the proficiency levels among ICT users. Doctors at rural clinics are often older than those in urban areas¹⁶, which might be a potential barrier to ICT use. However, this barrier can be addressed by establishing

Table 1 Problems associated with ICT use

	n= 56, n [†] (%)
Differences in proficiency levels among ICT users	17 (30)
High operating costs	12 (21)
Low-speed network connection	11 (20)
Slow operating speed of equipment	6 (11)
Esoteric interface	5 (9)
Others	12 (21)

[†]: Multiple answers. ICT: Information and communication technology.

a system that helps ICT users receive technical assistance from specialized institutions¹⁰.

Several limitations associated with the present study warrant mention. The questionnaire was self-administered, and not all clinics responded to the survey. The study methods (e.g., contact except for mail, the timing/period of the survey) might be the factors that required consideration to increase the response. The characteristics of ICT users, such as their age and gender, were not investigated. Despite these limitations, the current results are thought to be useful as a preliminary, albeit initial description of ICT use in Japanese rural clinics.

In conclusion, the prevalence of ICT use for rural healthcare in Japan appeared low. A policy to facilitate ICT use in rural healthcare would be recommended.

Conflicts of interest: The authors declare no conflicts of interest.

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