

Nursing activities at clinics in rural areas in Japan: gaps between recognition of importance and implementation

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ABSTRACT

This study determined the level of implementation and the importance placed on various nursing activities at clinics in rural areas of Japan in order to explore the achievement and perceived importance of implementing certain nursing roles and activities at such clinics. To identify these items, a questionnaire was administered to 40 nurses working in rural clinics. The results showed that activities related to “Basic Nursing Practice” and “Community Understanding” were recognized as important and were performed by almost all nurses. Some activities related to “Administration and Operation” and “Cooperation with Local Government” were recognized as important, but were not implemented, thereby hampering the continuum of care across the health system. These activities, which are related to collaboration with hospitals and local governments that support the clinics, included adjustment of staff inside and outside the facilities to guarantee the use of paid holidays, as well as collaboration with acute care, remote medical systems, and local governments during emergencies and for disaster preparation. Additional support for nurses in collaboration between clinics in rural areas, hospitals, and regional administrations that support the clinics remains a challenge to be addressed.

Keywords: clinics, Japan, nursing, nursing practice, rural

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INTRODUCTION

In Japan, clinics in rural areas work as outpatient facilities and provide many kinds of medical care for all patients, such as emergency care, health checkups, and support for home care.¹ In rural areas of Japan, clinics are established by prefectures and municipalities to maintain and operate in regions with no doctors. The criteria for setting up rural clinics include places without other medical institutions in a 4-km radius, with a population generally more than 1,000 people, and involving a commute of 30 minutes or more using public transportation from the clinic to

Received: May 24, 2019; accepted: October 1, 2019

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the nearest medical institution.² As of January 2013, there were 1,042 clinics for medical services in rural areas.³ The Japanese archipelago consists of 6,852 islands; the terrain is rich, and the mountainous areas, including volcanic land and hills, occupy about 75% of the national land.⁴ Therefore, there are many clinics in rural areas in Japan.

One half of the global population lives in rural areas,⁵ but these areas are served by only 38% of the total nursing workforce and 24% of the total physicians' workforce.⁶ Even high-income countries have a shortage of healthcare workers in rural areas.⁷ It has been reported that it is difficult to secure nursing staff, especially at clinics and hospitals in rural areas in Japan.⁸ Another issue is the aging of healthcare workers in rural areas.⁹ With the accelerated aging of healthcare workers, it is speculated that the shortage of human resources will not be improved.

In order to improve this situation, support hospitals for medical services in rural areas have been set up by prefectures that can provide medical examinations performed by dispatch examiners, training for remote workers, and telemedicine support.² Support hospitals are also capable of dispatching nurses to clinics in rural areas, but the nursing activities that they can perform there have not been standardized, and thus, adequate support has not been provided.⁸

Previous studies have reported on the role of nurses in general clinics,¹⁰ provided practical reports on nursing activities in rural areas,¹¹ and examined the problems and tasks in nursing practice.¹² Some studies have summarized opinions on nursing practice at clinics in rural areas through interviews with nurses dispatched to rural areas for several years¹³ and examined changes in the characteristics of nursing practice in rural areas.¹⁴ These studies focused on specific nursing activities in these clinics, and the purposes and goals of the studies were not systematically integrated. Additionally, there are no studies that comprehensively investigate the nursing activities at clinics in rural areas, including the function of general clinics. If the contents of nursing activities to be performed at clinics in rural areas are methodically clarified in this study, it is likely that the results of this research can be disseminated to Asian regions and the world to improve support for nurses in clinics responsible for rural health.

This study had three aims, to: 1) evaluate the status of implementation of nursing practice at clinics in rural areas of Japan; 2) identify important activities at clinics in rural areas; and 3) explore challenges in nursing practice at clinics in rural areas based on the differences in the implementation status of nursing practice and nurses' recognition of the importance of the activity.

MATERIALS AND METHODS

Study Design and Participants

This was a quantitative descriptive study using a paper-based questionnaire. Our purposeful sampling criteria required participants to have a minimum of 3 years' experience as a clinic nurse in rural areas in Japan in either a full-time or part-time position.

Ethical Considerations

This study was approved by the Nagoya University Graduate School of Medicine Bioethics Committee (No. 17-148). Each participant signed a consent form, and confidentiality was assured.

Instrumentation

We used a self-developed questionnaire based on the content on nursing activities at clinics in rural areas by reviewing the literature^{10,15,16} to extract the roles, duties, and activities related to nurses working at clinics in rural areas of Japan; we collaborated with seven nurses who have worked in rural clinics for over 10 years, making them clinical experts. We interviewed

these seven nurses and observed their activities to check whether the nurses' activities in the self-developed questionnaire were justified. Further, we obtained their opinions on whether the questionnaire is readable and suitable for clinical settings through a separate questionnaire and over the telephone. The gaps and overlaps in the nursing practice content and the content validity of such clinics were examined, and finally, 36 nursing activities were defined. Based on these 36 nursing activities, a questionnaire was created, describing specific roles or activities for each of the 36 items. There were 36 nursing activities that were divided into the following four categories: Basic Nursing Practice, Community Understanding, Administration and Operation, and Cooperation with Local Government. Participants rated the level of implementation of each of the 36 activities on a 2-alternative question and their level of importance on a 5-point Likert scale (not at all important = 1, very important = 5). We also provided a space for free comments and requested that participants add any nursing activities practiced in addition to the ones included in the survey items.

A test-retest (interval between the two tests: two weeks) was conducted with 10 nurses working at clinics in rural areas in order to verify the reliability of the created questionnaire. None of the items had a significant difference at $p < 0.01$ between the two surveys in the Wilcoxon rank sum test. As for content validity, the content of the questionnaire was refined based on the opinions of the seven experts.

The implementation status and importance of the 36 nursing activities were determined through simple tabulation. We computed the proportion of nurses who recognized each nursing activities as important to reach our study aims.

There were also several demographic questions related to area, age, length of employment, clinical experience, and employment status. Implementation status and importance of the 36 nursing activities were described qualitatively.

RESULTS

Participant Demographics

All clinics in rural areas in Japan were targeted, and we requested participation from nurses that received the research cooperation agreement from the clinic director. In October 2017, a request regarding cooperation with the research was sent to all 1,042 clinics in rural areas in Japan, and 100 nurses in 81 clinics provided consent for participation in this research. Among the nurses who consented, 60 fulfilled the inclusion criteria. We then sent the questionnaire to them, and finally, 40 nurses working at 33 clinics in rural areas in Japan participated in this study.

The 40 participants involved in this study were from all over Japan (Hokkaido to Kyusyu and Okinawa area). Of them, 92.5% ($n = 37$) were between 40 and 64 years of age. Further, 90% ($n = 36$) of participants had more than 5 years of employment at the same clinic, 90% ($n = 36$) had more than 10 years of clinical experience, and 30% ($n = 12$) had more than 30 years of experience. Of all participants, 95% ($n = 38$) were full-time employees. The complete distribution of demographic results is reported in Table 1.

Table 1 Participants' demographic characteristics

| | | N = 40 | % |
|------------------------------|-----------------|--------|------|
| Area | Hokkaido/Tohoku | 8 | 20.0 |
| | Kanto | 2 | 5.0 |
| | Chubu | 12 | 30.0 |
| | Kinki | 3 | 7.5 |
| | Chugoku/Shikoku | 10 | 25.0 |
| | Kyushu/Okinawa | 5 | 12.5 |
| Age (years) | 35–39 | 3 | 7.5 |
| | 40–49 | 20 | 50.0 |
| | 50–59 | 15 | 37.5 |
| | 60–64 | 2 | 5.0 |
| Length of Employment (years) | 3–4 | 4 | 10 |
| | 5–9 | 19 | 47.5 |
| | 10–19 | 8 | 20.0 |
| | 20–29 | 7 | 17.5 |
| | ≥30 | 2 | 5.0 |
| Clinical Experience (years) | 5–9 | 1 | 2.5 |
| | 10–14 | 3 | 7.5 |
| | 15–19 | 7 | 17.5 |
| | 20–25 | 9 | 22.5 |
| | 25–29 | 8 | 20.0 |
| Type of Employment | ≥30 | 12 | 30.0 |
| | Full time | 38 | 95.0 |
| | Part-time | 2 | 5.0 |

Implementation Status of Nursing Practice

Table 2 shows the results of the implementation status and importance of the 36 nursing activities as reported by respondents. Over 80% of the activities had a high implementation rate (24 activities). In Basic Nursing Practice, almost all activities were implemented by approximately 80% of the participants, such as “Performing triage at outpatient departments and through the phone” (100%), “Knowledge and skills required for medical assistance” (100%), and “Performing first aid” (92.5%). In Community Understanding, all activities were performed by over 90% of participants, including “Understanding local customs and characteristics” (92.5%). In Administration and Operation, five activities were performed by over 80% of participants, such as “Management of drugs and equipment” (100%) and “Infection control in clinics” (97.5%). In Cooperation with Local Government, four activities, including “Cooperation with home healthcare workers” (82.5%) and “Performing health checkups and health education” (89.5%), were listed as being implemented by at least 80% of participants.

On the other hand, the following three activities were performed by less than 50% of participants: “Consolidation of the role of emergency transportation and coordination with government offices and patients' family members” (40.5%), “Cooperation with volunteer residents” (47.5%), and “Establishment of home medical support systems for preparation in case of disaster” (48.7%).

Table 2 Nursing activities at clinics in rural areas in Japan (N = 40)

| Category | Activities | Implementation (%) | Importance (%) | Implementation < Importance | |
|---|--|---|----------------|-----------------------------|--|
| Basic Nursing Practice | Privacy protection | 100.0 | 77.5 | | |
| | Smooth communication with medical doctors | 100.0 | 87.5 | | |
| | Performing triage at outpatient departments and through the phone | 100.0 | 85.0 | | |
| | Knowledge and skills required for medical assistance | 100.0 | 87.5 | | |
| | Knowledge and skills required for providing personal care to patients | 97.5 | 79.5 | | |
| | Early detection of health risks | 92.5 | 80.0 | | |
| | Performing first aid | 92.5 | 77.5 | | |
| | Drug dispensing and management | 90.0 | 70.0 | | |
| | Vaccination management | 87.5 | 77.5 | | |
| | Providing guidance for medical treatment and education of patients | 87.2 | 76.9 | | |
| Community Understanding | Caring for patients in the terminal phase of illness | 80.0 | 75.0 | | |
| | Sharing patients' treatment and agreeing on care policies with other staff | 75.0 | 78.9 | * | |
| | Understanding geographic characteristics of residents and their access to medical institutions | 97.5 | 85.0 | | |
| | Forming relationships with residents who can perform certain nursing tasks | 95.0 | 72.5 | | |
| | Understanding local customs and characteristics | 92.5 | 75.0 | | |
| | Promoting home medical treatment within the community | 92.5 | 80.0 | | |
| | Management of drugs and equipment | 100.0 | 80.0 | | |
| | Improvement of sanitary conditions in clinics | 97.5 | 80.0 | | |
| | Infection control in clinics | 97.5 | 82.5 | | |
| | Handling of complaints and inquiries | 97.5 | 80.0 | | |
| Administration and Operation | Management of inspection data and medical records | 92.5 | 75.0 | | |
| | Provision of healthcare services and assistance even during holidays and outside work hours | 75.0 | 72.5 | | |
| | Procurement of continuous education opportunities for nursing staff | 62.5 | 65.0 | * | |
| | Adjustment of staff inside and outside the facilities in order to guarantee the use of paid holidays | 55.0 | 71.8 | * | |
| | Management and operation of clinics | 52.5 | 50.0 | | |
| | Introduction and operation of remote medical system | 25.6 | 48.7 | * | |
| | Cooperation with Local Government | Understanding and initiating Long-Term Care Insurance | 95.0 | 80.0 | |
| | | Performing health checkups and health education | 89.5 | 51.4 | |
| | | Cooperation with home healthcare workers | 82.5 | 75.0 | |
| | | Determining and proposing proper social resources to patients | 80.0 | 67.5 | |
| Association with local government and home healthcare facilities | | 75.0 | 75.0 | | |
| Performing tasks for continuing treatment and nursing at hospitals with cooperative partners in collaboration with acute care | | 59.0 | 69.2 | * | |
| Detection, reporting, and prevention of abuse | | 53.8 | 53.8 | | |
| Establishment of home medical support systems for preparation in case of disaster | | 48.7 | 57.5 | * | |
| Cooperation with volunteer residents | | 47.5 | 62.5 | * | |
| Consolidation of the role of emergency transportation and coordination with government offices and family members | | 40.5 | 61.5 | * | |

※ Importance: Answered as very important and important

* Implementation < Importance: Activities were lower in importance

Important Activities at Clinics in Rural Area

Eleven activities were recognized by at least 80% (n = 36) of participants as very important or important, including: “Smooth communication with medical doctors” (87.5%), “Performing first aid” (85.0%), “Understanding geographic characteristics of residents and their access to medical institutions” (85.0%), “Management of drugs and equipment” (80.0%), “Infection control in clinics” (82.5%), and “Understanding and initiating Long-Term Care Insurance” (80.0%).

Four activities were recognized by about 50% participants as very important or important. They were “Management and operation of clinics” (50.0%), “Introduction and operation of remote medical system” (48.7%), “Performing health checkups and health education” (51.4%), and “Detection, reporting, and prevention of abuse” (53.8%).

Activities with Gaps between Recognition of Importance and Implementation

Among the 36 activities, there were eight items whose rate of implementation was lower than that of the nurses’ recognition of their importance. There was a difference of 10–20% in six of them: “Adjustment of staff inside and outside the facilities in order to guarantee the use of paid holidays,” “Introduction and operation of remote medical system,” “Performing tasks for continuing treatment and nursing at hospitals with cooperative partners in collaboration with acute care,” “Establishment of home medical support systems for preparation in case of disaster,” “Cooperation with volunteer residents,” and “Consolidation of the role of emergency transportation and coordination with government offices and patients’ family members.”

Three activities were added in the free comment space in addition to the 36 survey items. These were “Accepting students and medical interns,” “Collaboration with pharmaceutical companies to manage medications and provide treatment of information,” and “Performing home visits.”

DISCUSSION

This is the first study to detail nurses’ overall activities at clinics in rural areas, which is important for understanding how best to support them in the future. All activities were defined in advance of the survey dissemination through a literature review and interviews with expert nurses in rural clinics. The results showed that nurses were practicing not only basic nursing activities but were also serving in additional roles, such as by coordinating services among medical centers and with families and government agencies and insurance and pharmaceutical companies. Although nursing tasks at such clinics are deemed important, the activities that are not practiced include those that are difficult to practice alone, such as “Introduction and operation of remote medical system,” which is of obvious importance in rural clinics.

Nursing Practice at Clinics in Rural Areas

The study showed that nurses practicing in clinics in rural areas carried out activities related to not only Basic Nursing Practice but also Community Understanding, Administration and Operation, and Cooperation with Local Government to a greater degree than those practicing in urban areas. From the 36 activities of rural nursing practice (Table 2), all were implemented with patients and residents at rates of 25–100%.

One of the barriers to medical care in rural areas is that residents have few options for accessing healthcare and must go to distant hospitals to receive more advanced medical services.¹⁷ Considering this healthcare access barrier, nurses require the skills and structures to promote home healthcare with limited resources.

In addition, most activities of Basic Nursing Practice, Community Understanding, and Ad-

ministration and Operation —“Improvement of sanitary conditions in clinics,” “Infection control in clinics,” “Management of inspection data and medical records,” and “Management of drugs and equipment” — were reported to have high implementation rates and high importance. Nurses performed these activities as primary care even in rural areas, indicating a need for policymakers and training developers and implementers to better understand the people living in rural areas and to provide Basic Nursing Practice as primary care.¹⁵

Challenges in Nursing Practice at Clinics in Rural Areas in Japan

Eight activities were not implemented despite being recognized as important by the nurses. As research on this is lacking, the actual status of rural nursing and the kind of activities considered important are unclear. Hence, through further research, it is important to explore why certain activities that are recognized as important are not feasible for implementation in such areas.

First, the following four activities were related to cooperation between clinics and support hospitals: “Adjustment of staff inside and outside the facilities in order to guarantee the use of paid holidays,” “Procurement of continuous education opportunities for nursing staff,” “Introduction and operation of remote medical system,” and “Performing tasks for continuing treatment and nursing at hospitals with cooperative partners in collaboration with acute care.” In rural clinics, nurses seek substitute nurses from other clinics or neighboring hospitals in order to use paid holidays.⁸ The item “Introduction and operation of remote medical system,” is based on the premise that clinics have neighboring hospitals as collaborators and many benefits of use of information and communication technology in rural areas¹⁸; nurses also recognized that this was an important activity. However, in fact, only 25.6% of nurses implemented it, and it can be said that presently, introduction of remote medicine is not progressing. Furthermore, for the activity, “Performing tasks for continuing treatment and nursing at hospitals with cooperative partners in collaboration with acute care,” there are limited medical and human resources in rural areas; therefore, from the results, we can infer the high importance of providing acute care in collaboration with support hospitals, which is also recognized by nurses. However, only about half of all nurses in this study did so, because collaborative relationships between clinics and support hospitals are not well established.⁸ In other words, such collaboration is in the developmental stage, so it is considered necessary to construct a network of medical staff and support appropriate outreach.¹⁹

The following three activities deal with cooperation between clinics and administrative agencies: “Cooperation with home healthcare workers,” “Establishment of home medical support systems for preparation in case of disaster,” and “Consolidation of the role of emergency transportation and coordination with government offices and patients’ family members.” The Japanese Ministry of Health, Labour and Welfare is promoting policies related to Community-based Integrated Care Systems to ensure coordination between community-based healthcare workers, local welfare officers, and community volunteers.²⁰

There are two key words, “self-help” and “mutual help,” in Community-based Integrated Care Systems. “Self-help” means promoting self-care and accessing private services, and “mutual help” means residents supporting each other and performing volunteer activities. Public services such as Long-term Care Insurance and public assistance systems from the public budget are limited since the birthrate has been declining and the society has been aging.²⁰ In rural areas, “self-help” and “mutual help” are the keys to promoting community health.

In urban areas, it is difficult to expect strong mutual help among residents, but they can avail private services. On the other hand, in rural areas, private services are limited, but the role of mutual support is significant.

During a disaster, it is easy to be isolated from neighboring cities separated by mountains,

rivers, and oceans; therefore, about 60% nurses recognized the need to “Consolidation of the role of emergency transportation and coordination with government offices and patients’ family members.” In fact, many natural disasters occur in Japan, and in the past 5 years, severe disasters as designated by the Japanese government occurred more than 20 times, including earthquakes, typhoons, and heavy rains.²¹ When emergency transportation of patients is necessary, in addition to ambulances, ships and helicopters are used in collaboration with fire departments and village offices.²² More than half of all nurses recognized that developing roles at each department during emergency transport is an important activity. Although activities conducted in collaboration with regional administration in the event of a disaster or emergency are also considered important, less than half of those are implemented, and it is conceivable that these activities will be challenging issues until implementation is fully achieved. Therefore, the intervention of home healthcare support during an emergency or disaster involves the challenge of collaboration between clinics and regional administration.

Twenty-six activities were not reported as being important, but their implementation was high. These activities might have been routine work among nurses’ activities, and hence were implemented quite often, though their importance was reported to be minimal. Many items included in the list that were prioritized as being important were those that required emergency care and care during disasters, and as such, were not routinely implemented; however, the routine activities had a high implementation rate despite not being as highly important as emergency care activities. As human resources, nurses are limited in number, and hence, most of them must perform administrative activities in clinics; such activities may be less important. Hence, some of these items were reported as being relatively less important but were implemented frequently. Further research is needed to clarify nursing activities that are necessary in emergency settings.

Implication for Practice

In the future, this study can be used as the basis for developing training content for nurses working in rural clinics. The findings could contribute to the increase in the number of nurses working in rural areas and improvement in the quality of nursing such as collaboration with support hospitals. The characteristics of nursing activities at clinics in rural areas was clarified by this study, which may contribute to the construction of theories of nursing in rural contexts in the future. Globally, similar challenges for nursing activities in rural areas have been identified through previous research, and the results of this study may contribute to nurse training in these areas worldwide or environmental improvement in rural healthcare.

This study has some limitations related to setting, sample, and approach. Participants were recruited from 33 clinics at rural areas in Japan, and the small sample size might not be representative of the broader nursing practices in rural areas. However, this study enabled us to integrate previous studies on rural nursing with practices of nurses working at clinics all over Japan and effectively implementing challenging tasks.

CONCLUSION

Activities related to Basic Nursing Practice and Community Understanding were recognized as important and carried out by almost all the nurses in this study. Some activities related to Administration and Operation and Cooperation with Local Government were recognized as important but not implemented. These activities related to collaboration with hospitals supporting the clinics and local governments, including promoting a system for paid holidays, collaboration with acute care and remote medical system, and collaboration with local governments during an

emergency and for preparation in case of disaster.

DISCLOSURE STATEMENT

This study received no financial support and has no conflicts of interest.

REFERENCES

1. Suzuki K, Tanaka Y, Kishi E, et al. Advanced nursing practices in rural clinics. *Jichi Medical School Journal of Nursing*. 2004;2:5–16.
2. Ministry of Health, Labour and Welfare. Health and medical services in remote areas. http://www.pref.okayama.jp/uploaded/life/86502_280569_misc.pdf. Published 2016. Accessed March 5, 2019.
3. Ministry of Health, Labour and Welfare. Current situation of health care measures for remote areas, 2012 edition white paper. <https://www.mhlw.go.jp/wp/hakusyo/kousei/13-2/dl/02.pdf>. Published 2012. Accessed March 5, 2019.
4. Ministry of Internal Affairs and Communications. Japan statistical yearbook 2019. <https://www.stat.go.jp/data/nenkan/index1.html>. Published 2019. Accessed March 5, 2019.
5. United Nations Population Division. *World Urbanization Prospects: The 2018 Revision Population Database*. New York, NY: United Nations Department of Economic and Social Affairs; 2018. <https://population.un.org/wup/>. Published March 17, 2010. Accessed March 5, 2019.
6. World Health Organization. *The World Health Report 2006: Working Together for Health*. Geneva, Switzerland: World Health Organization; 2006. https://www.who.int/whr/2006/whr06_en.pdf?ua=1. Accessed March 5, 2019.
7. World Health Organization. Increasing access to health workers in remote and rural areas through improved retention. 2010. http://www.searo.who.int/nepal/mediacentre/2010_increasing_access_to_health_workers_in_remote_and_rural_areas.pdf. Accessed March 5, 2019.
8. Tsukamoto T, Sekiyama T, Shimada H, et al. The relationship of working conditions of nurses in the support hospitals for rural medicine and their support for clinic nurses in rural and remote area. *Japan Journal of Rural and Remote Area Nursing*. 2011;6:17–33.
9. Matsumoto M, Kimura K, Inoue K, et al. Aging of hospital physicians in rural Japan: a longitudinal study based on national census data. *PLoS One*. 2018;13(6):e0198317. doi:10.1371/journal.pone.0198317.
10. Oshima M, Arai F, Abe K. Literature review on the role of nurses in clinics. *Kyusyu University of Nursing and Social Welfare*. 2014;15(1):81–89.
11. Nakagawa S, Takase M. Problem of nurses in remote places. *Japanese Journal of Nursing Research*. 2016;39(4):103–113. doi: 10.15065/jjsnr.20160302007.
12. Sekiyama T, Yuyama M, Esumi, S. et al. Difficulties of nursing practice to recognize clinic nurses in rural and remote area. *Japan Journal of Rural and Remote Area Nursing*. 2015;10:31–39.
13. Yamasaki F, Hiehata S, Oshige N. Developing training program using the characteristics of rural nursing: hearings with nurses who have experience of being stationed in rural areas. *Bulletin of Fukuoka Jogakuin Nursing College*. 2014;5:1–11.
14. Haruyama S, Esumi S, Sekiyama T, et al. Characteristics of the nursing activity in rural and remote clinics in Japan: comparison of the findings of 2003 and 2008 and 2013. *Japan Journal of Rural and Remote Area Nursing*. 2015;10:1–13.
15. Nanamori A, Moriyama M. Nursing roles and competencies in primary care clinics in Japan. *Journal of General and Family Medicine*. 2015;38(2):102–110.
16. Matsushita A, Moriyama M. *Primary Care Nursing Fundamental Section*. Tokyo, Japan: Nankodo Publishing; 2016.
17. Smith KB, Humphreys JS, Wilson MG. Addressing the health disadvantage of rural populations: How does epidemiological evidence inform rural health policies and research? *Aust J Rural Health*. 2008;16(2):56–66.
18. Fujinami T. Improving sustainability in rural communities through structural transitions, including ICT initiatives. *JRI Research Journal*. 2017;1:44–65. <https://www.jri.co.jp/MediaLibrary/file/english/periodical/jrirj/2017/08/fujinami.pdf>. Accessed March 5, 2019.
19. Grobler L, Marais BJ, Mabunda S, et al. Interventions for increasing the proportion of health professionals practicing in rural and other underserved areas. *Cochrane Database Syst Rev*. 2009;1:CD005314. doi:

- 10.1002/14651858.CD005314.pub2.
20. Ministry of Health, Labour and Welfare. Community-based Integrated Care Systems. https://www.mhlw.go.jp/seisakunitsuite/bunya/hukushi_kaigo/kaigo_koureisha/chiiki-houkatsu/dl/link1-3.pdf. Accessed July 26, 2019.
 21. Cabinet Office. Specified situation list of severe disasters over the past 5 years. <http://www.bousai.go.jp/taisaku/gekijinhukko/list.html>. Published 2018. Accessed March 5, 2019.
 22. Matsumoto M, Inoue K. Earthquake, tsunami, radiation leak, and crisis in rural health in Japan. *Rural Remote Health*. 2011;11:1759. <https://www.rrh.org.au/journal/article/1759>. Accessed March 5, 2019.