

Original article

# What do medical residents learn on a rural Japanese island?

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## Abstract

**Objective:** Community-based medical education (CBME) serves as a complement to university medical education, and it is practiced in several urban undergraduate and postgraduate curriculums. However, there are few reports on CBME learning content in rural Japanese settings.

**Materials and Methods:** This research aimed to clarify learning content through semi-structured interviews and qualitative analysis of second-year residents who studied on a remote, rural island located 400 km from the mainland of Okinawa, Japan. Analysis was based on Steps for Coding and Theorization (SCAT).

**Results:** Fifteen concepts were extracted, and four categories were generated: a strong connection among the islanders, the necessary abilities for rural physicians, islander-centered care, and the differences between rural and hospital medicine. In contrast to hospital medicine, various kinds of learning occurred in deep relationships with the islanders.

**Conclusion:** Through CBME on a remote island, the residents learned not only about medical aspects, but also the importance of community health through the social and cultural aspects, whole-person medical care in a remote location, and the importance of reflection in their self-directed learning.

**Key words:** community-based medical education, postgraduate, rural medicine, whole-person medical care, self-directed learning

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## Introduction

Community-based medical education (CBME) is used in undergraduate and postgraduate education worldwide<sup>1</sup>. Its expected effects are learning common diseases, common procedures, patient-centered clinical methods, functions of rural hospitals, and so on<sup>2</sup>. While medical trainees can learn both basic and specialized knowledge of medical science and various diseases in university hospitals and tertiary hospitals<sup>3</sup>, it is difficult to obtain opportunities to observe patients with common diseases and consider their biopsychosocial aspects. CBME therefore functions as a complementary aspect of medical education in medical universities and tertiary hospitals<sup>4</sup>.

In Japan, several medical educational institutes use CBME as a curriculum for both undergraduate students and postgraduate residents<sup>5,6</sup>. Its learning issues are varied, and depend on where the recipients receive training. For example, training in community hospitals is effective in clinical clerkship training, learning evidence-based medicine, deep learning discussion on cases, and acquiring clinical reasoning skills<sup>7</sup>. In outpatient clinics, it is easier for trainees to actively participate in practice, and to obtain opportunities to learn inhabitants' local activities in their communities<sup>8</sup>. These experiences may lead to the learning of patient-centered care and community approaches<sup>9</sup>. Among undergraduate students, experiences in CBME can improve students' understanding of community medicine, inter-professional collaboration, trust-based relationships, and roles of community hospitals and clinics<sup>10</sup>.

However, there has been little research on CBME learning among postgraduate trainees worldwide. In Japan, community medicine training is compulsory during the initial two-year training of physicians. Community medicine training competencies are established by the Ministry of Health, Labour and Welfare, and consist of three components: "to understand and practice medical care based on patients'

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lifestyles and community characteristics”; “to understand the role of clinic practice”; and “to understand and practice rural medicine and remote island medicine”<sup>11)</sup>. However, detailed learning contents are not described, and the local medical institutes are responsible for providing training.

CBME has been practiced for several years in Okinawa’s remote islands. Medical learning on these rural islands is considered to predominantly depend on their situations and conditions<sup>12)</sup>. Due to what medical trainees learn on the remote island of Okinawa, future trainees can understand the content, and perhaps be motivated to study there. Additionally, in the Japanese medical educational system, the clarification of learning content may produce competent and trustworthy professional activities on rural islands that can improve the medical trainees’ learning. Therefore, trainees learning content on Okinawa’s remote islands should provide insights into CBME in remote settings. The aim of our study was therefore to discover through qualitative analysis what medical trainees learn through CBME on a rural Okinawan island.

## Methods

### *Setting*

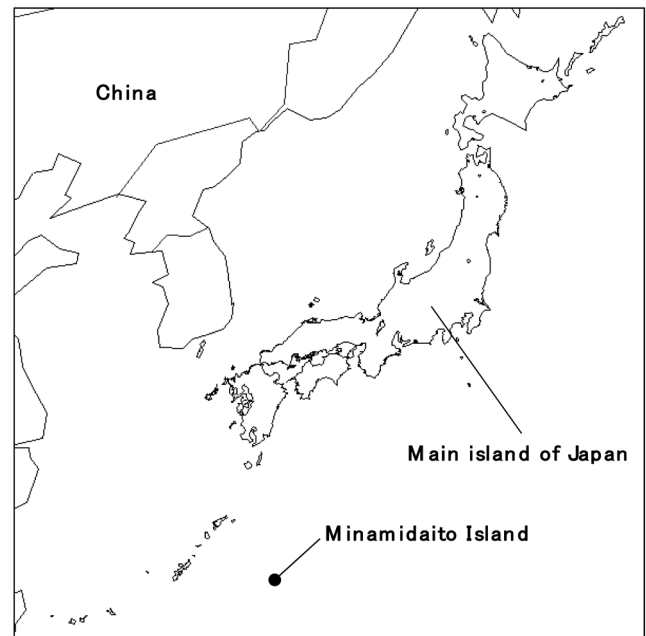
There are 16 prefectural clinics in the rural islands around Okinawa. The clinics’ physicians are dispatched from the prefectural hospitals on the mainland of Okinawa. Only one physician works at each clinic. The research setting was Minami Daitō Island, located about 400 km east of Okinawa (Figure 1). CBME is practiced on this island for second-year residents from the mainland hospitals, who study here for two weeks. The training services collaborate with rural health institutes, the local government, and the inhabitants. The CBME content here includes patient care at the clinic; community health care, such as pediatric vaccinations and participation in meetings with the local government; and participatory experience in local occupations, such as agriculture or fishing. The supervisor has a reflective session with the trainees at the end of each day of the two-week training period.

### *Participants*

This research was conducted at a remote island clinic off Okinawa from April, 2014, to March, 2015. The participants were second-year medical residents who had worked in the clinic during that period. Although every candidate was asked to join, only those who consented participated in the research.

### *Interview process*

We conducted semi-structured interviews with the par-



**Figure 1** Location of Minami Daitō Island.

ticipants after their two-week training on the island. These consisted of questions in the following information categories: “Impressive experiences during training,” “Learning points during training,” “Issues that they had wanted to experience but actually could not,” “Issues that they wanted to attempt though their experience on the island,” and “Improvement of the training at the clinic.” After receiving informed consent, we recorded the conversations using an IC recorder, following which the contents were converted to text. The primary author (R.O.) conducted the interviews.

### *Data analysis*

We analyzed the text data from the interviews qualitatively using the “Steps for Coding and Theorization” (SCAT) method, a sequential and thematic qualitative analysis technique. It consists of the following four steps<sup>13)</sup>.

Step 1: Focus words from within the interview texts.

Step 2: Words outside the text that are replaceable with the words from step 1.

Step 3: Words that explain the words in step 1 and step 2.

Step 4: Themes and constructs, including the process of writing a storyline and offering theories that weave together the themes and constructs.

Itemized concepts were extracted from each of the participants. Similar itemized concepts were merged, and categorized into themes. Initial analysis was conducted by the primary author (R.O.), and then reviewed and discussed with the second author (D.S.).

**Table 1** Characteristics of the participants

ID	Age	Sex	Training hospitals	Future specialty	Interview length (min.)
1	25	Female	Community hospital	Anesthesiology	48
2	26	Female	Community hospital	Internal medicine	50
3	25	Male	Medical university	Pediatrics	44
4	26	Male	Medical university	Emergency medicine	49
5	26	Female	Community hospital	Pediatrics	46
6	25	Male	Community hospital	General surgery	43
7	25	Female	Community hospital	Emergency medicine	50

**Table 2** Categories and concepts

Category	Concepts
Strong connection of the islanders	Reduction of burden on emergent care Difficulties of the islanders affected by social determinants of health Enrichment of community care through collaboration
Abilities necessary for rural physicians	Approach to subtle changes of elderly Necessity of precise prediction of clinical courses Physician's reflection into work-life balance Self-directed learning
Islander-centered care	Empathic intervention through whole-person understanding Patient education based on island context Understanding of the importance of tradition for the inhabitants Respectful trans-professional relationship
Difference between rural medicine and hospital medicine	Difference of time flow Consideration of patients' backgrounds Continuity of medicine between hospital and community Business of hospital medicine

### Ethical considerations

As an ethical consideration, the researcher asked the interviewees to join the research, and informed them that they had the right to reject participation at any time, in accordance with the Declaration of Helsinki, and that they could interrupt the interview if they felt any discomfort. The researchers explained the aims of this research, how data would be disclosed and personal information protected, and received written consent. The medical ethics committee of the Okinawa Nanbu Prefectural & Children's Medical Center approved this study (Approval Number 2015-12).

### Results

Altogether, there were seven participants. Table 1 indicates their characteristics. Their average age was 25.42 (SD = 0.53), and 71.4% (5/7) were male. The duration of their training on the rural island was 14 days for all participants. The average interview length was 47.42 minutes (SD = 3.51).

Through the analysis, 15 concepts were extracted, and four categories were generated (Table 2). The four categories included: strong connection among the islanders, abilities

necessary for rural physicians, islander-centered care, and differences between rural and hospital medicine. [ ] shows the IDs of the residents.

#### *Strong connection among the islanders*

Reduction of the burden on emergency care: Through their rural training, the residents discussed emergency care on the island with the government clerks and inhabitants. These discussions led to their understanding that connection and mutual support among the inhabitants might contribute to the reduced frequency of emergency calls at the rural clinic. According to one participant:

*"Rural emergency care is completely different from urban. There are no other places where people can receive medical consultations for their symptoms, except for this clinic. The inhabitants are always vigilant to ensure they do not miss an emergency situation. However, they know that the clinic has only one physician, and that they cannot always go there."* [6]

Islanders' difficulties affected by social health determinants: In rural training, the residents visited the houses of the elderly along with a public health nurse. Through this ex-

perience, they realized that on such a rural island the elderly faced difficulties in terms of loneliness and the management of their lands. As one participant stated, *"I wondered how the elderly could lead their lives. Their agricultural lands are so large. Although they are managing the lands with automatic machines, I can't imagine how a few of them fully manage their lands. They must face a certain amount of difficulty."* [1]

**Enrichment of community care through collaboration:** The residents had several opportunities to observe collaboration among the physician, the clinic nurse, the public health nurse, and the rural government clerks dealing with community care. Through this experience, they realized that collaboration leads to the improvement of the inhabitants' health condition. Another participant told us, *"In urban places, it is heard that the elderly who live alone, find it difficult to call ambulance and may die alone. However, on a rural island, these situations can be prevented to some extent. Thanks to collaboration among the inhabitants, they may receive help as soon as possible."* [5]

#### *Abilities necessary for rural physicians*

**Awareness of subtle changes in the elderly:** On rural islands, physicians must recognize their patients' subtle changes, because overlooking them might worsen their conditions, forcing their transference to mainland hospitals by helicopter. The residents realized that rural physicians should always be observant of any changes in the conditions of the elderly to protect their lives. Another participant emphasized, *"If we can diagnose the elderly with bacterial pneumonia at an early stage, we can easily treat them with oral antibiotics. However, if we miss it, they need to be admitted to the mainland. This may affect their daily life greatly. We knew that we should provide care for them within this island as far as possible."* [6]

**Necessity of precise prediction of clinical courses:** Some residents experienced the emergency transportation of rural patients to the mainland. In the process, they learned the importance of precisely diagnosing critically ill patients, and the appropriate initial management required in rural clinics. One such participant said, *"In rural islands, we cannot perform sufficient emergency treatments, so the prediction of the clinical course is critical. I thought that rural physicians always have to consider the worst case scenarios and identify a solution to the problem."* [1]

**Physician's reflections on work-life balance:** The residents often described the rural physician's actual life on the rural island. They recognized the strength of the connection between the physician and the inhabitants; however, they also revealed the difficulties of finding space to balance their life and work. As one participant described it, *"Living*

*on a rural island is difficult for a physician. I might lose the balance between my private and my professional life. To be a rural physician, we always have to be conscious about this balance to lead a healthy life."* [4]

**Self-directed learning:** On rural islands, physicians must learn medical issues themselves, because often they have no colleagues. Though there are some internet communication tools available for discussion with other rural physicians, several clinical questions may arise in their everyday experiences. Therefore, the residents realized the significance of self-directed learning. One stated, *"Through my experiences here, I understood that as a physician I have to find learning issues and study them myself."* [2]

#### *Islander-centered care*

**Empathic intervention through whole-person understanding:** Through interaction with the inhabitants, the residents understood the diversity of their cultural lifestyles, which led to a deep respect for their values and opinions about health.

As one remarked, *"I feel it is not appropriate to judge the patients' conditions only from a medical aspect. I learned the importance of understanding their lifestyles, and considering how they can lead safe lives in their contexts. I don't know how, but I want to attempt this method in my hospital."* [3]

**Patient education based on the island's context:** Some residents had the opportunity to observe some health promotion activities by the public health nurse, who understood the rural context and explained local health issues clearly to the inhabitants. Throughout her explanations and interventions, she always respected their lives, and attempted to adjust her interventions to suit their context. One participant explained, *"It was very impressive that the rural island has its own tradition, and the medical staff must be careful about the lifestyles of islanders and how they think about their own health conditions before intervening regarding their health problems. I regret my previous approaches in the hospital. I was unaware at that time, and continued offering the same explanations to patients, such as reducing consumption of salt, quitting smoking, and so on."* [6]

**Understanding of the importance of tradition for the inhabitants:** On the island, certain traditional events and activities were important to the inhabitants. They tended to place more importance on them than on medical problems. Through in-depth communication with them, the residents realized that there were different perspectives and they should respect each inhabitant's opinions. As one related, *"I heard from an inhabitant that he did not want to be admitted to the hospital when he was suffering from bacterial pneumonia because he had to organize a festival the following week. Although he needed strong treatment and we*



*suggested admitting him, we should have listened more to his hopes and expectations.” [4]*

Respectful trans-professional relationships: Some residents experienced the inhabitants’ occupations on the island, such as fishing, farming, and so on. Through their experiences, they understood the difficulties and values of these occupations, deepening their respect for them. One stated, *“I realized that I had not respected the people’s jobs. Every patient had a job and worked hard. I want to reconsider my attitude and empathize with my patients’ lives more.” [7]*

#### *Differences between rural and hospital medicine*

Differences in time flow: The rural physician usually cares for chronic patients for a longer period. As the residents had worked in tertiary hospitals, they had experienced few patients with chronic diseases. Through this continuous care for chronic patients, they noticed the difference in time flow between rural clinic and hospitals. According to one participant, *“Of course, we must intervene immediately in emergency situations, but even if we find any abnormalities in stable patients, we should pace their treatment processes. Although I had never experienced this in my hospital, now I understand the importance of patients’ life cycles and time flow.” [4]*

Consideration of patients’ backgrounds: Through their experiences on the island, the residents understood that every patient had a personal life and social relationships with other people. Furthermore, they realized that respecting these factors could lead to healthier lives for them. As one participant observed, *“In the hospital, I thought the patients could lead their lives if we helped them regain their basic Activity of Daily Living (ADL). But through my rural experiences, I realized that unless we understand their lives after they are discharged, they could get worse again.” [6]*

Continuity of medical practice between hospital and community: On the island, all the residents experienced examining patients who had recently been discharged from hospitals. Through conversations, they realized that there were significant differences between hospitals and rural islands, and that it was important to seamlessly connect hospital medicine and rural medicine. One participant stated, *“I realized that we decided the patients’ discharge based on their condition in hospitals, but did not consider their lives afterward. We should care for patients in the context of their daily lives, and help them seamlessly transfer into them.” [6]*

The demanding pace of hospital medicine: Through reflection, the residents realized that their hospital lives were very busy, and they regretted their inconsideration of patients’ perspectives. One of them admitted, *“I enjoyed the rural life, and realized that at the hospital we were working too hard and didn’t have time to consider our patients.” [7]*

## **Discussion**

This research clarifies the learning content of rural medicine training among second-year residents on an island near Okinawa. The trainees learned the importance of a strong connection among the islanders, the abilities necessary for rural physicians, respect for islander-centered care, and the differences between rural and hospital medicine.

It may be beneficial for the trainees to learn the importance of connection among the islanders in their subsequent management of patients’ health, since strong connections among the islanders are essential in their lives on rural islands<sup>14</sup>. What is called “social capital” can be connected to their mental and physical well being<sup>15</sup>. The stronger social capital is, the healthier people become, both mentally and physically<sup>16</sup>. However, if the connection between the inhabitants is too strong, it may have an opposite effect<sup>17</sup>. During their time on the island, the trainees had several opportunities to interact with the islanders, and so understood the advantages and disadvantages of social capital. It is therefore possible that they can deal with social capital effectively by reflecting on their patients’ backgrounds.

Certain abilities necessary for rural physicians on remote islands can be experienced though a two-week period on them. Some rural physicians on remote islands might have specific competencies that are different from others<sup>18</sup>. Their competencies range from primary to tertiary medical care in an emergency, because of the remoteness of the clinical settings<sup>18</sup>. Additionally, the perspectives of rural physicians on remote islands can be unique, since each remote rural island in Okinawa has only one physician. They are forced to interact with the islanders, even outside their workplaces. This may lead to negative feelings that must be controlled and balanced through self-reflection<sup>19</sup>. Trainees in rural settings can thus learn how to manage their negative feelings in clinical settings through the example of rural physicians.

Perspectives on islander-centered care may be acquired by first understanding patient-centered care as the basic competency of a medical doctor. Patient-centered care is an important skill not only for general practitioners, but also for other specialists, enabling them to understand their patients’ conditions and facilitating their healthcare<sup>20</sup>. Patient-centered care may be essential for shared critical decision making in specialized medicine<sup>21</sup>. Through observation of rural health care, residents might realize the importance of adjusting their stances with their patients to empower them, leading to the concept of “finding common ground” as an important factor in patient-centered care. Furthermore, since they experienced the patients’ occupations during training and knew their difficulties, they understood the patients’ problems in following physicians’ typical sugges-

tions regarding their health care. These experiences may lead them to understand the importance of being realistic in their patient care<sup>22)</sup>.

Training on a rural island may also cause residents to reflect on clinical performance while considering the differences between rural and hospital medicine. As the residents stated, there are several differences between hospital and rural medicine. Through training at hospitals, they could learn about various acute, complicated, and rare diseases within the framework of institutional medicine. They could experience various medical procedures as well. However, as hospital work is very demanding, they may not have deeply reflected on their experiences. Self-reflection is essential to enhance their learning, understanding, and accurate usage of medical knowledge and skills<sup>23, 24)</sup>. Through working on a rural island, the trainees might understand how reflection can help them learn and progress at their hospitals.

Such learning content may improve medical education on rural islands in Japan. Our finding may facilitate medical educators in understanding the educational conditions on Japanese rural islands, ensuring that the learning situations there are more effective for medical trainees. Although this learning content may not apply to education on all rural islands, our finding can nonetheless be generally utilized in developing rural medical education programs. Our research may thus motivate others to create more diverse medical learning content on Japanese rural islands.

The limitation of this qualitative research is that it was performed on a single, remote Okinawa island. On the other rural islands, trainees may experience different issues related to rural medicine, because there are differences in elderly rates, population sizes, and so on. The other limitation is the relationship between the interviewer and interviewees. In this research, the interviewer was the rural physician who had coordinated the training of the residents. Therefore, the interviewees' might have been reluctant to reveal negative aspects of the training, which might show only its primarily positive features in the results.

## Conclusion

On rural islands, medical residents learn the importance of connections among inhabitants, the necessary skills for rural physicians, islander-centered care, and the differences between rural and hospital medicine. Through CBME, the residents learned not only medical practice, but also the importance of community health from the social and cultural aspects, plus whole-person medical care in a remote setting, as well as the importance of reflection to guide their self-directed learning.

**Conflict of Interest:** The authors state that they have no conflict of interest.

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