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Original article

Experiences of developing competency in a network of nurse executives working at rural medical facilities: an ethnographic qualitative study

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Abstract

Objective: Nurse executives (NEs) working at rural medical facilities encounter challenges, including nursing quality and management, due to a shortage of nurses; this requires them to develop their competencies. A previous study reported that managers working in rural medical institutions gather nearby to learn about management. However, no research has focused on NEs working in rural areas or clarified their experiences in developing competency through learning networks. This study focused on the learning networks of NEs working in rural medical facilities and aimed to clarify their experiences with competency development.
Patients/Materials and Methods: In this study, we conducted competency development for NEs through the learning networks in Japan. An ethnographic qualitative study design was used. Twenty NEs participated in the study. Data were collected through participant observation and ethnographic interviews, and analyzed using thematic analysis.
Results: This study revealed the following three themes: (1) aiming to provide medical care that contributes to the rural community; (2) work efficiency by a small number of staff; and (3) development as NEs. The NEs in this study improved as NEs by promoting efficiency in their work with a small group, while aiming to provide medical care that contributes to the rural community through participation in a learning network.
Conclusion: A learning network of NEs develops their competencies by helping them improve their practice through dialogue and reflection on their nursing management. Therefore, even in an environment with limited resources, NEs might be able to improve the services of their organization through the learning network.

Key words: nurse executive, rural medical facility, competency, management, network

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Introduction

Unlike other countries, Japan is experiencing a declining birth rate and an aging population[1–4]. In particular, in some areas in rural Japan, the proportion of older adults exceeds 50%[5] and there are few medical facilities and a shortage of medical staff[5–9]. Previous studies have reported that rural hospitals face challenges such as nurse shortages[10–15] and closures[13, 16, 17]. Therefore, management must resolve these challenges to enable rural hospitals to continue providing medical services.

Nurse managers are responsible for various management tasks; moreover, they need competency to improve organizational challenges[18–22]. Competency is an individual's characteristic related to effective or superior performance in a job, role, or situation[18–22]. It comprises the skills, knowledge, and abilities required to achieve high-quality healthcare[18–22]. Nurse managers require a high level of competency. However, the competency of nurse managers vary depending on their years of experience as nurse managers and the size of the hospital where they work[23, 24]. Furthermore, some nurse managers leave their organizations owing to difficulties

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with their work[25]. In particular, nurse managers at small hospitals have been found to face more difficulties with a lack of support and resources in their organizations than those at large hospitals, and they tend to experience burnout[26]. Therefore, nurse managers at small rural hospitals must improve their management skills to continuously solve organizational challenges without burnout or high turnover.

A systematic review of nurse managers' competency development identified various challenges hindering the application of acquired knowledge in practice such as understaffing, time constraints, and inadequate assistance from supervisors and staff[27]. Therefore, especially for nurse managers in small rural medical facilities that encounter multiple challenges, management education that allows them to apply the knowledge and skills learned in their organizations is necessary. A previous study showed that healthcare middle managers (HMMs) experience capability development through the empowerment provided by upper management in their workplace and they require context-specific support[28]. According to this study, managers must develop practical skills through experience working in organizations. Moreover, regarding the capability development of HMMs outside the organization, a learning network has been reported, wherein HMMs learn the knowledge and skills that can be used in the workplace[29]. The learning network focuses on improving the quality of healthcare, and HMMs develop their capabilities by sharing their knowledge and skills based on their experiences with each other[29]. Thus, nurse managers should improve their practical skills through opportunities for competency development within and outside the organization. However, studies of competency development targeting nurse executives (NEs) working in rural medical facilities are limited. NEs are representatives of the nursing department of a medical facility. They have many responsibilities and are responsible for collaborating with other medical facilities in their region[19, 20, 22]. Therefore, NEs must develop their competencies by acquiring knowledge and skills based on each other's experience.

A study on competency development for NEs working at rural medical facilities reported a process wherein NEs reflected on their human resource development experiences and improved them by participating in a learning network[30]. However, it is unclear whether NEs will develop the competency to solve problems, such as nursing shortages and management difficulties, by participating in the learning network. NEs working at rural medical facilities encounter multiple challenges; therefore, it is necessary to improve their problem-solving competency by participating in learning networks. Therefore, this study focused on a learning network that develops the competency of NEs working at rural medical facilities and aimed to clarify the experiences of NEs who participated in the learning network. Our research question was how they experience competency development to solve challenges such as nursing shortages and management difficulties.

Materials and Methods

Participants

This study was conducted in cooperation with the Oita University of Nursing and Health Sciences, Oita University, the Oita Prefectural Health Center, and the Oita Prefectural Nursing Association. We recruited NEs to participate in this study from each region through rural nursing networks operated by public health nurses at Oita Prefecture Public Health Centers. The participants in this study were NEs who worked in small rural hospitals with fewer than 250 beds, visiting nursing stations, or clinics in Japan. All NEs were representatives of the nursing departments at their facilities. The participants of this study are listed in Table 1.

Learning network

The learning network aimed to develop the competency of the NEs by learning management from each other based on their management experience. This study's learning network refers to the theory of experiential learning, wherein managers develop through experiences, and critical management education theory, which promotes learning through reflection and dialogue on experiences[31].

The learning networks used in this study were conducted in three rural regions within Oita Prefecture, Japan. Each

Table 1 Characteristics of the nurse executives and facilities to which they belong

	N	%
Age		
50–59	15	75
60 and older	5	25
Total	20	100
Gender		
Male	0	0
Female	20	100
Total	20	100
Facility type		
Hospitals	11	61.1
Visiting nursing stations	6	33.3
Clinic	1	5.6
Total	18	100
Number of beds in the hospital/clinic		
<50 beds	4	33.3
50–99 beds	1	8.3
100–199 beds	4	33.3
200–250 beds	3	25
Total	12	100

NE participated in the learning network of their rural region, where their facility was located. The learning network was held in group sessions of two hours every two to three months. Group sessions were conducted eight times for two years in each of the three regions. The NEs conducted sessions in small groups of three to five people each. The NEs continuously participated in group sessions with the same group and reflected on their experiences through dialogue from multiple perspectives. One or two certified nursing managers and one or two researchers participated continuously as advisors in the group sessions with the same group. The NEs applied what they had learned in the group sessions to nursing management practices at their facilities. Furthermore, they discussed their applied experiences again in the group sessions and reflected on them through dialogue. The advisers from each group advised the NEs and facilitated their reflection and learning throughout the group sessions.

Data collection and analysis

This study used an ethnographic method to clarify the NEs' experiences of competency development, including their perceptions, thoughts, and behaviors. This research method can reveal the perceptions, thoughts, and behaviors of specific groups through researchers collecting data while they experience events with specific groups and analyzing data from internal and external perspectives obtained through their experiences[32, 33]. The method of this study was considered appropriate because we also participated in group sessions with the NEs as advisers, collected and analyzed data, and clarified the Nes' experiences in developing their competency.

Based on the literature[32, 33], participant observations, ethnographic interviews, group session records, and field notes were used. Participant observations were conducted during the group sessions by the researchers (HF, CH) participating in the group sessions held in each region. The researchers (HF, CH) observed the NEs while serving as advisers during the group sessions. Participant observation data were recorded on an integrated circuit recorder with the permission of the participants and their advisers, and verbatim transcripts of all group sessions were created by the researchers (AA, YH, and AY). Furthermore, we created records and field notes for each group session and recorded the dialogues and behaviors of the participants and advisers. The researchers (HF, CH, AA, YH, AY, and SM) created documents based on the records and verbatim transcripts for data analysis and interpretation. The participants confirmed the data analysis and interpretation of their dialogues and behaviors during the group sessions through documents.

The researchers (HF, CH, and SM) performed data analysis using NVivo 12 Plus for Windows (QSR International Pty. Ltd.) with reference to the literature[32, 33]; they performed the following steps:

(1) Data understanding: To understand the dataset as a whole, we carefully read the textual data (verbatim transcript data, meeting minutes, and field notes).

(2) Coding: We focused on the narratives of the NEs, dialogues between the NEs, and dialogues between the NEs and their advisers in all text data, and identified data that were applicable to the research purpose. Next, we extracted data on the experiences, cognitions, and behaviors related to the competency development of NEs and generated labels for each semantic content of the extracted data.

(3) Categorization: Each code was compared for differences and similarities in meaning and content and similar codes were aggregated into categories.

(4) Theme extraction: We compared the differences or similarities in the meaning of each category, aggregated similar categories, and extracted themes while clarifying the rules, patterns, themes, and storylines. Data analysis was stopped after saturation and no new information was identified.

Ethical considerations

This study was conducted with the approval of the Oita University of Nursing and Health Sciences Research Ethics and Safety Committee (approval number 18-93). To conduct the study, the researchers explained to the participants and their advisers, both in writing and verbally, the purpose and method of the study, voluntary participation, protection of personal and facility information, and obtained consent.

Results

Table 1 presents the characteristics of the NEs and the facilities to which they belong. The results of the analysis performed in this study are shown in Figure 1 and Table 2. Three themes were identified based on the codes and categories. The NEs experienced development as NEs by promoting work efficiency with a small number of staff while aiming to provide medical care that contributes to their rural community through participation in the learning network. The results are categorized according to theme.

Theme 1: Aiming to provide medical care that contributes to their rural community

This theme comprises four categories. Initially, NEs encountered the challenge of managing small rural medical facilities. However, as they participated in the learning network and had repeated discussions, they gradually began to consider the medical care needed in their region and shared their vision within the organization. Furthermore, they aimed to realize an organizational vision through improving management by improving the quality of nursing. Moreover, they attempted to provide high-quality medical care to patients in their regions by strengthening medical cooperation.

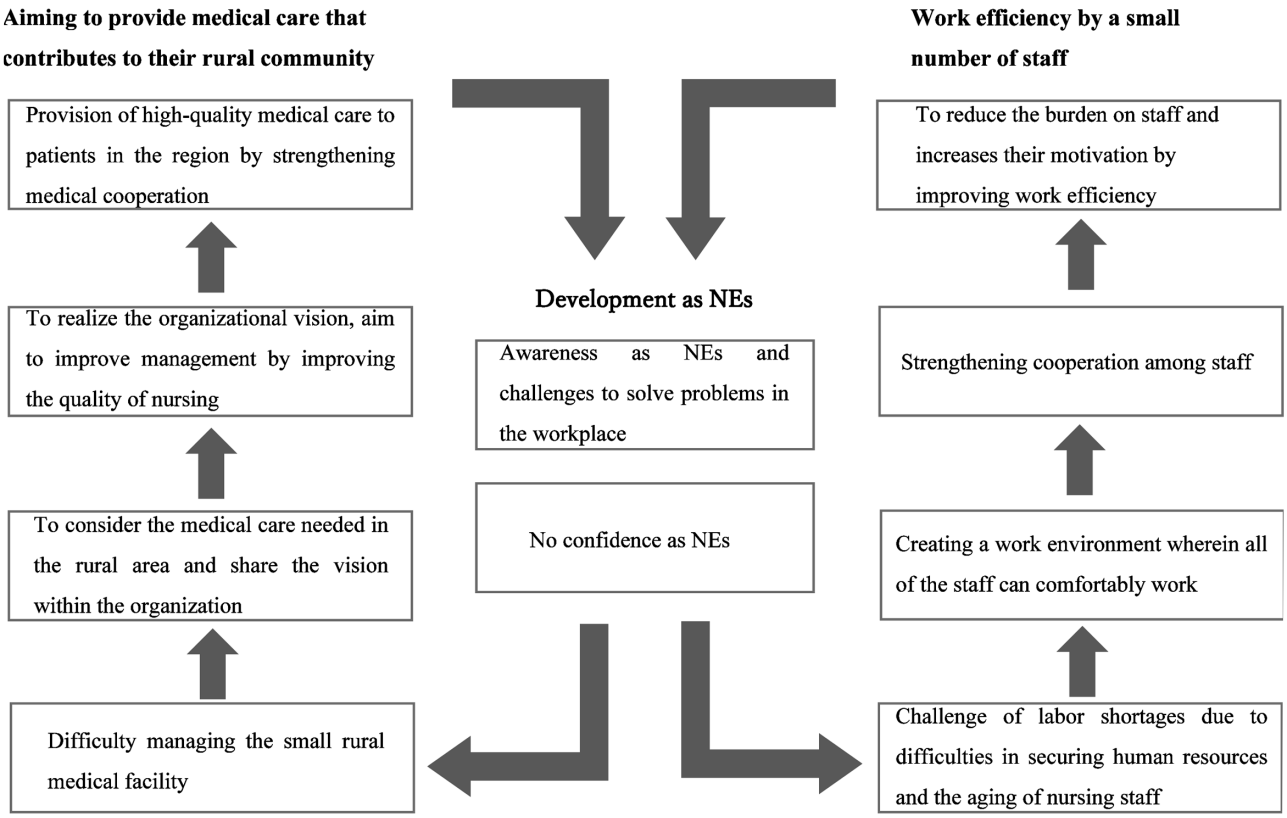

Figure 1 Experiences of developing competency in a network of nurse executives working at rural medical facilities.
NEs: nurse executives.

Category 1: Difficulty managing a small rural medical facility

The NEs recognized the negative impact on management due to a decrease in the number of patients and perceived a sense of crisis. They were unable to increase services with a small number of staff in the small medical facility, and they encountered difficulties in managing. Furthermore, the NEs believed that the geographical characteristics of the depopulated area were disadvantageous to management, transportation for hospital visits and home-visit nursing care took too long, and continuing medical care was costly.

"The number of patients has decreased; management is difficult. There is not enough staff to provide nursing care, and I (NE) also have to visit patients far away to care for them. I do not have time to go to business activities to find the new patients requiring home-visiting nurses. (ID20)"

Category 2: To consider the medical care needed in rural areas and share the vision within the organization.

The NEs considered the significance of their facility's existence in the region based on their management challenges and the medical care needed in their rural regions. Furthermore, they reconsidered their organizational vision and shared it with their staff.

"We have been providing care for patients undergoing surgery as a surgical hospital; however, the number of patients is decreasing. To continue providing medical care in this region, we must change our hospital's policies and provide care for older adult patients requiring internal medical care through cooperation with facilities in this rural region. I am going to start doing what I can while informing the staff about the current situation. (ID5)"

Category 3: To realize the organizational vision, aim to improve management by improving the quality of nursing.

The NEs prepared new healthcare equipment to provide better nursing care to local patients who required end-of-life care. Moreover, they supported their staff in improving the quality of outpatient nursing care and aimed to obtain new medical fees to improve the quality of nursing care for inpatients with dementia. Furthermore, they conducted effective cost management and budget negotiations with their organizational management team to improve the quality of nursing care and worked on business activities for nursing services in nearby areas.

"The ratio of older adult inpatients with dementia is increasing, and we cannot provide enough dementia care for them. We must improve the quality of their nursing care. Our hospital is under financial pressure. We could contribute to nursing care for patients with dementia and hospital

Table 2 Competency development experience of nurse executives (NEs) working at rural medical facilities through the learning network

Themes	Categories	Codes
Aiming to provide medical care that contributes to their rural community	Difficulty managing the small rural medical facility	A sense of crisis due to the negative impact on hospital management due to the decrease in the number of hospitalized patients
		A sense of crisis due to the negative impact on visiting nursing station management due to a decrease in the number of patients
		Difficulties in expanding services and improving management with a small staff
		Geographical characteristics of depopulated areas and disadvantages to management
	To consider the medical care needed in the rural area and share the vision within the organization	Reconsidering the organizational vision
		To consider the significance of a medical facility's existence in the community
		Consider new home medical services
		Aiming to transition from a surgical hospital to an internal medicine hospital
		Aiming to strengthen the functionality of visiting nursing stations
		Share the organization's vision with the staff
	To realize the organizational vision, aim to improve management by improving the quality of nursing	Preparing new equipment for patients at end-of-life to provide the best care
		Support staff to improve the quality of continuing care for outpatients
		Aiming to obtain new medical fees for improving the quality of nursing care for hospitalized patients with dementia
		Perform cost control for improving nursing quality
		Negotiate the budget with management to improve the quality of nursing care
		Public relations of good nursing services to the rural region
	Provision of high-quality medical care to patients in the region by strengthening medical cooperation	Visiting nursing stations work together to care for the children and older adults
		Visiting nursing stations work together to care for severely ill patients in remote areas
		Strengthening collaboration between small hospitals and older adult care facilities to improve the quality of care
		Strengthening cooperation between hospitals and visiting nursing stations to improve care for discharged patients
Work efficiency by a small number of staff	Challenge of labor shortages due to difficulties in securing human resources and the aging of nursing staff	NEs and staff are burdened with excessive tasks owing to labor shortages
		Staff members cannot afford to help each other because of a lack of manpower
		I am concerned that the quality of nursing care will decline because of a shortage of manpower
		In rural areas, we cannot gather enough staff
		The ratio of older adult nurses in the workplace has increased
	Creating a work environment wherein all of the staff can comfortably work	Create work schedules that align with the staff needs
		Prepare diverse work patterns that match the lifestyles of staff
		Arrange works to match older adult nurses
		Supporting nursing practices that staff want to engage in
	Strengthening cooperation among staff	Supporting the nursing staff to understand each other's work and help each other
		Coordinating collaboration of interprofessional within the organization to enable help each other
	To reduce the burden on staff and increases their motivation by improving work efficiency	Improving efficiency and reducing burden by reviewing and reducing operations
		Nursing staff and nursing assistants sharing nursing duties
		Using ICT and DX to improve work efficiency and staff motivation
Development as NEs	No confidence as NEs	Lack of confidence due to self-learned management knowledge
		Performing management while confused and fumbling around
	Awareness as NEs and challenges to solve problems in the workplace	Learn about reforms at other facilities and aim to reform your facility
		Awakening to the role of an NE
		A challenge to management that can be performed even in small organizations

management by acquiring new medical fees to improve the quality of dementia care. We decided to start these activities together with our staff. (ID10)"

Category 4: Provision of high-quality medical care to patients in the region by strengthening medical cooperation

The NEs worked to improve the quality of nursing care for patients by strengthening collaboration with hospitals, visiting nursing stations, and older adult care facilities in rural regions. Additionally, their small visiting nursing stations collaborated to care for patients of all ages, including seriously ill patients ranging from children to older adults.

"The most important thing for patients is good cooperation between hospitals and visiting nurse stations so that we can provide the medical care our patients need when they are discharged. I asked the NE of the hospital to arrange for me to participate as an NE of the visiting nurse station in hospital conferences to discuss the care of patients being discharged. Other professions needed the opinions of visiting nurses at the conferences; therefore, I intend to continue strengthening our collaboration. (ID12)"

Theme 2: Work efficiency by a small number of staff

This theme comprised four categories. To provide medical care that contributes to their rural region, the NEs promoted work efficiency with a small number of staff. They continued to discuss the challenges of labor shortages due to difficulties in securing human resources and the aging of nursing staff. They began considering ways to overcome these challenges. The NEs made an effort to create an environment wherein diverse staff, including older adult nurses and all other staff, could comfortably work. Furthermore, they aimed to solve the labor shortage by strengthening cooperation among their staff, reducing the burden on their staff, and increasing their motivation by improving work efficiency.

Category 1: Challenge of labor shortages due to difficulties in securing human resources and the aging of nursing staff

The NEs were concerned that the quality of nursing care would decline as the NEs and staff were burdened with multiple tasks and could not help each other because of labor shortages in the workplace. Moreover, because they could not recruit new staff, they were concerned about the increasing proportion of older adult nurses in their workplaces.

"Owing to the declining population of the region, securing nurse staff is extremely challenging. We are only able to recruit one or two new nurses per year, and depending on the year, we may not have any new nurses at all in our facility. The number of part-time staff and older adult nurses is higher than the number of full-time nurses, and the burden on full-time nurses, who are responsible for several tasks, is increasing in our facility. (ID11)"

Category 2: Creating a work environment wherein all of the staff can comfortably work

The NEs worked to create a comfortable working environment so that their staff could continue to work in understaffed workplaces. The NEs prepared various work styles to suit the lifestyles of their staff, and a work-shift schedule was created based on the staff's request. Furthermore, the NEs made operational adjustments that reduced the burden on the older adult nurses, allowing them to work. The NEs supported their staff by allowing them to provide ideal nursing care in a comfortable work environment.

"To realize that all staff can continue working, I (NE) have created a work style that suits each task. For example, we have created various work styles, including part-time employees who work 4 days/week and individuals who are raising children who only work in the morning. When creating a monthly work schedule, we frequently confirm the staff's work or off-day requests. We adjust their work so that other staff members do not become exhausted when a staff member suddenly takes time off. (ID10)"

Category 3: Strengthening cooperation among staff

To solve the challenge of labor shortages in the workplace, the NEs strengthened the cooperation system among their staff. They created opportunities for nursing and multidisciplinary staff to understand the work of other departments and professions in the organization to collaborate and help each other. They asked the employees to understand and cooperate with each other through these activities.

"It was challenging for older adult outpatient nurses alone to provide medical treatment and care for emergency patients. Consequently, I suggested to the staff that it would be better for nurses in the ward and outpatient department to help each other with their work. They started to share each other's jobs. The ward staff now helps outpatient emergency response, and the outpatient staff also helps the ward staff. (ID6)"

Category 4: To reduce the burden on staff and increases their motivation by improving work efficiency.

The NEs aimed to reduce the burden on staff and increase their motivation by improving work efficiency to solve the challenge of labor shortages. To improve the workload of nurse managers and staff, they reconsidered and reduced workloads, and used nursing assistants to share the workload. Furthermore, they aimed to increase staff motivation using information and communication technology (ICT) and digital transformation (DX) to improve work efficiency.

"Our visiting nursing station has to provide care to a wide area with a small number of staff. Consequently, all staff members have started to bring a tablet with them when visiting patients' homes. The staff members use the tablet to report and record at the place they visit, which has saved them the time of going to the visiting nursing station after their visit. Additionally, we have weekly online meetings using the tablet to share all updated patient information. We create monthly graphs of information about patient visits

to nursing. According to the information, the staff members understand the current situation of home-visit nursing, thereby leading to their motivation. (ID18)"

Theme 3: Development as NEs

This theme comprised two categories. The NEs participated in the learning network while feeling no confidence as NEs initially. However, they were newly aware of themselves as NEs and started solving problems in their workplaces while reflecting on the challenges encountered by their medical facilities through dialogue with the participants of the learning network. Finally, they developed as NEs through these changes.

Category 1: No confidence as NEs

The NEs did not have the opportunity to acquire nursing management knowledge and skills sufficiently and lacked confidence in their practice. Furthermore, there were no nursing management experts within the organization that they could consult. Therefore, they were groping their way through the practice of nursing management and felt it was difficult.

"I have never participated in any training to develop managers. I have only studied on my own by reading books on nursing management; therefore, I am not confident in my nursing management practice. (ID7)"

Category 2: Awareness as NEs and challenges to solve problems in the workplace

The NEs learned that the NEs of other facilities were working on improvements and innovations, while facing organizational challenges similar to their own. They renewed their awareness as NEs by learning about the practices of other facilities and began working on improvements and innovations that could be implemented in small organizations.

"By participating in this learning network, I learned about the nursing management of other facilities. I lacked confidence in my management skills and wanted to have a role model until now. However, in reality, we must use our own strengths and the strengths of our organization to consider and practice strategies for managing even small hospitals. I changed my mind from looking for a role model to wanting to challenge what I could. It is a huge accomplishment for me to become who I am. (ID4)"

Discussion

This study aimed to clarify the competency development experiences of the NEs who participated in the learning network. The results of this study showed that the NEs experienced development by promoting work efficiency with a small number of staff while aiming to provide medical care that contributes to their rural region through participation in the learning network. These findings shed new light on NEs' experiences working in rural medical facilities and developing their competencies through learning network participation. Learning networks may help develop the competencies of NEs, who must practice their roles in rural healthcare facilities with limited resources. We believe that our research has shown results are highly applicable to community medical care in Japan. In this study, we discuss their experiences with competency development.

Initially, the NEs discussed concerns about their organization's challenges in continuing medical care in rural areas, including a decline in the number of patients and changes in residents' medical care needs. However, they continued to discuss these challenges and became strongly aware that they had to provide the medical care needed by residents to continue medical care in their rural regions. Furthermore, NEs began aiming for medical care and contributing to the rural community. The reason behind these results was that the NEs providing medical care in the same region raised awareness among themselves of challenges common to all medical facilities in the region, not just challenges unique to their facilities, by discussing the challenges of each organization. In other words, the NEs' awareness changed, thereby broadening their perspectives from management challenges within their organizations to challenges common to medical facilities in their rural regions. Furthermore, it was assumed that they considered the medical care needed by residents based on changes in their awareness and aimed to contribute to rural medical care. Based on the above, learning networks are considered to develop NE competency by raising awareness about rural medical care and discussing the challenges and strategies common in rural medical facilities. Rural medical facilities have limited resources[10–13, 15] and some have closed down[13]. These situations pose challenges in supporting the health of residents in rural areas[11, 13]. The NEs aimed to contribute to rural medical care and enhance the quality of nursing care while strengthening regional medical cooperation. Rural medical facilities may continue to provide medical care, even with limited resources, through learning networks. NEs should develop their skills through learning networks to provide healthcare to rural residents.

Furthermore, the NEs in this study discussed challenges, including securing human resources, labor shortages, and the aging of nurses, while aiming to provide medical care that contributes to rural communities. To overcome these challenges, they promoted work efficiency with a small number of staff. Staff at rural medical facilities are required to perform complex and diverse tasks in small numbers[34]. Therefore, organizational support is significant[34]. The NEs in this study adjusted the staff's work so that they could perform complex and diverse practices with a small number of staff members. Additionally, the NEs supported their staff and aimed to create an organization that made it easy for diverse staff to work as the proportion of older adult nurses increased. Although older adult nurses have physi-

cal limitations, they can contribute to their workplace based on their years of experience[35, 36]. Therefore, the NEs in this study aimed to improve their work efficiency through the best performance among all staff members, including older adult nurses. A previous study reported that a system for improving work efficiency has not been effectively implemented in medical facilities[37]. One reason for this is that medical facilities implementing the system will have a new operational burden[37]. Improving work efficiency is difficult, and the competency of nursing managers responsible for reform becomes even more significant. The NEs in this study increased staff motivation by reducing the staff burden and improving work efficiency. These strategies are implemented through discussions in the learning network. Therefore, it is believed that the NEs enhanced their competency to boost work efficiency by learning and implementing each other's reforms.

The NEs initially lacked confidence in their nursing management. However, they became aware of their role as NEs when they learned about the reforms at other facilities through participation in the learning network. Networks of managers deepen mutual understanding and share knowledge through dialogues[29]. Moreover, networks help participants feel less lonely and more motivated by empowering each other[28, 30]. In this study, the NEs may have deepened their mutual understanding by discussing challenges and improvement strategies at each other's facilities during the learning network sessions. Furthermore, this mutual understanding freed them from feeling isolated as managers and helped them empower each other. Their experience with the learning network made them aware of their role as NEs. Furthermore, they developed their skills as NEs by executing feasible management tasks, even in small organizations. Specifically, they aimed to contribute to rural medical care and practiced ways to improve work efficiency. Manager development is facilitated by organizational management practices[28, 38]. The NEs may have developed as NEs by applying the knowledge and skills they learned in the learning network sessions to their workplace practices. A previous study has shown that it is challenging for nurse managers to apply what they have learned to practical management education programs in practice[27]. However, the learning network in this study may have resolved the gap between learning and practice by having NEs continuously discuss organizational challenges in their sessions and use them in their practice. In other words, NEs may have learned and developed as NEs through the experience of both the learning network outside their organization and the practices within their organization. Previous studies reported that managers have low self-esteem and lack confidence in their management abilities[28, 38]. Burnout has also been reported[26]. For NEs to lead confidently as representatives of the organization, developing their competency through their learning networks is necessary to learn management skills and acquire knowledge from each other. NEs are expected to contribute to rural medical care by developing competencies in their learning networks.

Limitations

This study clarified the experience of NEs' competency development by analyzing their words and actions in group sessions of a learning network, and did not directly observe nursing management practices in their workplaces. For this reason, this study does not reveal competency development that does not appear in the NE's words and actions. This study clarified the competency development of NEs through regular group sessions over two years; however, the data expressed in their words and actions were only a part of their competency development and did not cover everything. In the future, it will be necessary to clarify new aspects of NE competency development through learning networks by investigating their effects on staff working with NEs and in actual workplaces.

This study targeted 20 NEs, and its generalizability is limited if the conditions are significantly different from those in the present study. However, this study acknowledged data saturation due to continuous data collection and analysis in the learning network group sessions. Therefore, this study can be applied under similar conditions. In the future, it will be necessary to accumulate research on implementing NE learning networks in various countries and regions and conduct research on NE competency development.

Conclusions

This study focused on the learning networks of NEs working in rural medical facilities and clarified their experiences with competency development. As a result of this study, the experience of NEs who participated in the learning network revealed that they developed as NEs by improving work efficiency with a small number of staff while aiming for medical care that contributes to their rural region. NEs working in rural medical facilities encounter organizational challenges, such as nursing quality and management, due to a shortage of nurses. NEs' learning networks may help them solve challenges through competency development. Despite limited resources in rural medical facilities, NEs are expected to provide high-quality medical services to rural residents through competency development within their learning networks.

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Consent for publication: All authors have approved the manuscript and agree with publication.

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