BMC Medical Education

RESEARCH

Open Access

How do mandatory emergency medicine rotations contribute to the junior residents' professional identity formation: a qualitative study

Ichita Yamamoto[1*], Haruo Obara[2] and Daniëlle Verstegen[3]

Abstract

Background This study aims to investigate the impact of short-term mandatory emergency medicine rotations on professional identity formation of Japanese junior residents. Using situated learning theory as a theoretical framework, we explore how this rotation, which is part of a two-year Junior residency in the transition period from students to qualified physicians.

Methods We conducted a qualitative study conducting semi-structured face-to-face interviews with Year 1 postgraduate residents in the 2020–2021 classes of the junior residency program in Okinawa Chubu Hospital, Japan ($n = 10$). The data obtained from the interviews were analysed using inductive thematic analysis to identify the themes regarding professional identity formation.

Results Four main themes regarding professional identity formation emerged from the data analysis: patient care, teamwork, role models, and peers. Junior residents said they had the opportunity to participate in the emergency department community and experience training in authentic clinical contexts. Clinical exposure influenced the professional identity formation of the junior residents. Nurses and peers played a crucial role in this. Junior residents see the training in the emergency department as the beginning of their careers.

Conclusion Short-term mandatory rotations enabled junior residents to integrate into the emergency department community, demonstrating autonomy and responsibility. These experiences fostered their professional identity by helping their socialisation within the community of practice.

Keywords Situated learning theory, Community of practice, Legitimate participation, Professional identity formation, Mandatory clinical rotations, Emergency medicine

*Correspondence:
Ichita Yamamoto
t00780iy@gmail.com
[1]Department of Emergency and Critical Care Medicine, Tokyo Bay Urayasu Ichikawa Medical Center, Chiba, Japan
[2]Department of General Internal Medicine, Okinawa Prefectural Chubu Hospital, Okinawa, Japan
[3]School of Health Professions Education, Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, The Netherlands

Background

In Japan, theoretical knowledge of medical skills has traditionally been emphasised over practical skills. During clerkship training, medical students usually participate in clinical observership, mainly observation and job shadowing. As a result, medical students graduate with limited clinical experience, making the transition to residency challenging. In addition, before the early 2000s, most physicians were trained in a single speciality at a university hospital after graduation. The problem was that university hospitals in Japan specialise in advanced medical care. Residents have few opportunities to see common diseases. Physicians were unfamiliar with knowledge outside of their highly specialised fields. In addition, training has focused mainly on inpatient care, and there has been little contact with community-based primary care [1]. In response to this issue, the Japanese government introduced the junior residency system in 2004, requiring residents to complete rotations through various specialties, including emergency medicine.

The 2-year junior residency is positioned before the 3-year senior residency, and junior residents do not need to decide on their speciality until they enter the senior residency. Instead, junior residents do mandatory rotations through multiple specialities as well as elective rotations. Emergency medicine is one of the mandatory rotations, and junior residents must do an emergency medicine rotation for at least twelve weeks in their 2-year postgraduate junior residency. Junior residents engage in emergency practice with autonomy and responsibility to a certain degree, supervised by senior residents and attending physicians, though there are some differences among hospitals in how this is implemented. However, little is known about how this rotation impacts residents' professional identity formation, especially for junior residents with limited clinical experience.

Professional identity formation is critical to medical education, fundamentally shaping how medical students and residents develop into physicians. Professional identity formation is an important educational objective that influences how physicians think, act, and feel about their roles [2]. This process is complex, continuous and influenced by socialisation within specific communities of practice [2–5]. Professional identity formation is the process through which medical students and residents internalise the values, norms and behaviours of medical profession, developing into thinking, acting, and feeling like physicians [2, 3, 6].

Situated learning theory provides an important framework for understanding how professional identity formation occurs. This theory suggests that knowledge is contextually situated and that learning is a social process that occurs in a context and culture in which knowledge is used [7–11]. According to situated learning theory, professional identity is developed through participation in real-world activities, where learners move from peripheral participation to central roles within a community of practice. During this process, learners form professional identities based on their existing personal identities through social interaction within a community of practice [2]. Therefore, situated learning theory is important as it emphasises how medical students and residents develop their professional identities from participation in clinical environments.

Junior residency represents an important phase in this process, as this is the first time that residents work with patients as qualified physicians. During this period, junior residents gradually internalise the values, norms and behaviours that define their professional identity. Exposure to clinical contexts and interactions with role models, mentors, patients and their families are essential, as these experiences are fundamental to professional identity formation [2, 3]. However, the short rotations in each department during junior residency challenge deep socialisation. The frequent transitions can hinder junior residents from fully integrating into one community of practice, which is essential for professional identity formation. Moreover, transitioning from medical school to clinical practice is stressful and difficult [12, 13]. This can be expected to burden junior residents, especially in countries like Japan, where undergraduate students often have little clinical exposure.

Therefore, the research questions are: How do junior residents experience emergency medicine rotations, and how does this experience impact their professional identity? Understanding how experiences in emergency medicine rotations affect junior residents' professional identity formation will provide insights into how to support residents' identity formation. The findings of this study will have important implications for medical education in countries like Japan, where undergraduate medical students have limited active clinical experience.

Methods

Study design

Since our research questions are exploratory, we employed a qualitative methodology [14], conducting semi-structured, face-to-face interviews.

Setting

We conducted this study at Okinawa Chubu Hospital (OCH), a community, non-university-affiliated hospital in Japan. The postgraduate year-one (PGY-1) residents of the 2020–2021 junior residency classes in OCH have a six-week mandatory emergency medicine rotation consisting of four-week day and two-week night shifts. In addition, they perform night or semi-night duties in the emergency department zero to three times (depending

on their rotations) for a month throughout their first-year training.

Participants

Participants were recruited purposively from the 2020–2021 classes of the junior residency program in OCH, Japan. Ten of the 29 PGY-1 junior residents had not completed their emergency medicine rotations when this research started. We carefully selected participants to include a wide variety of residents regarding age, sex, and future desired specialities.

Data collection

A semi-structured interview guide (Appendix 1) was developed by the first author and a second investigator, an attending physician in general internal medicine (H.O.). The interview guide was created to guide the data collection process, inspired by the principles of situated learning theory and professional identity formation. After receiving ethical approval from the ethical review board at OCH (approval number 2020-63), we conducted a face-to-face interview with participants between December 2020 and February 2021. The corresponding author facilitated all interviews. The interviews lasted, on average, 55 min (48–61 min). The interviews took place in the conference room at OCH. All the conversations during the interviews were conducted in Japanese. Informed consent was obtained before the interview began, and we ensured that participants had the right to withdraw from the study at any time before we started the analysis. All conversations during the interviews were recorded and transcribed verbatim. We reviewed the transcripts to verify their accuracy. We conducted the data collection and analysis concurrently and continued recruiting participants until no new information was added and new themes emerged. Thematic saturation was achieved after 10 participants were interviewed.

Data analysis

We conducted an inductive thematic analysis in which researchers identified strongly linked themes to the data [15]. First, we read the transcripts to immerse ourselves in the data and then took notes about ideas. Then, we generated initial codes by identifying the interesting characteristics of the data. We performed this process independently to ensure credibility. After we completed ten interviews, we met in person and online to share the codes, search for themes, and review the identified themes. Subsequently, we created a thematic map of the analysis and refined the identified themes. We employed situated learning theory as a sensitising framework to guide our analysis. Situated learning theory emphasises learning as a social process that occurs within a community of practice through legitimate peripheral participation [7]. In our analysis, we focused on how junior residents participate in the community in emergency medicine. Specifically, to elucidate the process of socialisation in a community of practice, we explored their clinical experiences and the interactions they have with the people around them. This approach facilitated our interpretation of how junior residents acquire knowledge and skills through their interactions during the emergency medicine rotation. Finally, we generated a concise definition of the themes regarding the effect of experience in the emergency medicine rotation on professional identity formation. At this point, we decided that thematic saturation had been achieved. We used MAXQDA 2020 [16] for the data analysis. All the interviews, transcribing, and data analyses were done in Japanese. Later, we translated the themes and residents' key quotes into English.

Reflexivity

The authors are attending physicians in emergency medicine and general internal medicine at OCH. Thus, the authors must consider their positions and hierarchical relationships between attending physicians and residents. Since Japan is an intermediate hierarchical society [17], some residents might be reluctant to give their opinions frankly to attending physicians in a higher hierarchical position. To mitigate this, the authors clarified explicitly that these interviews would only be used for research and that whatever participants would say would not influence their evaluation and future careers. In addition, the authors acknowledge that they believe the experience in an emergency medicine rotation is valuable to all residents regardless of their future careers. This belief might affect the interpretability of the data. To avoid this bias, the authors created analytic memos to record their interpretations while reviewing the data.

Results

We interviewed ten junior residents at Okinawa Chubu Hospital; eight were male, and two were female. All interviewees were Japanese; one graduated from medical school abroad, and the others graduated from medical schools in Japan. They all started junior residency in April 2020. Their desired specialties for the future varied, including acute care surgery, cardiovascular surgery, critical care medicine, emergency medicine, hand surgery, internal medicine, palliative care medicine, paediatrics, family medicine, and child and adolescent psychiatry.

Forty-two codes were generated and grouped into four main themes: patient care, teamwork, role models, and colleagues.

Patient care

Delivering patient care in the emergency department critically influenced professional identity formation. Junior residents identified five subthemes related to patient care: patient-centred care, patient care ownership, the gap between ideal practice and actual practice, difficult patients, and the importance of patient contact for future careers.

Patient-centred care

Patients visited the emergency department for a variety of reasons. Junior residents talk about how they have tried to diagnose and treat patients' diseases. However, even when they reached a correct diagnosis, they realised this was not enough. They also talk about the need for patient-centred attitudes:

> *Comparing before and after the training in emergency medicine, a significant change has occurred in myself because I realised that just diagnosing the disease is not enough to work in the emergency department. I saw patients who seemed to just want me to listen to their complaints, and I came to believe that this might be the best way to help them. Personally, that is what I learned the most. It feels like if I did not meet their needs, I could not send them home. (Interview 6)*

Junior residents must pay attention to different kinds of problems. Patients presenting to the emergency department suffer from various social and public health problems, as well as medical problems. The opportunities to take care of these patients made residents realise the importance of patient-centred care:

> *I often saw patients who could go home but were not allowed to due to social problems. Therefore, I think it is good that I have changed or diversified my perspective from the past so that I can notice patients' problems from various angles. (Interview 4)*

Patient care ownership

Patient care ownership was related to professional identity formation, especially when junior residents felt personal responsibility for their patients' management. Junior residents tried to deliver patient care to the best of their ability, though they acknowledged their lack of experience. This led to reflection and learning:

> *I often wonder if it would have been better if I had noticed it myself initially. Later [after the patient was taken over], I often reviewed the patient's chart and checked how the patient was managed. Then, I realised that I should have done this from the beginning. (Interview 2)*

Autonomy enhanced the sense of patient care ownership. Junior residents described situations where they acted autonomously as experiences that made them feel most like physicians:

> *When I'm seeing patients myself, there's a certain enjoyment in it. Listening to patients' complaints, how can I put this? It may feel insufficient, but I do what I know I should, and that kind of experience is enjoyable to me. There's something satisfying about it, a feeling of "I'm a real physician." (Interview 2).*

Junior residents' sense of responsibility was seen in their efforts to avoid misdiagnosis and ensure patient safety. Being in charge of patient care meant they had to take responsibility for their decisions, which could directly affect patient outcomes. Potentially critically ill patients occasionally visit the emergency department without evident symptoms. Handling these cases was challenging. Failing to accurately estimate severity and make correct diagnoses can mislead physicians' management plans and result in the worst outcomes.:

> *If I made a diagnostic error, I would feel very sorry. After all, this is my job, and I am in the position of a physician despite my limited experience. I'm still in my first year, but I am the first physician to see the patient. (Interview 10)*

The gap between ideal practice and actual practice

Practice in emergency medicine requires quickness and efficiency. Multitasking is necessary, and physicians are often pressed for time to perform several tasks simultaneously. The time available per patient is limited. While junior residents understand the characteristics of practice in emergency medicine, the gap between their image of ideal practice and actual practice led to some discomfort:

> *I think there's a difference between practice in emergency medicine and outpatient clinics. In emergency medicine, diseases are diagnosed quickly within a short period of time. […]Personally, I tend to take more time to listen to what patients complain about. […]I cannot truly provide patient care that quickly, that makes it hard for me every time. (Interview 4)*

Over time, junior residents seemed to become accustomed to the practice and environment of emergency medicine. They sometimes lose interest in ordinary cases and non-urgent patients. They mentioned that some

other residents treated those patients impolitely or disrespectfully, which resulted in unprofessional behaviour:

> *It makes me wonder, to treat the noncritical patients in a, how should I put it, rough way, that kind of spirit, or sense of un… unprofessionalism, must have a reason for it to occur. I suppose one of the reasons is, well, frankly, we lost that sense of tension and became numb to work. (Interview 5)*

Difficult patients

Residents sometimes encounter challenging patient-physician encounters in the emergency department. These encounters provoke adverse emotional reactions toward patients, which conflict with their perception of professional behaviour. One resident noted, *"I tend to raise my voice a little…not so much that I raise my voice, but I find myself speaking a little too strongly. In addition, when I do that, it sometimes feels that I'm doing something wrong"* (Interview 10).

The importance of patient contact for future careers

Junior residents believed that training in emergency medicine would provide them with indispensable knowledge and skills regardless of their future careers. They saw this as an opportunity to acquire the basic competencies needed by all physicians:

> *Even if it is not your specialty, seeing patients outside of it is still a good idea. It will give you broad knowledge and improve your instinctual and experience-based thinking, which is important for any specialty. (Interview 5)*

Teamwork

Teamwork between physicians and nurses is fundamental in the emergency department. Junior residents identified two subthemes related to teamwork: interprofessional collaboration and leadership.

Interprofessional collaboration

Junior residents were required to maintain clear and concise communication with nurses. The interviews showed junior residents prioritised interprofessional collaboration as much as patient care. One resident noted, *"I used to think mainly about what I wanted to do for patients, but now I also think about how to work with other professionals and colleagues and how I should work with them"* (Interview 5).

The narratives revealed the relationship between nurses and junior residents in the clinical setting. Nurses expected junior residents to work as effectively as other physicians did. However, junior residents recognised and admitted their inability to meet nurses' expectations due to lack of experience. This gap provoked emotional conflict in their relationships with nurses:

> *At first, I did not know anything about this or that. I did not know how the emergency department worked, how the nurses worked, and so on, so I often had conflicts with nurses. Nurses got mad at me, which happened a lot. (Interview 6)*

Junior residents felt they were being treated unfairly by nurses compared to other physicians, such as senior residents and attending physicians. They felt that nurses regarded them as not qualified to work independently or without supervision from attending physicians. Conflicts with nurses induced negative self-perceptions:

> *To be honest, I try not to think of it that way, but sometimes I get annoyed or upset. I get irritated when nurses treat me like I cannot do anything without attending physicians, and I become even bossier, which makes me feel bad about myself. In addition, of course, when you behave like that, it amplifies the conflict. (Interview 9)*

On the other hand, some junior residents experienced positive effects from working with nurses. They felt helped or supported by experienced nurses.

> *I was always getting help from the nurses. Many times, they said, 'Doctor, I think it's better to order this lab too,' and I'd just respond, 'Oh, thank you.' This happened a lot, … But then, I learned and understood the reasoning behind things myself. I began to understand why we should order specific labs and tests. (Interview 5)*

Junior residents recognised the importance of understanding how nurses operate in the emergency department, and they felt that this knowledge facilitated more effective collaboration.

> *I think it's pretty important to understand how nurses work and the systems they operate within … Knowing how nurses work and understanding that they need specific instructions from physicians is crucial. … So, I often ask the nurses when I'm unsure because they usually know better. By communicating more and more with nurses, I think it has become easier to work together. (Interview 1)*

Leadership

Taking leadership contributed to building confidence in professional identity. Although residents were initially unaccustomed to taking leadership, they seemed to develop self-confidence in leadership roles eventually. Taking on leadership roles seemed to be associated with the feeling of being a physician. Another resident noted, *"I think I have become more like a physician; although there are still many things I do not do well, I am not too afraid to give instructions to the nurses anymore"* (Interview 8).

Although taking leadership is vital for developing professional identity, some residents are uncomfortable taking the initiative initially. This improves over time when they accumulate experience:

> *I have never been in a leadership position before. When a patient was brought into the resuscitation room, two nurses asked, "What should we do, doctor?" I would be like, "Uh…" That was when I realised that I should be the one giving them orders. Gradually, I became more accustomed to giving instructions to the staff. (Interview 8)*

Role models

Working with role models helped junior residents shape their professional identity. They felt supported when attending physicians helped them establish patient-physician relationships in problematic situations:

> *… my explanation did not convince the patient, so my attending physician explained his medical condition again. The patient was then convinced and went home without any trouble. I was impressed by my attending physician's ability to do that; it was one of those specialised, unquantifiable skills physicians have. (Interview 6)*

Junior residents paid attention to attending physicians' attitudes and behaviours.

> *"Wow, this attending has a broad perspective, that he can notice things that I don't notice, that he can see things from a higher perspective." (Interview 8).*

Physicians' commitment to resident education was perceived favourably, and it encouraged junior residents to imitate their behaviour. *"I got a lot of advice and feedback on my practice from attending physicians, and I truly feel like I want to become a physician who can support residents like them"* (Interview 10).

Peers

In the interviews, junior residents referred to connections with peers and other junior residents. Together, they developed shared values and understanding in the community of practice. They shared and compared their experiences. *"I was talking with a colleague about how trust in physicians is important. I thought he had gotten a truly good point* (Interview 6)."

Junior residents also felt a sense of competition among their peers while working in the emergency department. They tended to care about external evaluation from their colleagues and attending physicians:

> *I think this is because we are too concerned about the eyes of our peers, senior residents and attending physicians. For better or worse, there is a sense of competition among peers. The emergency department is where colleagues, senior residents and attending physicians judge whether you are a good or bad worker. I think it is just a disturbing opinion, but you cannot escape from it. (Interview 9)*

By training in the same department, opportunities arise to observe the attitudes and behaviours of colleagues. Colleagues sometimes work as negative role models, encouraging junior residents to reflect on their professional attitudes and behaviours:

> *When I looked at the previous medical charts of the patient who had come to the emergency department frequently, I found the charts written by my colleagues. I found in the description that my colleagues had sent the patient home very impolitely. These kinds of things irritate me a lot. I often see things like my colleagues treating patients disrespectfully or explaining things sloppy. (Interview 3)*

Discussion

This study investigated and elucidated professional identity formation during a mandatory emergency medicine rotation for Japanese junior residents. Using situated learning theory as a theoretical framework and professional identity formation as a conceptual framework, we answered the following questions: How do junior residents experience emergency medicine rotations, and how does this experience impact their professional identity?

In the schematic representation of professional identity formation by Cruess, personal identity develops into professional identity through socialisation [3]. Socialisation occurs within communities of practice through legitimate peripheral participation. Our question was if and how short-term emergency medicine rotations allow for junior residents to engage in legitimate peripheral

participation within a community of practice. Our findings suggest that junior residents demonstrated legitimate peripheral participation in the community of practice in the emergency department, which was characterised by increasing autonomy and a growing sense of being legitimate physicians [18].

For meaningful learning in a community of practice, participants must be interested in the knowledge and skills shared by the community [19, 20]. Participants willingly need to join that community. Junior residents in this study did so, and they viewed their training in the emergency department as the important beginning of their careers. Junior residents saw training in emergency medicine as a necessary foundation for all physicians to learn, regardless of their future careers.

Cruess et al. point out that clinical and non-clinical experiences and the influence of role models and mentors are the most powerful factors for professional identity formation [3]. The emergency department, as a community of practice, provides a rich context for situated learning. Engaging in clinical practice allows residents to understand the complexities of patient care. Junior residents' experiences of bridging the gap between theoretical knowledge in textbooks or classrooms and clinical contexts exemplify this nature of learning, contributing to their professional identity formation. These findings are supported by past research [21, 22]. The gaps, such as meeting patients' (medical and other) needs and coping with difficult patients, are not always covered in textbooks. Exposure to clinical practice initiates professional identity formation by highlighting these gaps and motivating efforts to bridge them. This is in line with a previous study that revealed that early exposure to the clinical environment contributes to developing a professional identity [23].

In our study, junior residents observed senior residents' and attending physicians' behaviour and attitudes and felt supported when they established patient-physician relationships. Role models are admired for their ways of being and acting as professionals [24]. Interactions with role models are one of the most powerful factors for professional identity formation [3]. Adopting the behaviour and beliefs of role models facilitates legitimate peripheral participation within a community of practice [3, 25]. Therefore, as role models, senior residents and attending physicians facilitated the socialisation of junior residents within the community of practice and promoted their professional identity formation.

Developing a professional identity involves reconstructing one's existing personal identity [2, 25–27]. Junior residents are expected to adopt professional attitudes and values, even if not yet fully developed [2]. This study highlights that interprofessional collaboration is essential in this process. Working with nurses helps junior residents recognise their roles and develop leadership. The emergency department offers a unique environment where interprofessional collaboration is essential. Interprofessional respect is valued in the emergency department because different professional groups depend on each other [28]. Previous research indicates that exposure to interprofessional teamwork helps medical students understand different professional roles and foster mutual respect [29]. This study shows how nurses also impact the professional identity formation of residents. Interaction with nurses helped junior residents understand physicians' interprofessional collaboration roles. Nurses' tasks differ from those of physicians; however, as community members, they are knowledgeable in the values and rules shared within the community; they understand how physicians and nurses collaborate in emergency care and can assist residents in learning about these collaborative practices. Interprofessional relationships in the emergency department are less hierarchical, and communication between physicians and nurses at the bedside is more direct [30]. This characteristic in the emergency department could promote interprofessional communication between junior residents and nurses. At the same time, in our study, some residents felt disrespected by nurses. This might negatively affect junior residents' professional identity formation, as it hampers interprofessional relationships. This may be attributed to a lack of clear understanding regarding the role of nurses within the community of practice.

Peers function not only as role models but also provide psychological support during challenging situations [31–33]. Within the framework of situated learning theory, peer interactions promote an understanding of shared values and roles within the community of practice. In our study, sharing and comparing experiences with peers helped to develop these values and roles. Junior residents explained that a sense of competition among peers heightened their awareness of external evaluations and encouraged reflection on their professional attitudes and behaviours. Sometimes, peers acted as negative role models, prompting junior residents to critically evaluate their conduct and strive to do it better.

The Japanese junior residency system aims to avoid early specialisation and provide junior residents with a wide variety of clinical experiences. Unlike their observational roles in medical school, they participate in clinical environments. They internalise the professional values, norms and behaviours. The experiences of the junior residents observed in this study are considered the outcome of the Japanese junior residency system. This study illustrates how short-term emergency medicine rotations in the Japanese junior residency system can provide meaningful opportunities for legitimate peripheral

participation, fostering professional identity formation even in limited time frames.

Implications

Based on our findings, we propose several implications. The first recommendation is to provide medical students and residents with the opportunity to engage in clinical practice at an earlier stage of their training. Experiencing the gaps between actual practice and what they learn in textbooks and classrooms will initiate and promote the development of their professional identity as a physician. Giving some degree of autonomy and responsibility is required, but full participation is not necessary at the beginning [19]. They can start with limited autonomy and responsibility and gradually become involved in the community of practice from the periphery. For example, case discussions and simulation training allow junior residents to learn and practice in a safe environment. In addition, it may be sufficient to give medical students the opportunity to see one patient once a week.

Second, nurses should formally participate in a community of practice. Our study showed that nurses can both support and obstruct residents' identity formation. The cooperation of nurses in junior residents' education will make junior residents' experiences in clinical environments more meaningful during the short-term clinical rotations. Nurses should be given an explicit role to facilitate the participation of medical students and residents in a community of practice. It is necessary for nurses to deeply understand their roles and responsibilities in junior residents' education. In our study, nurse also could be an obstacle to junior residents' professional identity formation. Nurses need to know their impact on junior residents' professional identity formation. This understanding will enhance the practical cooperation between nurses and junior residents.

Third, peers and mentors are necessary for professional identity formation in clinical contexts. Junior residents encounter numerous difficulties during their training, such as difficult patients, efficient time management and conflicts with nurses. The Japanese junior residency system, with its multiple short rotations, stresses junior residents in overcoming the gap in the transition from medical students to residents and adapting to rotations in a short period. Peers provide a network of support that allows junior residents to share their experiences. Mentors, often more experienced physicians, guide junior residents by sharing and modelling their knowledge and skills and by providing feedback. They serve as role models and help junior residents form their professional identity. Regular meetings and discussions within a community of practice can help junior residents voice concerns and seek advice.

Finally, involving medical students and residents in clinical care requires the cooperation of all healthcare stakeholders, namely, nurses, residents, attending physicians and patients. It can be difficult to give medical students any responsibility and autonomy, especially in Japanese hospitals, where medical students are observers. The medical community in Japan, including patients and healthcare providers, must be prepared to accept medical students in clinical practice.

Limitations and future research

This study has several limitations. Our data were based on interviews with small numbers of junior in a single non-university-affiliated hospital in Japan. Given the heterogeneity of emergency medical systems and resident education, our findings may not fully represent the postgraduate educational situation in other Japanese hospitals or other countries. Our institution has over 50 years of experience as a postgraduate educational hospital adopting a clinical rotation system and is always open to new participants. This may have promoted junior residents' legitimate participation in the community. Medical students who choose to apply for junior residency are aware of our institution's educational background. Therefore, our junior residents are more likely to be ready for rotational training. Finally, our study focused on the impact of only one short-term mandatory rotation on professional identity formation. It did not address the effects of rotations in other departments, such as internal medicine and surgery.

Further research may be warranted to determine how nurses influence the professional identity of junior residents in the emergency department and whether this is also the case in other departments. We may also need a longitudinal design study to track residents' professional identity formation throughout their junior residency. This approach would allow us to observe how professional identity evolves over time and identify critical experiences in this development. Additionally, comparative studies between different medical specialties or between Japanese and international residency programs could illuminate the role of context in professional identity formation.

Conclusion

Through their short-term mandatory rotations, junior residents became legitimate members of the emergency department community. They demonstrated autonomy and responsibility, understanding their roles in the department. They recognised their training as the essential beginning of their careers—even short-term clinical exposure catalysed the nurturing of their professional identity. Interactions with peers, senior residents, attending physicians, and nurses helped junior residents

understand the shared values and roles, and promoted their professional identity formation through socialisation within the community of practice.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-024-06051-4.

Supplementary Material 1

Acknowledgements
We would like to thank the junior residents in Okinawa Chubu Hospital who participated in this study for their time and insights. We also appreciate the support of the staff at Okinawa Chubu Hospital for their contributions to resident education.

Author contributions
Ichita Yamamoto conceived and designed the study, conducted the interviews, and performed the data analysis. Haruo Obara contributed to the study design and data analysis. Daniëlle Verstegen guided the design of the study and provided critical revisions and guidance throughout the study. All authors read and approved the final manuscript.

Funding
This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability
The datasets of this study are not publicly available due to confidentiality agreements with participants but are available from the corresponding author (IY) upon reasonable request.

Declarations

Ethics approval and consent to participate
This study was conducted with the approval of the Ethical Review Board of Okinawa Chubu Hospital (approval number 2020-63). Written informed consent was obtained from all participants prior to their involvement in the study.

Consent for publication
All participants provided written consent for the publication of the study findings.

Competing interests
The authors declare no competing interests.

Received: 19 June 2024 / Accepted: 18 September 2024
Published online: 27 September 2024

References

1. Otaki J. Considering primary care in Japan. Acad Med. 1998;73(6):662–8.
2. Cruess RL, et al. Reframing medical education to support professional identity formation. Acad Med. 2014;89(11):1446–51.
3. Cruess RL, et al. A schematic representation of the professional identity formation and socialization of medical students and residents: a guide for medical educators. Acad Med. 2015;90(6):718–25.
4. Cruess RL, Cruess SR, Steinert Y. Teaching medical professionalism: supporting the development of a professional identity. Cambridge;: Cambridge University Press; 2016.
5. Cruess SR, Cruess RL, Steinert Y. Supporting the development of a professional identity: General principles. Med Teach. 2019;41(6):641–9.
6. Wald HS. Professional identity (trans)formation in medical education: reflection, relationship, resilience. Acad Med. 2015;90(6):701–6.
7. Lave J, Wenger E. *Situated learning: legitimate peripheral participation*. Learning in doing: social, cognitive, and computational perspectives. Cambridge: Cambridge University Press; 1991.
8. Billett S. Situating learning in the workplace – having another look at Apprenticeships. Industrial Commercial Train. 1994;26(11):9–16.
9. Brown JS, Collins A, Duguid P. Situated cognition and the culture of learning. Educational Researcher. 1989;18(1):32–42.
10. Durning SJ, Artino AR. Situativity theory: a perspective on how participants and the environment can interact: AMEE Guide 52. Med Teach. 2011;33(3):188–99.
11. Wenger E. *Communities of practice: learning, meaning, and identity*. Learning in doing. Cambridge, U.K.,: Cambridge University Press; 1998.
12. Teunissen PW, Westerman M. Opportunity or threat: the ambiguity of the consequences of transitions in medical education. Med Educ. 2011;45(1):51–9.
13. Prince K, et al. Junior doctors' opinions about the transition from medical school to clinical practice: a change of environment. Educ Health (Abingdon). 2004;17(3):323–31.
14. Creswell JW, Creswell JD. *Research design: qualitative, quantitative & mixed methods approaches*. 5th edition, International student edition. ed. 2018, Thousand Oaks, CA,: SAGE.
15. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Res Psychol. 2006;3(2):77–101.
16. Software V. *MAXQDA 2020 Online Manual*. 2019 [cited 2021 October 4]; https://www.maxqda.com/help-max12/welcome
17. Hofstede G, Soeters J. Consensus societies with their own character: national cultures in Japan and the Netherlands. Comp Sociol. 2002;1(1):1–16.
18. Fredholm A, et al. Authenticity made visible in medical students' experiences of feeling like a doctor. Int J Med Educ. 2019;10:113–21.
19. Cruess RL, Cruess SR, Steinert Y. Medicine as a community of practice: implications for Medical Education. Acad Med. 2018;93(2):185–91.
20. Egan T, Jaye C. Communities of clinical practice: the social organization of clinical learning. Health. 2009;13(1):107–25.
21. Keshmiri F, et al. Exploring the challenges of professional identity formation in clinical education environment: a qualitative study. J Adv Med Educ Professionalism. 2020;8(1):42–9.
22. Peterson WJ, et al. Understanding the struggles to be a medical provider: view through Medical Student essays. J Emerg Med. 2018;54(1):102–8.
23. Barr J, Bull R, Rooney K. Developing a patient focussed professional identity: an exploratory investigation of medical students' encounters with patient partnership in learning. Adv Health Sci Educ. 2015;20(2):325–38.
24. Côté L, Leclère H. How clinical teachers perceive the doctor-patient relationship and themselves as role models. Acad Med. 2000;75(11):1117–24.
25. Jarvis-Selinger S, Pratt DD, Regehr G. Competency is not enough: integrating identity formation into the medical education discourse. Acad Med. 2012;87(9):1185–90.
26. Pitkala KH, Mantyranta T. Professional socialization revised: medical students' own conceptions related to adoption of the future physician's role–a qualitative study. Med Teach. 2003;25(2):155–60.
27. Frost HD, Regehr G. I am a doctor: negotiating the discourses of standardization and diversity in professional identity construction. Acad Med. 2013;88(10):1570–7.
28. Thomson K, et al. Interprofessional experiences of recent healthcare graduates: a social psychology perspective on the barriers to effective communication, teamwork, and patient-centred care. J Interprof Care. 2015;29(6):634–40.
29. Samuriwo R, et al. I didn't realise they had such a key role. Impact of medical education curriculum change on medical student interactions with nurses: a qualitative exploratory study of student perceptions. Adv Health Sci Educ. 2020;25(1):75–93.
30. Gergerich E, Boland D, Scott MA. Hierarchies in interprofessional training. J Interprof Care. 2019;33(5):528–35.
31. Cruess SR, Cruess RL, Steinert Y. Role modelling–making the most of a powerful teaching strategy. BMJ. 2008;336(7646):718–21.

32. Lönn A, et al. The impact of emotionally challenging situations on medical students' professional identity formation. Adv Health Sci Educ Theory Pract. 2023;28(5):1557–78.
33. Ross MT, Cameron HS. Peer assisted learning: a planning and implementation framework: AMEE Guide 30. Med Teach. 2007;29(6):527–45.

Publisher's note