



Impact of general practice / family medicine training on Japanese junior residents : a descriptive study

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(Received October 26, 2022, accepted April 4, 2023)

Abstract

Background : Despite international recognition of the impact of general practice / family medicine training on postgraduate training outcomes, there have been few reports from Japan.

Methods : Junior residents who participated in community medicine training for one month between 2019 and 2022 were enrolled in the study. The settings were five medical institutions (one hospital and four clinics) that had full-time family doctors. The junior residents were assigned to one of these institutions. The training content mainly consisted of general ambulatory care, home medical care, community-based care, and reflection. The junior residents evaluated themselves at the beginning and end of their training, and the family doctors evaluated the junior residents at the end. The evaluation items were 36 items in 10 areas, based on the objectives outlined in the Guidelines for Residency Training - 2020 Edition, and were rated on a 10-point Likert scale. In the statistical analysis, Wilcoxon signed rank test of two related groups was performed to analyze changes between pre and post self-evaluation, and the effect size r was calculated.

Results : Ninety-one junior residents completed the study. Their self-evaluations showed statistically significant increases in all 36 items. The effect size was large in 33 items. The family doctors' evaluation was 8-9 points for all 36 items.

Conclusion : General practice / family medicine training may greatly contribute to the acquisition of various required clinical abilities in postgraduate training even in Japan.

Key words : medical education, postgraduate training, community medicine, family doctor, general practitioner

Introduction

General practice / family medicine (GP/FM) is a clinical field that is expected to contribute not only to the provision of high-quality primary health care but also to medical education¹⁾. Internationally, postgraduate training has been reformed to strengthen primary health care²⁾. Experience of GP/FM during postgraduate training is very benefi-

cial to all junior residents, regardless of their future specialty choice³⁾. Previous reviews have reported that GP/FM training has an impact on the management of common diseases and chronic diseases, understanding of psychosocial factors of illness, communication skills, team medical care, and community care, as well as fostering better cooperation and understanding between primary care and secondary care^{4,5)}. The findings from international literature

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on primary care mentioned thus far examine primary care provided by family doctors²⁾. In 2020, the family medicine expert training program organized by the Japan Primary Care Association acquired international accreditation from the World Organization of Family Doctors⁶⁾. With this accreditation, Japanese family doctors are officially recognized as family medicine specialists who have received international standard training⁶⁾. However there have been few reports to date on the impact of GP/FM training in Japanese postgraduate training.

The initial postgraduate training period in Japan is two years, including one compulsory month of community medicine training in the second year⁷⁾. The setting for community medicine training is selected from medical institutions in rural areas and remote islands, including hospitals with less than 200 beds, or clinics⁷⁾. In addition, community medicine in Japan is practiced not only by family doctors but also by doctors from specialist backgrounds. Therefore, the training environments and programs of community medicine training vary, and community medicine training is not necessarily reflective of GP/FM training. Furthermore, since Japanese family doctors work in a variety of settings, the training environment for GP/FM is more diverse compared to countries where the majority of primary care is delivered in community clinic settings. For example, hospitals and clinics with beds treat not only outpatients but also inpatients. There are some clinics without beds that have a large need for home medical care. In all medical institutions, the faculty are certified family doctors, but to date there have been no reports regarding whether the learning of junior residents differs due to such differences in the training environment.

The purpose of the present study is to clarify the impact of Japanese GP/FM training regarding the clinical competence that should be acquired by junior residents in postgraduate training, including whether the impact varies depending on the training environment.

Materials and methods

We conducted a descriptive study using self-evaluations completed by junior residents, as well as evaluations of the junior residents completed by family doctors.

Participants and setting

The criteria for inclusion were second-year junior residents who participated in a one-month com-

munity medicine rotation between April 2019 and March 2022. Those choosing not to consent to participate in this study were excluded. In addition, when one junior resident undertook community medicine training at two sites for one month each, the second site was excluded. During orientation on the first day of the community medicine rotation, the present study was explained, and the junior residents who gave their consent were included as participants.

The settings were five hospitals and clinics in Fukushima Prefecture where family doctors certified by the Japan Primary Care Association work full-time. Hospitals and clinics are defined as hospitals if they have 20 or more beds, and clinics if they have 19 or fewer beds or no beds, according to the Medical Care Act. Kashima Hospital is a 193-bed hospital located in Iwaki City that provides a wide range of outpatient, inpatient, and home medical care. The Asahi Clinic is a clinic with beds located in Tadami Town, and is the only medical institution in the town. Hoshi Yokozuka Clinic is a clinic without beds located in Koriyama City, and the Hobara Central Clinic is a clinic without beds that is located in Date City. Both of these clinics have great needs for home medical care, and are function-enhanced home care support clinics⁸⁾. The Kitakata Centre for Community and Family Medicine is a clinic without beds that provides outpatient and home medical care. Kitakata City has almost no specialist pediatricians or dermatologists, so the center provides outpatient care in a wide range of fields, including not only internal medicine but also pediatrics and dermatology. One or two junior residents were assigned to each setting.

Contents of GP/FM training

For community medicine training, it is essential to include: general ambulatory care and home medical care; experience on chronic and recovery stage wards with specialty training; and opportunities to learn about the real-world circumstances surrounding community-based care⁶⁾. General ambulatory care provides opportunities to learn about medical practice for new patients to prevent bias toward specific symptoms or illnesses, as well as for returning patients who require continued care for chronic disorders. In home medical care, the junior residents visit the patients' homes together with the family doctors, and experience medical care in the context of the daily life of each patient and the characteristics of the community. Community-based care provides junior residents with the opportunity to learn

Table 1. An example of the training schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
			Week 1		
Morning	Orientation General ambulatory care	Home medical care	General ambulatory care	General ambulatory care	General ambulatory care
Afternoon	Home medical care	General ambulatory care	Home medical care	General ambulatory care	Home medical care
Evening	Reflection	Reflection	Reflection	Reflection	Reflection
			Week 2		
Morning	General ambulatory care	Home medical care	General ambulatory care	Home-visit nursing	General ambulatory care
Afternoon	Home medical care	General ambulatory care	Home medical care	General ambulatory care	Home medical care
Evening	Reflection	Reflection	Reflection	Reflection	Reflection
			Week 3		
Morning	General ambulatory care	Pharmacy	General ambulatory care	General ambulatory care	General ambulatory care
Afternoon	Home medical care	General ambulatory care	Community general support center	General ambulatory care	Home medical care
Evening	Reflection	Reflection	Reflection	Reflection	Reflection
			Week 4		
Morning	Long-term care health facilities	Home medical care	General ambulatory care	General ambulatory care	General ambulatory care
Afternoon	Long-term care health facilities	General ambulatory care	Home medical care	General ambulatory care	Presentation
Evening	Reflection	Reflection	Reflection	Reflection	Reflection

about cooperation with a variety of facilities and organizations related to medical care, nursing care, pharmacy and welfare. The junior residents write reflections on the day's events every evening and receive daily feedback from the family doctors. Table 1 shows an example of the training schedule. In addition to the required training content, there is some optional content that differs depending on the site.

Data source

The junior residents evaluated themselves at the beginning and end of GP/FM training, and the family doctors evaluated the junior residents at the end. Evaluations were performed by five family doctors. One family doctor evaluated one junior resident at each facility. The evaluation was based on a 10-level Likert scale (1, the level expected at the start of postgraduate training; 10, the level expected at the end of postgraduate training). The evaluation items were 36 items in 10 areas based on the objectives in the Japanese version of Guidelines for Residency Training - 2020 Edition published on the website of the Japanese Ministry of Health, Labour and Welfare (<https://www.mhlw.go.jp/con->

[tent/10800000/ishirinsyokensyu_guideline_2020.pdf](https://www.mhlw.go.jp/content/10800000/ishirinsyokensyu_guideline_2020.pdf)) (Table 2)⁷. Items 7, 24, and 36 only partially match the evaluation items of the present study and the objectives in the Guidelines for Residency Training - 2020 Edition.

Statistical analysis

In order to evaluate the self-perceived impact of GP/FM training on junior residents, the Wilcoxon signed rank test of two related groups was performed to analyze changes between pre and post self-evaluation, and the effect size r was calculated ($r = Z/\sqrt{n}$). The criteria for effect size were $r = 0.1$ (small), $r = 0.3$ (medium), and $r = 0.5$ (large)⁹. Furthermore, in order to evaluate whether the impact of GP/FM training differs depending on the training environment, the effect size for each training site was calculated. P values less than 0.05 were considered statistically significant, and all analyses were performed using STATA 15 (StataCorp LLC, 4905 Lakeway Drive College Station, Texas 77845-4512, USA).

Ethics approval and consent to participate

Ethics approval was obtained from the Ethics

Table 2. The objectives in the Guidelines for Residency Training - 2020 Edition

Fundamental Values as Physicians (Professionalism)

1. Residents must be aware of their social mission and accountability while making every effort to provide equitable medical care and improve public health with consideration for the limited resources and changes in society.
2. Residents must place the relief of pain and the concerns of patients and the improvement of patient welfare above all and respect the values of the patients and their rights in self-determination.
3. Residents must appreciate the diverse values, emotions, and knowledge of patients and their families, and have respect and compassion when interacting with them.
4. Residents must reflect upon their own behavior, patient outcomes, and details of medical care provided, striving to enhance competencies and capabilities.

Ethics in Medicine and Medical Practice

5. Maintain human dignity and respect the integrity of life.
6. Consider patient privacy and maintain confidentiality.
7. Recognize ethical dilemmas and respond in compliance with management policies.
8. Recognize conflicts of interest and respond to these according to the management policy.
9. Ensure the transparency of medical care, research, and education to prevent malpractice.

Medical Knowledge and Problem-solving

10. Provide differential diagnosis and initial response to frequently observed signs and symptoms by means of an appropriate clinical reasoning process.
11. Collect patient information to make clinical determinations based on the latest medical findings, with consideration for patient intentions and quality of life.
12. Establish and implement treatment plans that consider aspects such as health, medical care, and welfare.

Procedural Skills and Patient Care

13. Effectively and safely collect information relating to the health conditions of the patients, including the psychological and social aspects.
14. Implement optimal treatment suitable for the patients' conditions in a safe manner.
15. Prepare medical records and documents relating to treatment details and their rationale in an appropriate and timely manner.

Interpersonal and Communication Skills

16. Use appropriate language, a courteous attitude, and be well-groomed when interacting with patients and their families.
17. Organize information required by the patients and their families and explain it in an easy-to-understand manner in order to support the patients' independent decision making.
18. Consider the needs of the patients and their families from physical, psychological, and social aspects.

Practice in Interprofessional Teams

19. Understand the objectives of the organizations and through mutual respect and clear communication teams providing medical care, as well as the roles of each member of the teams.
20. Share information amongst the team members for the purpose of cooperation.

Patient Safety and Quality of Medical Care

21. Understand the importance of the quality of medical care and patient safety while making every effort in evaluating and improving these aspects.
22. Practice reporting/notifying/consulting as a part of routine practice.
23. Prevent medical accidents and implement corrective measures if an accident occurs.
24. Understand health management measures to protect healthcare professionals and make efforts in protecting their own health.

Medical Practice in the Context of Society

25. Understand the purposes and mechanisms of laws, regulations, and systems related to health and medical care.
26. Utilize health insurance and publicly funded medical care in an appropriate manner with consideration for the burden of medical expense on the patients and society.
27. Grasp the health issues and needs in the local community and propose necessary measures.
28. Encourage preventive medical care, healthcare, and health promotion.
29. Understand the community-based healthcare system and contribute to its promotion.
30. Be prepared for medical risk management in disasters, pandemics and other events affecting large numbers of people.

Scientific Exploration

31. Pursue answers to clinical questions that arise during medical practice in a scholarly manner.
32. Understand and utilize the scientific research method.
33. Understand the significance of clinical research and trials and cooperate with these studies.

Lifelong Learning

34. Make efforts to absorb the rapidly changing and developing knowledge in all competency and capability domains and technology.
35. Engage in mutual teaching and learning with colleagues, junior personnel, and healthcare professionals other than physicians.
36. Understand the governmental policies in Japan and overseas, as well as the latest trends in medicine and medical care.

Committee of Fukushima Medical University, approval number #30250. In the process of obtaining consent to participate in the study, we fully explained that participation was voluntary, and would not affect the residents' grades.

Results

Ninety-five junior residents were trained and ninety-one completed the study (96% participation rate). Their baseline characteristics are shown in Table 3. Table 4 shows the results of the self-evaluations and family doctor evaluations for junior residents completing the GP/FM rotation. Statistically significant increases were observed in all 36 items after the training. Eight areas had large effect sizes ($r = 0.5$ or more) for all items: Fundamental Values as Physicians (Professionalism), Medical Knowledge and Problem-solving, Procedural Skills and Patient Care, Interpersonal and Communication Skills, Practice in Interprofessional Teams, Medical Practice in the Context of Society, Scientific Exploration and Lifelong Learning. The effect size was 0.4 for item 9 ("Ensure the transparency of medical care, research, and education to prevent malpractice") in Ethics in Medicine and Medical Practice, as well as for item 23 ("Prevent medical accidents and implement corrective measures if an accident occurs") and item 24 ("Understand health management measures to protect healthcare professionals and make efforts in protecting their own health") in Patient Safety and Quality of Medical Care. In the evaluation by family doctors, the median value was 8-9 points in all 36 items. Table 5 shows the effect sizes for each training site. In Kitakata's 35 items and Hobara's six items, test statistic Z was not statistically significant in the Wilcoxon signed rank test. When the effect size was examined only for the

items for which test statistic Z was statistically significant, the effect size of all the training sites was large ($r = 0.5$ or more) in 24 out of 36 items (1-4, 10-14, 16-20, 22, 25-29, 31, 32, 34, 36).

Discussion

Statistically significant increases were observed in all 36 items after junior residents undertook the GP/FM rotation. The effect size was large in 33 items. In the evaluation by family doctors, the median value was 8-9 points in all 36 items. This result suggests that GP/FM training had an impact on all 10 areas of the residency training guideline. In the area of 'Fundamental Values as Physicians (Professionalism)', GP/FM training is beneficial for the formation of vocational identity and contributes to the development of professionalism³⁾. In the areas of 'Medical Knowledge and Problem-solving' and 'Procedural Skills and Patient Care', hospital training and GP/FM training are complementary to overall postgraduate training, and GP/FM training provides knowledge and skills not acquired in hospital training¹⁰⁾. In the area of 'Interpersonal and Communication Skills', it has been reported that improvement of communication skills and understanding of the effects of illnesses in families and communities are valuable in GP/FM training¹¹⁾. In the area of 'Practice in Interprofessional Teams', working with community professionals such as nurses, midwives, pharmacists, and hospital consultants provides an excellent educational environment¹¹⁾. In the area of 'Medical Practice in the Context of Society', home medical care is the starting point for understanding socio-economic factors related to holistic medicine and clinical conditions, and deepens the understanding of family medicine and community care¹²⁾. GP/FM training also helps junior residents better under-

Table 3. Junior resident baseline characteristics

	<i>N</i> (%)
Age median	26
Interquartile range	26-27
Gender	
Males	61 (67%)
Females	30 (33%)
Training site	
Kashima Hospital	38 (42%)
Asahi Clinic	21 (23%)
Hoshi Yokozuka Clinic	16 (18%)
Hobara Central Clinic	12 (13%)
Kitakata Centre for Community and Family Medicine	4 (4%)

Table 4. Results of self-evaluation and family doctor evaluation

Item Number	Self-evaluation					Family doctor evaluation		
	Pre		Post		<i>P</i> -value	effect size	Post	
	Median	IQR*	Median	IQR			Median	IQR
1	5	4-6	7	6-8	< 0.0001	0.6	8	8-9
2	6	5-7	8	7-8	< 0.0001	0.6	9	8-9
3	6	5-7	8	7-9	< 0.0001	0.6	9	8-9
4	6	5-7	8	7-8	< 0.0001	0.6	9	8-9
5	6	6-8	8	7-9	< 0.0001	0.5	9	8-9
6	8	6-8	9	8-10	< 0.0001	0.5	9	8-9
7	6	5-7	7	6-8	< 0.0001	0.5	8	8-9
8	5	4-7	7	6-8	< 0.0001	0.5	8	8-9
9	7	6-8	8	7-9	< 0.0001	0.4	8	8-9
10	5	4-6	7	6-8	< 0.0001	0.6	8	8-9
11	5	4-6	7	7-8	< 0.0001	0.6	8	8-9
12	4	3-5	7	6-8	< 0.0001	0.6	8	8-8
13	5	5-7	7	7-8	< 0.0001	0.6	9	8-9
14	5	4-6	7	6-8	< 0.0001	0.6	8	8-9
15	6	5-7	7	6-8	< 0.0001	0.7	8	8-9
16	7	6-8	8	7-9	< 0.0001	0.5	9	8-10
17	6	5-7	8	7-8	< 0.0001	0.6	9	8-9
18	6	5-7	7	7-8	< 0.0001	0.6	9	8-9
19	6	5-7	8	7-8	< 0.0001	0.6	8	8-9
20	6	5-7	8	7-8	< 0.0001	0.6	9	8-9
21	6	5-7	8	7-9	< 0.0001	0.5	9	8-9
22	7	6-8	8	7-9	< 0.0001	0.6	9	8-10
23	7	5-8	8	7-8	< 0.0001	0.4	8	8-9
24	7	5-8	8	7-9	< 0.0001	0.4	8	8-9
25	4	3-5	7	6-7	< 0.0001	0.6	8	8-9
26	4	3-5	7	5-7	< 0.0001	0.6	8	7-8
27	4	3-5	7	6-8	< 0.0001	0.6	8	7-9
28	4	3-5	7	6-8	< 0.0001	0.6	8	7-8
29	4	3-5	7	6-8	< 0.0001	0.6	8	8-8
30	4	3-5	6	5-7	< 0.0001	0.5	8	7-8
31	4	3-6	6	5-7	< 0.0001	0.5	8	7-8
32	4	3-6	6	5-7	< 0.0001	0.5	8	7-8
33	5	3-6	6	5-7	< 0.0001	0.5	8	8-9
34	6	4-7	7	7-8	< 0.0001	0.5	8	8-9
35	6	5-7	7	7-8	< 0.0001	0.5	9	8-9
36	4	4-6	6	6-7	< 0.0001	0.6	8	8-9

* IQR : Interquartile range

stand the link between primary and secondary care, and learn the importance of continuity in patient care³⁾. In the areas of 'Scientific Exploration and Lifelong Learning', GP/FM training allows junior residents to receive high-quality feedback from family doctors and secure time for self-study¹¹⁾. The biggest difference regarding the learning environment is the increased individual responsibility of junior residents for patient care in GP/FM training

compared to hospital training, and the greater the responsibility, the more the motivation to learn¹³⁾. In the areas of 'Ethics in Medicine and Medical Practice' and 'Patient Safety and Quality of Medical Care', there was an item with an effect size of 0.4, and it was considered that the impact was small compared to other areas. Previous studies have reported that junior residents learn about the ethical and legal aspects of practice through GP/FM train-

Table 5. The effect sizes for each training site

Item Number	Effect sizes				
	Kashima (n=38)	Asahi (n=21)	Hoshi Yokozuka (n=16)	Hobara (n=12)	Kitakata (n=4)
1	0.6	0.6	0.6	0.6	0.7*
2	0.6	0.6	0.6	0.5	0.5*
3	0.6	0.6	0.6	0.6	0.6*
4	0.6	0.6	0.6	0.5	0.6*
5	0.4	0.6	0.6	0.5	0.6*
6	0.4	0.5	0.6	0.4*	0.6*
7	0.5	0.4	0.6	0.5	0.6*
8	0.5	0.5	0.6	0.2*	0.5*
9	0.4	0.4	0.6	0.3*	0.5*
10	0.6	0.6	0.6	0.6	0.7*
11	0.6	0.6	0.6	0.6	0.7*
12	0.6	0.6	0.6	0.6	0.6*
13	0.6	0.6	0.6	0.6	0.6*
14	0.6	0.6	0.6	0.6	0.7*
15	0.5	0.3	0.6	0.4	0.6*
16	0.6	0.5	0.5	0.5	0.5*
17	0.6	0.5	0.6	0.6	0.7*
18	0.6	0.6	0.6	0.6	0.7*
19	0.6	0.6	0.6	0.6	0.6*
20	0.6	0.6	0.6	0.6	0.6*
21	0.5	0.5	0.6	0.4	0.7*
22	0.6	0.6	0.6	0.5	0.6*
23	0.4	0.3	0.5	0.1*	0.6*
24	0.4	0.5	0.5	0.4	0.5*
25	0.6	0.5	0.6	0.6	0.7*
26	0.6	0.5	0.6	0.6	0.6*
27	0.6	0.5	0.6	0.6	0.7*
28	0.6	0.5	0.6	0.6	0.7*
29	0.6	0.5	0.6	0.6	0.7*
30	0.6	0.4	0.5	0.5	0.7*
31	0.6	0.5	0.6	0.5	0.7*
32	0.6	0.5	0.6	0.5	0.7*
33	0.5	0.4	0.6	0.3*	0.7
34	0.5	0.5	0.6	0.6	0.7*
35	0.5	0.5	0.5	0.4*	0.6*
36	0.6	0.5	0.6	0.5	0.5*

* Test statistic Z was not statistically significant in the Wilcoxon signed rank test.

ing⁴). To the best of our knowledge, there have been no studies to date on patient safety and quality of medical care. However, the present study was conducted during the COVID-19 pandemic, and the hospital and clinics where this study was conducted were in an environment where infection protection equipment was not preferentially supplied, unlike university hospitals. Moreover, some junior residents helped clinic staff hand-make protective clothing and face shields. These experiences may

have influenced junior residents to learn the importance of health management measures to protect healthcare professionals and make efforts in protecting their own health.

In the comparison of effect sizes by training site, test statistic Z was not statistically significant in Kitakata's 35 items and Hobara's six items. This was considered to be due to the relatively small sample size. When the effect size was examined for the items for which the test statistic Z was statis-

tically significant (all items for Kashima, Asahi, and Hoshi Yokozuka, 30 items for Hobara, and one item for Kitakata), the effect size of all the training sites was large in 24 out of the total 36 items. This result means that these 24 items had the same strong impact at each training site. A prior study states that the learning of junior residents may be inconsistent due to differences in the training environment¹¹⁾. However, the results of the present study suggest that GP/FM training may bring about consistency regardless of the differences in the training environment. This will be an important finding in expanding the field of GP/FM training in Japan.

The present study has several strengths and limitations. The first strength is that, to the best of our knowledge, this is the first report on the impact of GP/FM training in Japanese postgraduate training using nationwide standardized evaluation items. Second, this study was a multicenter study conducted at multiple medical institutions. The first limitation is that general practice/family medicine training cannot be said to be superior to other training because there have been no studies comparing it with other training methods. Although there have been few prior studies comparing GP/FM training and other training, GP/FM training has been reported to be equal to or better than other training in terms of quality of education, acquisition of clinical skills, social support, and role independence¹⁴⁾. Second, since there is no comparison with attending doctors other than family doctors, it cannot be stated whether there is a difference in impact depending on whether the attending doctor is formally trained as a family doctor or not. Third, there may be some self-reporting bias, because self-evaluations were performed. At orientation on the first day of GP/FM training, we fully explained to the junior residents that the current study would not affect their grades; however, there may be a possibility that the junior residents purposefully exaggerated their post self-evaluations out of gratitude and consideration for the family doctors. Fourth, there was no correlation between the residents' self-evaluations and the family doctors' evaluations at the end of training. Two of the 36 items (No. 2 and 4) showed statistically significant correlations. However, the correlation coefficient was 0.2. In the present study, the evaluation was based on a 10-level Likert scale (1, the level expected at the start of postgraduate training; 10, the level expected at the end of postgraduate training). However, we suspected that the junior residents and family doctors had different recognitions of the level expected at the end

of postgraduate training, which was the reason for the lack of correlation. Fifth, the standardization of evaluation among family doctors was insufficient. We ensured that the same Likert scale was used for standardization of evaluation. However, each family doctor may have different recognitions of the level expected at the end of postgraduate training. If similar surveys are conducted in the future, it will be necessary for the learners and faculty to fully coordinate the evaluation criteria.

Conclusions

The current study investigated the self-evaluations and family doctor evaluations of junior residents undergoing a GP/FM rotation using evaluation items based on the objectives in the Guidelines for Residency Training. Our findings suggest that GP/FM training has an impact on all areas of the residency training guideline and has a consistent impact regardless of the training environment.

Acknowledgments

We thank Professor Aya Goto of the Center for Integrated Science and Humanities at Fukushima Medical University, for her useful comments on the analysis and interpretation of the data.

We thank Chisato Kubo of the Office for Gender Equality Support at Fukushima Medical University, for inputting the data.

We are indebted to Assistant Professor Maham Stanyon of the Center for Medical Education and Career Development at Fukushima Medical University, for her English editing of the manuscript.

We also wish to thank the Scientific English Editing Section of Fukushima Medical University.

Conflicts of interest disclosure

The authors declare no conflicts of interest.

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