

Original Article

Career satisfaction among acute care resident physicians in Japan

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Aim: With the introduction of the new national board certification system, sustainable education of acute care physicians has become an important topic. Prior surveys have addressed the job satisfaction of young acute care physicians. However, there have been limited nationwide surveys. The purpose of this study was to investigate the career satisfaction of senior acute care resident physicians, and to identify factors affecting their career satisfaction.

Methods: An anonymous multiple-choice questionnaire was administered to candidates at the national board examination in 2018 regarding their career satisfaction. Data were analyzed with factor analysis and multivariable analysis with a logistic regression model to identify factors affecting career satisfaction.

Results: There were 427 respondents and the response rate was 98.2%. There were 332 male respondents (80.8%). Factors that correlated with career satisfaction were training systems, working conditions, personal learning, and stress-related factors. High job satisfaction was found in 137 (36.6%) of the respondents. Logistic regression analysis showed that the factors significantly associated with high job satisfaction were: training systems (odds ratio [OR] 2.18; 95% confidence interval [CI], 1.43–3.33), working conditions (OR 1.78; 95% CI, 1.25–2.53), and personal learning (OR 1.55; 95% CI, 1.02–2.36). There was no significant correlation between high career satisfaction and intention to switch to another specialty.

Conclusion: High job satisfaction in senior acute care residents requires the development of a teaching environment, an optimized work environment, and encouragement of personal learning.

Key words: Career choice, certification, factor analysis, professional burnout, residency

This article was first published in Japanese as “Career satisfaction among emergency medicine resident physicians in Japan” in the *Journal of Japanese Association for Acute Medicine* 2021; 32: 237–44. Using data from 427 emergency medicine resident physicians, the original article reported that high job satisfaction in senior emergency medicine residents requires the development of a teaching environment, an optimized work environment, and encouragement of personal learning.

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BACKGROUND

THE BOARD CERTIFICATION system of the Japanese Association of Acute Medicine (JAAM) was started in 2003. In 2010, the number of board-certified physicians was 3,035. By 2019, this number had increased to 5,022. Moreover, the new medical board certification system led by the Japanese Medical Specialty Board (started in 2018) accredits the emergency medicine training programs developed by each institution. Under these circumstances, it is anticipated that the number of young physicians who first obtain a specialty other than emergency medicine and later obtain emergency medicine board certification will decrease. The leadership of the emergency medicine specialty needs to

explore what is necessary for resident physicians to choose emergency medicine over other specialties. In order to do this, it is essential to identify the aspects of work and emergency medicine training that resident physicians are satisfied with and the aspects that they consider problematic. Career and training satisfaction of 67 acute care physician trainees have been reported in the past, but no nationwide survey of acute care resident physicians has yet been undertaken.¹ The purpose of this study was to investigate the career satisfaction of acute care medicine resident physicians and to clarify the factors that affect their satisfaction. The data were anonymized according to the Personal Information Protection Law.

METHODS

THIS STUDY WAS undertaken after the study protocol was reviewed by the Ethics Committee of the JAAM (approved on August 8, 2018). With reference to previous published reports, a questionnaire was developed to assess the satisfaction of acute care physicians with their training and career, and a cross-sectional survey was carried out.¹⁻⁵ The target population comprised 435 resident physicians who took the JAAM Board Examination in 2018. We explained, both orally and in writing, that the questionnaire was not related to the success or failure in the examination and that the time spent on answering the questionnaire was exclusive of the time spent answering the questions in the examination. All participants were Japanese, and they were informed about the study, based on which they provided written consent prior to the survey. Participants were assured of confidentiality and anonymity.

The questionnaire was anonymous and included 12 items to gather data on the respondents' demographic information such as age and number of years since graduation and to get an overview of emergency medicine at their institution. Moreover, a total of 20 questions relating to career and training satisfaction were answered on a Likert-like scale ranging from 1 to 5.¹⁻⁵ In addition, five additional questions were added to the end of the questionnaire (Table 1): "Are your maximum weekly working hours fixed?" and "Do you consider emergency medicine as an established specialty?"

In the statistical analysis, we first identified the factors related to career satisfaction using factor analysis. The presence or absence of a ceiling effect and floor effect was confirmed using descriptive statistics of the questionnaire items. Factor analysis was then carried out using the maximum likelihood method and promax rotation. Multivariate logistic regression analysis was carried out with career satisfaction

Table 1. Survey items for Japanese acute care resident physicians (C-5)

A. Demographics

1. Sex
 2. Age
 3. Postgraduate year
 4. Present marital status
 5. I have a child/children
 6. Current style of practice
 7. Work hours per week
 8. Monthly income
 9. Number of ambulance visits per year
 10. Number of ED visits per year
 11. Number of emergency physicians (attending physicians)
 12. Number of emergency medicine residents
- The answer choices of the following items (B-1 to B-20) were presented in a Likert-like scale and ranged from 1 (lowest grade) to 5 (highest grade).

B. Satisfaction

1. Are you satisfied with your income?
2. Are you satisfied with your personal time?
3. Are you satisfied with knowing enough?
4. Are you satisfied with improvement of skill and knowledge through practice?
5. Are you satisfied with opportunities to attend conferences?
6. Are you satisfied with keeping up with medical literature?
7. Is your residency program organized enough?
8. Are you satisfied with the number of attending physicians?
9. Are you satisfied with bedside education by attending physicians?
10. Are you satisfied with measures of clinical problem solving?
11. Is this work condition available in my current position: Teaching opportunity
12. Is this work condition available in my current position: Research opportunity
13. Are you satisfied with ED administration?
14. Are you satisfied with patient volume?
15. Are you satisfied with working hours?
16. Overall, how satisfied are you with your emergency medicine residency training?
17. How much are you concerned about medical malpractice suits?
18. How high is the level of stress with patients and their families?
19. How high is the level of stress with allied health professions?
20. How high is the level of fatigue?

C. General questions

1. Is this work condition available in my current position:
Defined working hours
2. Do you have role models?
3. If you had to decide whether to select the specialty of emergency medicine, what would you decide?
4. Would you switch the specialty?
5. Overall, how satisfied are you with your career in emergency medicine?

ED, emergency department.

as the dependent variable and the obtained factors as independent variables.^{3,4} A score of 4 or 5 for career satisfaction was defined as high satisfaction.¹

Fisher's exact test was used to assess high satisfaction and the following questions: "Are your maximum weekly working hours fixed?" and "Do you consider emergency medicine as an established specialty?" All tests were two-tailed, and *P*-values <0.05 were considered to indicate statistical significance. Stata 15 (Stata Corporation, College Station, TX, USA) was used for the analysis.

RESULTS

OVERALL, THERE WERE 427 respondents (response rate, 98.2%). Each item related to demographic information was reported based on the number of responses obtained, and unanswered questions are included in Table 2. The number of male respondents

Table 2. Demographics of Japanese acute care resident physicians who responded to the survey (n = 427)

Personal information		
Sex	Male	332 (80.8)
Age, years; mean (SD)		35.54 (5.73)
Postgraduate year; mean (SD)		8.02 (1.86)
Present marital status	Married	272 (64.3)
I have a child/children	Yes	169 (47.5)
Current style of practice	ED only	105 (25.4)
	ED and critical care ward	308 (74.6)
Work hours per week	≤40	13 (3.2)
	41–60	104 (25.6)
	61–80	142 (35.0)
	80–100	98 (24.1)
	>100	49 (12.1)
Monthly income, ¥	≤3,00,000	12 (2.8)
	300,001–400,000	31 (7.3)
	400,001–500,000	48 (11.2)
	≥500,001	319 (74.7)
Departmental information		
Number of ambulance visits per year	≤2,000	55 (14.3)
	2,001–4,000	94 (24.4)
	4,001–6,000	100 (26.0)
	6,001–8,000	68 (17.7)
	≥8,001	68 (17.7)
Number of emergency physicians (attending physicians)	≤2	53 (12.9)
	3–6	149 (36.2)
	≥7	210 (51.0)
Number of emergency medicine residents	≤2	136 (33.3)
	3–6	152 (37.4)
	7–11	79 (19.3)
	≥12	41 (10.0)

Data are shown as n (%) unless otherwise indicated. Percentages were calculated without including missing responses. Information regarding missing responses is available in supplemental material. ED, emergency department, SD, standard deviation.

was 332 (80.8%; Table 2). After excluding responses with missing data, the total number of respondents was 374. The missing responses regarding demographic information are provided in Appendix S1. Table 3 shows the mean values of the 20 questions related to satisfaction on a Likert-like scale of 1–5 points.

We screened for the ceiling effect and the floor effect for factor analysis, but neither was found. Therefore, no item was excluded from the analysis. As a result of the factor analysis using the maximum likelihood method, the changes in the eigenvalues were 3.88, 1.73, 1.35, 1.23, and 1.21. Considering the attenuation and interpretability, a four-factor structure was considered appropriate. Therefore, we undertook a factor analysis using the maximum likelihood method and promax rotation, again assuming a four-factor structure. The presence or absence of items with factor loading less than 0.35 was examined, but none were found. The final factor patterns and factor loadings after promax rotation are shown in Table 4.

The first factor (designated as the educational environmental factor) comprised eight items: “bedside education,” “number of attending physicians,” “training program,” “training program management,” “department management,” “clinical support to the department,” “adequate research opportunities,” and “educational opportunities.” Cronbach’s alpha coefficient was 0.88, and the reliability was acceptable. The second factor (stress factor) comprised four items: “concern for patient’s family,” “concern for lawsuit,” “stress from allied health professionals,” and “fatigue.” Cronbach’s alpha coefficient was 0.70, and the reliability was acceptable. The third factor (working environment factor) comprised four items: “working hours,” “working hours outside clinical settings,” “income,” and

“patient volume.” Cronbach’s alpha coefficient was 0.75, and the reliability was acceptable. The fourth factor (self-learning factor) comprised four items: “didactics,” “skill development,” “medical knowledge,” and “evidence-based medicine.” Cronbach’s alpha coefficient was 0.76, and the reliability was acceptable.

The mean score of career satisfaction was 3.02 ± 1.02 . A total of 137 respondents (36.6%) had high levels of career satisfaction. High satisfaction was defined as response with 5 points and 4 points. Logistic regression analysis revealed that high career satisfaction was significantly associated with the following factors at the 5% level: educational environmental factor (odds ratio [OR] 2.18; 95% confidence interval [CI], 1.43–3.33), working environmental factor (OR 1.78; 95% CI, 1.25–2.53), and self-learning factor (OR 1.55; 95% CI, 1.02–2.36). The beta coefficient of each factor in this analysis is presented in Appendix S2. The r^2 value of the model was 0.17 (Table 5).

To examine how the respondents’ demographic information affects their satisfaction, we undertook a univariate analysis of high satisfaction among the respondents and their demographic information. We found no significant association between gender, marital status, or the presence of children and high satisfaction.

There were 18.8% respondents who were thinking of moving to another specialty. Fisher’s exact test showed that there was no significant correlation between high career satisfaction and the intention to switch to another specialty ($P = 0.15$). When asked whether they would choose to be an acute care physician again if they had another chance at choosing their career, 103 (27.1%) respondents answered that they would not. Fisher’s exact test showed that there was no significant difference between high career

Table 3. Median and interquartile range (IQR) of survey questions (n = 374)

Question	Median	IQR	Question	Median	IQR
1 Income	3	2–4	11 Teaching opportunity	3	2–4
2 Personal time	3	2–4	12 Research opportunity	3	2–3
3 Knowledge	2	2–3	13 Administration	3	2–3
4 Skill	3	2–4	14 Patient volume	3	3–4
5 Conference	3	2–3	15 Working hours	3	2–4
6 Literature	2	2–3	16 Residency training	3	2–4
7 Program	3	2–3	17 Medical-malpractice	3	3–4
8 Attending	3	2–4	18 Stress with patients	3	3–4
9 Bedside teaching	3	2–3	19 Stress with coworkers	3	2–3
10 Clinical support	3	2–3	20 Fatigue	3	3–4

Data were collected in September 2018 from participants taking a written board examination (n = 374). IQR, interquartile range.

Table 4. Pattern matrix after promax rotation

		Factors			
		1	2	3	4
9.	Satisfaction in bedside teaching	0.90	0.05	-0.07	-0.07
8.	Satisfaction in number of attending physician	0.82	0.06	0.04	-0.16
7.	Satisfaction in residency organization	0.76	0.03	-0.07	0.04
13.	Satisfaction in administration of emergency department	0.69	-0.01	0.26	-0.12
10.	Satisfaction in clinical support	0.62	-0.06	-0.07	0.26
16.	Satisfaction in residency training	0.52	0.02	0.23	0.06
11.	Satisfaction in teaching opportunity	0.48	-0.10	-0.01	0.24
12.	Satisfaction in research opportunity	0.42	-0.06	-0.07	0.26
18.	Stress associated with patients and their families	0.05	0.86	0.07	0.04
17.	Concern about medical malpractice suit	0.01	0.74	0.10	-0.10
19.	Stress with allied health professionals	-0.10	0.36	-0.17	0.17
20.	Fatigue	0.09	0.31	-0.47	0.04
2.	Satisfaction in personal time	-0.08	0.09	0.80	0.06
15.	Satisfaction in working hours	0.07	0.05	0.80	0.03
1.	Satisfaction in income	0.02	0.04	0.54	0.10
14.	Satisfaction in patient volume	0.24	0.01	0.44	-0.02
6.	Opportunity for keeping up with medical literature	0.02	-0.02	-0.08	0.73
3.	Satisfaction in knowing enough	-0.22	0.02	0.26	0.71
5.	Opportunity for participation in conferences	0.36	0.07	-0.05	0.50
4.	Satisfaction in skill development	0.19	-0.04	0.09	0.44

Table 5. Logistic regression analysis for career satisfaction

	OR	95% CI	P-value
Univariate analysis			
Training system factor	3.38	2.36–4.85	<0.01
Stress-related factor	0.73	0.55–0.97	0.03
Working conditions factor	3.51	2.33–5.28	<0.01
Personal learning factor	2.84	2.00–4.02	<0.01
Multivariable analysis			
Training system factor	2.18	1.43–3.33	<0.01
Stress-related factor	0.86	0.59–1.26	0.44
Working conditions factor	1.78	1.25–2.53	0.01
Personal learning factor	1.55	1.02–2.36	0.04

CI, confidence interval; OR, odds ratio.

satisfaction and intention to switch to another department if they could rewrite their choice ($P = 0.26$). Finally, when we analyzed the correlation between high career satisfaction and fixed weekly maximum working hours as well as the correlation between high career satisfaction and the views on emergency medicine as an established specialty using Fisher's exact test, there were no statistically significant correlation noted ($P = 0.30$ and 0.41 , respectively).

DISCUSSION

THIS STUDY IS the first large-scale cross-sectional study of Japanese acute care medicine resident physicians carried out to investigate their career satisfaction. The results showed that the factors correlated with high career satisfaction were related to the learning environment, working environment, and personal learning. The results suggest that the specialty of emergency medicine needs to provide more extensive training programs to increase the number of board-certified emergency physicians while simultaneously reforming the work style.

In 2010, Hagiwara *et al.* investigated the career satisfaction of young acute care physicians working in emergency departments.¹ In this study of 67 acute care physicians, working environment-related factors were found to be important for career satisfaction, as was the case in our study. In addition, the study reported by Hagiwara *et al.* shows the importance of the stress-reducing factor. The stress-reducing factor was not significant in the present study because the environment surrounding emergency medicine in Japan has changed and improved over the past 8 years. However, the factors of educational environment and self-learning, which were not significant in Hagiwara *et al.*'s study, became significant in the present study. In particular,

our study included resident physicians trained in the critical care style as well as the emergency medicine style. The sample size of the present study was also six times larger than that of the study by Hagiwara *et al.* In our study, the OR was higher for the education environmental factor (OR 2.18; 95% CI, 1.43–3.33) than for the working environmental factor (OR 1.78; 95% CI, 1.25–2.53). In studies undertaken in the United States, items related to the educational environment and items related to the work environment have been reported to significantly affect career satisfaction.^{2,6} However, the OR was highest for the work environment. This difference in results could indicate that young acute care physicians in Japan place a high priority on receiving high-quality specialty training. An environment in which young acute care physicians can grow by receiving sufficient teaching while maintaining a good working environment might be a condition for increasing the number of acute care physicians in the future.

In a study of occupational satisfaction in Japan, burnout, number of shifts, and sleeping hours were associated with occupational satisfaction among hospitalists.⁴ In a study of internists, income, relationships with other doctors, and relationships with other medical professions were associated with occupational satisfaction. In these studies, carried out in fields other than emergency medicine, working environment and career satisfaction were also related. These results suggest that in addition to the scope of practice and specialty, appropriate work environment has a significant impact on career satisfaction. In Japan, the field of emergency medicine has introduced a shift work system and team-based care from an early stage compared to other medical specialties. Strong efforts to improve the working environment could contribute to improvement of postgraduate education as well as an increase in the number of acute care residents.

In a study of emergency physicians in the United States, low career satisfaction was associated with a higher risk of early retirement than high career satisfaction. Landon *et al.* reported that physicians with low job satisfaction had a two- to three-fold higher risk of early retirement than those who did not.^{7–10} In a study of emergency physicians in the United States, high career satisfaction was correlated with work environment, educational opportunities, adequate patient volume, and guaranteed income, independent of gender, marital status, and parental status.² In other words, the factors that affect career satisfaction do not change significantly as life stages change. Although this study was carried out on acute care resident physicians, it might also lead to strategies to increase career satisfaction among board-certified acute care physicians.

This study had several limitations. First, because this was a cross-sectional study undertaken in a single year

(2018), we could not assess the differences over time. In the future, we plan to carry out surveys over multiple years to overcome this limitation. Second, there is a concern regarding reporting bias. Although the survey was completed anonymously after clearly informing the respondents that their responses would not affect the success or failure of the examination, we cannot deny the possibility that there was a psychological barrier to giving negative answers to the questionnaire survey conducted as an academic conference at the examination site. In addition, because the survey was based on self-reports, it does not represent actual behavior or performance. Finally, the third is the existence of an information bias. We tried to make the questionnaire as comprehensive and easy to answer as possible, referring to previous similar studies.^{1–4} However, it was not possible to examine all the attributes of the subjects and all factors that might be related to their satisfaction. These factors could have acted as confounders.

CONCLUSION

A SURVEY OF career satisfaction among acute care resident physicians revealed that the teaching environment, work environment, and self-learning factors were found to influence high career satisfaction. A well-developed training environment and an appropriate working environment could contribute to an increase in the number of acute care physicians in Japan. To achieve this, it is necessary to further improve the teaching and personal learning environments that are being developed in the newly developed board certification system. Although working on a greater number of cases is recommended to get trained well, it is important to ensure that the trainees are working for a reasonable number of hours in the context of duty hour restrictions.

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DISCLOSURE

APPROVAL OF THE research protocol with approval no. and committee name: This study was conducted

after the study protocol was reviewed by the Ethics Committee of the JAAM (approved August 8, 2018).

Informed consent: Written informed consent from the participants was obtained as described in the Methods section.

Registry and registration no. of the study/trial: N/A.

Animal studies: N/A.

Conflict of interest: None.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Appendix S1. Missing responses regarding demographic information.

Appendix S2. Beta coefficient of multivariate analysis.