

Perceived Progress of Physician Work Style Reform Among Resident Physicians in Japan: A Nationwide Multilevel Cross-Sectional Survey

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Abstract

Background: Japan implemented nationwide physician work style reform, including regulations on overtime work. Resident physicians are among the groups most affected by long working hours; however, little is known about their perceptions of the progress of these reforms. This study examined resident physicians' perceptions of physician work style reform and identified individual- and hospital-level factors associated with perceived insufficient progress.

Methods: A nationwide cross-sectional questionnaire survey was conducted among resident physicians at 955 core specialty training hospitals accredited by the Japanese Medical Specialty Board. Responses were obtained from 200 hospitals, yielding 1,038 questionnaires (hospital response rate: 20.9%). The primary outcome was perceived insufficient progress of physician work style reform, defined as responses of "not progressing very much" or "not progressing at all." All 1,038 respondents from 200 hospitals were included in the multilevel analysis using hospital-specific random intercepts.

Results: Overall, 70.6% of respondents perceived physician work style reform to be progressing, whereas 25.9% perceived insufficient progress and 3.5% selected "neither." Perceived insufficient reform progress was independently associated with postgraduate year 5 (odds ratio (OR), 2.63; 95% confidence interval (CI), 1.67-4.13), postgraduate year > 6 (OR, 2.40; 95% CI, 1.40-4.10), working 60-79 hours per week (OR, 2.47; 95% CI, 1.03-5.90), working 80-99 hours per week (OR, 3.79; 95% CI, 1.39-10.33), and increasing night-duty frequency (1-4 duties/month: OR, 1.83; 95% CI, 1.11-3.02; 5-8 duties/month: OR, 2.19; 95% CI, 1.22-3.94; >9 duties/month: OR, 4.65; 95% CI, 1.58-13.67). No significant associations were observed between perceived reform progress and hospital ownership, hospital size, or regional classification.

Conclusions: Resident physicians' perceptions of physician work style reform were associated primarily with working conditions rather than measured hospital characteristics. Even after accounting for clustering within hospitals, longer working hours and more frequent night duties remained independently associated with perceived insufficient implementation of physician work style reform.

Categories: Occupational Health, Health Policy, Epidemiology/Public Health

Keywords: graduate medical education, night duty, physician work style reform, resident physicians, working hours

Introduction

Physician burnout and excessive working hours have become major challenges for healthcare systems worldwide. Long working hours are associated with burnout, depression, medical errors, and reduced quality of patient care, particularly among early-career physicians undergoing specialty training [1-4]. Consequently, many countries have introduced regulations limiting physicians' working hours while attempting to maintain the quality of postgraduate medical education.

In Japan, resident physicians are among the groups most affected by excessive workloads. National surveys have consistently shown that resident physicians work substantially longer hours than many other physicians and frequently undertake overnight duties in addition to daytime clinical responsibilities [5]. Because resident physicians provide frontline patient care while simultaneously acquiring clinical competencies, physician work style reform may influence not only their working environment but also the quality of residency training and patient care.

To address physicians' excessive working hours, the Japanese government initiated physician work style reform, culminating in the nationwide implementation of overtime regulations in April 2024 [6,7]. The reform introduced legal limits on physicians' overtime work, mandatory health management measures, and rest interval recommendations, while allowing limited exemptions for designated institutions responsible for emergency and regional healthcare services. The primary goal of the reform was to improve physicians' working conditions without compromising healthcare delivery or postgraduate medical education.

Although physician work style reform has attracted considerable policy attention, evidence regarding its implementation from the perspective of resident physicians remains limited. Previous studies have mainly focused on physicians' working hours, burnout, or the potential impact of duty-hour regulations [2,5,8,9]. Few nationwide studies have examined how resident physicians perceive the progress of physician work style reform or explored the factors associated with perceived insufficient implementation.

Implementation of the reform may differ according to both individual working conditions and institutional characteristics. Resident physicians working longer hours or undertaking more frequent night duties may

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perceive less progress in work style reform. Likewise, implementation may vary across hospitals depending on ownership, size, and regional characteristics. Understanding these factors is important for evaluating the early implementation of physician work style reform and identifying areas requiring further policy attention. Therefore, this nationwide cross-sectional survey aimed to investigate resident physicians' perceptions of the progress of physician work style reform in Japan and to identify individual- and hospital-level factors associated with perceived insufficient progress using multilevel logistic regression analysis.

Materials And Methods

Study design and participants

This nationwide cross-sectional survey was conducted between July and August 2024 among resident physicians enrolled in specialty training programs in Japan. Questionnaires were mailed to all 955 core specialty training hospitals accredited by the Japanese Medical Specialty Board [10]. Each hospital was asked to distribute the questionnaire to resident physicians enrolled in its specialty training programs. Participation was voluntary and anonymous, and completion and return of the questionnaire were regarded as provision of informed consent. Responses were obtained from 200 of the 955 invited hospitals (hospital response rate: 20.9%), yielding 1,038 valid questionnaires. All 1,038 respondents from these 200 hospitals were included in the multilevel analyses. Because the total number of eligible resident physicians at participating hospitals was not available, an individual-level response rate could not be calculated.

Questionnaire

The questionnaire collected information on participants' demographic characteristics, specialty, working conditions, perceptions of physician work style reform, and perceived effects of the reform on healthcare quality and residency training. A reconstructed version of the questionnaire, including the original Japanese items and an English translation, is provided in the appendix. Weekly working hours were defined as the total time spent on clinical duties, night duties, and work-related educational activities during a typical working week. Monthly night-duty frequency was recorded using four predefined categories.

Outcome variable

The primary outcome was perceived insufficient progress of physician work style reform. For the binary outcome, responses of "not progressing very much" and "not progressing at all" were coded as 1 (perceived insufficient progress). Responses of "progressing substantially," "progressing somewhat," and "neither" were coded as 0 (reference group). Accordingly, 269 respondents were classified as having perceived insufficient progress, while 769 respondents, including 36 neutral respondents, were classified in the reference group.

Participants were also asked about the perceived effects of physician work style reform on healthcare quality and patient safety and on the quality of residency training. For each question, responses were recorded using six categories: "markedly improve," "somewhat improve," "no change," "somewhat worsen," "markedly worsen," and "neither."

Explanatory variables

Individual-level explanatory variables included sex, age, postgraduate year (PGY), specialty, weekly working hours, and monthly night-duty frequency. Hospital-level variables included ownership, number of licensed beds, and regional classification. These variables were not collected through the questionnaire; they were obtained from Japan's Hospital Bed Function Reporting System and linked to questionnaire responses at the hospital level using hospital identifiers. Hospital ownership was categorized as public, national/public university, private university, or private hospital. Hospital size was categorized according to the number of licensed beds. Regional classification was assigned according to the secondary medical area in which each hospital was located and categorized as metropolitan, regional urban, or rural based on previously published criteria [11].

Statistical analysis

Categorical variables are presented as frequencies and percentages. The primary analysis included 1,038 resident physicians from 200 hospitals. Multilevel multivariable logistic regression models with hospital-specific random intercepts were used to account for clustering of resident physicians within hospitals. The dependent variable was perceived insufficient progress of physician work style reform, defined as described above. Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were estimated for the explanatory variables. All variables included in the primary model had complete observations in the analytic dataset. Specialty categories with very small sample sizes were interpreted cautiously because of the potential for sparse-data bias and unstable estimates. Differences in available institutional characteristics between responding and nonresponding hospitals were examined descriptively to assess potential selection bias. Statistical significance was defined as a two-sided P-value below 0.05. Statistical analyses were performed using Stata/SE version 17.0 (StataCorp LLC, College Station, TX, USA).

Ethical approval

The study protocol was approved by the Ethics Committee on Human Research at Tokyo Healthcare University (Approval No. 023-25B). The questionnaire explained the study objectives, voluntary participation, and confidentiality. Written informed consent was waived because responses were anonymous, and return of the questionnaire was regarded as implied consent.

Results

Participant characteristics

Questionnaires were distributed to all 955 core specialty training hospitals accredited by the Japanese Medical Specialty Board. Responses were obtained from 200 hospitals (hospital response rate, 20.9%), yielding 1,038 valid questionnaires from resident physicians. Participant characteristics are summarized in Table 1.

Variable	Category	n	%
Sex	Female	370	35.6
	Male	668	64.4
Age (years)	25-29	586	56.5
	30-34	315	30.3
	35-39	65	6.3
	≥40	72	6.9
Postgraduate year	PGY3	289	27.8
	PGY4	235	22.6
	PGY5	277	26.7
	PGY6 or later	237	22.8
Specialty	Internal medicine	324	31.2
	Surgery	99	9.5
	Orthopedic surgery	53	5.1
	Pediatrics	106	10.2
	Obstetrics and gynecology	50	4.8
	Anesthesiology	29	2.8
	Otorhinolaryngology	31	3.0
	Psychiatry	85	8.2
	Dermatology	39	3.8
	Ophthalmology	26	2.5
	Emergency medicine	30	2.9
	Urology	21	2.0
	Radiology	32	3.1
	Neurosurgery	27	2.6
	Pathology	8	0.8
	Plastic surgery	21	2.0
	General practice	40	3.9
	Rehabilitation medicine	13	1.3
	Laboratory medicine	4	0.4
Weekly working hours	<40	54	5.2
	40-59	552	53.2
	60-79	348	33.5
	80-99	63	6.1
	≥100	21	2.0
Night duties per month	None	179	17.2
	1-4	601	57.9
	5-8	235	22.6
	≥9	23	2.2
	Public hospital	531	51.2

Hospital ownership	National or public university hospital	268	25.8
	Private university hospital	95	9.2
	Private hospital	144	13.9
Hospital size, beds	<200	37	3.6
	200-399	204	19.7
	400-599	285	27.5
	600-799	289	27.8
	800-999	144	13.9
	≥1,000	79	7.6
Regional classification	Metropolitan	302	29.1
	Regional urban	700	67.4
	Rural	36	3.5
Perceived reform progress	Progressing substantially	118	11.4
	Progressing somewhat	615	59.2
	Neither	36	3.5
	Not progressing very much	209	20.1
	Not progressing at all	60	5.8

TABLE 1: Participant Characteristics, Working Conditions, Perceptions of Physician Work Style Reform, and Hospital Characteristics

Values are presented as numbers and percentages. Percentages may not total 100 because of rounding or missing responses.

PGY: postgraduate year

Among the respondents, 64.4% (n = 668) were male and 35.6% (n = 370) were female. Most participants were aged 25-29 years (56.5%, n = 586), and PGYs 3-5 accounted for 77.2% (n = 801) of respondents. Internal medicine was the most frequently represented specialty (31.2%, n = 324).

Regarding working conditions, 53.2% (n = 552) of respondents reported working 40-59 hours per week, whereas 41.6% (n = 432) worked ≥60 hours per week. Most participants (57.9%, n = 601) performed one to four night duties per month, whereas 22.6% (n = 235) performed five to eight night duties and 2.2% (n = 23) performed nine or more night duties.

Hospital characteristics are also shown in Table 1. Just over half of respondents were affiliated with publicly owned hospitals (51.2%, n = 531), and most respondents were affiliated with hospitals located in metropolitan or regional urban areas (96.5%, n = 1,002).

Perceived progress of physician work style reform

Overall, 70.6% (n = 733) of respondents perceived that physician work style reform was progressing, whereas 25.9% (n = 269) perceived insufficient progress and 3.5% (n = 36) selected "neither." Regarding the perceived impact of physician work style reform, 36.0% (n = 374) of respondents believed that the reform would improve healthcare quality and patient safety: 8.6% (n = 89) selected "markedly improve" and 27.5% (n = 285) selected "somewhat improve." In contrast, 23.9% (n = 248) believed that these outcomes would worsen: 13.5% (n = 140) selected "somewhat worsen" and 10.4% (n = 108) selected "markedly worsen." A further 36.9% (n = 383) selected "no change" and 3.2% (n = 33) selected "neither" (Figure 1).

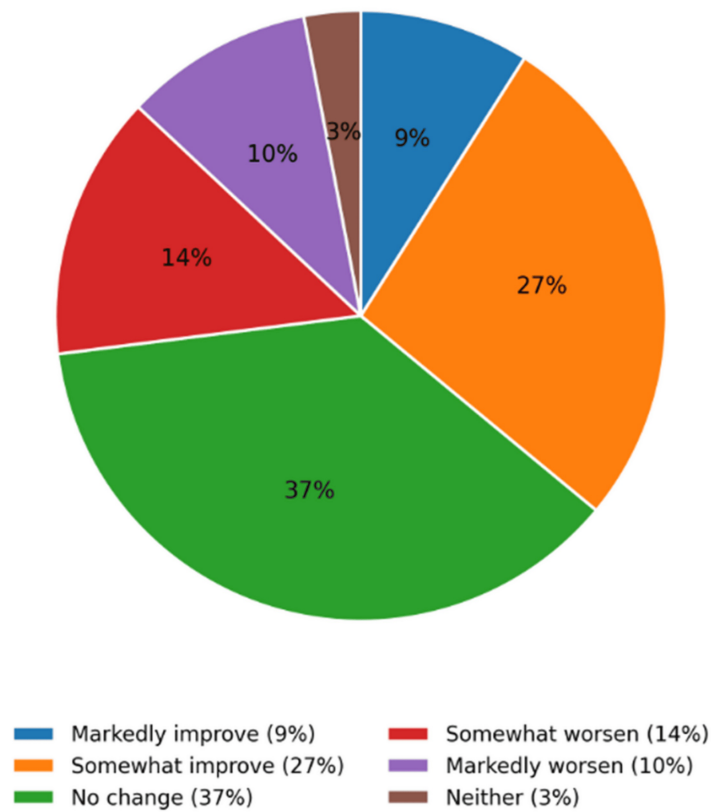


FIGURE 1: Resident Physicians' Perceptions of the Effects of Physician Work Style Reform on Healthcare Quality and Patient Safety

The figure shows the distribution of responses regarding the perceived effects of physician work style reform on healthcare quality and patient safety. Positive responses comprised "markedly improve" and "somewhat improve," whereas negative responses comprised "somewhat worsen" and "markedly worsen." Values are shown as n (%).

For residency training, positive perceptions accounted for 29.3% (n = 304): 7.6% (n = 79) selected "markedly improve" and 21.7% (n = 225) selected "somewhat improve." Negative perceptions accounted for 29.5% (n = 306): 19.2% (n = 199) selected "somewhat worsen" and 10.3% (n = 107) selected "markedly worsen." A further 37.8% (n = 392) selected "no change" and 3.5% (n = 36) selected "neither" (Figure 2).

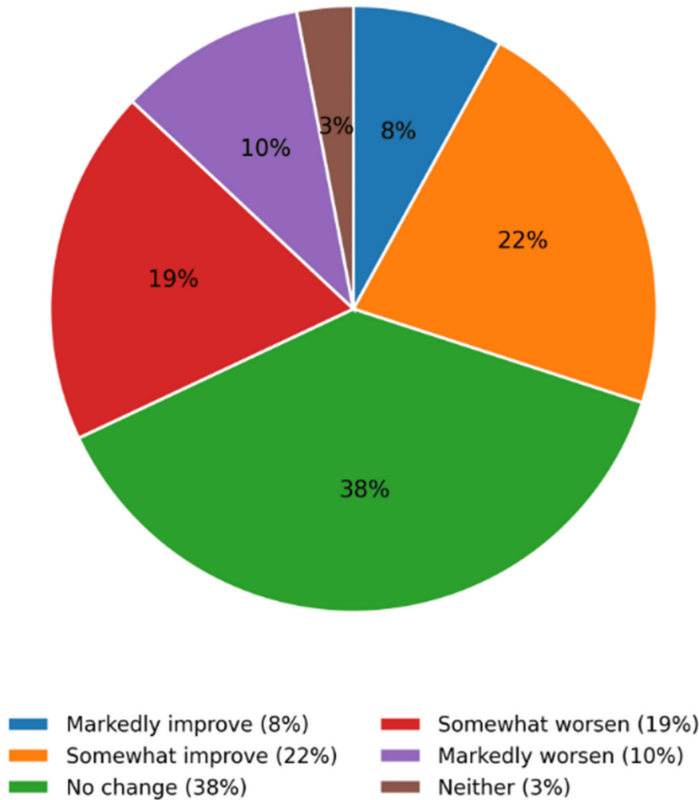


FIGURE 2: Resident Physicians’ Perceptions of the Effects of Physician Work Style Reform on the Quality of Residency Training

The figure shows the distribution of responses regarding the perceived effects of physician work style reform on the quality of residency training. Positive responses comprised "markedly improve" and "somewhat improve," whereas negative responses comprised "somewhat worsen" and "markedly worsen." Values are shown as n (%).

Multilevel logistic regression analysis

Multilevel multivariable logistic regression analysis was performed using 1,038 resident physicians clustered within 200 hospitals. The results are presented in Table 2. The associations were strongest for later PGYs, longer weekly working hours, and more frequent night duties. Estimates for specialties and workload categories with small sample sizes should be interpreted cautiously because of their limited precision. The results of the multilevel logistic regression analysis are presented in Table 2.

Variable	Category	Adjusted OR	95% CI	P-value
Sex	Female	Reference		
	Male	1.02	0.72-1.45	0.898
Age (years)	25-29	Reference		
	30-34	1.33	0.90-1.96	0.153
	35-39	0.61	0.29-1.27	0.188
	≥40	2.09	1.06-4.11	0.033
PGY	PGY3	Reference		
	PGY4	1.50	0.94-2.40	0.090
	PGY5	2.63	1.67-4.13	<0.001
	PGY6 or later	2.40	1.40-4.10	0.001
	Internal medicine	Reference		
	Surgery	0.76	0.44-1.30	0.314
	Orthopedic surgery	0.79	0.37-1.66	0.531

Specialty	Pediatrics	0.78	0.42-1.44	0.429
	Obstetrics and gynecology	0.59	0.27-1.29	0.186
	Anesthesiology	0.99	0.38-2.59	0.984
	Otorhinolaryngology	0.65	0.24-1.76	0.394
	Psychiatry	0.45	0.21-0.93	0.032
	Dermatology	1.21	0.55-2.68	0.630
	Ophthalmology	1.71	0.67-4.35	0.261
	Emergency medicine	0.38	0.13-1.13	0.081
	Urology	0.18	0.04-0.82	0.027
	Radiology	0.89	0.34-2.32	0.808
	Neurosurgery	1.02	0.38-2.72	0.966
	Pathology	3.28	0.68-15.87	0.140
	Plastic surgery	0.33	0.09-1.22	0.097
	General practice	0.83	0.35-1.98	0.669
	Rehabilitation medicine	1.68	0.45-6.27	0.443
	Laboratory medicine	Not estimated		
Weekly working hours	<40	Reference		
	40-59	1.86	0.79-4.33	0.153
	60-79	2.47	1.03-5.90	0.042
	80-99	3.79	1.39-10.33	0.009
	≥100	3.11	0.87-11.16	0.081
Night duties per month	None	Reference		
	1-4	1.83	1.11-3.02	0.018
	5-8	2.19	1.22-3.94	0.009
	≥9	4.65	1.58-13.67	0.005
Hospital ownership	Public hospital	Reference		
	National or public university hospital	1.05	0.61-1.81	0.858
	Private university hospital	1.74	0.68-4.47	0.249
	Private hospital	1.25	0.75-2.08	0.396
Hospital size, beds	<200	Reference		
	200-399	0.67	0.25-1.76	0.414
	400-599	0.74	0.29-1.93	0.544
	600-799	1.29	0.48-3.44	0.612
	800-999	0.91	0.31-2.64	0.859
	≥1,000	0.66	0.21-2.13	0.487
Regional classification	Metropolitan	Reference		
	Regional urban	0.85	0.58-1.24	0.388
	Rural	0.65	0.22-1.93	0.441

TABLE 2: Multilevel Multivariable Logistic Regression Analysis of Factors Associated With Perceived Insufficient Progress of Physician Work Style Reform

The dependent variable was perceived insufficient progress of physician work style reform, defined as responses of "not progressing very much" or "not progressing at all." A multilevel multivariable logistic regression model with a hospital-specific random intercept was fitted to account for clustering of resident physicians within hospitals.

OR: odds ratio; CI: confidence interval; PGY: postgraduate year

Compared with PGY3 residents, PGY5 residents (OR, 2.63; 95% CI, 1.67-4.13; $P < 0.001$) and residents in PGY6 or later (OR, 2.40; 95% CI, 1.40-4.10; $P = 0.001$) were significantly more likely to perceive insufficient progress of physician work style reform. Longer weekly working hours were independently associated with perceived insufficient reform progress. Compared with physicians working <40 hours per week, those working 60-79 hours per week (OR, 2.47; 95% CI, 1.03-5.90; $P = 0.042$) and 80-99 hours per week (OR, 3.79; 95% CI, 1.39-10.33; $P = 0.009$) had significantly higher odds of perceiving insufficient reform progress. Although physicians working ≥ 100 hours per week also showed higher odds (OR, 3.11; 95% CI, 0.87-11.16), the association did not reach statistical significance.

Night-duty frequency was also independently associated with perceived insufficient reform progress. Compared with residents who performed no night duties, the ORs were 1.83 (95% CI, 1.11-3.02) for one to four duties per month, 2.19 (95% CI, 1.22-3.94) for five to eight duties per month, and 4.65 (95% CI, 1.58-13.67) for nine or more duties per month.

Among specialty categories, psychiatry (OR, 0.45; 95% CI, 0.21-0.93) and urology (OR, 0.18; 95% CI, 0.04-0.82) were associated with significantly lower odds of perceiving insufficient reform progress than internal medicine. No statistically significant associations were observed between perceived reform progress and hospital ownership, hospital size, or regional classification.

Discussion

This nationwide cross-sectional survey examined resident physicians' perceptions of physician work style reform shortly after the nationwide implementation of overtime regulations in Japan. Using multilevel logistic regression to account for clustering of resident physicians within hospitals, we found that longer weekly working hours, more frequent night duties, and later PGYs were independently associated with perceived insufficient progress of physician work style reform. In contrast, hospital ownership, hospital size, and regional classification were not independently associated with physicians' perceptions after adjustment for individual working conditions.

Because physician work style reform had been implemented nationwide only a few months before this survey, the present findings should be interpreted as an assessment of the early implementation phase rather than the mature effects of the reform. Physicians' perceptions may evolve as hospitals continue adapting to the new regulatory framework.

To our knowledge, this is one of the first nationwide studies to evaluate physician work style reform from the perspective of resident physicians following the implementation of mandatory overtime regulations in Japan. Previous Japanese studies have primarily focused on objective indicators such as physicians' working hours, overtime, or burnout [5,12], whereas few have examined how physicians themselves perceive the implementation of work style reform. Perceived implementation is an important outcome because physicians' acceptance of organizational change is an important determinant of successful implementation and long-term sustainability of healthcare reforms [13,14]. Our findings therefore complement previous research by providing evidence regarding physicians' subjective evaluation of work style reform during the early phase of policy implementation.

The principal finding of this study was that resident physicians' perceptions of reform progress were associated with their reported working conditions. Residents working longer hours or undertaking more frequent night duties generally had higher odds of perceiving insufficient reform progress. These associations were observed after adjustment for measured individual- and hospital-level characteristics. However, because working conditions and reform perceptions were measured concurrently, the findings do not establish whether workload influenced perceptions or whether other individual or organizational factors contributed to both. The results should therefore be interpreted as associations rather than causal effects.

These observations are consistent with a substantial body of international literature demonstrating that excessive workload is closely associated with physician well-being. Long working hours have repeatedly been associated with burnout, depression, fatigue, medical errors, and reduced quality of patient care among physicians [1-4]. Landmark studies in the United States showed that restrictions on resident duty hours reduced serious medical errors and improved physician well-being, although evidence regarding educational outcomes has been mixed [2,3]. More recent systematic reviews have similarly identified excessive workload as one of the strongest predictors of physician burnout and occupational distress [15,16]. Our findings extend this literature by suggesting that even after nationwide implementation of overtime regulations, physicians' subjective perception of reform continues to depend largely on whether excessive workloads remain unchanged.

Night-duty frequency was also associated with perceived insufficient reform progress. Night duty combines prolonged working hours with sleep deprivation, circadian rhythm disruption, and sustained cognitive demands [17,18]. In the present study, the adjusted ORs generally increased across night-duty categories. However, the estimate for nine or more duties per month was based on a relatively small group and had a wide CI. This pattern is consistent with an association between greater overnight workload and less favorable perceptions of reform progress, but it does not establish a causal dose-response relationship. Further longitudinal studies are needed to determine whether changes in night-duty burden are accompanied by changes in perceived reform progress.

Residents in later PGYs were also more likely to perceive insufficient reform progress. Although causal mechanisms cannot be established from this cross-sectional study, senior residents generally assume greater clinical responsibility, supervise junior trainees, and manage increasingly complex patients. Consequently, they may experience greater discrepancies between the intended objectives of physician work style reform and the realities of clinical practice. Longitudinal studies are required to determine whether these

perceptions change as hospitals continue adapting to the new regulatory framework.

Contrary to our initial hypothesis, hospital ownership, hospital size, and regional classification were not independently associated with perceived reform progress after multivariable adjustment. This finding should not be interpreted as evidence that organizational characteristics are unimportant. Rather, it suggests that the hospital-level variables examined in this study may be insufficient to capture institutional differences in implementation. Hospital ownership and bed capacity are relatively crude indicators of organizational structure and may not adequately reflect staffing levels, patient acuity, emergency care responsibilities, workload distribution, task sharing, leadership, or institutional culture. These organizational factors have been reported to influence physician workload and job satisfaction [19,20] and should be incorporated into future studies. This finding does not imply that hospital-level factors are unimportant, but rather that the variables examined in this study may not adequately represent organizational readiness for physician work style reform.

An additional finding concerns physicians' expectations regarding the consequences of physician work style reform. More respondents anticipated improvements in healthcare quality and patient safety than deterioration, suggesting that resident physicians generally recognize the potential benefits of reducing excessive workloads. In contrast, perceptions regarding residency training were almost evenly divided between positive and negative responses. Similar concerns have been reported internationally following implementation of resident duty-hour regulations, where reductions in working hours have sometimes raised concerns regarding continuity of care, procedural experience, and educational opportunities [2,21]. Continued evaluation of educational outcomes following physician work style reform will therefore be essential.

Several strengths of this study should be acknowledged. First, this is one of the first nationwide surveys focusing specifically on resident physicians following implementation of physician work style reform in Japan. Second, we applied multilevel logistic regression to account for clustering of physicians within hospitals, thereby improving the robustness of the estimated associations. Third, the study included physicians from diverse specialties and training hospitals across Japan, permitting the examination of associations across a range of clinical and institutional settings. Nevertheless, the low hospital participation rate limits the representativeness of the sample.

This study has several limitations. First, its cross-sectional design precludes causal inference and does not establish the temporal relationship between working conditions and perceived reform progress. Second, the hospital participation rate was 20.9%, and resident participation was voluntary. Consequently, selection and nonresponse bias may have influenced the observed associations, and the findings may not be representative of all resident physicians or specialty training hospitals in Japan. Third, both working conditions and perceived reform progress were self-reported, creating potential recall bias and common-method bias. Furthermore, perceived reform progress does not necessarily reflect the objective implementation or effectiveness of the reform. Fourth, the primary outcome was dichotomized from five response categories, resulting in potential loss of information. Fifth, some specialty and workload categories contained relatively few participants, potentially reducing the precision and stability of regression estimates. Sixth, unmeasured organizational characteristics, including staffing adequacy, workload distribution, emergency care responsibilities, task sharing, and institutional leadership, may have influenced physicians' perceptions. Finally, the study did not include pre-reform baseline measurements, preventing direct assessment of changes attributable to the reform. Future longitudinal studies incorporating objectively measured institutional and individual outcomes are needed. Future longitudinal studies should evaluate how physicians' perceptions change as physician work style reform becomes fully established and whether changes in perception are accompanied by improvements in objective outcomes, including working hours, burnout, educational quality, and patient safety.

Conclusions

Among participating resident physicians in Japan, longer weekly working hours, more frequent night duties, and later PGYs were associated with greater odds of perceiving insufficient progress in physician work style reform. These findings suggest that resident physicians' experiences should be considered alongside objective indicators when evaluating reform initiatives. However, the cross-sectional design, voluntary participation, and self-reported measures limit causal inference and generalizability. Further longitudinal studies incorporating objective measures of policy implementation are needed.

Appendices

Reconstructed Questionnaire Used in the Survey

Note. The original survey was administered in Japanese using a web-based questionnaire. Because the original web interface is no longer available, the items below were reconstructed from the questionnaire items, response categories, study records, tables, figures, and variables used in the analysis. The wording and response options are reproduced to the extent that they could be verified from the available study documentation. Hospital-level characteristics (hospital ownership, number of beds, and regional classification) are not included because they were not reported by participants and were subsequently linked using external institutional data.
注記：本調査は日本語の Web 質問面を用いて実施した。現在、当時の Web 調査画面が保存されていないため、以下の項目は、保存されている質問項目、回答選択肢、研究記録、表・図、および解析に使用した変数に基づいて再構成した。質問文および回答選択肢は、確認可能な研究資料の範囲で再現した。病院所有形態、病床数、地域区分は回答者への質問項目ではなく、外部の施設情報を後から紐づけた変数であるため、本質問面には含めていない。

Japanese reconstructed version

Q1. 性別を教えてください。

- 女性
- 男性

Q2. 年齢を教えてください。

- 25～29 歳
- 30～34 歳
- 35～39 歳
- 40 歳以上

Q3. 卒業年数を教えてください。

- 卒業 3 年目
- 卒業 4 年目
- 卒業 5 年目
- 卒業 6 年目以上

Q4. 現在の専門研修の診療科を教えてください。

- 内科
- 外科
- 整形外科
- 小児科
- 産婦人科
- 麻酔科
- 耳鼻咽喉科
- 精神科

FIGURE 3: Questionnaire: Page 1

- 皮膚科
- 眼科
- 救急科
- 泌尿器科
- 放射線科
- 脳神経外科
- 病理
- 形成外科
- 総合診療
- リハビリテーション科
- 臨床検査

Q5. 通常の 1 週間あたりの勤務時間を教えてください。

- 40 時間未満
- 40～59 時間
- 60～79 時間
- 80～99 時間
- 100 時間以上

Q6. 1 か月あたりの当直回数を教えてください。

- 0 回
- 1～4 回
- 5～8 回
- 9 回以上

Q7. あなたの勤務先では、医師の働き方改革はどの程度進んでいると思いますか。

- 大いに進んでいる
- ある程度進んでいる
- どちらともいえない
- あまり進んでいない
- まったく進んでいない

Q8. 医師の働き方改革は、医療の質および患者安全にどのような影響を与えますか。

- 大きく改善する
- やや改善する
- 変わらない
- やや悪化する
- 大きく悪化する
- どちらともいえない

Q9. 医師の働き方改革は、専門研修の質にどのような影響を与えますか。

- 大きく改善する
- やや改善する

FIGURE 4: Questionnaire: Page 2

- 変わらない
- やや悪化する
- 大きく悪化する
- どちらともいえない

FIGURE 5: Questionnaire: Page 3

English translation

Q1. What is your sex?

- ☐ Female
- ☐ Male

Q2. What is your age?

- ☐ 25–29 years
- ☐ 30–34 years
- ☐ 35–39 years
- ☐ ≥40 years

Q3. What is your postgraduate year?

- ☐ PGY3
- ☐ PGY4
- ☐ PGY5
- ☐ PGY6 or later

Q4. What is your current specialty training field?

- ☐ Internal medicine
- ☐ Surgery
- ☐ Orthopedic surgery
- ☐ Pediatrics
- ☐ Obstetrics and gynecology
- ☐ Anesthesiology
- ☐ Otorhinolaryngology
- ☐ Psychiatry
- ☐ Dermatology
- ☐ Ophthalmology
- ☐ Emergency medicine
- ☐ Urology
- ☐ Radiology
- ☐ Neurosurgery
- ☐ Pathology
- ☐ Plastic surgery
- ☐ General practice
- ☐ Rehabilitation medicine
- ☐ Laboratory medicine

Q5. How many hours do you typically work per week?

- ☐ <40 hours
- ☐ 40–59 hours
- ☐ 60–79 hours
- ☐ 80–99 hours
- ☐ ≥100 hours

Q6. How many night duties do you perform per month?

- ☐ None

FIGURE 6: Questionnaire: Page 4

- ☐ 1–4
- ☐ 5–8
- ☐ ≥9

Q7. How much has physician work style reform progressed at your hospital?

- ☐ Progressing substantially
- ☐ Progressing somewhat
- ☐ Neither
- ☐ Not progressing very much
- ☐ Not progressing at all

Q8. What effect do you think physician work style reform will have on healthcare quality and patient safety?

- ☐ Markedly improve
- ☐ Somewhat improve
- ☐ No change
- ☐ Somewhat worsen
- ☐ Markedly worsen
- ☐ Neither

Q9. What effect do you think physician work style reform will have on the quality of residency training?

- ☐ Markedly improve
- ☐ Somewhat improve
- ☐ No change
- ☐ Somewhat worsen
- ☐ Markedly worsen
- ☐ Neither

FIGURE 7: Questionnaire: Page 5

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

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