

Survey of the recognition of the upper limit regulations of  
overtime work for medical doctors  
in St. Luke's International Hospital

- How can the government effectively disseminate the new  
regulations to the doctors? -

by

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## Abstract

**Background:** The Japanese government will establish a maximum limit for medical doctors' (MDs) overtime work after the fiscal year (FY) 2024. Even though this new regulation significantly impacts Japanese healthcare systems, nobody knows the recognition rate for those new regulations among MDs and other healthcare workers in Japan. Our research objective is to identify how well health care workers (HCWs) in St. Luke's International Hospital are aware of regulations on overtime work applied from FY 2024. The second objective is to determine the factors related to the HCWs who already know the new regulation.

**Methods:** We conducted a single-hospital survey from November 19 to December 13 in 2021 for all HCWs hired full-time at St. Luke's International Hospital in Japan. We set the recognition of the new overtime work regulation for medical doctors in 2024 as the outcome. We asked all health care workers web-based 45 questions (47 questions for medical doctors). Multiple logistic regression analysis was applied to find the factors associated to the recognition of the new law with covariates adjustments.

**Results:** Of 2,153 HCWs hired as full-time workers in St Luke's International Hospital in Japan, 446 (20.7%) workers responded to the survey. The recognition rate of the new law was 33.4% (149 of 446). The recognition of the new law was significantly higher among all respondents who noticed the details of the 36 Agreement (OR, 3.87; 95%CI, 2.42-6.20;  $P < 0.01$ ) and doctors (OR, 1.95; 95%CI, 1.10-3.45;  $P = 0.02$ ), and it was significantly lower among all respondents who worked overtime (OR, 0.56; 95%CI, 0.33-0.97;  $P = 0.04$ ).

**Conclusion:** The recognition of the beginning of the upper limit regulation of overtime work for MDs from FY 2024 was significantly related to recognizing the details of the 36 Agreement and the management position. To enforce the new regulation in 2 years, the government should inform MDs and other HCWs of the new law and should make them check the 36 Agreement.

**Keywords:** MD, upper limit regulation of overtime work, 36 Agreement

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## **List of abbreviations**

MHLW	Ministry of Health, Labour, and Welfare in Japan
MD	Medical doctor
FY	Fiscal Year
HCW	Health care workers
QIDS	Quick Inventory of Depressive Symptomatology
WFun	Work Functioning Impairment Scale

# 1. INTRODUCTION

## 1.1. Background

The Japanese government has declared the upper limit of overtime work for general workers in Japan in FY 2019. The adaptation of the regulations for MDs, who were known to be 327,210 in Japan by the Statistics of Physicians, Dentists, and Pharmacists[1] in 2018, in hospitals or clinics was postponed until FY 2024 due to anticipation for influence towards medical services in local communities. Since the Japanese medical service has been sustained by tremendous, long-time hours by MDs, many experts strongly agreed that the quality and quantities of medical services would be surprisingly decreased if the law limited the MDs' overtime hours. Therefore, the Ministry of Health, Labour, and Welfare in Japan (MHLW) decided to hold a national meeting about considering the proper limit of doctors' overtime hours since 2017.

While in the US, after the Libby Zion incident (1984), it has been suggested that the accumulation of fatigue due to long working hours by MDs affects not only their health but also medical safety. In the US, the work style reform of MDs has been implemented and evaluated based on evidence that includes medical safety as an outcome. In 2011, the Accreditation Council for Graduate Medical Education banned first-year residents from working 16 or more continuous hours after the National Academy of Medicine recommended that MDs should be prohibited from doing so from 2008. Regarding the relationship between patient outcomes and doctors' overtime hours, patients who have been taken care of by house staff working more than 80 hours per week had increased their length of stay and number of ICU transfers. Therefore, no association was found between resident work hours and in-hospital patient mortality or 30-day readmission rate [2].

A series of unofficial meetings with medical professionals in Japan have been held until now,

and active discussions were taken place for the appropriate regulations on overtime work limits for MDs. According to the data, 10% of the MDs in hospitals work more than 1,860 hours a year to maintain the medical systems of their hospital and other hospitals in the rural areas in Japan [3]. The Japanese government is now planning to set the upper limits of overtime work for them as a maximum of 1,860 hours a year. After FY 2024, medical institution managers who employ MDs who have worked excessively long hours will be punished in Japan.

However, it may be difficult for MDs who routinely work overtime every day to reduce their overtime correspondingly. Moreover, Japanese MDs' workload should not be suddenly reduced in the next two years. The number of well-trained doctors who can treat their patients only with their judgment but with help from their instructor doctor is limited. Furthermore, surprisingly, Japanese MDs perform various hospital miscellaneous tasks (e.g., transporting patients to laboratories and importing paper medical information from other hospitals into electronic medical records) that do not require an MD qualification. The MD's miscellaneous duties have often been a long-standing practice in the hospital, and the MD's workload is not reduced by the absence of fundamental hospital system reform. Therefore, in many Japanese hospitals, it is necessary to increase the number of MDs or medical staff who can legally share or shift a part of MDs' jobs to keep the healthcare system in every area. The government promises the number of MDs is increasing in 10 years because they have been increasing the number of medical students by commanding the current medical policy [4]. However, many experienced healthcare workers believe that this law change must significantly influence MDs, HCWs, and patients.

Their recognition for those new regulations may be too low among MDs despite active dissemination by the MHLW. In order to start new regulations smoothly in Japan, recognition of that new regulation by MDs needs to be improved, and the government should also inform the details of the regulation appropriately. However, there has been no comprehensive survey of

how well MDs know about regulations on MD's overtime work. Also, there is no data that tells the recognition rate of the regulations on overtime work from FY 2024 among all kinds of HCWs. Therefore, we decided to conduct the hospital-based pilot survey for all HCWs to research how they recognize this new regulation. Through this survey, we would suggest MHLW the alarm about the importance of informing this regulation and allow thinking seriously about finding out the best way to inform doctors about the regulations effectively.

## **1.2. Objectives**

Our research objective is to identify how well HCWs including MDs in St. Luke's International Hospital are aware of regulations on MD's overtime work applied from FY 2024. Moreover, the second objective is to find out the factors that lead to low recognition of this new regulation among HCWs.

## **2. METHODS**

We conducted a cross-sectional study with the single-hospital survey from November 19 to December 13 in 2021. The subjects of this survey were all healthcare workers (HCWs) hired full-time at St. Luke's International Hospital in Japan. HCWs were defined as any type of occupation in the hospital including MDs, nurses, clerks and so on. The hospital has approximately 600 beds, high-care emergency/intensive care unit and high-level cancer treatment and fulfills the requirement of an advanced treatment hospital in Japan.

### **2.1. The survey**

We prepared web-based 45 questions for HCWs (47 questions for MDs); we created the web-based questionnaire with Google form. Table 1 shows the questions of the survey. The survey included special questions for the calculation of the Work Functioning Impairment Scale (WFun) (Q22-Q28) or the Japanese version of Quick Inventory of Depressive Symptomatology (QIDS) (Q30-Q43). Moreover, because the survey was conducted just after COVID-19 pandemic in Japan, we asked some questions related to their work with COVID-19 patients in the questionnaire. Question 47 asked respondents whether they had already known the beginning of the new overtime worktime regulation for MDs in FY 2024.

The protocol for this research project was approved by the Ethics Committee of St. Luke's International Hospital (Approval No. 21-R136).

#### **2.1.1. Work Functioning Impairment Scale (WFun)**

WFun is the objective scale that expresses work functioning impairment status and was created at the University of Occupational and Environmental Health, Japan [5]. It was developed based on psychometric theory and a mathematical theory called Rasch model, validated through various validation studies. Based on the analysis method of similar surveys

in the past, the total score of the results of the seven questions (Q22-Q28) was calculated as follows: 1 point for "not at all," 2 points for "about one day a month," 3 points for "about once a week," 4 points for "more than two days a week," and 5 points for "almost every day.". Subsequently, scores of 13 or less were classified as normal, scores of 14 or more as moderate, and 21 or more as severe.

### **2.1.2. Quick Inventory of Depressive Symptomatology (QIDS)**

QIDS is a 16-item self-administered scale that assesses the severity of depression and corresponds to the DSM-IV criteria for major depressive disorder (core depression) [6]. 0-5 points or less is judged as normal, 6-10 points as mild, 11-15 points as moderate, 16-20 points as severe, and 21 points or more as very severe. We used the Japanese version of the QIDS (QIDS-J).

## **2.2. Study outcomes**

The main outcome was recognizing the new law that regulates overtime work for MDs. In subgroup analysis, the outcome was evaluated only for MD respondents. Also, we investigated the factors (i.e., respondents' characteristics) associated with the recognition of the new law.

## **2.3. Statistical analysis**

The categorical data are presented in Table 2 as the frequency and percentage. Chi-squared tests for categorical data of the respondents' characteristics were performed. Multivariable logistic regression analysis was applied to find the factors associated to the recognition of the new law with covariates adjustments (Table 3). We included all covariates with p-values of less than 0.1 in the bivariate analysis of the respondents' answers or those that were considered demographically important covariates of the respondent's answer in the

multivariable analyses. All analysis were proceeded by using STATA 17 (Stata Corp LLC, Texas, USA) with 2-sided significance set at  $p < 0.05$ .

**Table 1: The survey**

Q1	Select your gender (1) Female (2) Male (3) Other
Q2	Are you eligible for overtime pay (overtime, etc.)?
Q3	Select your job type
Q4	Are you a clinical resident or major (only for MDs)?
Q5	Select your department classification (only for MDs).
Q6	How often do you take care of COVID-19 patients on your working day?
Q7	How has your workload changed due to the COVID-19 pandemic?
Q8	How has the COVID-19 pandemic changed your free time?
Q9	How has the COVID-19 pandemic changed your sleep schedule?
Q10	How has the COVID-19 pandemic changed your educational opportunities?
Q11	How has the time for self-learning changed due to the COVID-19 pandemic?
Q12	Do you feel that medical care has become safe due to the outbreak of the COVID-19 pandemic?
Q13	How many holidays (Stay-at-home, not including on-call) have you had in the past month?
Q14	How many days did you stay at home or make an on-call in the past month?
Q15	How many hours did you sleep in a month? (Please answer on the average of days other than the night shifts.)
Q16	Have you worked at night more than once in the past month?
Q17	What was the average napping time during the night shift?
Q18	Have you received any unfair complaints or troubles from patients or their families in the last six months?
Q19	What do you think about your own current health?
Q20	Do you consult with your co-worker about your own physical condition?
Q21	In the past month, how often have you worked with physical or health concerns?
Q22	How many days have you been unable to behave outgoing in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q23	How often did you fail to work politely in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q24	How often did you not get your ideas together in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q25	How often do you feel that the number of interruptions has increased in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q26	How often did you feel that your work was not going well in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q27	How often did you fail to judge calmly in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day

Q28	How often did you not work voluntarily in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q29	How often have you considered switching jobs, quitting, or relocating in the past month? (1) Not at all, (2) One or more days a month, (3) About one day a week, (4) Two or more days a week, (5) Almost every day
Q30	About sleepiness (Select one from the following options) (1) No problem (2) sometimes took more than 30 minutes to fall asleep but less than half (of 1 week) (3) More than half (1 week) have taken more than 30 minutes to fall asleep (4) More than half (1 week) have taken more than 60 minutes to fall asleep
Q31	About nocturnal sleep (Select one from the following options) (1) No problem (Or never woke up at night) (2) A few brief awakenings from restless light sleep (3) Waking up at least once every night, but being able to sleep again without difficulty (4) Waking up once or more every night and not being able to sleep for more than 20 minutes is more than half of the time (for the week)
Q32	About waking up too early (Select one from the following options) (1) No problem (or most of the time you wake up no more than 30 minutes before you have to wake up) (2) Waking more than half a week, at least 30 minutes before you have to wake up (3) Nearly always waking up more than an hour earlier than you should, but eventually being able to sleep again (4) Waking up more than an hour earlier than the required time and not being able to sleep again
Q33	About oversleep (Select one from the following options) (1) No problem (Or do not sleep more than 7 ~ 8 hours at night or nap during the day) (2) Sleeping hours, including naps, are approximately 10 hours out of 24 hours. (3) Sleeping hours, including naps, are approximately 12 hours out of 24 hours. (4) Sleeping for at least 12 hours during a 24-hour period, including naps
Q34	About sad feeling (Select one from the following options) (1) Do not feel sad (2) Fewer than half the time it takes to be sad (3) More than half the time it takes to feel sad (4) Feeling sad almost all the time
Q35	About decreased appetite and increased appetite (Select one from the following options) (1) Same as usual appetite (2) Eating somewhat less often or in smaller portions than usual (loss of appetite) (3) Eating much less than usual and having to try to eat (loss of appetite) (4) Eating very little for a full day (24 hours), only if people try to eat very hard or are persuaded to eat (loss of appetite) (5) Feeling the need to eat more often than usual (to increase appetite) (6) Eating more often or in larger amounts than usual (increased appetite)

	(7) Both at and between meals, the urge to eat too much (increase appetite)
Q36	<p>About weight loss and weight gain (in the last 2 weeks) (Select one from the following options)</p> <p>(1) Weight has not changed</p> <p>(2) Feeling a little less</p> <p>(3) Reduced by more than 1 kg</p> <p>(4) Reduced by more than 2 kg</p> <p>(5) Feeling a little more</p> <p>(6) Increased by 1 kg or more</p> <p>(7) Increased by 2 kg or more</p>
Q37	<p>About concentration and determination (Select one from the following options)</p> <p>(1) Concentration and determination are not unusual</p> <p>(2) Feeling difficult or distracted from time to time</p> <p>(3) Focusing attention and struggling to make decisions most of the time</p> <p>(4) Inability to read or to focus on even the smallest things</p>
Q38	<p>About view of oneself (Select one from the following options)</p> <p>(1) Same as usual (or think of oneself as worthy and worthy of help as others)</p> <p>(2) More likely to blame oneself than usual</p> <p>(3) Believing quite a bit that they are causing trouble for others</p> <p>(4) Almost always thinking about your shortcomings, big and small.</p>
Q39	<p>About thoughts about death and suicide (Select one from the following options)</p> <p>(1) No thoughts of death or suicide</p> <p>(2) Feeling empty and wondering if life is worth living</p> <p>(3) Suicide and death may occur several times a week for several minutes</p> <p>(4) Thinking about suicide or death in detail several times a day, or making specific suicide plans or actually trying to die</p>
Q40	<p>About general interest (Select one from the following options)</p> <p>(1) My interests in other people and various activities are the same as usual.</p> <p>(2) Feeling less interested in other people and activities than usual</p> <p>(3) Feeling disinterested in only one or two of their former favorite activities</p> <p>(4) Almost completely lost interest in their former favorite activities</p>
Q41	<p>About level of energy (Select one from the following options)</p> <p>(1) Not different from normal energy levels</p> <p>(2) Easier to get tired than usual</p> <p>(3) A great deal of effort is required to start or complete daily activities (e.g., shopping, homework, cooking, going to work, etc.)</p> <p>(4) The lack of energy alone prevents us from performing most of our daily activities.</p>
Q42	<p>About feeling slowed down. (Select one from the following options)</p> <p>(1) Thinking, talking and moving at normal speed</p> <p>(2) Brain slows down, and the voice feels flat and monotonous</p> <p>(3) Most questions take a few seconds to answer, and you can see that your thinking is slowing down</p>

	(4) Without maximum effort, questions often cannot be answered.
Q43	About being restless (Select one from the following options) (1) Do not feel restless (2) Frequently fidgety, unable to resist clasping hands or re-sitting (3) Having an urge to move around and feeling quite restless (4) Occasionally, it is difficult to sit and walk around.
Q44	Do you want to continue working at the current facility in the future?
Q45	Do you know that there is a consultation center to provide your mental support in your institution?
Q46	Do you know the details of the 36 Agreement in your hospital?
Q47	Do you know that with the revision of the Medical Service Law this year, the regulation of overtime work for medical doctors will be enforced from FY 2024?

### 3. RESULTS

Of 2,153 HCWs hired as full-time workers in St Luke's International Hospital in Japan, 446 (20.7%) workers responded to the survey, with 760 female (76.2%) and 94 MDs (21.1%). 33.4% (149 of 446) of the respondents recognized the new law. Of 340 females, 246 did not recognize the new law; of 367 workers who were paid overtime, 257 did not recognize the new law; Of 352 non-MD workers, 255 did not recognize the new law; and of 268 workers who did not notice the details of the 36 Agreement, 218 did not recognize the new law (Table 2).

Table 2 also shows that the characteristics of the HCWs who recognized or not the new law. Compared to those who did not recognize the new law, those who did so had a significantly lower percentage of females (94 [63.1%] vs 246 [82.8%];  $P < 0.01$ ), overtime payment workers (110[73.8%] vs 257 [86.5%];  $P < 0.01$ ), respondents who did not notice the existence of the mental support department (29 [19.5%] vs 89 [30.0%];  $P = 0.02$ ), respondents who had more than 7 days holidays in the last 1 month (84 [56.4%] vs 220 [74.1%];  $P = 0.02$ ), respondents who had no on-call-days in the last 1 month (112 [75.2%] vs 255 [85.9%];  $P < 0.01$ ), and respondents who did not notice the details of the 36 Agreement (50 [33.6%] vs 218 [73.4%];  $P < 0.01$ ).

Table 3 shows that after adjusting for potential covariates, the recognition of the new law was significantly higher among all HCWs' respondents who noticed the details of the 36 Agreement (OR, 3.87; 95% CI, 2.42-6.20;  $P < 0.01$ ) and doctors (OR, 1.95; 95% CI, 1.10-3.45;  $P = 0.02$ ), and was significantly lower among all respondents who worked as overtime payment workers (OR,0.56; 95% CI, 0.33-0.97;  $P = 0.04$ ).

Moreover, we conducted a subgroup analysis for MD respondents (Table 4). The recognition of the new law among MD respondents was 55.3% (52 of 94). Of 36 females,

17 (check this value and that all variables%) did not recognize the new law, and of 31 workers who did not notice the details of the 36 Agreement, 20 (64.5%) did not recognize the new law.

In Table 4, compared to the MDs who did not recognize the new law, the MDs who recognized the new law had a significantly lower percentage of respondents who did not notice the existence of the mental support department (14 [26.4%] vs 20 [47.6%];  $P = 0.04$ ), and respondents who did not notice the details of the 36 Agreement (11 [21.2%] vs 20 [47.6%];  $P < 0.01$ ).

After adjusting for potential covariates, the recognition of the new law was significantly higher in MD respondents who noticed the details of the 36 Agreement (OR, 2.78; 95% CI, 1.07-7.21;  $P = 0.04$ ) (Table 5).

On the contrary, there was no relationship between WFun scores or QIDS-J scores and the new law's recognition among all HCW respondents and MD respondents. However, about 44% of all HCW respondents were in moderate or severe work functioning impairment status of WFun scores, and about 46% of all HCW respondents were from mild to very severe QIDS-J scores.

**Table 2: Characteristics of HCW respondents with and without recognition of the new law**

	<b>Total (n=446)</b>	<b>Recognition of the new law (n=149)</b>	<b>Non-recognition of the new law (n=297)</b>	<b>P-value<sup>a</sup></b>
<b>Gender</b>				<0.01
<b>Female</b>	340 (76.2%)	94 (63.1%)	246 (82.8%)	
<b>Male</b>	106 (23.8%)	55 (36.9%)	51 (17.2%)	
<b>Overtime payment</b>				<0.01
<b>No/Unknown</b>	79 (17.7%)	39 (26.2%)	40 (13.5%)	
<b>Yes</b>	367 (82.3%)	110 (73.8%)	257 (86.5%)	
<b>MD</b>				<0.01
<b>No</b>	352 (78.9%)	97 (65.1%)	255 (85.9%)	
<b>Yes</b>	94 (21.1%)	52 (34.9%)	42 (14.1%)	
<b>WFun</b>				0.15
<b>Normal</b>	250 (56.1%)	92 (61.7%)	158 (53.2%)	
<b>Moderate</b>	131 (29.4%)	41 (27.5%)	90 (30.3%)	
<b>Severe</b>	65 (14.6%)	16 (10.7%)	49 (16.5%)	
<b>QIDS-J</b>				0.33
<b>Normal</b>	243 (54.5%)	89 (59.7%)	154 (51.9%)	
<b>Mild</b>	143 (32.1%)	42 (28.2%)	101 (34.0%)	
<b>Moderate</b>	43 (9.6%)	14 (9.4%)	29 (9.8%)	
<b>Severe</b>	13 (2.9%)	2 (1.3%)	11 (3.7%)	
<b>Very Severe</b>	4 (0.9%)	2 (1.3%)	2 (0.7%)	
<b>Notice of Mental Support dep.</b>				0.02
<b>Unknown</b>	118 (26.5%)	29 (19.5%)	89 (30.0%)	
<b>Known</b>	328 (73.5%)	120 (80.5%)	208 (70.0%)	
<b>Willingness of Continuing working</b>				0.38
<b>Yes</b>	259 (58.1%)	93 (62.4%)	166 (55.9%)	
<b>Unknown</b>	138 (30.9%)	40 (26.9%)	98 (33.0%)	
<b>No</b>	49 (11.0%)	16 (10.7%)	33 (11.1)	
<b>No. of holiday in 1 month</b>				<0.01
<b>0 to 7 days</b>	142 (31.8%)	65 (43.6%)	77 (25.9%)	

> 7 days	304 (68.2%)	84 (56.4%)	220 (74.1%)	
<b>On-call-day in 1 month</b>				<0.01
<b>Nothing</b>	367 (82.3%)	112 (75.2%)	255 (85.9%)	
<b>Yes</b>	79 (17.7%)	37 (24.8%)	42 (14.1%)	
<b>Average sleeping time</b>				0.30
< 6 hr.	248 (55.6%)	88 (59.1%)	160 (53.9%)	
≥ 6 hr.	198 (44.4%)	61 (40.9%)	137 (46.1%)	
<b>Nightshift in 1 month</b>				0.48
<b>Yes</b>	202 (45.3%)	64 (43.0%)	138 (46.5%)	
<b>No</b>	244 (54.7%)	85 (57.1%)	159 (53.5%)	
<b>No. of claims received in 1 month</b>				0.54
<b>Nothing</b>	253 (56.7%)	90 (60.4%)	163 (54.9%)	
<b>1, 2, 3 times</b>	164 (36.8%)	50 (33.6%)	114 (38.4%)	
<b>≥ 3 times</b>	29 (6.5%)	9 (6.0%)	20 (6.7%)	
<b>Subjective health status</b>				0.44
<b>Healthy</b>	36 (8.1%)	14 (9.4%)	22 (7.4%)	
<b>Rather healthy</b>	284 (63.7%)	100 (67.1%)	184 (62.0%)	
<b>Rather unhealthy</b>	103 (23.1%)	29 (19.5%)	74 (24.9%)	
<b>Unhealthy</b>	23 (5.2%)	6 (4.0%)	17 (5.7%)	
<b>Frequency of consulting others about personal health</b>				0.39
<b>Nothing</b>	229 (51.4%)	83 (55.7%)	146 (49.2%)	
<b>Sometimes</b>	200 (44.8%)	60 (40.3%)	140 (47.1%)	
<b>Often</b>	17 (3.8%)	6 (4.0%)	11 (3.7%)	
<b>Notice of the details of the 36 Agreement</b>				<0.01
<b>Unknown</b>	268 (60.1%)	50 (33.6%)	218 (73.4%)	
<b>Known</b>	178 (39.9%)	99 (66.4%)	79 (26.6%)	

a The Chi-Square Test was used.

Notes: MD, medical doctors; WFun, Work Functioning Impairment Scale; QIDS-J, Japanese version of Quick Inventory of Depressive Symptomatology

**Table 3: Logistic regression analysis of the factors associated with the recognition of the new law for HCW respondents**

<b>Factor</b>	<b>Odds ratio [95% CI]</b>	<b>P-value</b>
<b>Notice of the details of the 36 Agreement</b>	3.87 [2.42-6.20]	<0.01
<b>Male</b>	1.52 [0.88-2.63]	0.13
<b>MD</b>	1.95 [1.10-3.45]	0.02
<b>Overtime payment</b>	0.56 [0.33-0.97]	0.04
<b>Notice of Mental Support dep.</b>	1.40 [0.80-2.44]	0.24
Notes: MD, medical doctors		

**Table 4: Characteristics of MD respondents with and without recognition of the new law**

	<b>Total (n=94)</b>	<b>Recognition of the new law (n=52)</b>	<b>Non-recognition of the new law (n=42)</b>	<b>P-value</b>
<b>Gender</b>				0.70
<b>Female</b>	36 (38.3%)	19 (36.5%)	17 (40.5%)	
<b>Male</b>	58 (61.7%)	33 (63.5%)	25 (59.5%)	
<b>Overtime payment</b>				0.64
<b>No/Unknown</b>	20 (21.3%)	11 (21.2%)	9 (21.4%)	
<b>Yes</b>	74 (78.7%)	41 (78.9%)	33 (78.6%)	
<b>Department</b>				0.41
<b>Jr. Resident</b>	4 (4.3%)	2 (3.9%)	2 (4.8%)	
<b>Internal medicine</b>	55 (58.5%)	31 (59.5%)	24 (57.1%)	
<b>Surgery</b>	30 (31.9%)	18 (34.6%)	12 (28.6%)	
<b>Unknown/Other</b>	5 (5.3%)	1 (1.9%)	4 (9.5%)	
<b>Junior/Senior resident</b>				0.15
<b>No</b>	85 (90.4%)	45 (86.5%)	40 (95.2%)	
<b>Yes</b>	9 (9.6%)	7 (13.5%)	2 (4.8%)	
<b>WFun</b>				0.79
<b>Normal</b>	56 (59.6%)	32 (61.5%)	24 (57.1%)	
<b>Moderate</b>	28 (29.8%)	14 (26.9%)	14 (33.3%)	
<b>Severe</b>	10 (10.6%)	6 (11.5%)	4 (9.5%)	
<b>QIDS-J</b>				0.23
<b>Normal</b>	59 (62.8%)	36 (69.2%)	23 (54.8%)	
<b>Mild</b>	24 (25.5%)	9 (17.3%)	15 (35.7%)	
<b>Moderate</b>	9 (9.6%)	6 (11.5%)	3 (7.1%)	
<b>Severe</b>	2 (2.1%)	1 (1.9%)	1 (2.4%)	
<b>Very Severe</b>	0 (0%)	0 (0%)	0 (0%)	
<b>Notice of Mental Support dep.</b>				0.04
<b>Unknown</b>	34 (36.2%)	14 (26.9%)	20 (47.6%)	
<b>Known</b>	60 (63.8%)	38 (73.1%)	22 (52.4%)	
<b>Willingness of Continuing working</b>				0.28
<b>Yes</b>	57 (60.6%)	29 (55.8%)	28 (66.7%)	
<b>No/Unknown</b>	37 (39.4%)	23 (44.2%)	14 (33.3%)	

<b>No. of holiday in 1 month</b>				0.98
<b>0 to 7 days</b>	76 (80.9%)	42 (80.8%)	34 (81.0%)	
<b>&gt; 7 days</b>	18 (19.2%)	10 (19.2%)	8 (19.1%)	
<b>On-call-day in 1 month</b>				0.75
<b>Nothing</b>	42 (44.7%)	24 (46.2%)	18 (42.9%)	
<b>Yes</b>	52 (55.3%)	28 (53.9%)	24 (57.1%)	
<b>Average sleeping time</b>				0.58
<b>Less than 6 hr.</b>	53 (56.4%)	28 (53.9%)	25 (59.5%)	
<b>6 and more than 6 hr.</b>	41 (43.6%)	24 (46.2%)	17 (40.5%)	
<b>Nightshift in 1 month</b>				0.52
<b>Yes</b>	46 (48.9%)	27 (51.9%)	19 (45.2%)	
<b>No</b>	48 (51.1%)	25 (48.1%)	23 (54.8%)	
<b>No. of claims received in 1 month</b>				0.93
<b>Nothing</b>	44 (46.8%)	25 (48.1%)	19 (45.2%)	
<b>1, 2, 3 times</b>	45 (47.9%)	24 (46.2%)	21 (50.0%)	
<b>More than 3 times</b>	5 (5.3%)	3 (5.8%)	2 (4.8%)	
<b>Subjective health status</b>				0.48
<b>Healthy</b>	5 (5.3%)	3 (5.8%)	2 (4.8%)	
<b>Rather healthy</b>	57 (61.7%)	35 (67.3%)	23 (54.8%)	
<b>Rather unhealthy</b>	26 (27.7%)	11 (21.2%)	15 (35.7%)	
<b>Unhealthy</b>	5 (5.3%)	3 (5.8%)	2 (4.8%)	
<b>Frequency of consulting others about personal health</b>				0.64
<b>Nothing</b>	65 (69.2%)	37 (71.2%)	28 (66.7%)	
<b>Sometimes</b>	29 (30.9%)	15 (28.9%)	14 (33.3%)	
<b>Often</b>	0 (0%)	0 (0%)	0 (0%)	
<b>Notice of the details of the 36 Agreement</b>				<0.01
<b>Unknown</b>	31 (33.0%)	11 (21.2%)	20 (47.6%)	
<b>Known</b>	63 (67.0%)	41 (78.6%)	22 (52.4%)	

a The Chi-Square Test was used.

Notes: MD, medical doctors; WFun, Work Functioning Impairment Scale; QIDS-J, Japanese version of Quick Inventory of Depressive Symptomatology

**Table 5: Logistic regression analysis of the factors associated with the recognition of the new law for MD respondents**

<b>Factor</b>	<b>Odds ratio [95% CI]</b>	<b>P value</b>
<b>Notice of the details of the 36 Agreement</b>	2.78 [1.07-7.21]	0.04
<b>Male</b>	1.11 [0.46-2.67]	0.82
<b>Notice of Mental Support dep.</b>	1.77 [0.70-4.48]	0.23

## **4. DISCUSSION**

Our survey has been shown to recognize the new law by 33.4% of HCW respondents in St. Luke's International Hospital. After adjusting for potential covariates, the recognition of the new law was significantly higher among all HCW respondents who noticed the details of the 36 Agreement and were MDs and was significantly lower among all HCW respondents who worked as overtime payment workers. This research has revealed the association between the recognition of the upper limit regulation of MDs overtime work time and the 36 Agreement. For instance, respondents who noticed the details of the 36 Agreement are at as much as 3.87 odds of the recognition of the new law.

### **4.1. Correlation with 36 Agreement**

The "36 Agreement" is a labor-management agreement based on Article 36 of Japan's Labor Standards Act required when companies order workers to work more than the legal working hours (8 hours per day, 40 hours per week). After the company discussed the contents of the 36 Agreement with representatives of labor unions, the 36 Agreement was approved, and the employers' overtime hours were determined. Since then, the employees know their overtime hours in their written notice of working conditions. A written notice of working conditions is a document issued by an employer when concluding an employment contract with a worker. The employer must legally issue a written notice of working conditions. We found that the HCW respondents with recognition of the 36 Agreement significantly tended to know the beginning of the new overtime worktime regulation for MDs in FY 2024. Therefore, all workers should know their 36 Agreements' details in all medical institutions, including St Luke's International Hospital.

Surprisingly, our survey showed that, of 446 responded HCWs, 268 workers did not

know the details of the 36 Agreement. It is unclear whether many HCWs in St Luke's International Hospital are not interested in their working conditions, or the human resources department has not sufficiently informed employees of working conditions. However, our results could explain that HCWs who properly check their 36 Agreement are likely to be interested in the overtime worktime regulation for MDs.

## **4.2. Correlation with management positions**

In Japan, companies do not pay overtime to employees in management positions. In this survey, we found that the respondents who did not work as overtime payment workers significantly knew the beginning of the new overtime work regulation for MDs in FY 2024. In other words, managers may be aware of this law. They know that the new law may bring a considerable impact on hospitals, such as the decrease in the number of night shift MDs, the increase in the workload of nurses who have shifted their duties from MDs to nurses, and the risk of limiting the availability of ambulances. Since the person penalized under the new law is the hospital chief administrative officer, it is not surprising that managers are more aware of the new law.

## **4.3. Necessity of informing young doctors the new law**

Moreover, we found that more than half of MD respondents were aware of the beginning of the overtime work regulation for doctors in FY 2024. However, less than 10% of these MD respondents were junior or senior residents who have been MDs for less than 6 years [3].

There are 2 reasons why young MDs should sufficiently know about the new overtime work regulation. First, they will work under the conditions of this new law, so they need to know more about the advantages and disadvantages of this overtime work regulation than

other generations of MDs. Some medical educational experts often emphasize that young MDs would lose the chances to learn at medical institutions, such as wards, clinics and so on because of this new law.

Second, recent data from the MHLW indicated that the percentage of MDs in their 20s and 30s who do overtime work is higher than that of other generations of MDs. Thus, the young generation of MDs need to make more efforts to gradually reduce their overtime hours in preparation for the enforcement of the law in FY 2024 than other generations. In 2021, the MHLW reported that about 10% of MDs who have been MDs for less than 3 years and about 16% of doctors who have been MDs for 3 to 6 years are estimated to work more than 1,860 overtime hours a year. It also reported that about 13% of MDs in their 20s and about 11% of MDs in their 30s MDs are estimated to work more than 1,860 overtime hour including the overtime work during holidays. In Japan, people who work more than 80 hours per month are at high risk of “Karoshi”, deaths from excessive workloads. Everybody understands that 1,860 overtime hours including working during holidays are at the Karoshi level. However, only few Japanese MDs recognize that working overtime is quite dangerous for their lives. Thus, this law, which the government has concluded for the health and life of all MDs, should be properly communicated to especially young doctors so that they do not ruin the lives of those who became doctors with high aspirations.

#### **4.4. Expectations for medical policy**

Another important finding of the survey was that the recognition of the new law was only about 30% in all HCW respondents. However, that was about 50% only in MD respondents. The tasks of MDs in their overwork time would need to be shared with or shifted to other HCWs after the beginning of the overtime regulation; otherwise, the MDs' overwork time might not be reduced. However, many workers in several job fields need to reduce their

overtime working hours to accomplish the Working-Style reforms. It is also the situation in HCWs, which means that overtime working hours are still a constant for non-doctors. The government should start thinking about effective ways to make this new law known to all HCWs, even as it makes more efforts to inform MDs.

According to the MHLW survey of MDs working at designated emergency hospitals (approximately 1,000 respondents), MDs answered that the explanation from the staff of the medical institution would be the best form of dissemination of information regarding the upper limit of overtime work for MDs [7]. However, it is impossible for a few staff in medical institutions who know the details of the new law to inform all HCWs of the new law. These staff should first try to disseminate the 36 Agreement in the institution for HCWs and then let HCWs have interest in the new law. Knowing the 36 Agreement supports the HCW's recognition of themselves as workers. Therefore, the MHLW should make all HCWs know the primary workers' laws, including MDs. The enforcement of the laws on the upper limit for MDs demands major revisions at each medical institution. Considering this situation seriously, the MHLW should make sufficient preparations to enforce the laws to prevent confusion at medical institutions in FY 2024.

#### **4.5. Limitations**

This research has limitations. It was conducted in a single institution focusing on a one-point survey for HCWs and had only about 20% of respondents. The findings of this research may not be generalizable to other medical areas in Japan. Furthermore, regarding the recognition level of the new law, we did not provide the qualitative criteria for "know" and "do not know" responses to the question "the regulation of overtime work for doctors will be enforced from FY 2024" were "I know" and "I do not know". Therefore, depending on the respondents' subjective judgment, some might have answered "I do not know" because they

did not understand the contents of the new law even though they were slightly aware of it.

#### **4.6. Implications for Practice**

In this survey, we found no interactions between work functioning impairment or workers depression and the recognition of the new law. However, we revealed that nearly half of respondents had trouble with work functioning impairment or mental status. Therefore, we should further analyze the factors related to these two scores with these surveys answering data.

#### **4.7. Conclusion**

Approximately 30% of all respondents and 50% of MD respondents have already recognized the beginning of the upper limit regulation of MD overtime working from FY 2024. The recognition of the new law was significantly related to the recognition of the details of the 36 Agreement and the management position. To enforce the new regulation in 2 years, the government should not only inform MDs and other HCWs the new law, but also should make them check the 36 Agreement. Doing so will increase HCWs' awareness of labor legislation and, as a result, their understanding of the new law.

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