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Seeking a 'Career' and 'Family': Factors of Satisfaction in Work-Life Balance among Child-Rearing Female Physicians in Japan, Comparison between Female Physicians without Children and Male Physicians

Makiko Arima[1*], Yoko Araki[2], Sachiko Iseki[1], Chieko Mitaka[3], Nobuhide Hirai[1] and Yasunari Miyazaki[1]

[1]Tokyo Medical and Dental University, Yushima, Bunkyo-ku, Tokyo Japan

[2]Araki Occupational Health Consultancy, Shibasaki, Chofu-city, Tokyo, Japan

[3]Juntendo University, Hongo, Bunkyo-ku, Tokyo Japan

[*]**Correspondence:** Makiko Arima, Assistant Professor, Gender Equality and Career Development Division, Support Center for Students and Female Staff, Tokyo Medical and Dental University, Yushima, Bunkyo-ku, Tokyo, Japan 113-8510, Tel: 81-3-5803-4921; Fax: 81-3-5803-0246; E-mail: arima.ang@tmd.ac.jp

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Abstract

Objective: More female physicians are participating at the workplace in Japan; however, due to the difficulty in balancing work and childrearing, there is the major issue of low retention. Therefore, maintaining work–life balance (WLB) is an urgent topic for child-rearing female physicians as they often need to work long hours. This study investigated WLB satisfaction factors among child-rearing female physicians in Japan, regarding work systems, job satisfaction and openness toward providing medical career education to new physicians and compared these factors with those related to other physicians.

Methods: A cross-sectional, self-administered questionnaire with 34 items was distributed to 2,159 medical school alumni in 2011. The primary outcome measures were 'satisfaction with WLB'; 'satisfaction with skill utilization, physician achievement, staff communication, patient communication, current position, current salary' and 'openness toward providing career education to young physicians in academic hospitals'.

Results: Statistically significant relationships were identified using chi-square tests. In total, 439 responses were received: 76.1% of females and 75.4% of males were satisfied with their WLB. A logistic regression analysis showed that child-rearing female physicians who were 'satisfied with staff communication' were more likely to be satisfied with WLB (OR: 22.65, $p < 0.009$). Further, those who were 'satisfied with salary' were more likely to be satisfied with WLB (OR: 4.365, $p < 0.031$) and those who 'agreed to provide career education to young physicians in academic hospitals' were more likely to be satisfied with WLB (OR: 0.086, $p < 0.011$). For other physicians, 'average weekly work hours' was the common predictor of WLB satisfaction.

Conclusion: Implementing favourable work–life policies for child-rearing female physicians will enhance their participation and retention, leading to a better work environment for other physicians. Changes in work systems and the organisational climate will lead to workplace diversity, better performance and success of health-care organisations.

Keywords: Work–life balance; Diversity management; Job satisfaction; Career education; Child-rearing female physicians; Reasonable working hours; Flexible work-systems

Introduction

For Japanese physicians, who commonly work long hours, improving their work–life balance (WLB) is a challenge. Their sense of responsibility and commitment to meeting patients' needs can result in long work hours. The average working hours per week among Japanese physicians has been reported as 46.6 hours [1], which is longer than for physicians in other developed countries [2]. This issue represents a hurdle for female physicians, particularly those with children, who seek to balance their family life and a career. A survey among female physicians found that achieving equilibrium between work and family life was a leading concern [3]. Seventy percent of female physicians report that they forgo their promising careers due to the 'difficulty in raising children' [4]. Consequently, many Japanese female physicians have to either abandon their career ambitions or give up on having children [5]. As a result of time constraints, child-rearing female physicians are compelled to reduce their work hours, work part-time or resign from their positions, and such actions may decrease their overall career motivation and cause a loss of expertise [6]. That many female physicians choose to work part–time helps explain the imbalance and inequality in working patterns among both female and male physicians [6]. In addition, 70% of Japanese female physicians are married to male physicians [7]. Because physician husbands also work long hours, female physicians may find it difficult to ask them for sufficient support in household or child-rearing duties. Therefore, many child-rearing female physicians struggle in

allocating time for clinical work and family and sometimes are even compelled to dedicate most of their time to childrearing, no matter how much they wish to continue their career as physicians [6].

Furthermore, the low retention among female physicians leads to their underrepresentation in high positions and academic settings as well as an unbalanced gender distribution in clinical settings [8]. The presence of very few female role models in clinical practice may diminish young female physicians' overall awareness towards developing a professional career as well as climbing the career ladder to achieve a leadership position.

Identifying the specific factors that satisfy WLB for child-rearing female physicians may make it possible to propose ways of improving organizations' work management systems, such as optimizing work hours and introducing flexible work systems including work-sharing, which would help with their retention and improve productivity and motivation. Such changes would also improve the workplace climate or raise awareness regarding each physician's career development, thus improving a physician's productivity and helping her achieve fulfilment and happiness in her family life; this corresponds to the urgent necessity stemming from the increasing number of female physicians, who make up 20.4% (N = 63,504) of all physicians (N = 311,205), which was 19.7% (N = 59,641) in 2012 [9]. As more female physicians participate in the workplace and choose to work as well as raise children, it will be critical to make improvements in both the organisational management systems and workplace climate which support WLB.

Thus, WLB has been a central issue in diversity management in many organisations [10]. WLB is defined as an employee's ability to achieve equilibrium between work and family life; moreover, it is an effective management system in the workplace for furthering productivity as it contributes to helping employees gain fulfilment in both work and life [11]. As this study focused on the good functioning of work and private life for physicians, WLB is defined as 'good-functioning at work and at home with a minimum of role conflicts'[12], according to the study. Although the importance of WLB has long been recognized, its practical application in the workplace is still an emerging idea. This is partly because 'research on the positive individual outcomes of WLB has been relatively slow to accumulate' [13,14]. If physicians' satisfaction with WLB were improved, this would not only have an impact on their physical and mental health but also improve the quality of their clinical performance [15].

It has been found that long work hours are a pivotal factor in declining satisfaction with WLB [16] and the main contributor to burnout and turnover [17,18]. However, to our knowledge, the detailed relationship between long work hours and WLB for physicians, with or without children, has not been fully investigated.

Furthermore, previous studies have indicated that WLB is related to overall job satisfaction in many professional fields [19]. It has been found that aspects of work system management, such as work hours, quality of communication with supervisors and job autonomy, are related to WLB satisfaction [20]. Furthermore, employees who are highly satisfied with their WLB are more likely to be committed to their organisation, satisfied with their job and willing to continue working in their current position [21]. Moreover, an effective approach in medical settings is to provide career education as a way of improving awareness of diversity in clinical medicine because diversity is the key to improving organizational performance and patient and employee satisfaction [22].

Thus, this study investigated factors of WLB satisfaction among child-rearing female physicians in Japan, with respect to the aspects of work systems, job satisfaction and openness toward providing medical career education and compared these factors with those related to other female physicians without children and male physicians with children and without children. Identifying the differences and the positive impact of WLB satisfaction can aid in promoting improvements in work systems and workplace diversity, in turn enhancing female physicians' participation and retention and ultimately the overall performance and success of health-care organisations.

Methods

Participants

A sample of 2,159 persons was assembled from the membership database of the alumni of the Medical School of Tokyo Medical and Dental University (TMDU), Japan's only national university with a graduate school in the medical and dental sciences, which was established in 1946. A total of 536 persons returned the questionnaire and currently unemployed physicians (N = 52) and residents (N = 20) and graduate students (N = 30) were excluded from the study. Study participants (N = 439) were alumni who had graduated from the university during the previous 30 years and whose postal address was included in the TMDU database. Participants were working as physicians full-time (N = 297), part-time (N = 66) and in private practice (N = 76). For the present study, the secretary of the medical school alumni office agreed to provide postal addresses. Each participant was sent a letter stating the study's purpose, a questionnaire to complete and a return envelope. Those who did not return the questionnaire within four weeks were sent a reminder by post to encourage a response. Participation was voluntary and no incentive was provided. Stratified random sampling technique was used as study sampling technique.

Questionnaire

The self-administered questionnaire consisted of 34 items, which addressed 'WLB satisfaction', 'satisfaction with skill utilization', 'satisfaction with achievement', 'satisfaction with staff communication', 'satisfaction with patient communication', 'satisfaction with current position', 'satisfaction with salary' and 'openness toward providing

education about a medical career to young physicians in academic hospitals' (Table 1).

Table 1 Questionnaire items.

Objectives	Level of agreement with statements	Options for responses
Satisfaction with skill utilization	I am satisfied with the level of skill utilization at work.	1. Fully satisfied
		2. Somewhat satisfied
		3. Somewhat unsatisfied
		4. Fully unsatisfied
Satisfaction with achievement	I am satisfied with the level of achievement at work.	1. Fully satisfied
		2. Somewhat satisfied
		3. Somewhat unsatisfied
		4. Fully unsatisfied
Satisfaction with staff communication	I am satisfied with the level of staff communication.	1. Fully satisfied
		2. Somewhat satisfied
		3. Somewhat unsatisfied
		4. Fully unsatisfied
Satisfaction with patient communication	I am satisfied with the level of patient communication.	1. Fully satisfied
		2. Somewhat satisfied
		3. Somewhat unsatisfied
		4. Fully unsatisfied
Openness toward providing career education to young physicians	I agree that academic hospitals should provide education on a medical career to young physicians.	1. Fully agree
		2. Somewhat agree
		3. Somewhat disagree
		4. Fully disagree
Satisfaction with WLB	I am satisfied with the balance between my work and family life.	1. Fully satisfied
		2. Somewhat satisfied
		3. Somewhat unsatisfied
		4. Fully unsatisfied
Demographic information	Gender	
	Marital status	
	Have children	
	Years since graduation	
	Current position	
	Type of hospital	
	Full-time or part-time employment	
	Average weekly work hours	
	Average number of night shifts per month	
	Annual income	
	Specialty	

Previous studies have demonstrated that job satisfaction has two components, intrinsic motivation (e.g. skill utilization, achievement, recognition, responsibility) and extrinsic motivation (e.g. salary, working conditions, communication) [23]. In the current study, we measured the aspects of each component of job satisfaction as follows: physicians' skill utilization and achievement (intrinsic), communication with staff and patient, current position and salary (extrinsic).

Ethics

The ethical review board of TMDU approved the study, reference number 742.

Statistical analysis

Data were entered into an Excel database by a survey centre. Chi-square tests were performed to establish which demographic and other variables showed a relationship with WLB satisfaction. The level of statistical significance was set at 5%. On the basis of these chi-square test results, statistically significant variables were used as possible explanatory variables in logistic regression analysis, with 'WLB satisfaction' being dependent variables. Variables for regression were selected from possible explanatory variables by the forward selection method. Results are presented as odds ratios (OR) with 95% confidence intervals (95% CI). The Statistical Package for the Social Sciences Statistics Base and Regression 22.0 (IBM Japan, Ltd., Tokyo, Japan) was used for statistical analysis.

Results

By the end of February 2011, 536 questionnaires were received (a 24.8% response rate). There were 350 (65.3%) responses from males and 186 (34.7%) from females. Table 2 shows the relationships between demographic characteristics and WLB satisfaction. Of 439 participants, 76.1% of female physicians and 75.4% of male physicians were satisfied with WLB. Chi-square tests were performed for each demographic characteristic, with 'WLB satisfaction' showing no statistical significance for gender, marital status, have children, holding a specialist license or type of specialty. Furthermore, in order to study the factors of WLB satisfaction among female physicians, as being one of the purposes of this study, chi-square tests was also performed for each demographic characteristic with WLB satisfaction among female physicians with children and without children (Appendix 1).The following variables did show statistical significance:

Table 2 Demographic characteristics and satisfaction with WLB.

Characteristic (N = 439)		**Number satisfied**		**p value (* < .05,**< .01)**
Gender	Female	105 of 138	76.1	0.879
	Male	227 of 301	75.4	
Marital status	Single	47 of 64	73.4	0.664
	Married	272 of 356	76.4	
	Divorced or widowed	13 of 19	68.4	
Have children	No	89 of 119	74.8	0.803
	Yes	243 of 320	75.9	
Years after graduation	10 or fewer	74 of 104	71.2	**.004
	11–20	122 of 174	70.1	
	21–30	136 of 161	84.5	
Type of hospital	Academic hospital	81 of 131	61.8	**.000
	Non-academic hospital	178 of 221	80.5	
	Private practice	73 of 87	83.9	
Position	Private clinician (self-employed)	66 of 76	86.8	*.033
	Part-time	46 of 66	69.7	
	Full-time	220 of 297	74.1	
Average weekly work hours	0–40	99 of 115	86.1	**.000
	41–60	179 of 221	80.9	
	61–79	36 of 61	59	
	More than 80	18 of 42	42.9	

Average number of monthly night shifts	0	153 of 189	80.9	*.024
	1–2	66 of 84	78.6	
	3–4	63 of 94	67	
	More than 5	36 of 54	66.7	
	Data missing	18		
Annual income (in millions of yen)	Below 3	1 of 3	33.3	0.059
	3–4.9	10 of 14	71.4	
	5–9.9	75 of 107	70.1	
	10–14.9	101 of 140	72.1	
	15–19.9	79 of 94	84	
	More than 20	61 of 75	81.3	
	Data missing	6		
Licensed specialist	Yes	262 of 353	74.2	0.18
	No	69 of 85	81.2	
	Data missing	1		
Specialty	Internal medicine	136 of 176	77.3	0.217
	Surgery	66 of 82	80.5	
	Minor	102 of 138	73.9	
	Other	27 of 42	64.3	
	Data missing	1		
Skill utilization	Satisfied	269 of 345	77.9	**.000
	Unsatisfied	62 of 93	66.7	
	Data missing	1		
Achievement	Satisfied	286 of 368	77.7	*.020
	Unsatisfied	46 of 71	64.8	
Staff communication	Satisfied	304 of 388	78.4	*.020
	Unsatisfied	28 of 51	54.9	
Patient communication	Satisfied	314 of 406	77.3	*.015
	Unsatisfied	18 of 31	58.1	
	Data Missing	2		
Salary	Satisfied	258 of 319	80.8	**.000
	Unsatisfied	72 of 117	61.5	
	Data missing	3		
Current Position	Satisfied	287 of 362	79.3	**.000
	Unsatisfied	45 of 77	58.4	
Providing education about a career as a physician to young physicians	Agree	301 of 390	77.2	*.028
	Non-agree	26 of 42	61.9	
	Data missing	7		

- **Years after graduation:** Those physicians who had graduated within the past 21–30 years showed greater

satisfaction in their WLB than those who had graduated more than 11–20 years back and within the past 10 years ($p < .004$).

- **Types of hospital:** Physicians working in private practice showed greater satisfaction in their WLB than those working in non-academic and academic hospitals ($p < .000$).
- **Position:** Physicians working as private clinicians showed greater satisfaction in their WLB than those working part-time and full-time ($p < .033$).
- **Average weekly work hours:** Physicians working 0–40 hours showed greater satisfaction in their WLB than those working 41–60 hours, 61–79 hours and more than 80 hours ($p < .000$). Female physicians without children (Appendix1), working 41–60 hours showed greater satisfaction in their WLB than those working 0-40 hours, 61–79 hours and more than 80 hours ($p < .001$).
- **Average number of night shifts per month:** Physicians who worked no night shifts per month showed greater satisfaction than those who worked the night shift 1–2 times, 3–4 times and more than 5 times per month ($p < .024$).
- **Annual income:** This variable was close to significant. Those physicians earning more than 3 million Japanese yen showed greater WLB satisfaction than those earning less than 3 million yen ($p < .059$).
- **Satisfaction with skill utilization:** Physicians satisfied with their use of skills showed greater satisfaction in WLB than those who were unsatisfied with their use of skills ($p < .000$).
- **Satisfaction with achievement:** Those physicians satisfied with their job achievement showed greater satisfaction in WLB than those who were unsatisfied with their job achievement ($p < .020$).
- **Satisfaction with staff communication:** Those physicians satisfied with staff communication showed greater satisfaction in WLB than those who were unsatisfied with staff communication ($p < .020$). Female physicians with children (Appendix1) satisfied with staff communication showed greater satisfaction in WLB than those who were unsatisfied with staff communication ($p < .000$).
- **Satisfaction with patient communication:** Those physicians satisfied with patient communication showed greater satisfaction in WLB than those who were unsatisfied with staff communication ($p < .015$).
- **Satisfaction with salary:** Those physicians satisfied with salary showed greater satisfaction in WLB than those who were unsatisfied with their salary ($p < .000$). Female physicians with children (Appendix1) satisfied with salary showed greater satisfaction in WLB than those who were unsatisfied with their salary ($p < .011$).
- **Satisfaction with current position:** Those physicians satisfied with their current position showed greater satisfaction in WLB than those who are unsatisfied with their current position ($p < .000$).
- **Providing medical career education to young physicians:** Those physicians who agreed to provide career education to young physicians on a medical career in academic hospitals showed greater satisfaction in WLB than those who were unwilling to provide medical career education ($p < .028$). Female physicians with children (Appendix1) who agreed to provide career education to young physicians on a medical career in academic hospitals showed greater satisfaction in WLB than those who were unwilling to provide medical career education ($p < .002$).

Years after graduation; type of hospital; position; average weekly work hours; average number of night shifts per month; annual income and satisfaction with skill utilization, achievement, staff communication, patient communication, salary, current position and providing medical career education to young physicians were statistically significant or near-significant variables for WLB satisfaction. Therefore, these variables were used in the logistic regression analysis (Table 3). Multiple categories, female with children and without children, and male with children and without children was used, to see the difference of each category. This is because this study aimed to investigate factors of WLB satisfaction among child-rearing female physicians and compare these factors with female physicians without children, male physicians with children and without children. Through the procedure to logistic regression, missing values were excluded in the analysis, finally 409 samples were only considered for logistic regression. For female physicians without children, average weekly work hours was the only variable that showed statistical significance ($p < 0.009$), with $R2=0.33$, explained more than 33% of the variance of the dependent variables. Female physicians without children whose average weekly work hours totalled more than 80 were 0.031 times more likely to be dissatisfied with WLB than physicians working 0–40 hours ($p < 0.025$). For female physicians with children, 'satisfied with staff communication', 'satisfied with salary', and 'agreed to provide medical career education to young physicians in academic hospitals' showed statistical significance, with $R2=0.27$, explained more than 27% of the variance of the dependent variables. Child-rearing female physicians who were 'satisfied with staff communication' were 22.65 times more likely to be satisfied with WLB ($p < 0.009$) than those who were unsatisfied. Child-rearing female physicians who were 'satisfied with salary' were 4.365 times more likely to be satisfied with WLB ($p < 0.031$) than those who were unsatisfied. Child-rearing female physicians who 'agreed to provide medical career education to young physicians in academic hospitals' were 0.086 times more likely to be satisfied with WLB ($p < 0.011$) than physicians who were unwilling to do so. For male physicians without children, average weekly work hours was the only variable that showed statistical significance ($p < 0.015$), with $R2=0.38$, explained more than 38% of the variance of the dependent variables. Male physicians without children who were working 61–79 hours were 0.061 times more likely to be dissatisfied with WLB ($p < 0.041$), and those working more than 80 hours were 0.044 times more likely to be dissatisfied ($p < 0.024$) than those working 0–40 hours. For male physicians with children, average weekly work hours, 'satisfied with staff communication', and 'satisfied with salary' showed statistical

significance, with R2=0.24, explained more than 24% of the variance of the dependent variables. Child-rearing male physicians who were working 61–79 hours were 0.103 times more likely to be dissatisfied with WLB (p < 0.001), and those working more than 80 hours were 0.096 times more likely to be dissatisfied than those working 0–40 hours (p < 0.002). Child-rearing male physicians who were 'satisfied with staff communication' were 2.657 times more likely to be satisfied with WLB (p < 0.047) than those who were unsatisfied. Child-rearing male physicians who were 'satisfied with salary' were 2.950 times more likely to be satisfied with WLB (p < 0.003) than those who were unsatisfied.

Table 3 Logistic regression analysis: WLB satisfaction by sex and having children (N = 409).

		Average weekly work hours				Satisfied with staff communication		Satisfied with salary		Providing career education to young physicians	
		0–40	41–60	61–79	80 or more	Unsatisfied	Satisfied	Unsatisfied	Satisfied	Agree	Disagree
Female, without children (N = 55)	OR		1.687	0.175	0.031	NA	NA	NA	NA	NA	NA
	p value	*0.009	0.685	0.15	*0.025	NA	NA	NA	NA	NA	NA
	95% CI		0.135	0.016	0.002	NA	NA	NA	NA	NA	NA
			21.116	1.881	0.641	NA	NA	NA	NA	NA	NA
Female, with children (N = 77)	OR		NA	NA	NA		22.65		4.365		0.086
	p value	NA	NA	NA	NA		*0.009		*0.031		*0.011
	95% CI	NA	NA	NA	NA		2.161		1.146		0.013
		NA	NA	NA	NA		237.4		16.62		0.575
Male, without children (N = 56)	OR		0.88	0.061	0.044	NA	NA	NA	NA	NA	NA
	p value	*0.015	0.921	*0.041	*0.024	NA	NA	NA	NA	NA	NA
	95% CI		0.07	0.004	0.003	NA	NA	NA	NA	NA	NA
			11.05	0.891	0.67	NA	NA	NA	NA	NA	NA
Male, with children (N = 221)	OR		0.363	0.103	0.096		2.657		2.95	NA	NA
	p value	*0.000	0.121	*0.001	*0.002		*0.047		*0.003	NA	NA
	95% CI		0.101	0.026	0.022		1.015		1.459	NA	NA
			1.308	0.414	0.42		6.953		5.965	NA	NA

Table 4 Average weekly work hours and WLB satisfaction, by gender and having children.

		Female				Male			
		Without children		With children		Without children		With children	
		WLB satisfaction	WLB dissatisfaction	WLB satisfaction	WLB dissatisfaction	WLB satisfaction	WLB dissatisfaction	WLB satisfaction	WLB dissatisfaction
Average weekly work hours	0–40	16%	6.30%	57.80%	45%	22.40%	10.50%	23.50%	6.90%
	41–60	62%	18.80%	34.40%	45%	59.20%	31.60%	58.50%	44.80%
	61–79	18%	37.50%	4.70%	5%	10.20%	21.10%	11.50%	25.90%
	More than 80	4%	37.50%	3.10%	5%	8.20%	36.80%	6.60%	22.40%

Table 4 shows the relationship between average weekly work hours and WLB satisfaction, by gender and having children. Over half of the child-rearing female physicians work fewer than 40 hours a week. Over half of the other physicians

work 41–60 hours. Except for working 41–60 hours, as work hours increase, it becomes more difficult for physicians other than females with children to maintain WLB.

Discussion

Average weekly work hours were a factor in WLB satisfaction for all physicians, except for females with children. Male physicians with and without children and female physicians without children are still available to work long hours if they choose. However, child-rearing female physicians have time constraints and are not able to work long hours; therefore, this was not the predictor for WLB satisfaction. They end up choosing to work fewer hours; in fact, more than half of them work 0–40 hours or take a part-time position. Thus, they need to fulfil their role as a physician within that short span of work hours. This was a distinctive difference from male physicians or even female physicians without children. Therefore, based on this study, it is proposed that implementing systems that will allow for a reduction in work hours is important for female physicians without children and male physicians. But it is not sufficient simply to reduce work hours. Measures are needed for creating more WLB-friendly environments where physicians can choose flexible work hours, such as part-time but permanent positions, where multiple physicians are put in charge of a unit and where they share the work.

Staff communication was the predictor of WLB for child-rearing female and male physicians. It is assumed that physicians with children are compelled to save some time for when they need to communicate with the staff to ask for help, request substitutes who can take their place or negotiate their needs as they relate to work–life conflict or urgent family duties. In this sense, it is assumed that physicians with children are more aware of the importance of having staff communication than are those without children. Practically, communication has been one of the tools in maintaining WLB, and face-to-face communication in the workplace is effective in employees attaining WLB [24]. Furthermore, in the work environment of a clinical practice, effective information sharing among staff members and constructive interpersonal interactions produce greater satisfaction and productivity. Under the new 'team-based' approach for delivering health care, various types of professionals work together to meet the patient's needs in order to achieve better health outcomes. Within the team approach, each member plays a critical role in providing health care to patients. Therefore, creating a work environment with active staff communication is necessary for improved WLB.

Child-rearing male and female physicians who were satisfied with salary were more satisfied with WLB. It is assumed that if they have children, they need to support a family, which makes salary a fundamental requirement in their life. Thus, salary worked as one of the predictors of WLB satisfaction.

For child-rearing female physicians, offering education about a medical career to young physicians in academic hospitals was the only predictor for WLB satisfaction among other physicians. Providing information to others about a medical career in which they were likely to participate is effective in helping physicians manage a balance between work and family as it aids them in foreseeing priorities that will arise in the future, such as when and how to decide on a specialty, where to select a training hospital, when to take a specialist license or how to develop a physician's mind-set. This factor might imply that females with children struggle in developing a medical career due to their ignorance about the potential hardships that they might face, since they did not receive information on this. Providing sufficient information at an early academic stage concerning the course that a physician's professional and personal life might entail could enhance physicians' understanding of the relationship between clinical practice and everyday life and consequently improve WLB attitudes in the workplace. It is therefore necessary to reform the curriculum for higher education in Japan [25], in addition to implementing career education in medical schools.

As conclusion, establishing favourable work–life policies for females with children will lead to a better work environment for other physicians as well, regardless of gender or whether they have children. Raising children should be a mutual agenda for males and females. Therefore, changes in work systems and the organisational climate are necessary to better accommodate employees' life events. Measures for improving WLB-friendly environments, where physicians can choose their desired WLB are needed, regardless of their marital or family status. Furthermore, academic hospitals constitute the very existence of trained physicians for the next generation. Therefore, academic hospitals should incorporate "career design lectures" into the educational curriculum to teach new physicians how to manage their personal lives and careers so that the next generation will have positive WLB.

Limitations of this study

All participants were alumni of a single academic hospital. Therefore, the present study does not represent national data and might include some bias. To obtain greater validity, future studies should include graduates of other schools. Furthermore, the survey was distributed only in paper form to the home address of each alumnus, which might have contributed to the relatively low response rate (about 25%). To improve the response rate, future research should employ online questionnaires. Finally, the construct of average weekly work hours represents only the total number of hours worked and is not classified into types of work. Further consideration is needed regarding what types of work should be included in research on physicians' work demands and WLB.

Ethical approval

Ethical approval has been granted by the Ethical Review Board of Tokyo Medical and Dental University, 23 March 2010, reference number 742.

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Conflicts of interest

None

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Appendix 1 Demographic characteristics and satisfaction with WLB, female physicians by having children.

Characteristics (N = 138)		Female without children (N=58)			Female with children (N=80)		
		Number satisfied	%	p value (*< .05,**< .01)	Number satisfied	%	p value (*< .05,**< .01)
Marital status	Single	27of 36	75	0.601	1 of 1	100	0.853
	Married	14 of 19	73.7		57 of 75	76	
	Divorced or widowed	3 of 3	100		3 of 4	75	

Years after graduation	10 or fewer	22 of 33	66.7	0.134	15 of 19	78.9	0.8
	11–20	17 of 20	85		30 of 41	73.2	
	21–30	5 of 5	100		16 of 20	80	
Type of hospital	Academic hospital	11 of 17	64.7	0.355	11 of 18	61.1	0.255
	Non-academic hospital	31 of 39	79.5		35 of 43	81.4	
	Private practice	2 of 2	100		15 of 19	78.9	
Position	Private clinician (self-employed)	0	0	0.526	15 of 17	88.2	0.204
	Part-time	9 of 13	69.2		21 of 26	80.8	
	Full-time	35 of 45	77.8		25 of 37	67.6	
Average weekly work hours	0–40	8 of 9	88.9	**.001	37 of 46	80.4	0.773
	41–60	27 of 30	90		19 of 27	70.4	
	61–79	8 of 13	61.5		3 of 4	75	
	More than 80	1 of 6	16.7		2 of 3	66.7	
Average number of monthly night shifts	0	14 of 16	87.5	0.12	47 of 59	79.7	0.122
	1–2	11 of 12	91.7		6 of 7	85.7	
	3–4	9 of 15	60		5 of 9	55.6	
	More than 5	9 of 14	62.3		1 of 3	33.3	
	Data missing	1			2		
Annual income (in millions of yen)	Below 3	0	0	0.209	1 of 2	50	0.573
	3–4.9	2 of 2	100		6 of 7	85.7	
	5–9.9	21 of 32	65.6		22 of 27	81.5	
	10–14.9	18 of 21	85.7		16 of 24	66.7	
	15–19.9	3 of 3	100		9 of 10	90	
	More than 20	0	0		6 of 8	75	
	Data missing			2			
Licensed specialist	Yes	28 of 36	77.8	0.663	48 of 64	75	0.683
	No	16 of 22	72.7		12 of 15	80	
	Data missing			1			
Specialty	Internal medicine	21 of 29	72.4	0.649	25 of 32	78.8	0.653
	Surgery	4 of 5	80		10 of 14	71.4	
	Minor	16 of 19	84.2		22 of 30	73.3	
	Other	3 of 5	60		4 of 4	100	
	Data missing						
Skill utilization	Satisfied	34 of 47	72.3	0.195	50 of 63	79.4	0.208
	Unsatisfied	10 of 11	90.9		11 of 17	64.7	
	Data missing						
Achievement	Satisfied	37 of 50	74	0.407	50 of 63	79.4	0.208
	Unsatisfied	7 of 8	87.5		11 of 17	64.7	
Staff communication	Satisfied	38 of 50	76	0.951	60 of 74	81.1	**.000

	Unsatisfied	6 of 8	75		1 of 6	16.7	
Patient communication	Satisfied	41 of 53	77.4	0.914	59 of 77	76.6	0.691
	Unsatisfied	3 of 4	75		2 of 3	66.7	
	Data Missing	1					
Salary	Satisfied	37 of 49	75.5	0.884	52 of 63	82.5	**.011
	Unsatisfied	7 of 9	77.8		9 of 17	52.9	
	Data missing						
Current Position	Satisfied	40 of 52	76.9	0.578	49 of 62	79	0.278
	Unsatisfied	4 of 6	66.7		12 of 18	66.7	
Providing education about a career as a physician to young physicians	Agree	41 of 53	77.4	0.914	58 of 72	80.6	**.002
	Non-agree	3 of 4	75		2 of 7	28.6	
	Data missing	1			1		