（原著）

Hospital ward nurses' work engagement and its relationship with work-life balance

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Abstract

This study aimed to clarify the levels and factors of hospital ward nurses' work engagement (WE) and analyze its relationship with work-life balance (WLB). An anonymous, self-administered questionnaire survey was conducted by mail with hospital ward nurses in four prefectures in the Tokai region of Japan. Personal attributes, the Japanese Utrecht Work Engagement Scale, and part of the Nursing Work-Life Balance Index (N-WLBI) Survey by the Japanese Nursing Association (2017) were used as survey items. *T*-tests, one-way analysis of variance, correlation analysis, and multiple regression analysis were conducted. The significance level was 5% on both sides, and SPSS Statistics 25.0 for Windows was used for statistical analysis. Out of 3,008 completed questionnaire (response rate 44.5%), 2,683 (89.2%) had valid responses, and the analysis target comprised 2,017 people. Factors of high WE were a few hospital beds, having an occupational position, being married, having children, high subjective health status, just the right amount of work, being willing to continue working, and not completing night shifts. There was a positive correlation between WE and WLB ($r = .462$, $p < .001$), and the two variables of "career ability development" ($\beta = .385$) and "management attitude" ($\beta = .129$) had an influence on WE. Although WE increased with the years of experience, it was overall low, indicating that proficient nurses cannot work with enthusiasm, especially from their second year onward. Meanwhile, the findings suggested that WE may be improved by adjusting WLB.

Keywords: work engagement, Utrecht Work Engagement Scale, work life balance, hospital ward nurse, questionnaire survey

抄　録

病棟看護師におけるワーク・エンゲイジメント（WE）の現状を明らかにし、ワーク・ライフ・バランス（WLB）との関連を分析することを目的にした。東海地方 4 県の病棟看護師に、郵送法による無記名自記式質問紙調査を行った。個人属性、Utrecht Work Engagement Scale Japanese、Nursing WLB Index を調査項目とし、t 検定、一元配置分散分析、重回帰分析をした。有意水準両側 5％、統計解析は SPSS Statistics Ver.25 For Windows を用いた。回収数 3,008 名（回収率 44.5％）、有効回答数 2,683 名（有効回答率 89.2％）、分析 2,017 名とした。WE が高い要因は、小規模病床数、職位がある、既婚者、子どもがいる、主観的健康状態が高い、ちょうどよい業務量、仕事の継続意思がある、夜勤がないであった。WE と WLB には正の相関があり（$r = 0.462$, $p < 0.001$）、キャリア能力開発、経営姿勢が WE に影響していた。WE は経験年数で上昇するものの全体的に低く、特に 2 年目以降の看護師が生き生きと働けていなかった。一方で WLB を整えることで看護師の WE が向上する可能性が示唆された。

キーワード：ワーク・エンゲイジメント、ユトレヒト・ワーク・エンゲイジメント・スケール、ワーク・ライフ・バランス、病棟看護師、質問紙調査

I. Introduction

In recent years, as a new direction for mental health in the workplace, emphasis has been placed on implementing measures that address and prevent mental illness and revitalize individuals and organizations. Since around 2000, attention has been focused on negative factors such as stress and burnout and positive factors such as human strengths and performance (Shimazu, 2012). These concepts refer to what is called positive mental health, and one such concept is work engagement (WE), proposed by Schaufeli et al. (2002), also theorized by Inamura et al.

Shimazu (2012) stated that people with high WE feel pride and fulfillment in their work, work hard, gain vigor from their work, and feel energetic. They also experience less psychological distress and somatic complaints (Demerouti et al., 2001) and show high job satisfaction, organizational commitment, and performance and low turnover intention (Schaufeli, 2010).

Studies on Japanese nurses have reported that WE increases with age, years of experience, and managerial position and that lower WE results in significantly higher turnover intention (Kawauchi & Ohashi, 2011; Iguchi, 2016). Furthermore, Kagata et al. (2015) reported that nursing duties pose a higher stress burden than other occupations and that emotional labor is associated with WE and stress response, as the job involves controlling emotions. In other words, WE can be said to be a factor that promotes workers' mental health and organizational performance. Sakai et al. (2012) stated that, in today's social environment, where it is difficult to secure human resources due to a shrinking working population related to a considerably low birthrate and the aging population, there is a need to further improve the quality of nursing staff's mental health. Therefore, it can be said that there is considerable significance in focusing on WE in the nursing profession.

Meanwhile, Shimazu (2013) and Kagata et al. (2015) suggested that working life and factors other than work, such as household resources and work-life balance (WLB), may have influenced WE. Article 12 of the Nurse Code of Ethics of the Japanese Nursing Association (2003) also explains that for nurses to provide higher quality care, they must strive to maintain and improve their mental and physical health. To this end, they must maintain a balance between their professional and personal lives, and between activity and rest. Nevertheless, no research has clarified the relationship between WE and WLB in the nursing profession. Nurses are a hospital's greatest human resource, and it has become clear that increasing nurses' WE is likely to lead to improved work performance and quality of care. Thus, this study aimed to address this gap by focusing on hospital ward nurses in Japan. It is believed that this research will help with specific interventions to increase nurses' WE.

II. Methods

1. Definition of terms

1) Work engagement (WE)

In this study, we use Schaufeli and Bakare's (2004) definition of WE as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Engagement refers to a persistent and pervasive affective–cognitive state that is not focused on any particular object, event, individual, or behavior".

2) Work-life balance (WLB)

Referring to the *Work-Life Balance Charter and Action Guidelines for Promoting Work-Life*

Balance issued by the Ministry of Health, Labour and Welfare of Japan (2007), WLB was defined as "being able to choose and realize diverse and flexible work styles so that you can work with a sense of purpose and fulfillment, fulfill your work responsibilities, and live the healthy and fulfilling life you desire."

2. Ethical considerations

This study was conducted with the approval of the ethics review committee of the affiliated university (approval number 2020006). It was clearly stated in the instructions that cooperation with the survey would be based on free will, subjects would not be disadvantaged even if they did not respond, individuals would not be identified, and the questionnaire and data would be strictly managed. Consent was provided by ticking the consent box on the questionnaire and mailing the survey form. Additionally, the used Utrecht Work Engagement Scale-Japanese is a scale that can be used freely for academic research purposes. For the Nursing Work-Life Balance Index (N-WLBI) Survey, we reported the purpose of use and research summary to the Japanese Nursing Association, and obtained permission to use it.

3. Subjects and survey methods

1) Survey period

January 2021–August 2021

2) Survey targets

We included hospital ward nurses who worked at hospitals with multiple wards in four prefectures in the Tokai region. University hospitals, which are considered to have relatively good WLB according to the "Nursing WLB Index: N-WLBI" (Japan Nursing Association, 2017), were excluded from this study.

3) Survey methods

Hospital directors and nursing managers of hospitals with multiple wards in four prefectures in the Tokai region were mailed a research cooperation request form that described the study, guaranteed protection of personal information, and explained that participation was voluntary. We also included a return postcard on which they could write whether they would like to cooperate for our research. The forms, questionnaires, and envelopes were distributed through the nursing departments. We requested that completed questionnaires be mailed directly to us using a special return envelope.

4. Questionnaire items

1) Personal attributes

Questions were asked about the following: sex, age, years of clinical experience, final educational background, number of beds in the employing hospital, presence/absence of occupational position, marital status, presence/absence of children, presence/absence of family members requiring long-term care, presence/absence of night shifts, subjective health status, subjective workload, and intention to continue working. Subjective health status was assessed on a two-item scale that included "I am in good health" and "I am not in good health." Questions on

subjective workload were asked on a five-point scale ranging from "very much" to "very little." The intention to continue working was expressed on a two-item scale as either "I want to continue" or "I do not want to continue."

2) Work engagement (WE)

The UWES is a scale that has been standardized or used in 23 countries, and we used its Japanese translation by Shimazu et al. (2008). Cronbach's α coefficient of this scale was 0.92, which indicating good reliability and validity. The UWES-J comprises nine items, and responses are rated on a 7-point scale ranging from 0 for "Not at all" to 6 points for "Felt all the time." The score was calculated as the sum of all items.

3) Work-life balance (WLB)

The questions about WLB were based on 24 items from the N-WLBI survey by the Japanese Nursing Association (2017). This scale comprises five subscales assessing supervisor's management behavior, work discretion, career ability development, management attitude, and work-life satisfaction. Cronbach's α coefficient was 0.91, ensuring good reliability (Kawamura & Suzuki, 2016). The answers to the 24 items were scored on a four-point scale ranging from "disagree" to "agree," and each item is scored from 1 to 4. The total WLB score was calculated by summing the mean scores of all subscales.

5. Analysis method

First, we performed a simple aggregation of all responses. For the presence/absence of occupational position, marital status, presence/absence of children, subjective health status, intention to continue working, presence/absence of night shifts, and presence/absence of family members requiring long-term care, we conducted comparison analyses (*t*-test) between the WE scores of the two groups. One-way analysis of variance was performed for the following: years of clinical experience, final educational background, number of beds in the employing hospital, and subjective workload. Furthermore, we conducted a correlation analysis between WE and WLB. Subsequently, a multiple regression analysis was conducted, with WE as the dependent variable and the five WLB subscales as independent variables. The significance level was set at 5% on both sides. SPSS Statistics 25.0 for Windows was used for statistical analysis.

III. Results

1. Respondent attributes

Questionnaires were distributed to 6,762 people at 90 hospitals with multiple wards in four Tokai prefectures. Out of 3,008 completed questionnaires (response rate 44.5%), 2,683 (89.2%) were confirmed as including valid responses. There were 2,434 females and 249 males. Males were excluded from the analysis because of their extremely low number that did not allow for a comparison. Similarly, part-time workers and people aged 60 years or older were also excluded. Therefore, in this study, 2,017 full-time females aged 60 years or younger were analyzed.

Their mean age was 37.99 (±11.16) years, with the majority being 20–30 years old. The mean years of nursing experience was 14.86 (±10.38) years, with 1–5 years being the most common. The

Table 1. Overview of subjects

N=2,017

Item			n	%
Age (years)		Mean (SD) 37.99±11.16	years	
(*n*=2,017)	20–30		695	34.46
	31–40		426	21.12
	41–50		568	28.16
	51–60		328	16.26
	Total		2017	100.00
Item			n	%
Years of experience		Mean (SD) 14.86±10.38	years	
(*n*=2,017)	1–5		522	25.88
	6–10		362	17.95
	11–20		491	24.34
	21–30		480	23.80
	>31		162	8.03
	Total		2017	100.00
Work engagement (WE)			Mean (SD)	
(*n*=2,017)		Mean vigor	6.58±3.75	
		Mean dedication	8.63±3.58	
		Mean absorption	6.49±3.89	
Total mean		Mean (SD) 21.70±10.41		
Work-life balance			Mean (SD)	
(*n*=2,017)		Supervisor's management behavior	2.76 (±0.69)	
		Job discretion	2.61 (±0.63)	
		Career ability development	2.61 (±0.63)	
		Management attitude	2.34 (±0.61)	
		Work-life satisfaction	2.47 (±0.66)	
Total mean		Mean (SD) 12.79 (±2.53)		

mean WE score was 21.70 (±10.41) points. The mean WLB score was 12.79 (±2.53) (see Table 1 for an overview of all respondents).

2. Aspects and levels of work engagement (WE)

For the presence/absence of occupational position, marital status, presence/absence of children, subjective health status, intention to continue working, presence/absence of night shifts, presence/absence of family members requiring long-term care, we conducted a comparative analysis (*t*-test) between the WE scores of the two groups (Table 2).

The results showed that those with an occupational position had significantly higher WE scores than those without one ($t = -7.373$, $p < .001$). The WE scores were also significantly higher for the following: those who were married than for those who had never been married ($t = -8.097$, $p < .001$); those with children than those without ($t = 9.871$, $p < .001$); those who perceived themselves as healthy than those who felt unwell ($t = -8.049$, $p < .001$); those who wanted to continue working than those who did not want to ($t = -18.310$, $p < .001$); those who did not work night shifts than those who did ($t = -4.176$, $p < .001$).

Next, for the years of nursing experience, number of beds in the employing hospital, final educational background, and subjective workload, we conducted a comparison analysis (one-way analysis of variance) between WE scores and three or more groups (Table 3).

The results showed that nurses with 2–3 years of experience had significantly lower WE scores than those with 16–20, 21–25, and 26 or more years of experience. Additionally, nurses with 4–9 years of experience had significantly lower WE scores than those with 16–20, 21–25, and 26 or more years of experience ($F = 7.126$, $p < .001$). Those working in hospitals with 100 to fewer than 200 beds had significantly higher WE scores than those working in hospitals with 500

Table 2: Factors related to WE (*t*-test)

N=2,017

Item		WE score *n*	%	Mean (SD)	*t*-value	*p*-value
Years of experience n=2,017	Below mean	1,059	52.50	20.39 (±10.42)	-5.981	0.000***
	Mean or higher	958	47.50	23.14 (±10.21)		
Presence / absence of occupational position n=2,003	Absent	1,526	76.19	20.72 (±10.43)	-7.373	0.000***
	Present	477	23.81	24.69 (±9.68)		
Marital status n=1,802	Absent	907	50.33	19.62 (±10.00)	-8.097	0.000***
	Present	895	49.67	23.50 (±10.30)		
Presence / absence of children n=2,015	Absent	1132	56.18	19.72 (±10.12)	9.871	0.000***
	Present	883	43.82	24.23 (±10.23)		
Presence / absence of family members requiring long-term care n=2,015	Absent	1,804	89.53	21.56 (±10.46)	1.856	0.065
	Present	211	10.47	22.91 (±9.98)		
Presence / absence of night shifts n=2,015	Absent	179	8.88	24.79 (±11.45)	-4.176	0.000***
	Present	1,836	91.12	21.40 (±10.26)		
Current health status n=1,952	I am not in good health	469	24.03	18.60 (±9.94)	-8.049	0.000***
	I am in good health	1,483	75.97	22.87 (±10.31)		
Intention to continue working n=2,017	I do not want to continue	439	21.76	14.22 (±9.69)	-18.310	0.000***
	I want to continue	1,578	78.24	23.78 (±9.62)		

df=1, ***$p<0.001$

Table 3: Factors related to WE (one-way *analysis of variance (ANOVA)*)

N=2,017

Item		WE score *n*	%	Mean (SD)	Multiple comparisons	*F* value	*p*-value
Number of beds *n*=1,977	Less than 100 beds	127	6.42	22.90 (±9.94)		2.993	0.006**
	100 to fewer than 200 beds	446	22.57	22.83 (±10.76)			
	200 to fewer than 300 beds	269	13.61	22.27 (±9.60)			
	300 to fewer than 400 beds	155	7.84	22.25 (±10.59)	*		
	400 to fewer than 500 beds	316	15.98	20.61 (±10.52)			
	500 to fewer than 600 beds	299	15.12	20.21 (±10.14)			
	600 beds or more	365	18.46	21.58 (±10.53)			
Years of nursing experience *n*=2,017	≤1	57	2.83	22.72 (±11.78)		7.126	0.000***
	2–3	240	11.90	19.48 (±10.59)			
	4–9	519	25.73	20.19 (±9.93)	** *** *** ** ** ***		
	10–15	304	15.07	21.35 (±10.66)			
	16–20	255	12.64	23.05 (±10.28)			
	21–25	256	12.69	23.19 (±10.17)			
	≥26	386	19.14	23.35 (±10.26)			
Final educational background *n*=1,971	Vocational school	1,551	78.69	21.51 (±10.53)		1.346	0.251
	Junior college	121	6.14	23.24 (±9.36)			
	University	271	13.75	22.15 (±10.03)			
	Graduate School (masters)	28	1.42	23.50 (±10.44)			
Workload *n*=2,017	Very much	379	18.79	20.30 (±11.51)		4.500	0.006**
	Moderately high	997	49.43	21.48 (±9.74)	** *		
	Just right	550	27.27	23.11 (±10.50)			
	Moderately low	70	3.47	21.01 (±11.25)			
	Very low	21	1.04	22.81 (±11.91)			

One-way ANOVA, multiple comparison Tukey's HSD, *$p<0.05$, **$p<0.01$, ***$p<0.001$

to fewer than 600 beds ($F = 2.993$, $p = .006$). Furthermore, those with just the right subjective amount of work had significantly higher WE scores than those with extremely heavy or moderately heavy workloads ($F = 4.500$, $p = .006$).

3. Relationship between work engagement (WE) and work-life balance (WLB)

We performed a correlation analysis between WE and WLB. The results showed that there was a positive correlation between WE and WLB ($r = .462$, $p < .001$). Next, we conducted a multiple regression analysis using the forced input method, with WE as the dependent variable, the five WLB subscales as independent variables, and age and subjective health status as the moderator variables (Table 4). The results showed that two variables, career ability development ($\beta = .385$) and management attitude ($\beta = .129$), influenced WE. The adjusted coefficient of determination (R^2) was 0.323, with all VIFs less than 10, indicating no multicollinearity effects.

Table 4: Multiple regression analysis of work engagement and work-life balance　　N=2,017

Dependent variable WE / Independent variables	β (standard partial regression coefficient)	*t*-value	Significance value	WE correlation coefficient	VIF
Supervisor's management behavior	0.017	0.715	0.474	0.016	1.610
Job discretion	0.012	0.496	0.620	0.011	1.774
Career ability development	0.385	16.350	0.000***	0.343	1.648
Management attitude	0.129	5.065	0.000***	0.112	1.915
Work-life satisfaction	0.043	1.713	0.087	0.038	1.862
R^2 0.323			Adjusted R^2 0.321		

*Moderator variables: age, current health status　　*p<0.05, **p<0.01, ***p<0.001

IV. Discussion

In general, WE is evaluated as high when the total score for the nine items of the UWES-J is 36 points or higher, with the mean at 28–35 points, and low for 27 points or less (Schaufeli, 2012). The WE score in this study was at a considerably low level with a total mean of 21.70 (±10.41). In a study by Sakurama et al. (2021) targeting hospital ward nurses in their 40s to 60s, the total WE score for non-managerial positions was converted to 23.49 points, indicating that the WE scores in our study tended to be low. In particular, proficient nurses from their second year onward had a lower WE than novices, showing that this generation cannot work energetically. Proficient nurses are said to play leadership roles within hospitals, among various other roles, including serving as models of nursing practice and being involved in the development of students and juniors (Nagata, 2017). Furthermore, Sano et al. (2006) found that the diverse roles of proficient nurses increased emotional strain at work and were involved in the influencing factors of work motivation. Our study included numerous nurses in the mid-career (proficient) class, which can be inferred to be the reason for the low WE scores.

Factors of high WE included the small number of beds, having an occupational position, being married, having children, high subjective health, the right amount of work, willing to continue working, and not doing night shifts.

Previous research has shown that WE increases with age, higher position, being married, and

presence of children and that those with high WE have low turnover intention (Schaufeli et al., 2010). These factors were similar to those in previous research.

In our study, WE was found to be high among nurses working in hospitals with small numbers of beds. According to a survey by the Ministry of Health, Labour and Welfare of Japan (2022), approximately 82% of hospitals in Japan are small- and medium-sized with fewer than 300 beds. Therefore, the role of small- and medium-sized hospitals is said to be increasing in importance due to the promotion of community-based comprehensive care systems rather than hospital-based medical care. Moreover, Yamada stated that due to the diversification of nurse employment patterns, it is easier for managers to interact personally with each nurse in small- and medium-sized hospitals. Additionally, there is greater flexibility in work styles, and having more such freedom of choice than in a large acute care hospital may have had an impact on the high WE (2016).

In this study, we found that one of the factors contributing to high WE was high subjective health status. This is in line with the findings of Saka et al.'s (2017) study, which targeted hospital nurses, where higher WE scores were associated with lower feelings of depression and physical complaints. Therefore, we can conclude that nurses' WE is influenced by their health status, and taking care of their health may lead to maintaining and improving their WE.

Furthermore, in our survey, those who said they had "just the right amount of work" had higher WE scores. Kageyama et al. (2001) also pointed out that the situation where nurses have a high workload and low control over their work may have an impact on their mental health. Further, Inaba and Hioki(2016) analyzed t nurses' working environment, which involves 24-hour shifts, and reported that good sleep was associated with high WE. Thus, it can be inferred that the nurses who did not complete any night shifts could secure relatively good sleep, which explained their high WE scores.

The positive correlation found between WE and WLB suggests that improving nurses' WLB may lead to improved WE. The multiple regression analysis showed that WE was positively related to the variables of career ability development and management attitude. Shimazu (2012) states that organizations with rapidly changing business environments may tend to seek out human resources with high WE. Although I do not know about the hospital management of the subjects of this research, Japan's medical background is rapidly changing, including a super-aging society. Therefore, it is thought that "management attitude" influenced WE. Additionally, According to Ono (2018), while he states that career support is useful for people with low WE, he also states that WE had no effect on career support for people with high WE. In this survey, WE was in a very low state, so it is thought that the impact on career support was high. Therefore, interventions aimed at developing nurses' career skills are necessary and expected to lead to higher WE, helping nurses work with more enthusiasm.

V. Study limitations

Our sample was a limited group, and the results should be generalized with caution. Moreover, this study was a cross-sectional survey, and other factors might also be involved in the individual background of WE and WLB. Thus, causal relationships cannot be clearly established. Furthermore, as the degrees of freedom-adjusted coefficient of determination (R^2) in multiple regression analysis cannot necessarily be said to be high, it is necessary to include individual background in future analyses.

VI. conclusion

1. Factors of high WE were a few hospital beds, having an occupational position, being married, having children, high subjective health status, just the right amount of work, being willing to continue working, and not completing night shifts.
2. There was a positive correlation between WE and WLB ($r = 0.462$, $p < 0.001$), and the two variables of "career ability development" ($\beta = 0.385$) and "management attitude" ($\beta = 0.129$) had an influence on WE.
3. It was suggested that if the hospital's business conditions are stable and interventions are made to help nurses develop their career skills, nurses' WE will increase and they will be able to work with more energy.

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VIII. Conflict of interests

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