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A cross-sectional study examining the relationship between nursing practice environment and nurses' psychological empowerment

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The nursing practice environment is essential for improving the quality of nursing practice and patient service. Performing secondary analysis of data from the work environment for hospital nurses in Japan (WENS-J) study, this research investigated whether an improved, healthier work environment could enhance nurses' psychological empowerment. Self-administered questionnaire responses of 2,438 participants from 23 participating general hospitals with over 200 beds in municipalities with a population of 200,000 or more were analyzed. The questionnaire recorded participating nurses' demographic characteristics and utilized two scales: the Practice Environment Scale of the Nursing Work Index (PES-NWI) and the Psychological Empowerment Instrument (PEI), which identified adequate work environments and measured the internalization of organizational goals and objectives, respectively. Most participants (93.7%) were female nurses with a mean age of 33.7 years. Multilevel analysis (hierarchical linear models) revealed that the total PEI score was significantly related to the PES-NWI composite score and all subscales after adjusting for nurses' demographic characteristics, such as age (coefficient 0.33–0.72, all $p < .001$). The results suggest that a work environment such as that presented in the PES-NWI may contribute to nurses' psychological empowerment. These findings could provide insight for creating healthier work environments.

The nursing practice environment is defined as the organizational characteristics of a work setting that facilitate or constrain professional nursing practice[1]. The quality of the nursing practice environment influences not only the quality of patient care and outcomes[2–6]but also labor satisfaction[7,8], intent to stay[7], and nurse turnover[8]. The importance of a positive working environment and supervisory support as workplace resources for preventing nurse burnout has been consistently emphasized[9,10]. Therefore, from the perspective of nursing management, it is imperative to maintain a foundational organizational environment that supports nurses and upholds the quality of care. This is essential for enhancing the quality of nursing practice and patient service.

In the early 1980s, when the U.S. was facing a nursing shortage, hospitals that were considered safe for patients and successful in recruiting and retaining nurses were known as magnet hospitals; these hospitals shared several noteworthy organizational characteristics[11–13]. In the American Nurses Credentialing Center Magnet Recognition Program®, nursing work environments in magnet hospitals have been evaluated from a nursing perspective[12–14], which highlighted structural empowerment as a core component of their success[14]. The Practice Environment Scale of the Nursing Work Index (PES-NWI) was developed based on items of the Nursing Work Index (NWI), reflecting the characteristics of magnet hospitals. The PES-NWI was used to evaluate the nursing practice environment[1]and is employed extensively and internationally to study work environments. Studies found a positive relationship between work environment and job satisfaction, as well as nurses' desire to continue working within an organization[7,8]. The authors of this study previously conducted a study on the work environment for hospital nurses in Japan (the WENS-J project) to examine the relationship between nurses' work environment perceptions and nursing outcomes in Japanese hospitals using the PES-NWI[15]. The WENS-J study demonstrated correlations between PES-NWI scores and nurse outcomes through the mean for each unit—that is, the higher the PES-NWI scores, the better the nursing outcomes[15].

Psychological empowerment in the workplace is a nursing performance-related outcome. Thomas and Velthouse[16]defined psychological empowerment as intrinsic motivation manifested in four cognitions reflecting

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an individual's orientation toward their work role. Motivational theory and its relationship to workplace roles are conceptualized by four cognitive motivational elements: meaning, competence, self-determination, and impact[17]. Meaning reflects "an employee's values, beliefs, and behaviors that are congruent with workplace requirements;" competence reflects "an employee's beliefs about his ability to accomplish work tasks;" self-determination reflects "an employee's sense of having options to start and carry out their own work;" and impact reflects "how much influence an employee has at their workplace"[17,18]. The Psychological Empowerment Instrument (PEI) was developed by Spreitzer (1995) using these four dimensions, and the items adapted from previous research[17]. The PEI is also used internationally to measure employees' psychological empowerment[19–21]. Psychologically empowered employees have reportedly enhanced intrinsic motivation and are able to maximize their potential, resulting in increased organizational effectiveness[22]. Psychological empowerment has been demonstrated to enhance patient care[23]and increase work engagement[24]. Moreover, empowered nurses can empower their patients[25]. Thus, enhanced psychological empowerment should indicate improved nursing care quality. Managers who understand the impact of such psychological empowerment could psychologically empower their nurses to enable more favorable outcomes for their workers and patients.

One aspect of empowerment is structural empowerment, which is a prerequisite for psychological empowerment[10,26]. Structural empowerment, as noted above, is a core concept of magnet hospitals[14]; yet, we have found no studies examining the relationship between PES-NWI, which is a possible indicator of structural empowerment, and psychological empowerment in the nursing context. Additionally, the authors have not been able to locate studies examining the relationship between the five subscales of the PES-NWI and psychological empowerment as a possible indicator of a healthy work environment. Although certain previous studies have examined the relationship between the PES-NWI and psychological empowerment, they did not focus on the relationship between all five subscales and the composite of the PES-NWI. For instance, Wang[24]investigated the influence of the professional nursing practice environment using the PES-NWI composite scores and psychological empowerment on nurses' work engagement; Cho[27] investigated the relationship between the unit work environment (using three PES-NWI subscales), the psychological empowerment of nurses and their perceptions of patient activation. This helped in realizing better patient and nurse outcomes and enhancing nurses' autonomy to make decisions based on their expertise. These studies indicate the necessity of creating a positive and encouraging nursing practice environment and supporting nurses' psychological empowerment. Ensuring a nursing practice environment in which nurses can continue to work in a healthy manner is one of the most urgent and important issues for the future of Japan's healthcare management, as well as for that of other countries.

Conducting a secondary analysis using the PES-NWI and PEI data obtained from the WENS-J project[15], this study investigated the hypothesis that a healthier work environment increases nurses' psychological empowerment. Moreover, the PES-NWI was hypothesized to be an antecedent of psychological empowerment. In other words, this study aimed to investigate whether a better work environment could enhance nurses' psychological empowerment. Specifically, in addition to the total score of psychological empowerment, we focused on subscales that more concretely incorporate the conceptual framework to ensure better clinical application. Figure 1 demonstrates the conceptual framework of this study.

Methods

Data collection in the WENS-J project

This study involved a secondary analysis using cross-sectional data from the WENS-J project, which was a 2-year prospective longitudinal survey conducted between 2013 and 2015. In the WENS-J project survey, all eligible general hospitals with more than 200 beds in municipalities with a population of 200,000 or more—which indicated a willingness to participate—were surveyed using a self-administered questionnaire to obtain a reference value for general hospitals in Japan[15]. University hospitals were excluded in the present study to avoid the influence of management style differences in specialized teaching hospitals; the remaining hospitals explored

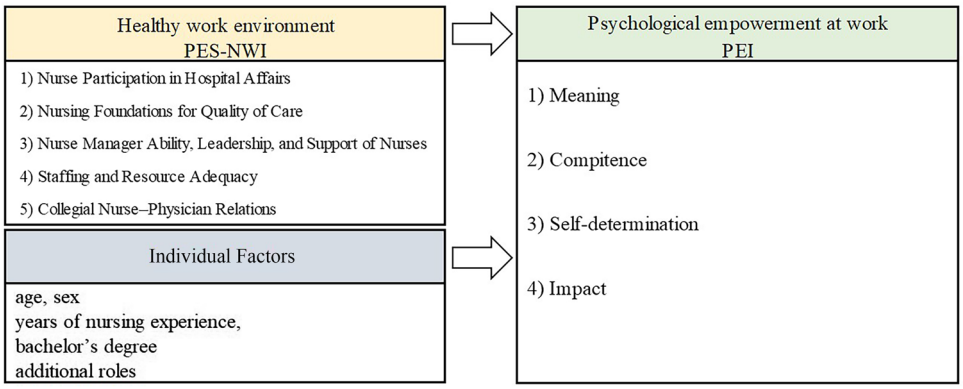

Fig. 1. Conceptual diagram of the relationship between a healthy work environment and psychological empowerment. PEI = Psychological Empowerment Instrument; PES-NWI = Practice Environment Scale of the Nursing Work Index.

were listed in the 2012 Hospital Yearbook. As part of survey administration, the questionnaires were distributed to a total of 7,849 staff nurses working in 23 hospitals. They were sent a survey package, which included a letter of invitation, a questionnaire, and a stamped return envelope. After completing them, the nurses sent their completed questionnaires directly to the researchers without going through their respective hospital management. While this reduced the number of responses, it was the preferred method to ensure the nurses' anonymity and avoid privacy issues. The number of beds of participating hospitals ranged from 211 to 875, with a mean of 426.1 (SD 197.4)[15]. The average length of stay ranged from 15.4 to 15.8 days across the hospitals[15]. The survey was conducted between September and October 2014.

Instruments

The questionnaire included respondents' demographic characteristics such as age, sex, years of nursing experience (including length of service at their current hospital), nursing education background, employment status (full-time/part-time), and additional assigned role at their respective hospitals related to team leadership, teaching, training, and research. These were measured using two scales: the Japanese version of the PES-NWI[28,29]and the Japanese version of the PEI[19].

The PES-NWI is an internationally validated scale for measuring nurses' work environments based on the characteristics of magnet hospitals. It addresses managerial support for nursing, nurse participation in hospital affairs, doctor–nurse relations, and the promotion of quality care. The reliability and validity of the Japanese version of the PES-NWI have previously been confirmed[29]. Following the original PES-NWI, the Japanese version of the scale comprises 31 items on five subscales: (1) Nurse Participation in Hospital Affairs (nine items); (2) Nursing Foundations for Quality of Care (10 items); (3) Nurse Manager Ability, Leadership, and Support of Nurses (five items); (4) Staffing and Resource Adequacy (four items), and (5) Collegial nurse–physician relations (three items)[28,29].

For each question, respondents rated the organizational characteristics of their current nursing practice environment on a 4-point Likert scale ranging from 1 = strongly agree to 4 = strongly disagree. The subscale scores were calculated by taking the mean score for each respondent after rearranging the scores according to the answer choices. The composite score was calculated as the mean of the five subscale scores. Higher subscale and composite scores indicated that the respondents' work environment had stronger magnet hospital characteristics. The mean scores were used instead of sum scores to facilitate comparisons across subscales and aid in score interpretation[1]. The Japanese version of the PES-NWI was used in the WENS-J survey[29].

Psychological empowerment was measured using the PEI[17], which was developed based on the empowerment theory proposed by Conger and Kanungo[22], Thomas and Velthouse[16], and Kanter[26]. These researchers broadly defined empowerment as increasing the essential motivation identified in the four perceptions that influence an individual's orientation toward their work role. The PEI, comprising 12 items, includes four subscales reflecting nurses' attitudes towards their job-related perceptions, namely meaning (three items), competence (three items), self-determination (three items), and impact (three items). Possible answers ranged from "very strongly disagree (1)" to "very strongly agree (7)" on a 7-point Likert scale. Each subscale score was calculated as the mean of the three items measuring the associated dimensions. Higher subscale scores indicated that the respondent was psychologically empowered. The overall PEI score was obtained by averaging the subscale scores. The authors used the Japanese version of the PEI, the reliability and validity of which have previously been confirmed[19].

Data analysis

Descriptive statistics were used to describe respondents' demographic information regarding distribution, frequencies, percentages, means, and standard deviations (SDs). Cronbach's alpha coefficients were calculated to test the internal consistency of the PES-NWI subscales and PEI composite/total scores. The survey obtained data on the independent and dependent variables from the same respondents. This method may introduce common method bias that could overemphasize the relationships between variables. Consequently, Harman's one-factor test[30]was conducted to reduce common method bias. Pearson's correlation coefficient was calculated using the PES-NWI, PEI total score, and subscale scores. Subscales were added to the analysis as more specific subscales are needed to determine the clinical situation. Since the motivational factors hypothesized in this study were influenced by age and length of service[31], a multilevel analysis (hierarchical linear models) was performed to adjust for confounding factors such as age, sex, years of nursing experience, level of education, and additional roles at their respective hospitals and taking data clustering into account. The total PEI score was the dependent variable, and the PES-NWI subscales and composite scores were entered independently and analyzed in six models. Statistical significance was set at $p < .05$. Statistical analysis was performed using JMP® pro 16.0.0 (SAS Institute Inc., Cary, NC, USA).

Ethical considerations

This study was approved by the Institutional Review Board of Tokyo Medical and Dental University (Approval no. 1674 and M2018–065). Written information regarding the study purpose and the voluntary nature of participation was provided to all respondents. Informed consent was obtained from the respondents to determine their willingness to participate in the survey.

Results

Sample description

Of the 7,849 nurses surveyed, 3,166 returned the questionnaire (response rate: 40.3%). Out of these, 2,438 nurses' responses were valid (valid response rate: 31.1%) with no missing variables, and were included in the analysis; the mean age was 33.7 years (SD 8.9, range 20–67) and 2,285 (93.7%) were female. The average length of service at their current hospital was 6.5 years (SD 7.0, range 0–49), 2,261 (92.7%) were full-time, and 1,788 (73.3%) were

staff with no additional assigned role. Four hundred and thirty-six (17.9%) nurses had a bachelor's degree or higher, and 2,002 (82.1%) had no bachelor's degree. Table 1shows respondents' characteristics and their working backgrounds. As part of Harman's one-factor test[30], a factor analysis (maximum likelihood method, no rotation) was conducted on all nine constructs (43 questions) included within the two scales, with an eigenvalue of 1.00 or higher as the extraction condition. The contribution of the first factor was low (25.1%), indicating a low possibility of common method bias.

Descriptive statistics for PES-NWI and PEI

Cronbach's alpha coefficient for the PES-NWI composite score was 0.82; the alpha for each subscale ranged from 0.85 to 0.89. In addition, Cronbach's alpha coefficient for the PEI total score was 0.83, and alphas for each subscale ranged from 0.88 to 0.90. The PES-NWI and PEI subscale scores and the total score are compiled in Table 2. Concerning the PES-NWI, the composite score was 2.58 (SD 0.39); the highest score was 2.76 (SD 0.59) for "Nurse Manager Ability, Leadership, and Support of Nurses," and the lowest score was 2.27 (SD 0.55) for "Staffing and Resource Adequacy." The PEI total score was 3.83 (SD 0.85); the highest was 4.48 (SD 1.02) for the Meaning subscale, and the lowest score was 2.98 (SD 1.15) for the Impact subscale.

Correlation between PES-NWI and PEI score

The results of Spearman's correlation analysis of the PES-NWI and PEI (correlation coefficient 0.08–0.84, $p < .001$) are shown in Table 2. Before the multiple regression analysis, the correlations among the independent variables were significant, with weak positive correlations for the total PEI and subscale scores and the composite PES-NWI score ($r = 0.16–0.25$, $p < .001$).

Multilevel analysis: Hierarchical Linear Models

The PEI total score was significantly related to the PES-NWI composite score and all subscales after adjusting for age, sex, bachelor's degree, employment status (full-time/part-time), length of service at the current hospital, and assignment of additional assigned roles in the ward (coefficient 0.33–0.72, $p < .001$, Table 3). Multicollinearity was examined using Variance Inflation Factors but the score did not exceed 10 for any of the variables.

Discussion

This study involved a secondary analysis of data obtained from the WENS-J project[15]. It was a relatively large-scale longitudinal project that examined the relationship between the nursing practice environment and nursing outcomes as they relate to nurses' performance, health, and satisfaction[15]. To the authors' knowledge, this is the first attempt to empirically examine the relationship between work environment based on magnet hospital characteristics using the five PES-NWI subscales and psychological empowerment as a nursing outcome for general hospitals in Japan.

The authors conducted verification based on the hypothesis that a healthy work environment increases nurses' psychological empowerment. After adjusting for confounding factors, such as respondents' attributes and job background, the results revealed a significantly weak but positive relationship between the PES-NWI and PEI scores. This finding supports the authors' hypothesis as well as the results of the previous study[24], indicating that a work environment such as that presented in the PES-NWI may contribute to nurses' psychological empowerment. Based on the analysis results of the PES-NWI and PEI subscales, we believe that these indicators are more specific and can, therefore, be successfully used in clinical practice.

	Mean	SD	Range
Age	33.7	8.91	20–67
Total years in current hospital	6.5	6.98	0–49
		n	**%**
Gender			
Male		153	6.3
Female		2,285	93.7
Bachelor's degree			
Yes		436	17.9
No		2,002	82.1
Employment status			
Full-time		2,261	92.7
Part-time		177	7.3
Additional assigned role[a]			
Yes		650	26.7
No		1,788	73.3

Table 1. Respondents' characteristics and work background ($n = 2,438$). [a]Additional assigned role at respondents' hospital related to team leadership, teaching, training, and research. SD = standard deviation.

	Items	Mean	SD	Cronbach's alpha	1	2	3	4	5	6	7	8	9	10
	PEI													
1	Meaning	4.48	1.02	0.90										
2	Competence	3.87	1.01	0.88	0.50									
3	Self-determination	3.99	0.99	0.88	0.47	0.57								
4	Impact	2.98	1.15	0.89	0.38	0.58	0.60							
5	Total score	3.83	0.85	0.83	0.69	0.82	0.81	0.84						
	PES-NWI													
6	Nurse Participation in Hospital Affairs	2.59	0.42	0.85	0.21	0.11	0.22	0.19	0.22					
7	Nursing Foundations for Quality of Care	2.66	0.39	0.85	0.23	0.12	0.23	0.15	0.22	0.71				
8	Nurse Manager Ability, Leadership, and Support of Nurses	2.76	0.59	0.87	0.21	0.08	0.23	0.12	0.19	0.58	0.54			
9	Staffing and Resource Adequacy	2.27	0.55	0.88	0.16	0.10	0.21	0.14	0.18	0.46	0.49	0.46		
10	Collegial Nurse–Physician Relations	2.63	0.56	0.88	0.21	0.10	0.17	0.09	0.16	0.45	0.51	0.38	0.33	
11	Composite score	2.58	0.39	0.82	0.26	0.13	0.27	0.18	0.25	0.80	0.81	0.78	0.72	0.70

Table 2. Univariable Statistics and correlations among Composite score; PEI and PES-NWI items ($n = 2{,}438$). Spearman's rank correlation coefficients, p-values < 0.001. PEI = Psychological Empowerment Instrument; PES-NWI = Practice Environment Scale of the Nursing Work Index.

	Independent Variable	Coefficient	SE	95%CI	*p*
Model 1	Nurse Participation in Hospital Affairs	0.52	0.04	0.44–0.59	< 0.001
Model 2	Nursing Foundations for Quality of Care	0.60	0.04	0.52–0.69	< 0.001
Model 3	Nurse Manager Ability, Leadership, and Support of Nurses	0.33	0.03	0.28–0.39	< 0.001
Model 4	Staffing and Resource Adequacy	0.42	0.03	0.36–0.48	< 0.001
Model 5	Collegial Nurse-Physician Relations	0.34	0.03	0.28–0.40	< 0.001
Model 6	Composite score	0.72	0.04	0.64–0.80	< 0.001

Table 3. Multilevel analysis (HLM) of Factors Associated with total psychological empowerment score as the Dependent Variable and PES-NWI subscales and Composite score as independent variables ($n = 2,438$). All analyses were adjusted for age, sex, years of nursing experience, bachelor's degree, and additional roles. The independent variables in Models 1−5 are the subscales of the PES-NWI. HLM = Hierarchical Linear Model, SE = Standard Error, 95% CI = 95% Confidence Interval.

Although direct comparisons with several previous studies are not possible due to the different tabulation methods, the PEI scores in this study ranged between 2.98 and 4.48 points. These scores were somewhat lower than those of previous studies conducted on U.S. clinical nurses[32,33], which scored 5–6 points. The high PEI scores of the U.S. nursing sample may be because the sample was composed of nurses whose average age was 44 years, who attended national conferences, held baccalaureate degrees, and had specific professional certifications[33]. Thus, the PEI score may be higher as opportunities for work-related activities expand. However, the nurses in this study were younger (33.7 years old on average), had fewer bachelor's degrees (17.9%), and were less likely to have additional roles (26.7%) in team leadership, teaching, training, and research at their respective hospitals. It is conceivable that work roles may increase as nurses' age and years of experience increase. However, the PES-NWI, a characteristic of magnet hospitals, expects nurses to fulfill the role outlined in "Nurse Participation in Hospital Affairs," encompassing statements such as "Staff nurses are involved in the internal governance of the hospital" and "Staff nurses have the opportunity to serve on hospital and nursing department committees." If this can be achieved, it may boost the PEI score.

In a recent psychological empowerment-related study of part-time nurses in Japan, PEI scores ranged between 3.06 and 4.85 points[34], similar to the results of this study. The highest and lowest dimensions—"meaning" and "impact," respectively—were consistent with the present study's results. Per the psychological empowerment theory, "meaning" refers to the consistency between the requirements of the worker's post and their beliefs, values, and behaviors[35]. This dimension had high scores, which might reflect nurses' beliefs in the meaning and value of their work, further indicating that their job is compatible with their values[36]. Further, "impact" was associated with the sense of being able to contribute to significant outcomes for the organization[35]. The fact that this dimension was low may suggest that the nurses felt they had no influence over their work, which may be related to the extent to which nurses feel that they are valued by their supervisors[36].

The results of this study show weak but significant correlations between subscale and PEI scores and PES-NWI subscales and composite scores. To create an empowering work environment for nurses, it is important to provide them with the work environment delineated in the PES-NWI. Leadership styles such as inclusive and empowering leadership were related to psychological empowerment[37,38]. The PES-NWI subscale "Nurse Manager Ability, Leadership, and Support of Nurses" outlines the importance of the leadership role played by nurse managers. A previous study reported that organizational justice, such as appropriate evaluation of employees and employee involvement in work-related decision-making, impacted psychological empowerment[39]. The PES-NWI subscale "Nurse Participation in Hospital Affairs" outlines nurses' responses to subjects such as opportunities to participate in policy-related decisions and career development opportunities.

The authors found that nurses who work in an environment with high magnet hospital characteristics may be empowered; this finding strengthens the study hypothesis that nurses working in magnet hospitals are empowered. In addition, nurses working in magnet hospitals have higher job satisfaction and experience less burnout[40,41], resulting in lower turnover[42]than nurses working in other settings. Empowered nurses are able to empower their patients, who in turn experience positive health outcomes[25]; the observed effect on patient outcomes through positive nursing care was also expected. It follows that evaluating and improving the work environment in line with magnet hospital characteristics appears effective in empowering nurses. Furthermore, it is worthwhile to recommend that nursing managers incorporate empowerment techniques into their management strategies to increase nurses' satisfaction with their work environment. This is reflected in the highest PES-NWI subscale score, "Nurse Manager Ability, Leadership, and Support of Nurses," which is associated with the nurses' relationships with their managers. The "Nurse Participation in Hospital Affairs" subscale, which involves chief nursing officers, revealed a low score in the study results. The importance of managers' shared governance task, which includes maintaining nursing standards for quality of care, was highlighted; top managers, such as chief nursing officers, are significantly responsible for transforming the work environment[14].

The relationship between structural and psychological empowerment is positively associated[36,43]and improves nurse outcomes[44]. Therefore, the authors believe that the findings of this study using the PES-NWI—a more focused structural element of the nursing work environment—will be beneficial for healthcare managers aiming to create a healthier nursing practice environment. In addition, researchers could evaluate the contribution of the practice environment on nurse and patient outcomes using the PES-NWI. Managers could use the scale to compare their hospital's scores with the reference values, targeting specific aspects of their nurses'

practice environment that need improvement[1]. Empowerment also plays an important role in crises, such as pandemics[45]. The authors believe that the results of the present study can serve as an important and normative reference for future studies.

This study has some limitations. First, the present study was based on a cross-sectional correlational design; thus, no inferences can be made about causality[46]. Second, because this study was restricted to general hospitals with more than 200 beds in urban areas, it is difficult to generalize its findings to nursing practice environments across all hospitals in Japan. However, except for university hospitals, this could be an indicator of a rough baseline for further research. Third, due to the response rate of 40.3% in this study, sampling bias might have been introduced. Fourth, differences in organizational cultural values that influence nurses' perceptions of empowerment could also influence their job satisfaction[47]. In this study, correlations similar to those found in other Asian countries could not be found[24]; however, the impact of cultural background was not examined. Fifth, the survey was conducted in 2014, eight years prior to the present study. Despite this, the results have value as benchmark data of the period before the coronavirus disease 2019 pandemic and can serve as a reference point for future research.

Conclusion

This study revealed that a positive, healthy work environment could enhance nurses' psychological empowerment. The results contribute toward constructing an appealing and healthy work environment focusing on the quality and outcomes of nursing care. This is expected to serve as a potential resource for developing a working environment that promotes quality nursing care.

Data availability

The datasets analyzed during the current study are not publicly available due to participants of this study having been informed that their data would not be shared publicly.

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Author contributions

Author Contributions: Conceptualization, Y.O., K.T., Y.Y., M.S. and M.T.; methodology, K.T., Y.O. and Y.Y.; software, K.T.; validation, K.T., Y.O., Y.Y., M.S. and M.T.; formal analysis, K.T., Y.O. and Y.Y.; Investigation, Y.O. and M.S.; Resources, Y.O.; data curation, Y.O., K.T. and M.T.; writing—original draft preparation, K.T.; writing—review and editing, Y.O., M.S., M.T. and Y.Y.; visualization, K.T., M.T and Y.O.; supervision, project administration, and funding acquisition, Y.O. All authors have read and agreed to the published version of the manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of the Medical Research Ethics Committee of Tokyo Medical and Dental

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Informed consent

Informed consent was obtained from all participants involved in the study.

Additional information

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