

Relationship of Nurse Burnout with Personality Characteristics and Coping Behaviors

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Abstract: Burnout of nurses at university hospitals was analyzed in relation to their personality characteristics and coping behaviors. A self-administered questionnaire regarding burnout (the Copenhagen Burnout Inventory), work-related stressors (the Nursing Job Stressor Scale), personality characteristics (Short-Form Eysenck Personality Questionnaire-Revised), and coping behaviors (the short Japanese version of Brief COPE) was used. We obtained answers from 778 nurses (response rate: 94.9%), and analyzed 707 female registered nurses. Multiple regression analysis showed that neuroticism was more closely related to personal, work-related, and client-related burnout than extroversion. Covariate structure analysis revealed that among the nurses with high neuroticism and low extroversion, client-related burnout was found to be correlated with stressors in relation to conflict with patients and with positive coping behaviors. Among the nurses with low neuroticism and high extroversion, client-related burnout correlated with the coping behavior of behavioral disengagement and conflict with patients. In both groups, an increase in quantitative workload was associated with a higher score for stressors arising from conflict with patients, leading to client-related burnout. These results suggest that acquisition of skills to cultivate appropriate coping behaviors might be useful for reducing client-related burnout in relation to nurses' personality characteristics. These findings need to be further endorsed by intervention studies.

Key words: Burnout, Nurse, Neuroticism, Extroversion, Coping behavior

Introduction

Burnout is often defined as a syndrome primarily characterized by emotional exhaustion and cynicism arising from continued exposure to excessive demands placed on mental energy levels during continuous contact with other people, and is a condition associated with lack of pride in self, aversion to work, and a loss of interest, sympathy, etc¹⁾. Following the recent trends of an increase in the population of elderly patients, sophistication of healthcare technology, and changes in patients' needs, the roles

expected of healthcare professionals are becoming more diverse than ever. Nurses in Japan have been working under chronic manpower shortage because of the high rate of premature retirement of nurses^{2, 3)}, and have therefore been facing increasing physical and mental stress. It is reported that one out of every 5 hospital nurses answered that they intended to leave their current jobs within a year and that their job dissatisfaction is 4 times greater than the average for all US workers⁴⁾. As a result of these conditions, the rate of burnout in nurses has also been increasing⁵⁾.

Burnout in nurses is regarded as a serious problem not only because it is potentially hazardous to their health,

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resulting in problems such as physical exhaustion or insomnia, but also because it influences patients' satisfaction and safety^{6, 7}). Therefore, prevention of burnout in nurses is essential to the provision of high quality health care.

In the field of job stress research, occupational stress has been evaluated under traditional job stress models, such as Karasek's demand-control-support model or other occupational stress models, and many of the studies conducted using these models have focused on analysis of the relationship of the stressors to the stress reactions^{8, 9}). However, Folkman & Lazarus stressed the necessity of examining coping in stress research and defined coping as the cognitive and behavioral efforts made to master, tolerate, or reduce demands and conflicts among them¹⁰). Subsequently, some investigators conducted job stress research by linking the said model to coping behaviors of subjects¹¹). Epting reported that reactions to stress can vary depending on the adaptability of individuals or on the coping strategies employed by them, and are therefore quite personal in nature¹²). According to this view, exposure to the same stressors may cause burnout in some subjects but not in others.

Personality is another important factor to be considered. It has been reported to be related to burnout, mental illness, and morality¹³⁻¹⁵). In longitudinal studies, even when situational variables were controlled for, personality continued to account for a significant portion of the variance in burnout scores¹⁴), thus, burnout features may differ depending on personality characteristics of individual subjects.

Therefore, when examining the factors involved in the burnout of nurses, it is necessary to analyze not only the relationship between the stressors and the stress reactions, but also to take into account the personality characteristics and coping behaviors of the subjects as factors modifying the stress reactions. The present study was undertaken to analyze burnout in nurses, which is currently gaining recognition as a serious clinical problem, in relation to their personality characteristics and coping behaviors, with the goal of obtaining informative results to devise valid measures to prevent such burnout.

Subjects and Methods

Subjects

The survey was conducted in March 2004, on 819 nurses working at a university hospital. A self-administered questionnaire was handed to each of these nurses via the nursing management division of the hospital. To protect the privacy of individual nurses, the questionnaire was designed to be anonymous. Informed consent for the survey was obtained from all of the subjects prior to their

participation in the study. The filled-in questionnaires were collected in sealed envelope from individual units where the nurses worked, for a total of 778 responses (response rate, 95.5%). The responses of 15 male nurses (because their number was too small), 54 nurse assistants (whose job profiles differed markedly from those of other registered nurses), and 2 nurses who gave incomplete responses were excluded from the analysis. Finally, the responses of 707 female nurses (mean age, 29.3 ± 8.4 yr) were analyzed in this study.

Surveyed items

The survey pertained to demographic factors, job stressors, burnout, personality characteristics and coping behaviors of the individual nurses. The questionnaire was prepared using the Nursing Job Stressor Scale (NJSS)¹⁶) for stressors, the Copenhagen Burnout Inventory (CBI)¹⁷) for burnout, the Japanese Version of the Short Form Eysenck Personality Questionnaire-Revised (EPQ-R)^{18, 19}) for personality, and the short Japanese version of Brief COPE^{20, 21}) for coping behavior.

The Nursing Job Stressor Scale (NJSS) is a questionnaire which describes nurses' potential stressful situations including clinical work and relationship with coworkers and patients¹⁶). It is composed of 33 questions pertaining to 7 types of stressors: 1) conflict with nursing staff, 2) nurse role conflict, 3) conflict with physicians, 4) conflict with dying, 5) qualitative workload, 6) quantitative workload and 7) conflict with patients. The scores for all of these 7 types of stressors are totaled to yield the overall strain score. Cronbach alpha values for each 7 subscales were from 0.76 to 0.79 in this study.

The Copenhagen Burnout Inventory (CBI) is a questionnaire for burnout and is composed of three subscales (personal burnout, work-related burnout, and client-related burnout)¹⁷). Personal burnout pertains to general symptoms of physical or mental exhaustion, which is not always related to a given particular situation in the work environment and applies to everyone. Work-related burnout pertains to symptoms of exhaustion that are related to the work of the subject and applies to everyone in the workforce. Client-related burnout pertains to symptoms of exhaustion related to the subject's work with clients and applies to employees in human service work such as nurses and teachers. Thus, in this study, clients means patients. CBI includes 6 questions about personal burnout, 7 questions about work-related burnout, and 6 questions about client-related burnout (19 questions in all). This inventory is relatively newly-developed and has been used in several countries. In our subjects, the Cronbach alpha value was 0.91 for personal burnout, 0.75 for work-related burnout, and 0.85 for client-related burnout.

The Short-Form Eysenck Personality Questionnaire-Revised (EPQ-R) was employed as an indicator of personality characteristics. Among established personality traits such as neuroticism, extroversion, openness, agreeableness or conscientiousness, neuroticism and extroversion were especially relevant to stress-related outcomes²²⁾, and even mortality¹⁵⁾. In this survey, to clearly focus on personality characteristics, 12 questions pertaining to neuroticism and extroversion were selected. The Cronbach alpha value was 0.77 for neuroticism and 0.79 for extroversion in this survey.

The Japanese version of Brief COPE is composed of 24 questions pertaining to 7 coping behaviors: positive activity, social support, behavioral disengagement, venting, drinking, self-distraction, and self-blame^{20, 21)}. For conventional use and because of limitation of the number of total questions in the questionnaire, questions with small factor loadings and questions pertaining to drinking were excluded. As a result, 12 questions from the Japanese version of Brief COPE (2 questions each on 6 factors, i.e., positive activity, social support, behavioral disengagement, venting, self-distraction and self-blame) were adopted for this survey. Cronbach alpha values for each of the 6 factors were from 0.60 to 0.86.

Methods of analysis

All the data were analyzed using SPSS Version 12.0J and Amos4.0 for Windows. Bivariate correlations were performed to determine the relationship between nursing job stressors, burnout, coping, and personality. Multiple regression analysis with the stepwise method was performed to test the factors associated with the 3 scales of burnout. As some relatively high correlation coefficients were observed, variance inflation factors of each independent variable were checked to confirm absence of multicollinearity. The analysis of variance (ANOVA) with age as a co-variable was used for inter-group comparisons made by high-low combination of neuroticism and extroversion divided by the median of each dimension. The subjects were divided into four groups as follows: group 1 (high neuroticism and low extroversion, n=177), group 2 (high neuroticism and extroversion both, n=97), group 3 (low neuroticism and extroversion both, n=224) and group 4 (low neuroticism and high extroversion, n=192). If inter-group differences were obtained, a post hoc test was carried out by scheffe analysis. Covariance structure analysis was used for comparisons among the client-related burnout-associated factors. *p* values lower than 0.05 were regarded as being statistically significant.

Ethical considerations

This study was carried out in accordance with the Ethical Guidelines on Epidemiological Studies

(Notification No. 1, 2004, issued jointly by the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Health, Labour and Welfare). Each subject of the study was provided with a written explanation as to the purposes and methods of the study, privacy protection related to the study, etc. The study was conducted with the approval of the ethics committee of the facility to which the authors belonged.

Results

Characteristics of the subjects

Table 1 shows the marital status, lifestyles, length of career as a nurse, working conditions, and the mean and SD for the 7 scales of NJSS, 3 subscales of CBI, 6 factors of COPE and 2 factors of EPQ-R evaluated in this

Table 1. Subjects' characteristics (n=707)

	Number	%
Marital status		
Unmarried	585	83.6
Smoking		
Smoker	178	25.3
Alcohol		
Daily drinker	79	11.1
Regular exercise	113	16.6
	Mean	SD
Sleeping hours	5.6 ± 1.0	
Length of career as a nurse (yr)	7.8 ± 8.1	
Working for patient care/wk	44.9 ± 9.8	
Hours spent on other work/wk	3.6 ± 6.4	
Paid leave or summer holiday/yr	16.3 ± 9.9	
Nursing Job Stressor Scale		
Overall strain (range 1.1–4)	2.8 ± 0.7	
Conflict with nursing staff (range 0–4)	2.7 ± 0.8	
Nursing role conflict (range 0–4)	2.8 ± 0.7	
Conflict with physician (range 0–4)	2.7 ± 0.8	
Conflict with dying (range 0–4)	2.3 ± 1.1	
Qualitative workload (range 0–4)	2.9 ± 0.7	
Quantitative workload (range 0–4)	2.6 ± 0.5	
Conflict with patients (range 0–4)	2.9 ± 0.9	
Burnout		
Personal Burnout (range 4.17–100)	54.5 ± 21.6	
Work-related Burnout (range 0–100)	50.4 ± 20.9	
Client-related Burnout (range 0–100)	33.8 ± 20.9	
Coping behaviors		
Active coping (range 2–8)	5.7 ± 1.1	
Social support (range 2–8)	6.3 ± 1.1	
Behavioral Disengagement (range 2–8)	4.1 ± 1.1	
Venting (range 2–8)	5.0 ± 1.2	
Self-Distraction (range 2–8)	5.1 ± 1.1	
Self-Blame (range 2–8)	5.5 ± 1.1	
Personality		
Neuroticism (range 0–12)	7.8 ± 2.5	
Extroversion (range 0–12)	5.7 ± 3.0	

study. Most of the subjects were unmarried (83.6%). There were 25.3% smokers and 11.1% daily drinkers. The percentage of nurses in the habit of exercising regularly was 16.6%. The mean sleep duration was 5.6 ± 1.0 h. The mean length of career as a nurse was 7.8 ± 8.1 yr. The mean number of weekly hours of working for patients' care was 44.9 ± 9.8 h. The mean number of days taken as paid leave or summer holidays was 16.3 ± 9.9 d/yr. The mean scores for each of the 7 scales of NJSS and 2 factors of the EPQ-R were almost identical to those reported from previous studies^{19, 23}). Average values for burnout on the scales for personal burnout and work-related burnout were much higher than the values of nurses²⁴) as well as white-collar office workers²⁵), teachers²⁶), and employees in human service work²⁷) reported in other countries.

Association of nursing job stressors, coping, personality and burnout, and examination of factors associated with the 3 subscales of burnout

Pearson correlations among each subscale of nursing job stressors, burnout, coping behaviors, and personality were presented in Table 2. Stepwise multiple regression analysis was carried out, with personal burnout, work-related burnout and client-related burnout serving as the dependent variables, and age, 7 scales of NJSS, 6 types of coping behaviors and personality characteristics serving as independent variables. The results are shown in Table 3.

Factors shown to be associated with personal burnout were age, "quantitative workload" and "qualitative workload" from stressors, "social support" and "self-blame" from coping behavior, and "neuroticism" and "extraversion" from personality. These 7 factors explained 40% of the variances in the scores for personal burnout. Factors shown to be associated with work-related burnout

Table 2. Pearson correlations among psychosocial factors

	Nursing Job Stressor Scale							CBI				COPE				EPQR			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Overall strain	1.00																		
2 Conflict with nursing staff	.75***	1.00																	
3 Nursing role conflict	.69***	.33***	1.00																
4 Conflict with physician	.79***	.57***	.47***	1.00															
5 Conflict with dying	.70***	.33***	.50***	.54***	1.00														
6 Qualitative workload	.70***	.41***	.45***	.40***	.33***	1.00													
7 Quantitative workload	.55***	.35***	.28***	.33***	.21***	.48***	1.00												
8 Conflict with patients	.57***	.30***	.30***	.36***	.38***	.41***	.40***	1.00											
9 Personal Burnout	.38***	.25***	.24***	.25***	.18***	.35***	.48***	.25***	1.00										
10 Work-related Burnout	.41***	.27***	.24***	.31***	.19***	.37***	.52***	.27***	.80***	1.00									
11 Client-related Burnout	.31***	.20***	.09*	.20***	.17***	.27***	.40***	.43***	.48***	.55***	.00								
12 Active coping	.03	.01	.08*	.08*	.02	.01	-.09*	-.03	-.01	-.03	-.06	1.00							
13 Social support	-.01	-.03	.04	-.03	.00	.01	-.06	.04	-.12**	-.12**	-.05	.32***	1.00						
14 Behavioral Disengagement	.01	-.02	-.05	-.02	.02	.08*	.07	.08*	.09*	.10*	.17***	-.23***	-.07	1.00					
15 Venting	.11**	.06	.03	.07	.06	.12**	.14***	.14***	.05	.09*	.17***	.04	.25***	.18***	1.00				
16 Self-Distracton	.01	.00	-.02	-.03	.07	-.01	-.01	.00	-.09*	-.08*	-.01	.09*	.28***	.10**	1.00				
17 Self-Blame	.17***	.12**	.16***	.11**	.04	.15***	.09*	.08*	.25***	.26***	.11**	.17***	.11**	-.01	-.05	-.10**	1.00		
18 Neuroticism	.30***	.25***	.22***	.19***	.11**	.31***	.24***	.23***	.45***	.45***	.32***	.08*	.02	-.03	.09*	-.12**	.38***	1.00	
19 Extroversion	-.07	-.07	.00	-.03	.01	-.11**	-.17***	-.04	-.18***	-.21***	-.14***	.07	.20***	-.15***	.08*	.07	-.13***	-.12**	1.00

*: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$.

Table 3. Factors related to Personal burnout, Work-related burnout, and Client-related burnout

	Personal burnout		Work-related burnout		Client-related burnout			
	Standardized β	p -value	Standardized β	p -value	Standardized β	p -value		
Quantitative work load	0.30	***	Quantitative work load	0.38	***	Conflict with patients	0.31	***
Neuroticism	0.30	***	Neuroticism	0.29	***	Quantitative work load	0.25	***
Age	-0.15	***	Conflict with physician	0.12	***	Neuroticism	0.23	***
Social support	-0.12	***	Social support	-0.11	***	Nursing role conflict	-0.13	***
Self-blame	0.10	**	Self-blame	0.12	***	Behavioral disengagement	0.12	***
Qualitative work load	0.10	**	Behavioral disengagement	0.07	*			
Extroversion	-0.08	*						
R ²	0.40	***		0.41	***		0.32	***

*: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$.

Stepwise Multiple Regression Analysis using subscales of burnout as dependant variables.

were “quantitative workload” and “conflict with physician” from stressors, “social support”, “self-blame” and “behavioral disengagement” from coping behavior and “neuroticism” from personality. These 6 factors explained 41% of the variances in the scores for work-related burnout. Factors shown to be associated with client-related burnout were “conflict with patients”, “quantitative workload” and “nursing role conflict” from stressors, “behavioral disengagement” from coping behavior, and “neuroticism” from personality. These 5 factors explained 32% of the variances in the scores for client-related burnout. “Quantitative workload” and “neuroticism” showed a strong positive correlation with all the 3 sub-scales of burnout (personal burnout, work-related burnout,

and client-related burnout), with a standardized β of 0.30 and 0.30 for personal burnout, 0.38 and 0.29 for work-related burnout, and 0.25 and 0.23 for client-related burnout, respectively.

Comparison of stressors, burnout and coping behavior among four groups of nurses with differing tendencies in personality profiles

The differences in objective stressors such as weekly hours of working for patients care etc., 7 scales for the NJSS, burnout, and coping behaviors among nurse groups with differing personality characteristics were explored (Table 4).

There was no significant difference between the four

Table 4. Mean scores of objective stressors, nursing job stressors, burnout and coping behaviors in 4 groups divided according to the scores for neuroticism and extroversion (covariable: age)

	Group 1 (N=177) High neuroticism Low extroversion	Group 2 (N=97) High neuroticism High extroversion	<i>p</i> -value	Group 3 (N=224) Low neuroticism Low extroversion	<i>p</i> -value	Group 4 (N=192) Low neuroticism High extroversion	<i>p</i> -value
Objective stressors							
Hours of work for patient care/wk	45.8 (10.2)	46.0 (10.5)		44.4 (10.2)		44.1 (8.4)	
Hours spent on other work/wk	4.4 (7.7)	3.4 (5.5)		3.5 (6.6)		3.3 (5.3)	
Sleeping time/d	5.5 (1.1)	5.7 (1.2)		5.7 (1.0)		5.6 (1.0)	
Paid leave or summer holiday/yr	16.4 (7.4)	15.7 (12.7)		16.4 (9.7)		16.3 (10.7)	
Nursing Job Stressor Scale							
Overall Strain***	3.0 (0.5)	2.9 (0.8)		2.6 (0.7) §§§		2.8 (0.5) §§§	
Conflict with nursing staff***	3.0 (0.8)	2.8 (0.8)		2.6 (0.7) §§§		2.6 (0.8) §§§	
Nursing role conflict***	3.0 (0.6)	3.0 (0.7)		2.7 (0.6) §§§		2.8(0.6) §§	
Conflict with physician***	2.9 (0.8)	2.9 (0.9)		2.6 (0.8) §§		2.6 (0.9) §§	
Conflict with dying**	2.4 (1.0)	2.4 (1.0)		2.1 (1.1) §		2.3 (1.1)	
Qualitative workload***	3.2 (0.6)	3.0 (0.7)		2.8 (0.6) §§		2.7 (0.7) §§§	
Quantitative workload***	2.8 (0.4)	2.7 (0.4)		2.6 (0.5) §§§		2.5 (0.5) §§§	
Conflict with patients***	3.1 (0.8)	3.0 (0.8)		2.7 (0.9) §§§		2.7 (0.9) §§§	
Burnout							
Personal Burnout***	66.6 (20.6)	60.1 (19.2) §		49.2 (20.4) §§§		45.5 (19.3) §§§	
Work-related Burnout***	62.0 (18.7)	55.8 (18.7) §		46.0 (18.7) §§§		41.2 (20.6) §§§	
Client-related Burnout***	42.6 (21.0)	38.9 (22.4)		29.4 (18.1) §§§		27.1 (19.7) §§§	
Coping behaviors							
Active coping*	5.7 (1.1)	5.8 (1.1)		5.5 (1.1) ¶		5.7 (1.2)	
Social support***	6.2 (1.2)	6.6 (1.1)		6.1 (1.1) ¶¶		6.5 (1.1)	
Behavioral Disengagement***	4.1 (1.0)	3.9 (1.1)		4.3 (1.0) ¶¶		4.0 (1.0) ¶¶	
Venting*	5.0 (1.3)	5.3 (1.2)		4.8 (1.2) ¶		4.9 (1.3) ¶	
Self-Distracton*	4.9 (1.2)	5.2 (1.0)		5.2 (1.0)		5.2 (1.1)	
Self-Blame***	6.0 (1.1)	5.7 (1.1) §		5.2 (1.1) §§§		5.2 (1.1) §§§	

***: $p < 0.001$, **: $p < 0.01$, *: $p < 0.05$ as inter-group comparison.

§§§: $p < 0.001$, §§: $p < 0.01$, §: $p < 0.05$ vs Group 1, ¶¶¶: $p < 0.001$, ¶¶: $p < 0.01$, ¶: $p < 0.05$ vs Group 2 by post hoc test, respectively.

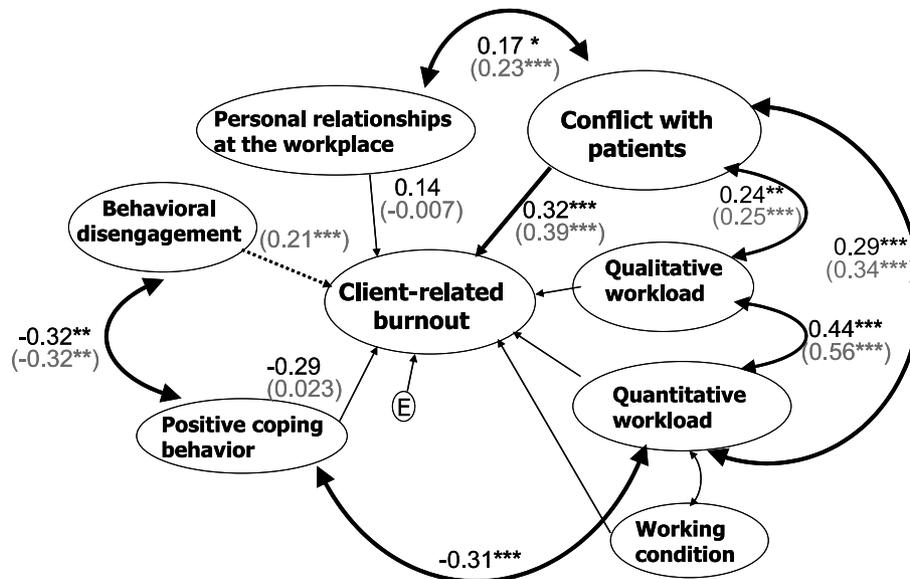
groups in terms of all objective stressors. However, significant inter-group differences were noted in scores of 7 scales and overall strain for the NJSS, the three subscales of burnout, and 6 coping behaviors. The scores of all subscales and overall strain for NJSS were highest in group 1 (high neuroticism and low extroversion). Regarding the 3 subscales of burnout, namely, personal burnout, work-related burnout and client-related burnout, group 1 showed the highest and followed group 2, 3, and 4. The results of coping showed somewhat different aspects from those with subscales of NJSS or burnout. Active coping, social support, and venting were the highest in group 2 (high neuroticism and high extroversion). Self-blame was the highest and self-distraction was lowest in group 1 than in any other group.

Stressors and coping behaviors associated with client-related burnout

Because we wanted to focus on the nurses' burnout and related work at the hospital, a covariance structure analysis to identify the stressors and coping behaviors associated with *client-related* burnout was performed. From the NJSS and the components of the short Japanese version

of the Brief COPE, we selected "qualitative workload", "quantitative workload", "working conditions" (weekly hours of working for patients care, and the number of days taken as paid leave or summer holidays each year), "personal relationships at the workplace" (conflict with nursing staff, and conflict with physicians), "conflict with patients", "positive coping behaviors" (social support and positive coping), and "behavioral disengagement", and applied these factors or components to the model diagram. To investigate the influence of the personality characteristics on the stressors and coping behaviors, we conducted an analysis with subjects with high neuroticism and low extroversion (group 1) and with subjects with low neuroticism and high extroversion (group 4) on the same model diagram, respectively.

Figure 1 shows the results of analysis of the factors influencing client-related burnout among both group 1 and 4. In the analysis of the indicators of fitness, the χ^2 was 83.6 (df=45, $p<0.001$), GFI was 0.932, AGFI was 0.881, RMSEA was 0.068, and AIC was 149.6 for group 1. Thus, all indicators other than the RMSEA suggested a good fit of the model to the data. We may therefore say that the model used was suitable for explaining the data. The only



For group 1: GFI=0.932 AGFI=0.881 RMSEA=0.068 AIC=149.6 P=0.000 $\chi^2=83.6$

For group 4: GFI=0.898 AGFI=0.823 RMSEA=0.102 AIC=200.9 P=0.000 $\chi^2=134.9$

*: $p<0.05$, **: $p<0.01$, ***: $p<0.001$

GFI: goodness of fit index, AGFI: adjusted goodness of fit index, RMSEA: the root mean square error of approximation.

Numbers indicate standardized correlation coefficients for group 1 and those in parentheses represent for pass coefficients for group 4.

Fig. 1. Results of a covariance structure analysis to identify the stressors and coping behaviors associated with client-related burnout among subjects with high neuroticism and low extroversion and with low neuroticism and high extroversion.

factor shown to have a significant direct association with client-related burnout was “conflict with patients” (0.32, $p < 0.001$). Besides this factor, a relatively close association of client-related burnout was also noted with “positive coping behavior” (−0.29) and “personal relationships at the workplace” (0.14), although none of these associations was statistically significant. Among the factors shown in the model diagram, significant association was noted between “positive coping behavior” and “quantitative workload” (−0.31, $p < 0.001$), between “personal relationships at the workplace” and “conflict with patients” (0.17, $p < 0.05$), between “quantitative workload” and “conflict with patients” (0.29, $p < 0.001$), between “qualitative workload” and “conflict with patients” (0.24, $p < 0.01$), between “quantitative workload” and “qualitative workload” (0.44, $p < 0.001$), and between “positive coping behavior” and “behavioral disengagement” (−0.32, $p < 0.01$).

The results of the indicators of the model’s fitness among group 4 showed that the χ^2 was 134.9 (df=45, $p < 0.001$), GFI was 0.898, AGFI was 0.823, RMSEA was 0.102, and AIC was 200.9. These results indicate that GFI and AGFI reached a certain level although not adequately high, and RMSEA was not satisfactory. The factors that were shown to have significant direct association with client-related burnout were “conflict with patients” (0.39, $p < 0.001$) and “behavioral disengagement” (0.21, $p < 0.001$). Significant association was noted between “personal relationships at the workplace” and “conflict with patients” (0.23, $p < 0.001$), between “conflict with patients” and “quantitative workload” (0.34, $p < 0.001$), between “conflict with patients” and “qualitative workload” (0.25, $p < 0.001$), between “quantitative workload” and “qualitative workload” (0.56, $p < 0.001$), and between “positive coping behavior” and “behavioral disengagement” (−0.32, $p < 0.01$).

Discussion

The aim of this study was to investigate the relationship between burnout and specific nursing job stressors, and coping behaviors by considering personality characteristics, especially neuroticism and extroversion.

Multiple regression analysis revealed that neuroticism was relatively strongly associated with all scales for burnout, namely personal burnout, work-related burnout, and client-related burnout. In a previous study, higher neuroticism was reported to be associated with increased reactions to stress, while high extroversion reduced reactions to stress¹³. The result of this study implies that personality features are underlying important factors that should be addressed as in the previous study.

Another significant feature of this present study was to

focus on client-related burnout as well as personal or work-related burnout in conjunction with nursing job stressors, coping behaviors, and personality at the same time. Multiple regression analysis revealed that client-related burnout was most closely associated with “conflict with patients” compared with personal and work-related burnout. This implies that client-related burnout is likely to occur if the nurse faces stress in her/his relationship with patients. Human service providers such as nurses tend to have strong ethical views and believe that they need to faithfully respond to patients’ demands. However, it is not uncommon that repeated striving to meet the demands of patients causes conflicts among the other multiple roles expected of nurses. It seems likely that exposure to this type of stress can induce client-related burnout among nurses. Modifying factors such as neuroticism or behavioral disengagement coping were also related, however, standardized beta values were smaller than for conflict with patients.

Results from covariate structure analysis also supported the above finding regardless of how subjects’ neuroticism and extroversion were. An increase in the score for “conflict with patients” was associated with an increase of client-related burnout in both groups, even though the adjustment values for group 4 are not satisfactory. It was also noted that “personal relationships at the workplace” such as conflict with nursing staff or conflicts with physicians correlated closely with “conflict with patients”, and that both of these factors affected client-related burnout, suggesting that an increase in the score for either “personal relationships at the workplace” or “conflict with patients” elevates the score for the other factors, resulting in an increase in client-related burnout. This means if conflicts arise in the relationship between subjects and coworkers at the hospital, this may disturb subjects’ relationship with patients or influence their attitude toward patients, and possibly leads to burnout. In a prospective study on burnout, role conflict was negatively associated with client-related burnout after 3 yr, as well as emotional demands, demands for hiding emotions, and meaning of work²⁸. Our results supported the former study’s finding even among the subjects with high neuroticism and low extroversion, and vice versa.

Contrary to the above findings, it was revealed that burnout-related coping styles differ by the subjects’ personality characteristics in this study. The coefficient for “personal relationships at the workplace” and “positive coping behavior” against client-related burnout was higher in group 1 than in group 4, however these coefficients are not statistically significant, suggesting that group 1 (high neuroticism and low extroversion) was more likely to show client-related burnout due to subjective burden with “personal relationships at the workplace” than

group 4. The results also suggested that in group 1, "positive coping behavior" was more useful in preventing client-related burnout. When the association among other factors was analyzed in group 1, significant associations were noted between "quantitative workload" and "positive coping behavior" and between "quantitative workload" and "conflict with patients". This finding suggests that a decrease of "quantitative workload" may stimulate "positive coping behavior" resulting in a reduction in client-related burnout, and that an increase in "quantitative workload" stimulates conflict with patients, resulting in an increase of client-related burnout.

According to Folkman and Lazarus, coping is a process that changes over time and across situations¹⁰. Individuals may have preferred ways of coping based on personality. In other words, personality is a predictor of coping behavior under certain circumstances²⁹. As personality alteration is difficult to intervene/modify, however, shedding light on coping behavior is more realistic when considering practical intervention. Among the subjects with low neuroticism and high extroversion (group 4), a direct correlation was noted between the scores for "conflict with patients" and "behavioral disengagement". This suggests that an increase in conflict with patients or adopting the coping behavior of behavioral disengagement serves as a strong factor stimulating client-related burnout. When the association among other factors was analyzed in group 4, an association was noted between the lack of "positive coping behavior" and the selection of "behavioral disengagement" as a coping behavior, resulting in a higher likelihood of client-related burnout.

In earlier studies on nurse burnout, an association with burnout was demonstrated for mainly work schedule³⁰, job strain³¹, and coping³². With regard to the relation between job stressors and burnout, previous studies revealed that job demands or effort-reward imbalance was related to emotional exhaustion, one of the components of burnout measured by Maslach Burnout Inventory^{31, 33}. Contrary to our expectation, neither qualitative nor quantitative workload were directly related to client-related burnout in this study. These were closely related to each other and were related to client-related burnout through conflict with patients. (Fig. 1).

On the basis of these findings, we may say that among the subjects with high neuroticism and low extroversion (group 1), positive coping behavior is useful for preventing burnout, and that in the subjects with low neuroticism and high extroversion (group 4), it is essential to guide nurses to avoid selection of behavioral disengagement. In both subject groups, quantitative workload and qualitative workload are likely to stimulate burnout through elevating the nurses' association with conflict with patients, thus

indicating the importance of paying special attention to the volume and nature of the job.

In the present study we were able to explain the process of burnout by analyzing each stressor and coping behavior and the relationships between these stressors and coping behaviors. Through comparing group 1 and group 4, we were able to give some account of the stressors, coping behaviors and stress reaction tendencies specific to some particular personality characteristics through covariance structure analysis. However, covariance structure analysis was originally designed to assume some particular structure for a given concept of structure and allow the causal relationship between them to be analyzed. Although this analysis in the present study yielded indicators with a somewhat good fit, we cannot rule out the possibility of better models than this one. Meanwhile, covariance structure analysis has been highly appraised as a means of analysis for the purpose of testing the validity, because it can reflect the hypothesis of the investigator created on the basis of previous studies into the framework of the model. Although exploring factors associated with burnout was difficult in previous studies, the use of the framework of the causality model in the present study probably allowed us to make an objective assessment of the relationship between personality characteristics and coping behaviors, although there are certain limitations in the interpretation of the results of the present study.

The present study had the following limitations. First, although the work-related stressors of nurses were analyzed by using a Nursing Job Stressor Scale (a scale relatively closely tailored to nurses), the present study involved no analysis on the basis of the model of the degree of job demand-control for nurses. According to a previous study focusing on the degree of job demand-control and coping behaviors in nurses³⁴, the likelihood of burnout was higher in nurses with a high job demand and low job control who adopted positive coping behaviors, contradictory to the results in group 1 in the present study. In this respect, it would be desirable for coping behaviors to be evaluated not only on the basis of their relationship to personality characteristics, but also on the basis of an adequate understanding of the circumstances of the nurses' jobs and the degree of control. An open theme would be to analyze the relationship of burnout to the degree of job demand-control for nurses in addition to its relationship with personality characteristics and coping behaviors.

Secondly, we did not include the items regarding drinking when measuring coping behavior. The prevalence of subjects who drink almost everyday was 11.1% in this study. This number was almost the same as 10.1% of women of 30s who drink every day in the Japan nation-

al health survey³⁵), however, it can not be denied that their drinking might be effective coping behavior for nurses. We must consider including drinking for measuring coping behavior for future study.

Lastly, this study was conducted in cross-sectional design. It would be desirable to propose skills for generating possibly valid coping behaviors on the basis understanding nurses' personality characteristics and to test the validity of such skills in interventional studies.

In conclusion, subjective stressors in nursing work, coping behavior, as well as burnout are different in relation to personality characteristics. The subjects with high neuroticism and low extroversion reported high scores of stressors and showed more burnout. For these subjects, it is essential to offer guidance in avoiding selection of behavioral disengagement. In the subjects with high neuroticism and low extroversion and vice versa, quantitative workload and qualitative workload are likely to stimulate client-related burnout through elevating the nurses' association with conflict with patients, thus paying special attention to the volume and nature of the job are necessary.

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