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The overall goal of this study was to examine the relationship between burnout and two parameters: job strains and coping styles. The subjects were 568 nurses from a university hospital in Ishikawa Prefecture of Japan. A packet of self-administered questionnaires was distributed to the nurses. Four hundred and forty nurses completed the questionnaires. The Japanese version of the Maslach Burnout Inventory (MBI) was used to measure burnout. The Japanese MBI is consisted of three factors: Physical Exhaustion, Emotional Exhaustion/Depersonalization, and Personal Accomplishment.

We developed the Nursing Job Stressor Scale (NJSS) to assess perceived job strains. The analysis identified seven major sources of strain. The seven subscales were: conflict with other nursing staffs, nursing role conflict, conflict with physicians/autonomy, dealing with death and dying, qualitative work load, quantitative work load, and conflict with patients. The Japanese version of the Coping Inventory for Stressful Situations (CISS) assessed coping styles. The three coping patterns include: Task-oriented coping, Emotion-oriented coping, and Avoidance-oriented coping.

Stepwise multiple regression analysis resulted in significant predictors for Physical Exhaustion being quantitative and qualitative work load strains, the strain variables: quantitative work load, conflict with other nursing staffs, and conflict with patients for Emotional Exhaustion/Depersonalization, qualitative work load strain for diminished Personal Accomplishment, nursing role conflict strain for Personal Accomplishment. Emotion-oriented coping style was a significant predictor for Emotional Exhaustion/Depersonalization and diminished Personal Accomplishment, while both Task-oriented and Avoidance-oriented coping styles were significant predictors for Personal Accomplishment

Key words : burnout, job strain, coping, nurse, Japanese

I Introduction

Burnout can be seen as a unique type of stress syndrome that occurs among individuals who do 'people work' of some kind. Burnout is characterized by emotional exhaustion, depersonalization, and diminished personal accomplishment. Because burnout is more predominant in caring

professions, many investigators have observed that the nursing population is at higher risk of experiencing burnout (Duquette et al., 1994). The consequences of nurse burnout are potentially very serious for patients and hospitals as well as for the nurses themselves. Burnout can lead to a deterioration in the quality of the care or service that is provided by nurses. It appears to be a fac-

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tor in job turnover, absenteeism, and low morale (Maslach and Jackson, 1981). Thus, it is very important to examine what factors are involved and how they affect responses to the work environment in order to decrease the risk of burnout.

In the study of burnout, the sound data collection instruments are essential. Three psychometric instruments have been designed to measure the syndrome of burnout: the Maslach Burnout Inventory (MBI) (Maslach and Jackson, 1981; Maslach et al., 1996), the Staff Burnout Scale (SBS) (Jones, 1980), and the Tedium Scale (Pines et al., 1981). The MBI is based on the three-component conceptualization: emotional exhaustion, depersonalization, and reduced personal accomplishment, that is the most commonly accepted definition of burnout. The MBI is highly regarded for its practical applications to measure occupational burnout (Authur, 1990), hence it has been widely used by investigators in many countries. On the other hand, the Tedium Scale, based on the unitary concept of burnout as physical, emotional, and mental exhaustion, has been chosen by Japanese researchers.

In order to investigate burnout in nursing and its relationship to job stressors, some investigators have used psychometrically validated instruments such as the Work Environment Scale (WES) (Moos, 1986), the Job Content Questionnaire (JCQ) (Karasek, 1985), and the Nursing Stress Scale (NSS) (Gray-Toft and Anderson, 1981) for measuring job stressors: WES on Constable and Russell (1986), Robinson et al. (1991), Stone et al. (1984), and Turnipseed (1998), JCQ on Bourbonnais et al. (1998), NSS on Hillhouse and Adler (1997), Lewis et al. (1992), McCranie et al. (1987), and Stewart and Arklie (1994). Especially the NSS is designed to measure the frequency and major sources of stress experienced by nurses working in hospital settings. On the con-

trary, instruments (Chikazawa, 1988; Inaoka et al., 1984; Kubo and Tao, 1994; Mori and Kageyama, 1995; Yamamoto et al., 1987) of nursing job stressors which are available in Japanese have no adequate psychometric support.

The associations between nurse burnout and personality characteristics, such as hardiness, sense of coherence, or coping behavior have been studied. Coping has been conceptualized as an individual's conscious response to environmental and psychological demands in particular stressful situations (Folkman and Lazarus, 1985; Folkman et al., 1986). We have seen a variety of studies regarding the relationship between nurse burnout and coping. But, to our knowledge, there are no reports using standardized instruments such as the Coping Inventory for Stressful Situations (CISS) (Endler and Parker, 1990b) to assess coping styles.

Therefore, the purpose of this study is: (1) to identify burnout among Japanese nurses, (2) to analyze the association between burnout and perceived job strains/coping styles, and (3) to investigate possible predictors of burnout. The MBI to measure burnout and the CISS to measure coping styles were used. We developed the Nursing Job Stressor Scale (NJSS) (Higashiguchi et al., 1998a) for this study to assess perceived job strains for Japanese nurses.

II Method

The subjects were all nurses (N=568) working on 28 workplaces of a 1,020-bed, university hospital in Ishikawa Prefecture. The 28 workplaces included three intensive care units (ICU, CCU, and NICU), 22 non-intensive care units, operating room, dialysis center, and out-patient clinics. Approval of the survey was obtained from head nurses at each workplace. Then, a packet of self-administered questionnaires, including an

unidentified demographic data sheet and the three instruments to measure burnout, job strains and coping patterns was distributed to the nurses on each workplace. The subjects were recruited on a voluntary basis. The sealed questionnaires were collected 10 days later.

The MBI is a self-report measure of the 22-item, 7-point Likert scale ranging from "never", to "a few times a year", to "every day" to assess the frequency of occurrence of the three aspects of the burnout syndrome: Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA). With the consent of Maslach et al. we have revised the existing Japanese version of the MBI (Inaoka, 1988; Masuko et al., 1989) in an earlier study (Higashiguchi et al., 1998b). A previous attempt to have the same factor structure of the original MBI yielded inconsistent results. Item factor analysis resulted in a three-factor structure that had different implications from the MBI: namely, Physical Exhaustion (PE), Emotional Exhaustion/Depersonalization (EE + DP), Personal Accomplishment (PA). The PE subscale measures feelings of being physically exhausted by one's work. A second subscale, EE + DP, measures feelings of being emotionally overextended by one's work, and an impersonal and unfeeling attitude toward patients. Psychologically, workers feel that they are unable to continue giving of themselves because their emotional resources are depleted. As one's sense of depersonalization increases, one becomes negative, cynical, and callous. A third subscale, PA, measures feelings of competence and successful achievement in one's work with people. A person who burns out has less of a sense of personal accomplishment. With the use of the Japanese version of the MBI, the following reliability testing was reported: Cronbach's alpha coefficients for internal consistency with a reliability of .88

for PE, .90 for EE+DP, and .87 for PA. The test-retest reliability coefficients were .61 for PE, .73 for EE+DP, and .70 for PA. The item scores were calculated on a scale of zero to six, where an answer of "never" counted for 0 points and an answer of "every day" counted for 6. The item scores were added, then divided by the number of items for each subscale score. On the Japanese MBI, a higher degree of burnout is reflected in higher scores on the subscales for PE and EE+DP and in lower scores on the subscale for PA.

We developed the NJSS (Higashiguchi et al., 1998a). This scale consists of 33 items that describe potential stressful situations for nurses in the performance of their duties. Nurses were asked to indicate on four possible answers how intensely they experienced such situations as strain in their present workplace. The four responses were: (1) barely noticeable, (2) mild, (3) quite strong, and (4) very strong. A value of zero was given if the respondent indicated that she never experienced strain. The analysis identified seven major sources of strain. The seven subscales were: (a) conflict with other nursing staffs, (b) nursing role conflict, (c) conflict with physicians/autonomy, (d) dealing with death and dying, (e) qualitative work load, (f) quantitative work load, and (g) conflict with patients (Appendix). The internal consistency as measured by Cronbach's alpha coefficient exceeded .70 for all subscales. The test-retest reliability coefficients for the subscales ranged from .60 to .74. Ratings were added then divided by the number of items to produce a total strain score. The NJSS items were also scored on seven subscales.

When Endler and Parker (1990a) reviewed several existing self-report measures of coping patterns (Billings and Moos, 1981, 1984; Carver et al., 1989; Folkman and Lazarus, 1980, 1988; Mc-

Appendix The Nursing Job Stressor Scale (NJSS) subscales

Factor 1: Conflict with other nursing staffs

- Q 5 Disagreement concerning a task among other nursing staffs
 Q24 No cooperation among other nursing staffs
 Q21 Difficulty in working with a particular nurse on the unit
 Q15 No support from a supervisor in a troublesome situation
 Q23 Disagreement concerning a nursing care among other nursing staffs
 Q14 Lack of an opportunity to share thoughts and feelings on a task with other nursing staffs on the unit
 Q32 No reliable nursing staff besides yourself

Factor 2: Nursing role conflict

- Q 8 Unable to do a nursing care to the extent of satisfaction
 Q 1 Inadequately prepared to help with the emotional needs of a patient
 Q16 Inadequately prepared to help with the emotional needs of a patient's family
 Q25 Not enough time to provide emotional support to a patient
 Q29 Watching a patient suffer

Factor 3: Conflict with physicians/Autonomy

- Q18 No rapport with a physician
 Q19 Not enough communication with a physician
 Q 6 Disagreement concerning the treatment of a patient
 Q12 Unable to talk openly with a physician ordering what appears to be inappropriate treatment for a patient
 Q13 Unable to say 'no' to a physician ordering a task with no consideration for nursing staffs

Factor 4: Dealing with death and dying

- Q11 Physician not being present when a patient in a medical emergency or dies
 Q31 Listening or talking to a terminal patient
 Q 9 The death of a patient with whom you developed a close relationship
 Q20 The death of a terminal patient under the aggressive medical treatment

Factor 5: Qualitative work load

- Q26 Many intensive tasks which require judgement, attention, and responsibility
 Q30 Requested to do a task you haven't experienced
 Q 4 Uncertainty regarding the operation and functioning of a specialized equipment
 Q33 Performing difficult procedures on a patient
 Q10 Requested to do a task beyond your capacity

Factor 6: Quantitative work load

- Q 2 Too many tasks required
 Q27 Overwork to complete all your tasks
 Q22 Not enough time to complete all your tasks
 Q 3 Endless tasks
 Q17 Not enough staff to adequately cover the unit

Factor 7: Conflict with patients

- Q 7 Dealing with a patient who complains a lot
 Q28 Dealing with a patient whom you want to avoid
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Crae, 1984; Pearlin and Schooler, 1978), they found that many of those coping measures suffered from a variety of psychometric weaknesses. Endler and Parker (1990b) developed the CISS which was a valid and highly reliable mul-

tidimensional measure of coping styles. This 48-item questionnaire was designed to assess an individual's typical coping pattern and is rated on a 5-point Likert scale from 1-5. The three patterns of coping include: (a) Task-oriented coping,

which measures the extent to which one responds to stress by doing something to change the situation for the better; (b) Emotion-oriented coping, which measures the extent to which one responds to stress either by dealing with the emotional consequences of problems, or by self-preoccupation, or by fantasizing; and (c) Avoidance-oriented coping, which measures the extent to which one responds to stress by seeking out support from other people (social support) or by engaging in another task rather than the task at hand. The mean score (ranging from 16–80) for each subscale is based on the added 16-item scores. A higher subscale score represents a stronger style of coping. The Japanese version of CISS was developed by Furukawa et al. (1993) and the reliability and validity have been ascertained.

The data was analyzed using HALBAU 5.0 for Windows. In order to identify replicable factor structures, a factor analysis was carried out on the Japanese MBI using principal factoring with oblique rotation. The replicable factor structure of the Japanese MBI was thus ascertained. Cronbach's alpha coefficients for internal consistency were .81 for PE, .84 for EE+DP, and .83 for PA. However, the factor loading for item 14 was less than .4. Therefore, the score for item 14 was not used in the current data analysis. Regarding the Japanese version of CISS, the factor analysis was carried out using principal factoring with a varimax rotation. The analysis resulted in a replicable factor structure. Cronbach's alpha coefficients ranged from .85 to .89 for the three subscales.

The data analysis was performed in order to identify the relationship of burnout to occupational factors and individual parameters. Partial correlations were analyzed for significant relationships that were useful predicting burnout.

Stepwise multiple regression analysis was carried out and then explanatory variables with a variable fluctuation (F-Ratio) value of 2 were selected to test the predictability of the three components of burnout using NJSS subscales and the Japanese CISS subscales adjusted by occupational factors such as years of nursing experience and individual factors such as marital status.

III Results

Five hundred and twenty-nine nurses (93.1%) participated in the study questionnaires. Four hundred and forty nurses (83.2%) completed the questionnaires. The respondent sample (Table 1) was all female and predominantly unmarried (69.2%) with an average age of 29.2 ± 8.1 years (range between 20 and 61). The majority of nurses were staff nurses working revolving shifts. The nurses reported an average of 8.1 ± 6.8 years (range between 1 and 38) of nursing experience.

Table 1 presents the MBI subscale scores by occupational factors and individual parameters. The overall mean scores on PE (Mean \pm SD = 3.58 ± 1.3) were over twice as high as that on EE+DP (1.53 ± 1.1). When the respondents were grouped by years of nursing experience, nurses with less than 3 years of experience showed the highest scores on PE as well as EE+DP. Next was the 4–9 years group, followed by the group with 10–19 years of experience. The group with the lowest scores of PE and EE+DP was that of nurses with over 20 years of experience. Nurses working on three revolving shifts showed significantly higher PE and EE+DP scores than those who worked on either day shifts or day shifts with night duty from time to time. Staff nurses showed significantly higher scores on both PE and EE+DP as compared to administrative nurs-

Table 1 The Japanese MBI subscale scores by occupational and individual factors among nurses from Ishikawa Prefecture of Japan

	N	Physical Exhaustion Mean ± SD	Emotional Exhaustion/ Depersonalization Mean ± SD	Personal Accomplishment Mean ± SD
Total	440	3.58 ± 1.3	1.53 ± 1.1	2.62 ± 1.1
Years of nursing	440	***	***	
under 3 years	129	3.89 ± 1.2	1.84 ± 1.2	2.59 ± 1.0
4 ~ 9	173	3.67 ± 1.3	1.56 ± 1.0	2.55 ± 1.1
10 ~ 19	101	3.39 ± 1.3	1.36 ± 1.0	2.73 ± 1.2
over 20	37	2.68 ± 1.3	.75 ± .6	2.70 ± 1.3
Work schedule	440	**	***	
revolving shifts	353	3.69 ± 1.3	1.63 ± 1.1	2.63 ± 1.1
other types	87	3.15 ± 1.4	1.12 ± .9	2.58 ± 1.3
Nursing position	440	***	***	
administrative	35	2.76 ± 1.3	.94 ± .9	2.55 ± 1.3
staff	405	3.66 ± 1.3	1.58 ± 1.1	2.62 ± 1.1
Marital status	435	***	***	*
unmarried	301	3.79 ± 1.2	1.70 ± 1.1	2.52 ± 1.1
married	134	3.16 ± 1.4	1.17 ± 1.0	2.79 ± 1.3
Child	134			
without	32	3.49 ± 1.4	1.49 ± 1.1	2.72 ± 1.3
with	102	3.06 ± 1.3	1.07 ± 1.0	2.82 ± 1.3
Age of children	102			
under 12 years	74	3.14 ± 1.3	1.13 ± 1.0	2.76 ± 1.2
over 12	28	2.83 ± 1.4	.92 ± .8	2.97 ± 1.5

p : t-test and one-way ANOVA * : p < .05 ** : p < .01 *** : p < .001

Note. MBI : Maslach Burnout Inventory

Table 2 NJSS and the Japanese CISS subscale scores among nurses from Ishikawa Prefecture of Japan

	Mean ± SD
The Nursing Job Stressor Scale	
Overall strain	2.67 ± .5
1. Conflict with other nursing staffs	2.49 ± .8
2. Nursing role conflict	2.67 ± .7
3. Conflict with physicians/ Autonomy	2.54 ± .9
4. Dealing with death and dying	2.21 ± 1.0
5. Qualitative work load	2.96 ± .6
6. Quantitative work load	3.08 ± .6
7. Conflict with patients	2.74 ± .8
The Coping Inventory for Stressful Situations	
Task-oriented coping	47.79 ± 9.2
Emotion-oriented coping	40.42 ± 9.1
Avoidance-oriented coping	43.51 ± 9.3

Note. NJSS : Nursing Job Stressor Scale

CISS : Coping Inventory for Stressful Situations

es. Married nurses showed significantly lower scores on all three subscales of the Japanese MBI than unmarried nurses. Married nurses with children and married nurses with children over 12 years of age showed somewhat lower scores on PE and EE+DP and higher scores on PA as compared to married nurses without children and married nurses with children under 12, respectively, but not significantly so.

Table 2 presents the subscale mean scores of both NJSS and the Japanese CISS. When the seven different subscales of NJSS were analyzed, quantitative work load showed the highest score. Next was qualitative work load, followed by conflict with patients. The subscale with the lowest score was dealing with death and dying. The

Table 3 Correlation coefficient of the Japanese MBI to NJSS and the Japanese CISS among nurses from Ishikawa Prefecture of Japan

	Physical Exhaustion	Emotional Exhaustion/ Depersonalization	Personal Accomplishment
Overall strain	.37 ***	.33 ***	.05
1. Conflict with other nursing staffs	.25 ***	.28 ***	-.01
2. Nursing role conflict	.24 ***	.22 ***	.13 **
3. Conflict with physicians/Autonomy	.14 **	.13 **	.07
4. Dealing with death and dying	.12 *	.10 *	.13 **
5. Qualitative work load	.39 ***	.32 ***	-.06
6. Quantitative work load	.45 ***	.34 ***	-.05
7. Conflict with patients	.34 ***	.33 ***	-.03
Task-oriented coping	-.05	-.04	.34 ***
Emotion-oriented coping	.30 ***	.38 ***	.01
Avoidance-oriented coping	.26 ***	.28 ***	.22 ***

*: p < .05 **: p < .01 ***: p < .001

Note. MBI : Maslach Burnout Inventory

NJSS : Nursing Job Stressor Scale

CISS : Coping Inventory for Stressful Situations

Table 4 Partial correlation coefficient of the Japanese MBI to NJSS and the Japanese CISS among nurses from Ishikawa Prefecture of Japan : adjusted by years of nursing, work schedule, nursing position, and marital status

	Physical Exhaustion	Emotional Exhaustion/ Depersonalization	Personal Accomplishment
Overall strain	.40 ***	.35 ***	.04
1. Conflict with other nursing staffs	.27 ***	.32 ***	-.01
2. Nursing role conflict	.25 ***	.22 ***	.13 **
3. Conflict with physicians/Autonomy	.21 ***	.21 ***	.06
4. Dealing with death and dying	.19 ***	.15 **	.13 **
5. Qualitative work load	.37 ***	.29 ***	-.06
6. Quantitative work load	.42 ***	.30 ***	-.05
7. Conflict with patients	.31 ***	.30 ***	-.03
Task-oriented coping	.01	.03	.35 ***
Emotion-oriented coping	.26 ***	.34 ***	.03
Avoidance-oriented coping	.16 ***	.17 ***	.29 ***

*: p < .05 **: p < .01 ***: p < .001

Note. MBI : Maslach Burnout Inventory

NJSS : Nursing Job Stressor Scale

CISS : Coping Inventory for Stressful Situations

other three subscales had mean responses and included nursing role conflict, conflict with physicians/autonomy, and conflict with other nursing staffs. When the three different subscales of the Japanese CISS were analyzed,

Task-oriented coping was the strongest coping pattern. Avoidance-oriented coping was the second strongest, and Emotion-oriented coping was the weakest.

Table 3 presents correlations of the Japanese

Table 5 Predictors of burnout using stepwise multiple regression analysis among nurses from Ishikawa Prefecture of Japan: Standardized partial regression coefficient

	Physical Exhaustion	Emotional Exhaustion/ Depersonalization	Personal Accomplishment
1. Conflict with other nursing staffs		.14 **	
2. Nursing role conflict			.14 **
3. Conflict with physicians /Autonomy			
4. Dealing with death and dying			
5. Qualitative work load	.15 **		-.10 *
6. Quantitative work load	.30 ***	.13 *	
7. Conflict with patients		.10 *	
Task-oriented coping			.29 ***
Emotion-oriented coping	.08	.22 ***	-.11 *
Avoidance-oriented coping	.08		.28 ***
Years of nursing		-.13 *	
Work schedule			
Nursing position	.07		
Marital status	-.11 **	-.11 *	.12 *
Total R ²	.28	.26	.21
Adjusted Total R ²	.27	.25	.20

*: p < .05 **: p < .01 ***: p < .001

MBI to NJSS and the Japanese CISS. There were many significant correlations between NJSS subscales and the Japanese MBI subscales although those score values are relatively low. The highest correlation was between quantitative work load strain and PE ($r = .45$). There were also significant correlations between the Japanese CISS and the Japanese MBI subscales, again with the relatively low score values: correlation between Task-oriented coping and PA ($r = .34$), correlations between Emotion-oriented coping and PE and EE+DP ($r = .30, .38$, respectively), and correlations between Avoidance-oriented coping and all of the three subscales of the Japanese MBI ($r = .22-.28$). Since a significant relationship between the Japanese MBI and occupational factors and individual attributes was found (Table 1), correlations of burnout to job strains and coping styles were adjusted by years of nursing experience, work schedule, nursing position, and marital status. Table 4 presents the

partial correlation coefficients of the Japanese MBI to NJSS and the Japanese CISS. The same result was obtained.

Stepwise multiple regression analysis was performed to determine which of the variables studied were the most significant predictors of the three components of the Japanese MBI adjusted by both occupational and individual factors: years of nursing experience, work schedule, nursing position, and marital status (Table 5). Both quantitative and qualitative work load strains were significant predictors for PE. These data imply that quantitative work load strain was the primary variable accounting for PE. Significant predictors of EE+DP were Emotion-oriented coping style and the strain variables: quantitative work load, conflict with other nursing staffs, and conflict with patients. The primary variable was Emotion-oriented coping style. Both Task-oriented and Avoidance-oriented coping patterns and nursing role conflict strain

were significant predictors of PA. On the other hand, Emotion-oriented coping pattern and qualitative work load strain were significant predictors for diminished PA. Task-oriented and Avoidance-oriented coping patterns were both primary variables accounting for PA.

IV Discussion

A number of studies have supported the three-factor structure of the MBI which Maslach and Jackson (1981) postulated (Gold et al., 1989; Koeske and Koeske, 1989; Lahoz and Mason, 1989; Powers and Gose, 1986). However, some studies have reported that the MBI had only two factors: one defined by Emotional Exhaustion and Depersonalization and another defined by Personal Accomplishment (Brookings et al., 1985; Walkey and Green, 1992; Williams, 1989). Emotional Exhaustion/Depersonalization is tentatively identified as the "Core of Burnout" by Walkey and Green (1992). The results of our earlier study (Higashiguchi et al., 1998b) supported this finding. Of special interest, it was found that Physical Exhaustion, which had not been identified in other countries, was extracted as one factor. The phenomenon of the burnout process among Japanese hospital nurses was considered tentatively to follow a path from Physical Exhaustion to Emotional Exhaustion/Depersonalization (Higashiguchi et al., 1998b). The other language versions of MBI such as the French version (Dion and Tessier, 1994), the Italian version (Visintini et al., 1996), and the Dutch version (Schaufeli and van Dierendonck, 1994) have the same factor structure as the original MBI. The Japanese version of MBI was examined among samples of nurses. The data from other occupations should be collected for further investigation on the factor structure of the Japanese MBI.

Younger nurses consistently report higher

levels of burnout (reviewed by Cordes and Dougherty, 1993). In the present study, junior nurses, especially those with less than three years of experience, had the highest levels of burnout on Physical Exhaustion and Emotional Exhaustion/Depersonalization. On the other hand, veteran nurses with over 20 years of experience reported the lowest levels of burnout. Young nurses, that is, nurses with less experience, would carry out their duties feeling inspired about helping and serving people, and then they would come face to face with the realities of a busy hospital and feel stress from their inability to fulfill their own expectations. The inability of nurses to learn effective ways of dealing maturely with stress allows stress to build and build. And, as the mind and body tires, nurses become prime candidates for burnout. In regards to new nurses, we consider it essential that any plan of prevention take a three-year perspective.

As the present study shown, the majority of Japanese nurses work on three revolving shifts. It is not unusual that they work on day shift, and 8 hours later on night shift, or they work on evening shift, and 8 hours later on day shift. Typically on both of the evening and the night shifts, only two staff nurses cover the unit of a 50-bed. The nurse manager to supervise them is not present. Neither is the nurse assistant to help them. In the research on Japanese nurses, nurses working revolving shifts were more likely to burnout (Doi, 1988). In others, shift nurses were reported being more emotionally exhausted, feeling more alienated, and having less of a sense of accomplishment (Koda et al., 1989). In our study, those nurses who worked three revolving shifts reported more burnout as indicated by Physical Exhaustion and Emotional Exhaustion/Depersonalization subscales. This infor-

mation should encourage administrators to reconsider hospital work schedules in Japan.

Compared with administrative nurses, staff nurses are apt to be burned out because they are more directly involved in the care of patients and function under multiple and time-urgent demands. Lewis et al. (1992) reported that staff nurses had significantly more burnout than nurse administrators or nurse educators as measured by Emotional Exhaustion, Depersonalization, and low levels of Personal Accomplishment. Kubo and Tao (1994) reported that administrative nurses had a greater sense of personal accomplishment and feel less emotionally exhausted than staff nurses. We obtained the similar result that staff nurses had more burnout than administrative nurses as indicated by Physical Exhaustion and Emotional Exhaustion/Depersonalization. However, contrary to these results, it has been reported that administrative nurses are more depersonalized and have less of a sense of accomplishment, even though they are less emotionally exhausted (Kishi and Miyake, 1988). Administrative nurses must deal with complex human relations, and in the event of problems, intervene between nurses and patients. This might be another cause of burnout among administrative nurses. Further research is needed to examine the relationship of burnout to nursing positions.

There is some evidence that married nurses report lower levels of burnout and that nurses with children consistently report even lower levels (Maslach and Jackson, 1985). Similarly, in the present study, married nurses reported lower levels of burnout on all three subscales of the Japanese MBI and married nurses with children showed an even lower trend. Moreover, as some researchers indicate, social support from family members, such as husbands as well as grown-up

children, may serve as an important resource that builds nurses' capacity to manage the demands of their work, while difficulties in managing the boundary between work and family have been identified as a contributor to Exhaustion and Depersonalization (Leiter, 1990; Leiter and Durup, 1996). Likewise, in our study married nurses with children under 12 years of age showed a higher tendency of burnout on all three subscales. It seems that the number of individuals who are working as a nurse, marrying, having children, then working shifts is increasing in Japan. We suggest that nurses with small children be allowed to choose the work schedule and the duty which suit their needs. Such nurses should expect the hospital to provide childcare facilities and offer a work environment that is supportive of working mothers.

The present study identified that quantitative and qualitative work load strains in the NJSS were predictors for Physical Exhaustion, the first step of the burnout process on Japanese nurses; strains from quantitative work load and personal conflict with other nursing staffs or patients were predictors for Emotional Exhaustion/Depersonalization, the core of burnout; qualitative work load strain was a predictor for diminished Personal Accomplishment while nursing role conflict strain was a predictor for Personal Accomplishment. Quantitative work load in the NJSS was measured with such items as endless tasks, too many tasks required, and not enough staff to adequately cover the unit. Qualitative work load was measured with such items as many intensive tasks which require judgement, attention, and responsibility. The present study showed relatively low correlations of the Japanese MBI to NJSS and also low explanatory rates in multiple regression analysis. Nevertheless, we consider that quantitative and qualita-

tive work load strains are the potential contributing factors to burnout on Japanese nurses, especially quantitative work load strain was the primary predictor.

In the study of burnout on Japanese nurses, it is considered that lack of nursing staff, work overload, and intensive tasks are not directly related to nurse burnout as addressed in the study of Inaoka (1984). But, different reports are found in the study overseas. McCranie et al. (1987) investigated the relationship of burnout to work stressors and hardiness. Hierarchical multiple regression analysis indicated that work stressors (particularly stress due to work load in the NSS) and hardiness were significant predictors of burnout. Lewis et al. (1992) performed stepwise multiple regression analysis to determine the predictability of burnout using demographic variables, stress perception, and sense of coherence. The NSS was used to measure perceived job stress. The results indicated that work load and sense of coherence were the major contributing factors to burnout. Hillhouse and Adler (1997) examined nursing stress and burnout. Nursing stressors were assessed using the NSS. Cluster analysis revealed that the high patient numbers and workloads, together with greater levels of physician conflict, leads nurses to develop more severe burnout syndrome. Moreover, in the structural model of burnout, Maslach et al. (1996) reported that distinct predictors of burnout generally included the demands of work, such as work overload and personal conflict. Duquette et al. (1994) reviewed literatures regarding factors related to nursing burnout. It was found that the best correlates of nursing burnout were work overload, role ambiguity, age, hardiness, passive coping style and social support. The findings of the present study were similar to those of studies. We consider that

strain due to quantitative work load primarily leads Japanese nurses to burnout although our study was cross-sectional so that we do need bear in mind that the cause-effect direction remains unknown in this study design. There has always been work overload in nursing profession in any country. Particularly, the number of beds per nurse in Japan is over three times as high as that in the US. Nurses have too many tasks required and too little time to complete. Further, no male staff called transporters, who are commonly employed for the heavy lifting and moving of patients at hospitals in the US, can be seen in Japan. Japanese nurses, that are predominantly female, are suffered from physical fatigue and develop burnout. We strongly suggest that the bed-nurse ratio be improved and the introduction of transporters.

It is unfortunate that literatures used standardized measures to assess coping styles are rarely found. We found that Emotion-oriented coping style in the CISS was associated with increased burnout, while Task-oriented and Avoidance-oriented coping styles were both associated with decreased burnout. We do again need bear in mind that the present study showed relatively low correlations between the Japanese CISS and the Japanese MBI and also low explanatory rates in multiple regression analysis. Some research has found that coping styles can be highly stable over time (Schwengkmezger et al., 1990); however, Lazarus and Folkman (1984) consider coping to be a process that changes over time and across situations. It is most likely that individuals have at their disposal a number of coping strategies although each person may have their preferred styles based on personality characteristics (Shaw, 1999). A nurse who tends to have Emotion-oriented coping style in the stressful situations at work can be recommend-

ed to change the coping style for Task-oriented or Avoidance-oriented coping styles. Organization should provide nurses with educational programs to learn effective coping strategy to reduce the risk of burnout. Over the past two decades, the proliferation of research on coping is representative of the important role that coping is seen to play in mediating between antecedent stressful events and outcomes such as anxiety, depression, psychological distress, and somatic complaints (Billings and Moos, 1981, 1984; Coyne et al., 1981; Endler, 1988; Endler and Parker, 1989; Pearlin and Schooler, 1978). However, the role of coping in the burnout process has not been sufficiently investigated yet. Interestingly in our study, nurses who reported lower levels of both quantitative work load strain and burnout on Physical Exhaustion and Emotional Exhaustion/Depersonalization had a greater tendency to use Task-oriented coping style rather than Emotion and Avoidance-oriented coping styles. These findings indicate that Task-oriented coping mediates the impact of perceived job stressors on the degree of burnout. Further investigation is needed to understand how coping styles affect perceived stressors and burnout.

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