[原著]Effects of personality traits and work-related attitudes on job stress among nurses in general hospitals

Effects of personality traits and work-related attitudes on job stress among nurses in general hospitals

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ABSTRACT

Purpose: We aimed to clarify whether personality traits and work-related attitudes affect job stress among medical care professionals. Methods: Subjects were 455 nurses (59 males, 396 females) working in general hospitals. Seven dimensions of personality traits, i.e., novelty seeking (NS), harm avoidance (HA), reward dependence (RD), persistence (P), self-directedness (SD), cooperativeness (C) and self-transcendence (ST), were assessed by using the Temperament Character Inventory-125. A 15-item questionnaire for work-related attitudes, classified into five components (diligence, evaluation-seeking, low-confidence, self-sacrifice, and over-self-reliance), and 10-item visual analogue scale for job stress, consisting of three components (overload, insufficient evaluation and poor environmental support), were also administered to the participants. The schematic models for the path analysis were used to detect relationships among personality traits, work-related attitudes and job stress. Results: The following three model pathways were identified as specific sets of personality traits, work-related attitudes and job stress: 1) path from low NS and SD together with high P and C to overload stress via self-sacrifice work attitude, 2) path from low SD and high HA to job stress related to insufficient evaluation via low-confident work attitude, and 3) path from low SD and C to job stress related to poor environmental support via over-self-reliant work attitude. Conclusion: Some relationships were apparent among personality traits, work-related attitudes and job stress from the present results. The model pathways may provide hints for active prevention and early intervention against job stress which may lead to potential mental disorders including depressive disorders. *Ryukyu Med. J., 32(1,2)23～32, 2013*

Key words: nurse, job stress, personality trait, work-related attitude, path analysis

INTRODUCTION

The number of suicide deaths in Japan has constantly exceeded over 30,000 each year since 1998[1)]. However, to date, preventative measures against suicide have not been sufficiently effective due to the multifactorial aspects of the complicated process leading to the suicidal outcome. Several reports on psychological autopsy revealed that 50-60 % of suicide victims had suffered from depressive disorders before their deaths[2,3)]. Furthermore, an analysis of risk factors among suicide victims also revealed that the final determinant factor leading to suicide was depressive disorder[4)]. These findings may at least partly justify early diagnosis and treatment of depressive disorder as a medical model of suicide prevention.

Meanwhile, the same report showed that five out of the major ten risk factors for suicide were closely related to work or those surrounding the work place, such as job loss, overwork, stressful interpersonal relationship, environmental change

and difficulty in business management[4]. Although it has shown that more than half of suicide victims are unemployed, active workers are also attributable to about 30 % of suicides[1,5], which is a serious social concern and at least partly affects the average life expectancy of males in Japan[6]. In fact, it has been repeatedly pointed out that such social factors as increased unemployment and worsened work environment followed by economic depression are greatly attributable to the high rate of suicide deaths in Japan[7].

Adaptation by most industrial companies to the depressed economy has resulted in overloaded volume, overly-devoted time and heavy responsibility for work among workers, who eventually develop chronically-increased physical and psychological stress as a plausible cause of future onset of depressive disorder as well as stress-related psychosomatic diseases[8]. According to an investigation by the Japanese Ministry of Health, Labour and Welfare, loss in industrial productivity by mental disorders in employees has been increasing year by year[9]. Furthermore, 58.0% of workers actually have considerable anxiety, concern and stressful feelings, which are closely associated with their job and work life[10]. Since persistent high job stress is regarded as a prodromal stage for depressive disorder[6,11], preventative measures targeting highly stressed workers are equally important as well as an early intervention for already depressed workers.

Although work-associated stress surrounding workers is generally increasing in Japan, there are considerable interindividual variations in susceptibility to various job stressors and the future onset of depressive disorders. Meanwhile, individual workers have different tolerance levels to job stressors and capability for stress management[12], which may be affected by their temperament/-character profiles and work-related attitudes[6]. Thus, it is important to clarify what kind of personality traits and work-related attitudes are more greatly attributable to various types of job stress among workers. Such investigations should be based on homogeneous subjects with the same occupation to avoid the effects of differences in a variety of occupations on job stress and to identify risk factors associated with personality traits and work-related attitudes. In this regard, we selected medical care nurses working in general hospitals as the subjects for the present study because they belong to a major occupational group in hospitals and are likely exposed to considerably high job stress[13-15].

The Temperament and Character Inventory (TCI) was developed for measurements of personality traits by Cloninger et al.[16]. Temperament dimensions consist of novelty seeking (NS), harm avoidance (HA), reward dependence (RD) and persistence (P), which are associated with activation, inhibition, maintenance and preservation of behavior, respectively. Character dimensions are classified into self-directedness (SD), cooperativeness (C) and self-transcendence (ST), which reflect the concept of self as an autonomous individual, a harmonization with humanity/society and an integral part of the universe, respectively. TCI has been widely used in clinical researches as a probe for premorbid personality factors for depressive disorders[17-20].

To our knowledge, however, very few studies[21] have focused on the relationship between personality traits using TCI and working attitudes/stress. Therefore, the purpose of this study is to examine comprehensive associations among temperament/character profiles, work-related attitudes and various types of job stress.

Path analysis was developed around 1918 by geneticist Sewall Wright, and has been used to describe the directed dependencies among a set of variables. It can be regarded as a form of multiple regressions focusing on causality and has been applied to a vast array of complex modeling areas, including sociology and econometrics. Since we aimed to clarify what kind of personality traits and work-related attitudes are attributable to job stress, we adopted the path analysis in this study.

SUBJECTS and METHODS

I Subjects

This investigation commenced in May 2008 and continued up to March 2010. The subjects were 455 nurses (55.5% of a total of 820 nurses working at three hospitals; 59 males and 396 females; 37.0 ± 10.5 years; 96/455 (21.1%) in administrative positions) working in general hospitals. The data were collected from three hospitals in

Okinawa prefecture, where we provided educational lectures on mental health promotion for workers. The subjects filled out the following questionnaires before these lectures, thus, the results were not affected by the content of lectures at all.

All the results were recorded as anonymous and were treated as grouped data after being encoded, adhering to privacy policy to protect personal information. The subjects were informed about the voluntary nature of participation and assured of anonymity in the handling of the data. About a month after the lectures, each participant received feedback of analyzed personal data in a sealed envelope with the matched code to the subject unless he or she refused to know his or her data. This study had been approved by the Epidemiological Research Ethics Committee of the University of the Ryukyus as No. 23 in 2008.

II Measures

Personality traits with seven dimensions were assessed by using the simplified version of TCI (TCI-125) which was originally a 240-item questionnaire[16]. A 15-item questionnaire for work-related attitudes by 4-scale steps, classified into 5 components, i.e., diligence, evaluation-seeking, low-confidence, self-sacrifice and over-self-reliance (Table 1), and a 10-item visual analogue scale (VAS) for job stress with scores ranging from 0 to 10, consisting of 3 components, i.e., overload, insufficient evaluation and poor environmental support (Table 2), were also administered to the participants. Although factor analyses of work-related attitudes and job stress were previously performed in our previous report[22], this present study has reconfirmed these components based on brand-new data (Tables 1 and 2).

III Statistical Analysis

Factor analyses for work-related attitudes and job stress were carried out on maximum likelihood method with promax rotation (Tables 1 and 2), because there may be some correlations among these factors. The effects of demographic data (gender, age and administrative position) on total job stress and its subtypes were analyzed by Mann-Whitney U test on the basis of

Table 1 **Five-factor model of work-related attitudes from 15-item questionnaire**

Diligence	1) I am persistent in working.
(Cronbach's α = 0.69)	2) I feel strong responsibility for my job.
	3) I take as much time for my job as I want.
Evaluation-seeking	4) I am highly dependent on estimation from others.
(Cronbach's α = 0.63)	5) I want to be needed by others.
	6) I am really a competitive person.
Low-confidence	7) I am afraid to make a decision by myself.
(Cronbach's α = 0.68)	8) I am not confident with what I have done.
	9) I am often forced by surrounding situations.
Self-sacrifice	10) I am patient with subjective stress and fatigue.
(Cronbach's α = 0.59)	11) I willingly devote myself to my job for others.
	12) I cannot refuse what others ask me.
Over-self-reliance	13) I cannot entrust any job to others.
(Cronbach's α = 0.50)	14) I am always frustrated with the way others do jobs.
	15) I like to work alone rather than in collaboration with others.

nonparametric statistics (Table 3). Single correlations among personality traits, work-related attitudes and subtypes of job stress were examined by Spearman's rank correlation test (Tables 4 and 5). Model specification search for the schematic models for the path analysis were performed to detect relationships among personality traits, work-related attitudes and subtypes of job stress (Fig.1). A two-tailed P value of less than 0.05 was regarded as statistically significant. All statistical analyzes were performed by using SPSS 16.0 for Windows (SPSS Japan Inc., Tokyo) and Amos 16.0 for Windows (SPSS Japan Inc., Tokyo).

Table 2 **Three components of job stress from 10-item visual analogue scale**

Overload	1) Overload (volume/time)
(Cronbach's α= 0.77)	2) Difficulty in achievement
	3) Burden of responsibility
	4) Fitness for the job
Insufficient evaluation	5) Unsatisfactory wages
(Cronbach's α= 0.72)	6) Unsatisfactory evaluation
	7) Lowered motivation
Poor environmental support	8) Friction with colleagues
(Cronbach's α= 0.82)	9) Friction with superiors
	10) Uncomfortable environment

Table 3 **Effects of demographic factors on total job stress and its subtypes**

	Overload (0-40)	Insufficient evaluation (0-30)	Poor environmental support (0-30)	Total job stress (0-100)
Gender				
Male (n=59)	16.3±8.8	8.9±5.1	8.9±6.5	34.2±17.6
Female (n=396)	19.2±7.7 **	13.0±6.0 ***	10.9±6.2 *	43.0±16.7 ***
Age				
≦40years (n=277)	18.9±8.1	12.6±6.1	10.4±6.4	41.8±17.4
>40years (n=178)	18.7±7.8	12.1±6.0	11.0±6.0	41.7±16.6
Job position				
Non-Administrative (n=359)	19.1±7.8	12.5±6.0	10.7±6.3	42.3±17.0
Administrative (n=96)	17.8±8.3	11.9±6.2	10.2±6.2	40.0±17.6

Values are scores of total job stress and its subtypes expressed as mean ± SD.

* P<0.05, ** P<0.01, *** P<0.005

Table 4 **Correlations of personality traits and work-related attitudes with job stress**

	Overload	Insufficient evaluation	Poor environmental support	Total job stress
Personality traits				
Novelty seeking	0.026	0.071	0.069	0.065
Harm avoidance	0.213 ***	0.181 ***	0.120 *	0.207 ***
Reward dependence	-0.028	-0.016	-0.097 *	-0.056
Persistence	0.109 *	0.072	0.047	0.105 *
Self-directedness	-0.323 ***	-0.370 ***	-0.275 ***	-0.385 ***
Cooperativeness	-0.007	-0.072	-0.151 ***	-0.089
Self-transcendence	0.072	0.083	0.115 *	0.100 *
Work-related attitudes				
Diligence	0.028	-0.023	0.078	0.041
Evaluation-seeking	0.057	0.112 *	0.112 *	0.112 *
Low-confidence	0.209 ***	0.208 ***	0.099 *	0.206 ***
Self-sacrifice	0.103 *	0.03	0.035	0.065
Over-self-reliance	0.180 ***	0.138 **	0.284 ***	0.247 ***

Values are Spearman's rank correlation coefficients between personality traits/work-related attitudes and job stress. * P<0.05, ** P<0.01, *** P<0.005

Table 5 **Correlations between personality traits and work-related attitudes**

	Diligence	Evaluation-seeking	Low confidence	Self-sacrifice	Over-self-reliance
Novelty seeking	-0.219 ***	0.019	-0.047	-0.173 ***	0.106 *
Harm avoidance	-0.102 *	0.116 *	0.477 ***	0.106 *	0.110 *
Reward dependence	0.150 ***	0.222 ***	0.111 ***	0.140 ***	-0.264 ***
Persistence	0.496 ***	0.326 ***	0.018	0.284 ***	0.067
Self-directedness	0.138 ***	-0.138 ***	-0.550 ***	-0.140 ***	-0.240 ***
Cooperativeness	0.191 ***	-0.004	-0.046	0.333 ***	-0.364 ***
Self-transcendence	0.079	0.042	-0.044	0.049	0.073

Values are Spearman's rank correlation coefficients between personality traits and work-related attitudes.

* P<0.05, ** P<0.01, *** P<0.005

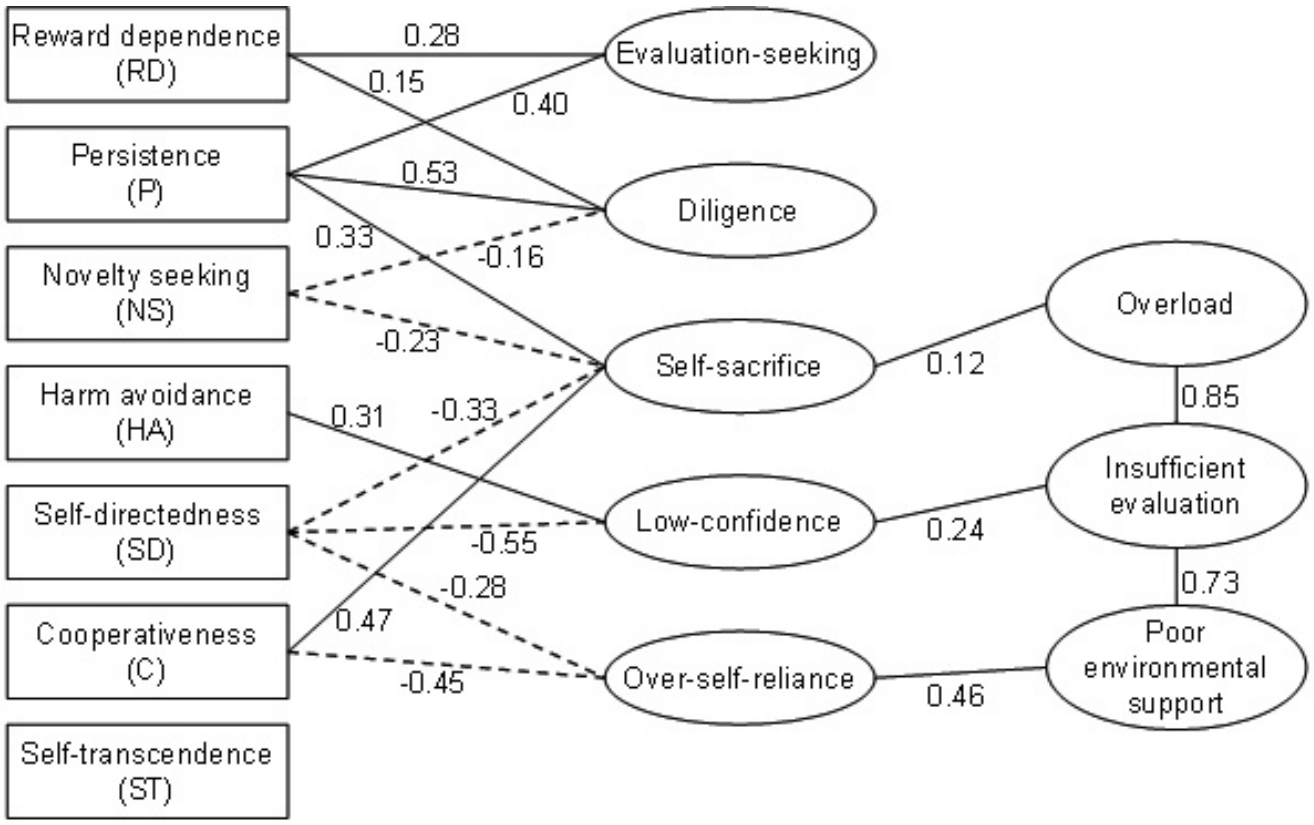

Fig. 1 **Pathways of personality traits, work-related attitudes and job stress.** Path analysis of personality traits (left), work-related attitudes (middle) and job stress (right). Three pathways are postured: 1) path from low NS-SD/high P-C to overload stress via self-sacrifice attitude, 2) low SD/high HA to job stress related to insufficient evaluation via low-confident attitude, and 3) low SD-C to job stress related to poor environmental support via over-self-reliant attitude. Values are standardized path coefficients.
Comparative Fit Index = 0.883, Root Mean Square Error of Approximation = 0.061.

RESULTS

A factor analysis for work-related attitudes revealed 5 components, namely, diligence (Cronbach's α=0.69), evaluation-seeking (0.63), low-confidence (0.68), self-sacrifice (0.59) and over-self-reliance (0.50), whereas that for job stress demonstrated 3 components, namely, overload (Cronbach's α=0.77), insufficient evaluation (0.72) and poor environmental support (0.82), as shown in Table 1 and 2, respectively. Female subjects showed higher VAS scores of total and all the subtypes of job stress while age and administrative position did not affect scores of job stress (Table 3).

As for single correlations between personality traits by 7 dimensions of TCI and job stress (Table 4), HA was positively correlated with total job stress (r_s=0.207, P<0.005) and all such subtypes as overload (r_s=0.213, P<0.005), insufficient evaluation (r_s=0.181, P<0.005) and poor environmental support (r_s=0.120, P<0.05), whereas SD showed negative correlations with total job stress (r_s=-0.385, P<0.005), overload (r_s=-0.323, P<0.005), insufficient evaluation (r_s=-0.370, P<0.005) and poor environmental support (r_s=-0.275, P<0.005). C showed a negative correlation only with poor environmental support (r_s=-0.151, P<0.005). Meanwhile, regarding single correlations between work-related attitudes and job stress (Table 4), both low-confident and over-self-reliant work-related attitudes were positively correlated to total and any subtypes of job stress.

Relationships between personality traits and work-related attitudes were summarized in Table 5. Diligence was strongly correlated with P (r_s

=0.496, P<0.005). Evaluation-seeking was moderately correlated with RD (r_s=0.222, P<0.005) and P (r_s=0.326, P<0.005). Low-confidence was positively correlated with HA (r_s=0.477, P<0.005) but was negatively correlated with SD (r_s=-0.550, P<0.005). Self-sacrifice was positively correlated with P (r_s=0.284, P<0.005) and C (r_s=0.333, P<0.005) while over-self-reliance was negatively correlated with RD (r_s=-0.264, P<0.005), SD (r_s=-0.240, P<0.005) and C (r_s=-0.364, P<0.005).

We did model specification search based on these correlation analyses, and the schematic models for the path analysis identified three model pathways as specific flows from personality traits to job stress via work-related attitudes (Fig. 1). First, low NS and SD together with high P and C reached overload stress via self-sacrifice attitude. Second, low SD and high HA reached job stress related to insufficient evaluation via low-confident attitude. Third, low SD and C reached job stress related to poor environmental support via over-self-reliant attitude. P and RD reached diligent and evaluation-seeking attitudes although these paths did not finally lead to any job stress. ST was not correlated with any work-related attitude and job stress.

DISCUSSION

Cronbach's α of the five components of work-related attitudes were relatively low (0.50-0.69; Table 1) due to the small number of constitutive factors, thus we adopted these components as still tentative and referential.

Since medical care nurses are predominantly female, the present results may mostly reflect job stress in working women. Although the number of male subjects was small as a comparative group, it was shown that female nurses were more vulnerable to job stress than male nurses regardless of subtypes of job stress (Table 3). These may be at least partly associated with the fact that prevalence of depressive disorder is generally higher in females than in males since persistent stress is a well-known risk factor for the development of depressive disorder[6,11].

Provided that job stress is the outcome of some habitual work-related behaviors determined by unconscious recognition affiliated with characteristic personality traits, "cognition-behavior-stress" model should be applied to the solution. Especially, behavioral modification can be an effective intervention strategy for the management of job stress and can be targeted for an individualized and concrete advice for each worker. Therefore, we should pay more attention to hazardous work-related attitudes promoting job stress although evidence is lacking in these research fields. The present single correlation analyses revealed that high HA and low SD were essential personality traits for any subtypes of job stress (Table 4). Interestingly, such a combination of personality traits (high HA/low SD) has been consistently reproduced as a premorbid temperament/character model for depressive disorders[17-20]. Therefore, common profiles in personality traits may underlie vulnerability to job stressors and a predisposition to depressive disorder. Meanwhile, low SD and C were additionally connected with job stress related to poor environmental support. Workers with such personality traits rather prefer isolation from others to collaboration with others. We ought to know that these kinds of workers may be potentially accumulating their job stress while being frustrated with forced teamwork situation.

Among work-related attitudes, low-confidence and over-self-reliance were the most important promoters for job stress (Table 4). Although low-confidence and over-self-reliance are common risk factors for any subtypes of job stress, these two factors are unlikely to coexist in the same workers. Therefore, different pathways to job stress via these two work-related attitudes should be taken into consideration. In particular, an over-self-reliant work-related attitude was highly related to poor environmental support. This finding suggests that workers with over-self-reliance may possess ambivalent attitudes toward other coworkers. They seem to superficially stick to their own work style and do not want to be disturbed by others, whereas they subconsciously seek for support from others at their convenience.

There are various types of close relationships between personality traits and work-related attitudes (Table 5), suggesting that workers of characteristic personality traits tend to take specific work behaviors. However, some of these combinations appear unlikely to be associated with job stress, e.g., RD with evaluation-seeking, P with

diligence and C with self-sacrifice. Hazardous combinations would be high HA/low SD with low-confidence and low SD/C with over-self-reliance since these personality traits and work-related attitudes, which are independently variable, are also attributable to various subtypes of job stress (Table 4). However, in order to pursue an accurate "cognition-behavior-stress" model, path analysis of personality traits, work-related attitudes and various subtypes of job stress would be more required.

Three model pathways were identified as specific sets of personality traits, work-related attitudes and job stress by using path analysis (Fig. 1). First, low NS and SD together with high P and C were connected with self-sacrifice attitude, leading to overload job stress. Second, low SD and high HA were correlated to low-confident attitude, leading to job stress related to insufficient evaluation. Third, low SD and C were associated with over-self-reliant attitude, leading to job stress related to poor environmental support. It is suggested that the first "cognition-behavior-stress" model is closely associated with a unique set of premorbid character (conservative, earnest and conscientious) and adaptation pattern (rigid and devoted) leading to the onset of well-known "melancholic type" depression, as defined by Tellenbach[23]. Unless active measures are taken with these workers, they will be consequently exhausted manifesting symptoms like "burnout syndrome" as the prodromal stage of the "classic type" depressive disorder. The second model may typically represent workers with insufficient job experience and skills who are less confident and more anxious than others. Thus, educational approaches to improve their job skills and adequate evaluation to increase their self-confidence will be necessary for these workers. Meanwhile, the third model may well correspond with "dysthymic type" depression[24], so-called as the new type of depressive disorder that has been gradually increasing since the late 1990s during the economic recession in Japan, of which clinical pictures are manifested with frustration and avoidance rather than such classic symptoms as guilt feeling and inhibition[25]. We should carefully support them with suitable environmental rearrangement because these workers often show ambivalent attitudes against others, e.g., self-defensive isolation versus subconscious support-seeking from others. These findings imply that different routes for preventative measures against job stress exist according to the individual background.

Insufficient assessments of mental health in workers may eventually lead to delayed diagnosis of mental disorders and missed opportunities of environmental arrangement. However, it may be still too late to prevent workers from mentally-ill conditions even by assessing workers' subjective stress or detecting symptoms of depression. For early detection and intervention, personality traits are initial predictors for some work-related attitudes leading to specific subtypes of job stress. In reality, however, assessing temperaments and characters of workers before or while working is uncommon and includes sensitive problems in relation to privacy protection and concerns for the evaluation of workers. Nevertheless, if such individual information is strictly controlled, protected and utilized only by occupational mental health specialists, prospective monitoring of hazardous work-related attitudes in some vulnerable personality traits for specific job stress would be more practical. Early suggestion or instruction as an intervention by mental health professionals will also be helpful for these workers to improve their work behavior before hazardous work-related attitudes are irreversibly fixed.

The Japanese Ministry of Health, Labour and Welfare has proposed that the following four steps are essential for mental health care in work places; the self-care by workers themselves, line-care by managers and supervisors, professional care by inside medical staff and outside care of outside medical services[26]. According to the present study, feedback of information on personality traits and education of possible hazardous work behaviors to workers may be helpful as the first step of self-care stage. Hazardous work-related attitudes associated with low-confidence and over-self-reliance, if focused on, can be carefully monitored by managers/ supervisors and may be reported to the mental health care professionals as the line-care stage. Then, mental health care professionals may be able to prospectively monitor selected workers with hazardous combinations of personality traits and work behaviors and take active intervention strategies at the best time if necessary. This professional care stage

naturally includes an assessment of actual job stress in these workers and recommendations of environmental arrangements to reduce job stressors.

The above mentioned principles are also applied to workers returning to work from absence due to depression[27] as well as active workers. For such vulnerable workers, associations of personality traits and work behaviors, both of which cause heavy stress and result in absence from work, should be more intensively reexamined before the worker restarts their job, and more cautious and deliberate rearrangements in work environment may be reconsidered on the basis of individualized "cognition-behavior-stress" model. Future mental health promotion should be oriented towards more active strategies for both workers and work environments through enhanced self-care and line-care using the information on personality profiles and work behaviors beyond the conventional style of passive assessment of job stress and delayed intervention of depressive disorder.

The present study has several limitations. First, the results may not be necessarily generalized because the majority of nurses in general hospitals are female and so are the majority of the subjects of the study. Therefore, comparative studies among different occupations with a well-balanced gender distribution will be necessary in the future. Second, simple VAS scores were used for the measurement of job stress instead of using the established but complicated scales. Since the questionnaire was used not only as data for group analysis but also as a resource for individual feedback, reducing the burden of participants was an important priority in this study.

Meanwhile, most of the participants were satisfied to know their personal data on personality traits, work-related attitudes and subjective job stress. This fact may prompt us to expect that feedback data of personality profiles and work behaviors enhance motivation for self-care of workers. Also, an educational lecture on mental health promotion together with the "cognition-behavior-stress" questionnaire will more efficiently increase workers' interest in job stress management.

Finally, according to the present results, job stress is indirectly affected by some characteristic personality traits and these processes are probably mediated by specific work-related attitudes. Thus, behavioral modification can be a good intervention for self-care while behavioral monitoring may be helpful for the first step of line-care.

CONCLUSIONS

The relationships among personality traits, work-related attitudes and job stress were comprehensively investigated in this study. Several combinations of personality profiles and work behaviors are specifically related to various subtypes of job stress. These model pathways may provide hints for active prevention and early intervention against job stress which may lead to potential mental disorders including depressive disorders.

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