Relationship between Coping Skills and Job Satisfaction among Japanese Full-time Occupational Physicians

Takashi SHIMIZU¹ and Shoji NAGATA¹

¹Department of Mental Health, Institute of Industrial Ecological Sciences, University of Occupational and Environmental Health, Fukuoka, Japan

Abstract

Objective: The present study investigated the relationship between coping skills and job satisfaction among Japanese full-time occupational physicians (OPs).

Methods: In 2000 we mailed self-administered questionnaires to 716 full-time OPs who were members of “Sanyu-kai”, the only Japanese association of full-time OPs. The questionnaires included age, gender, marital status, main type of company’s work, the number of full-time OPs, the number of employees, working years as an OP, tenure in the present company, job stress, and coping skills questions. The coping skills questions consisted of 11 items which were decided after discussion among several experienced full-time OPs. In total, 351 (49%) of the OPs returned suitable questionnaires for analyses.

Results: Considering age, gender, marital status, and coping skills, multiple regression analysis (stepwise method) found that age, simplification of work, obvious roles for staff, consultations, and communication in the community and company were factors which contributed significantly to job satisfaction. Structural equation modeling showed that age and coping skills such as work system improvements, consultations, and communication in the community and company influenced job satisfaction.

Discussion: Our results indicated that the age and coping skills influenced job satisfaction among full-time OPs. Our results are also considered to support the training of OPs in the future.

Key words: full-time occupational physician, coping skills, job satisfaction, multiple regression analysis, structural equation modeling

Introduction

Under the Japanese Industrial Safety and Health Law, occupational physicians (OPs) are mandated to carry out the establishment of an industrial health management system, working environmental control, work control, health management, and industrial health education to improve the safety and health of workers (1). The law also states that enterprises which have 50–999 employees should have at least one part-time OP, that those with 1000–1999 employees should have one full-time OP, and that those with two thousand or more employees should have at least two full-time OPs. In Japan, there are about 2100

full-time OPs and about eighty-six thousand part-time OPs (2).

These statements cause Japanese full-time OPs to have a different job content, quality, and work environment than general practitioners (GPs), a group which has been well documented in coping studies (3–10).

Coping, an important factor affecting stress reactions, was defined by Dewe et al. (11) as being the cognitions and behaviors adopted by the individual following the recognition of a stressful encounter and, in some way, designed to deal with that encounter or its consequences.

Some studies found that GPs had three types of coping strategies such as support-seeking, regretting-denying, and annoying (6). Other studies found that GPs were likely to talk about stressful events with family and friends, exercise, and participate in hobbies as ways of coping (9).

However, few studies have investigated the coping skills of physicians in Japan. Katagiri et al. (9) suggested the factors contributing to burnout were age (<40 years old), marital status (unmarried), job rank (non-manager), and coping skills (support-seeking and annoying). In regard to OPs, a search of MEDLINE

Received Dec. 17 2002/Accepted Apr. 17 2003

Reprint requests to: Takashi SHIMIZU

Department of Mental Health, Institute of Industrial Ecological Sciences, University of Occupational and Environmental Health, 1-1, Iseigaoka, Yahatanishi-ku, Kitakyushu-shi, Fukuoka 807-8555, Japan

TEL: +81(93)691-7575, FAX: +81(93)692-5419

E-mail: t-shimiz@nifty.com

documents for the period 1966–2002 did not elicit any studies on the subject of coping skills among Japanese full-time OPs and the relationship between coping skills and job satisfaction. As job satisfaction mediates between job stressors and stress reactions (11), there is a growing need for a study about the relationship between coping skills and job satisfaction in order to prevent mental illness among the increasing number of OPs (13).

We studied job stress among full-time OPs and the factors contributing to job stress previously (14).

In the present study, we hypothesized that the coping skills of full-time OPs contributed to job satisfaction, as indicated by an interactionist model of stress in previous studies (3, 5). We studied coping skills and job satisfaction among Japanese full-time OPs to test our hypothesis.

Materials and Methods

We made questionnaires on background items (age, gender, marital status, working years as an OP, and tenure in the present company), demographic items in the present company (main type of work, the number of OPs, and the number of employees), coping skills, job satisfaction, self-rated health, quality of working life, desirable way to solve practical problems, and job stress.

Bearing in mind Lazarus' suggestion (15) that any investigation of coping behavior should have a minute and longitudinal analysis for changes of each subject's emotional reaction in various different human relationships, we developed the coping skills questionnaire by first interviewing a group of several experienced full-time OPs. These interviews were semi-structured (16) and were summarized with reference to the KJ method (17). We then decided on eleven items as being common coping skills for full-time OPs. The questions were further amended after a pretest was given to several OPs (Appendix).

The questions did not seek information on the organizational characteristics of the respondent's situation, but focused instead on whether he/she had the recognition, behavior or attitude to cope in practice. To every question on coping skills the respondents were requested to grade fitness. Fitness had four values from "1: extremely non-descriptive", "2: non-descriptive", "3: descriptive" to "4: extremely descriptive". Job satisfaction ranged from "1: extremely dissatisfied", "2: dissatisfied", "3: satisfied" to "4: extremely satisfied".

In June 2000 we mailed a set of self-administered questionnaires to 716 OPs who were all registered members (as of April 2000) of "Sanyu-kai", the only Japanese association of full-time OPs. In order to protect personal privacy, the association, whose membership comprises 34% of all Japanese full-time OPs in Japan, provided only names and mailing addresses of its members. Three hundred and eighty seven (54%) of the physicians returned the questionnaires anonymously by the end of July 2000. Of these, 351 (49%) were suitable for statistical analysis, after excluding those with data deficits.

Statistical analysis

We studied Pearson's correlations among age, gender,

marital status, job satisfaction, and eleven coping skills. There were significantly high correlations among coping skills; Q1 (simplification of work) vs. Q2 (obvious roles for staff) ($r=0.49$, $p<0.01$), and Q10 (appeal to employees) vs. Q11 (communication in the company) ($r=0.46$, $p<0.01$). These high correlations implied that two latent variables would result in both Q1 and Q2, and Q10 and Q11.

Oblique-rotated principle factor analysis was performed to certify the predictable latent variables which resulted in coping skills of full-time OPs (18).

Multiple regression analysis (stepwise method) was performed to estimate the factors influencing job satisfaction among age, gender, marital status, and coping skills. Considering the significantly high (>0.4) correlations among the independent variables, multiple regression analyses were performed (19).

Structural equation modeling (SEM) (20) was used to certify relationships among background items, coping skills, and job satisfaction on the base of results of the above analyses.

The calculations and SEM were performed with SPSS 10.0J and Amos 4.0, respectively.

Results

Table 1 shows the characteristics of the respondents. The mean age was 49.0 (SD=13.2) years and 82.9% of the respondents were male, 89.7% married and 64.4% satisfied with their jobs.

Table 2 shows the characteristics of the coping skills questionnaire. Table 3 shows correlations among background items, coping skills, and job satisfaction. We found that job satisfaction had significant correlations with age, Q1 (simplification of work), Q2 (obvious roles for staff), Q5 (consultations), Q6 (acceptance), Q8 (communication in the community), and Q11 (communication in the company).

In our results, the factor analysis suggested that Factor 1 was a latent variable which resulted in Q1 (simplification of work) and Q2 (obvious roles for staff) and that Factor 2 was a

Table 1 Characteristics of the respondents

	Total
n	351
Percentages of groups	
Male	82.9
Married	89.7
Age groups	
20–39	29.6
40–49	29.1
50–59	17.1
59<	24.2
Job satisfaction	
Extremely satisfied	6.3
Satisfied	64.4
Dissatisfied	26.2
Extremely dissatisfied	3.1
Mean (SD)	
Age	49.0 (13.2)

Table 2 Characteristics of the coping skills questionnaire

Questions	extremely descriptive (%)	descriptive (%)	non-descriptive (%)	extremely non-descriptive (%)
Q1. Simplification of work	14.0	52.7	22.8	10.5
Q2. Obvious roles for staff	9.1	59.3	24.8	6.8
Q3. Self-discipline	23.6	62.4	12.0	2.0
Q4. Off-work enjoyment	25.9	53.3	15.7	5.1
Q5. Consultations	17.4	58.7	19.7	4.3
Q6. Acceptance	25.5	62.4	14.0	1.1
Q7. Avoidance	1.7	10.5	63.2	24.5
Q8. Communication in the community	5.7	25.9	45.3	23.1
Q9. Drinking and smoking	4.6	13.4	29.1	53.0
Q10. Appeal to employees	11.1	65.5	21.7	1.7
Q11. Communication in the company	19.7	64.1	14.2	2.0

Table 3 The correlation matrix of the background items, coping skills, and job satisfaction among Japanese full-time occupational physicians

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender														
2. Marital status	-0.12*													
3. Age	-0.22**	0.26**												
4. Job satisfaction	-0.07	0.05	0.13*											
5. Simplification of work (Q1)	-0.03	-0.02	-0.09	0.16**										
6. Obvious roles for staff (Q2)	-0.05	0.02	0.02	0.19**	0.49**									
7. Self-discipline (Q3)	0.02	-0.09	-0.08	0.06	0.10	0.19**								
8. Off-work enjoyment (Q4)	-0.02	-0.10	-0.01	0.06	0.04	0.03	0.17**							
9. Consultations (Q5)	0.10	-0.09	-0.20**	0.17**	0.15**	0.11*	0.17**	0.14**						
10. Acceptance (Q6)	0.02	-0.03	-0.04	0.13*	0.04	0.05	0.13*	0.07	0.11*					
11. Avoidance (Q7)	0.05	0.03	-0.01	-0.02	0.00	0.03	0.01	0.09	0.04	0.04				
12. Communication in the community (Q8)	-0.04	0.06	0.26**	0.20**	-0.03	0.12*	0.11*	0.07	0.09	0.11*	0.05			
13. Drinking and smoking (Q9)	-0.14*	0.02	-0.12*	-0.08	0.07	0.06	-0.05	-0.08	-0.04	0.11*	-0.07	0.06		
14. Appeal to employees (Q10)	-0.05	0.02	0.04	0.08	0.15**	0.18**	0.16**	0.03	0.19**	0.15**	-0.09	0.15**	0.05	
15. Communication in the company (Q11)	-0.03	-0.01	-0.08	0.20**	0.18**	0.26**	0.10	0.05	0.17**	0.23**	-0.04	0.14**	0.05	0.46**

1) *: $p < 0.05$.2) **: $p < 0.01$.**Table 4** Results of oblique-rotated principle factor analysis of the coping skills questionnaire

	Factor 1	Factor 2	Factor 3	Factor 4
Simplification of work (Q1)	0.71	0.00	-0.01	-0.07
Obvious roles for staff (Q2)	0.72	0.00	0.04	0.03
Appeal to employees (Q10)	-0.05	0.83	-0.06	-0.06
Communication in the company (Q11)	0.08	0.52	-0.02	0.15
Self-discipline (Q3)	0.08	0.05	0.35	0.03
Off-work enjoyment (Q4)	-0.03	-0.07	0.45	0.00
Consultations (Q5)	0.06	0.15	0.31	0.00
Avoidance (Q7)	0.01	-0.20	0.23	0.05
Acceptance (Q6)	-0.09	0.04	0.14	0.42
Drinking and smoking (Q9)	0.07	-0.05	-0.26	0.37
Communication in the community (Q8)	-0.05	0.07	0.13	0.22
Eigenvalue	1.25	1.35	0.77	0.76
Interfactor correlation	1	2	3	
Factor 1				
Factor 2	0.38			
Factor 3	0.22	0.35		
Factor 4	0.29	0.48	0.21	

1) Bold-faced type shows factor loadings over 0.40.

Fig. 1 Relationships among age, coping skills, and job satisfaction

latent variable which resulted in Q10 (appeal to employees) and Q11 (communication in the company) because of high (>0.40) factor loadings of Q1, Q2, Q10, and Q11 (Table 4). Factor 1 or 2 was related to improvements of the OPs' work system (work system improvements) or to an increase in support for occupational health services, respectively. These results corresponded with the significant and high correlations among Q1, Q2, Q10, and Q11.

By multiple regression analyses, we found that age, simplification of work (Q1), obvious roles for staff (Q2), consultations (Q5), and communication in the community (Q8) and company (Q11) contributed both significantly ($ps < 0.05$) and positively (standardized partial regression coefficients: 0.12–0.16) to job satisfaction.

With reference to the results of the correlations, factor analysis, and multiple regression analyses, we made a research model of relationships among age, job satisfaction, and five coping skills, namely, simplification of work (Q1), obvious roles for staff (Q2), consultations (Q5), and communication in the community (Q8) and company (Q11), which contributed significantly to job satisfaction (Fig. 1). We employed a latent variable (work system improvements) which resulted in Q1 (simplification of work) and Q2 (obvious roles for staff) in the model.

The research model resulted in a chi-square ($df=7$) of 11.55 ($p=0.12$, not significant), an Adjusted Goodness of Fit Index (AGFI) of 0.96, and a root mean square error of approximation (RMSEA) of 0.04, with 0.05 or less indicating a close fit to the model in relation to degrees of freedom (20, 21).

Discussion

Based on our MEDLINE search for the period 1966–2002, we believe the present study is the first investigation of the relationship between coping skills and job satisfaction among Japanese full-time OPs.

In our results we found that positive contributions to job

satisfaction were made by consultations and communication in the community and company. These are factors associated with the “support seeking” or “social support” type of coping which have in previous studies been shown to have positively influenced job satisfaction (5, 22). This was compatible to the previous indication in which a stress management workshop which included learning and practicing interpersonal skills that increase the availability of social support led to a significant short-term improvement in burnout test scores related to job satisfaction (4).

Our results also showed that job satisfaction was influenced positively by work system improvements. This result is consistent with that of the previous studies in which problem-coping contributed to job satisfaction and job control was related to job satisfaction (22, 23).

Age contributed to job satisfaction among Japanese full-time OPs in our results. This was compatible with the previous indication that job satisfaction was related to age in GPs (24).

The research model showed that communication in the community influenced obvious roles of staff. This was considered reasonable because the communication by community-based physicians created a distinction between respective roles and thus led to a clearer understanding for OPs and occupational health staff.

In the model, communication in the company was affected positively by consultations, work system improvements, and communication in the community. Consultations can be reasonably expected to induce improvements in the practical skills of OPs that would allow them greater opportunity for effective communication with other employees including directors. Cooperation with community-based physicians through communication in the community decreases the time needed to deal with on-site patients while proportionally increasing the time available to communicate with the employees. Work system improvements similarly reduce the time taken to do routine work with staff while increasing time for communication in the company.

The model certified our hypothesis and implied that work system improvements, consultations, and communication in the

community and company would contribute positively to job satisfaction. This implication is helpful for the training of OPs in the future.

Our study has two limitations. First, the subjects were members of "Sanyu-kai" which they had joined voluntarily and had been lectured by occupational health professionals for several years. They were considered to have not only a positive attitude to performing occupational health services but also typical coping skills for full-time OPs. The final response rate was 49%, which means that the selection bias cannot be completely removed. The selection bias may underestimate coping skills among full-time OPs. However, the relationship between job satisfaction and coping skills among Japanese OPs had not been studied previously. Considering these facts, the response rate of our study is acceptable to obtain basic data.

The second limitation was the validity and reliability of the coping skills questions. Previous studies reported that it was difficult to make a standard scale on coping skills because respondents were likely to answer with an ideal or desirable form of coping rather than that of the one actually practiced (11, 25, 26). However, the method used to develop the questionnaire

was to interview full-time OPs with 2–10 years experience, and to further refine it after giving a pretest to several OPs. Considering the above method and the characteristics of coping scales, the coping skills questionnaire was considered to have an acceptable construct validity to study typical coping skills among full-time OPs.

In conclusion, our results found that the factors influencing job satisfaction among Japanese full-time OPs were age, work system improvements, consultations, and communication in the community and company. These indications are considered to support the training of OPs in the future.

Acknowledgements

This study was supported by "Sanyu-Kai", an association of Japanese full-time occupational physicians in enterprises. The authors gratefully acknowledge the kind assistance of Drs. Shoji and Hirobe.

Appreciation is expressed to Dr. Mizoue, Dept. of Preventive Medicine, Graduate School of Medicine, Kyushu University, for valuable comments on this paper.

References

- (1) Ministry of Health, Labour and Welfare. General Guidebook on Industrial Health. Tokyo: Japan Industrial Safety and Health Association 2001; 1–4.
- (2) Seo S, Ishikawa K. Manual for occupational physicians (Sangyoi Katsudou Manual). 2nd ed. Tokyo: Igaku-Shoin Ltd., 1997; 2–3 (in Japanese).
- (3) Cooper CL, Baglioni AJ. A structural model approach toward the development of a theory of the link between stress and mental health. *British Journal of Medical Psychology* 1988; 61: 87–102.
- (4) McCue JD, Sachs CL. A stress management workshop improves residents' coping skills. *Arch. Intern. Med.* 1991; 151: 2273–2277.
- (5) Rees DW, Cooper CL. Job stress, ill health and job satisfaction among health service employees. *Health Services Management Research* 1994; 7: 250–264.
- (6) Rout U, Cooper CL, Rout JK. Job stress among British general practitioners: predictors of job dissatisfaction and mental ill-health. *Stress Medicine* 1996; 12: 155–166.
- (7) Post DM. Values, stress, and coping among practicing family physicians. *Arch. Fam. Med.* 1997; 6: 252–255.
- (8) Schattner P. Stress in general practice—how can GPs coping? *Australian Family Physician* 1998; 27: 993–998.
- (9) Katagiri A, Saitou I, Shinzima I, Muramatsu Y, Arakawa M, Shimozyou H, Sakurai H, Miyaoka H. The comparison of stress and stress-related symptoms of medical staffs (Iryo-zyuzi no sutoresu to sono kanren-zikou no hikaku). *Stress Kagaku* 1999; 14: 39–43 (in Japanese).
- (10) Post DM, Weddington WH. Stress and coping of the African-American physician. *J. Natl. Med. Assoc.* 2000; 92: 70–75.
- (11) Dewe P, Cox T, Ferguson E. Individual strategies for coping with stress at work: a review. *Work and Stress* 1993; 7: 5–15.
- (12) Tanaka N. A study on the relation between job satisfaction and stress reactions. *Job Stress Res.* 1998; 5: 72–81 (in Japanese with English abstract).
- (13) Masugi N. Future of Rosai hospital (Rosai Byouin no Kongo no Arikata). *JJOMT* 2001; 49: 330–332 (in Japanese).
- (14) Shimizu T, Hiro H, Mishima N, Nagata S. Job stress among full-time occupational physicians. *J. Occup. Health* 2002; 44: 348–354.
- (15) Lazarus RS. How we cope with stress. *The Japanese Journal of Health Psychology and Health Education* 2000; 6: 1–12.
- (16) Holloway I, Wheeler S, Noguchi M. Qualitative research for nurses. Tokyo: Igaku-Shoin Ltd., 2002; 56–75 (in Japanese).
- (17) Kawakita J. The method of scientific thinking (Hassou Hou). 2nd ed. Tokyo: Chuokoron-Shinsha, Inc., 1978 (in Japanese).
- (18) Toyoda H. Covariance structural analysis—Structural equation modeling (Kyoubunsan Kouzou Bunseki—Kouzou Houteishiki Modeling). 2nd ed. Tokyo: Asakura-Shoten, 1999; 51–71 (in Japanese).
- (19) Muto S. Handbook for statistical analysis (Toukei Kaiseki Handbook). Tokyo: Asakura-Shoten, 1995; 218–219 (in Japanese).
- (20) Kline RB. Principles and practice of structural equation modeling. New York: The Guilford Press, 1998.
- (21) Arbuckle JL, Wothke W. Amos 4.0 users' guide. Chicago: SmallWaters Corporation, 1995; 402–406.
- (22) Koleck M, Bruchon-Schweitzer M, Thiebaut E, Dumartin N, Sifakis Y. Job stress, coping and burnout among French general practitioners. *European Review of Applied Psychology* 2000; 50: 309–314.
- (23) O'connor DB, O'connor RC, White BL, Bundred PE. The effect of job strain on British general practitioners' mental health. *Journal of Mental Health* 2000; 9: 637–654.
- (24) Branthwaite A, Ross A. Satisfaction and job stress in general practice. *Fam. Pract.* 1988; 5: 83–93.
- (25) Kosugi S. Trends of stress-coping theory by Lazarus, R. S. and problems on measurement of stress-coping. *Job Stress*

Res 1996; 3: 124–126 (in Japanese).
(26) Nagata S, Mishima N, Irie M, Kubota S. Job stress and coping

(Syokuba Stress to Coping). Occupational Health Journal
1994; 17: 79–85 (in Japanese).

APPENDIX

The Coping Skills Questionnaire

Q1. I simplify and computerize clerical work to decrease workload. (Simplification of work)
Q2. I decide clear roles for staff in the occupational health section. (Obvious roles for staff)
Q3. I participate in workshops and academic association activities to promote improvements in my own knowledge and skills. (Self-discipline)
Q4. I enjoy hobbies and sports on my days off and have time to relax. (Off-work enjoyment)
Q5. I seek advice from superiors, other occupational physicians outside my company, or supportive networks when I have a job-related problem. (Consultations)
Q6. I try to accept whatever difficulties or problems that arise as being part of my job. (Acceptance)

Q7. I deny responsibility for any problems which occur. (Avoidance)
Q8. I actively join associations of community-based physicians and try to let them understand occupational health services. (Communication in the community)
Q9. I drink alcohol and smoke to decrease stress reaction. (Drinking and smoking)
Q10. I explain occupational health services at committees meetings and training sessions so that employees will have a better understanding of my work. (Appeal to employees)
Q11. I try to communicate with as many people as possible at work including directors in order to facilitate my work. (Communication in the company)