

Relationships among Mood/Anxiety Disorder, Occupational Stress and the Life Situation : Results of Survey of a Local Government Staff

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Abstract

For the purpose of determining the relationship among mood/anxiety disorder, occupational stress and the life situation, a questionnaire survey was conducted on 312 staff of a city hall in Japan. The following results were obtained from the analysis of the 244 responses received: 1) The results of screening for mood/anxiety disorder using the K6 questionnaire (scores can range from 0 to 24) showed that 8.2% of the subjects had a score of 9 or more, of which 2.5% had a score of 13 or more. Higher scores were observed in females, in the 20s and 30s age group, not-married/divorced/separated or widowed status, frequent job stress, problems in human relations at work, effort-reward imbalance, low sense of physical health, and mean daily sleep duration of less than six hours. 2) Sex- and age-adjusted multiple logistic regression analysis identified effort/reward imbalance (OR = 10.53, 95%CI: 2.06-53.94) and frequent job stress (6.36, 1.71-23.70) as factors significantly related to the risk of mood/anxiety disorder.

I. Introduction

Since the recent prolonged recession, introduction of IT into businesses and organizational reform has called for a high job performance, and employees continue to suffer from increased stress at work. Many business institutions have workers with stress-related diseases such as depression, and depression, in turn, has been reported to result in long-term absences from the workplace¹⁾. The World Health Organization ranked depression as the leading cause of disability worldwide²⁾. Under such circumstances, implementation of mental health measures at the

workplace has been specially emphasized as an important task.

Most conventional studies of mental health at the workplaces have been conducted in specific occupational cohorts, such as corporate workers, factory workers, or nursing professionals, to determine the effects on health of stressors specifically associated with these professions/careers. These studies reported that in general a good life style was associated with good mental status³⁻⁵⁾. However, only a small number of studies have investigated the actual mental health situation of public-sector employees with a highly stable employment, particularly staff at

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local governments, which are not large-scale. Since the frequency of mergers of cities, towns and villages is increasing and citizen needs are becoming diversified, the percentage of local government staff who experience stress at the workplace may be expected to be increasing. The mental health of workers is closely intertwined with the physical health, working environment and living condition⁶⁾, however, few studies have investigated the relationships among these factors. We carried out a questionnaire survey to clarify the relationship among mood/anxiety disorder, occupational stress and the life situation of local governmental staff in a prefecture in Japan. The survey was conducted by requesting the public health nurses in the city to evaluate the actual mental health status of the staff.

II. Method

1. Subjects, methods, and period

A questionnaire survey was conducted of all the staff of A city hall in Japan by the placement method, using a self-reported questionnaire. The city is located inland and has a population of approximately 36,000 and area of about 700 km². The questionnaires were distributed to all of the 312 staff of A city hall, and 274 responses were recovered (recovery rate, 87.8%). Of these, the data of 244 subjects who had answered all the items of the questionnaire (K6) for sex, age and mood/anxiety disorder were analyzed in this study (valid response rate, 89.5%). The subjects were explained, in writing, about the aim of the survey, protection of privacy and the publication of the results, and also the fact that the survey was anonymous and voluntary and would not entail any disadvantage if he/she did not participate. Completion and return of the questionnaires was regarded as consent. The questionnaires were distributed by public health nurses in A city, and the questionnaires with answers in were recovered from the respondents in sealed envelopes. The survey period was from January to February 2008.

A seminar and workshop for mental health

promotion (include information of resources on mental health) was organized for the subjects, based on the results of this survey. Moreover, the results of the survey were compiled as a report for the public health nurses of A city in Japan, which also served as health guidance material for the staff of the city hall.

2. Description of the survey

The questionnaire included items to determine the demographic characteristics of the subjects (sex, age, length of education, family structure), screening items for mood/anxiety disorder (K6), occupational stress (the Japanese version of effort-reward imbalance questionnaire, subjective job stress), life situation (exercise habit, alcohol drinking, smoking, sleeping hours, working hours), sense of physical health, problems in human relations at work, and presence/absence of feeling "I want to die" during the previous one month.

The K6, the screening scale for mood/anxiety disorder, was developed by Kessler et al.⁷⁾, and its Japanese version was prepared by Furukawa et al.⁸⁾. The questionnaire consists of 6 items, with a score range of 0 to 24. Higher scores reflected a higher risk of mood/anxiety disorder. In this study, a score of 9 or more was considered to reflect a positive result of screening, based on the cutoff value determined to obtain a cohort with a posttest probability of mental disorder of 50% or more within a cohort with a prevalence of approximately 10%⁹⁾.

The effort-reward imbalance, suggested by Siegrist et al.¹⁰⁾, is defined as a model to analyze the chronic stress situation at the workplace based on the two axes, "effort" and "reward", in occupational life. The Japanese version was prepared by Tsutsumi et al.¹¹⁾. In this model, reward factors such as salaries, job approval and employment stability are emphasized, and work situations where workers do not receive appropriate rewards for the efforts put in at work are considered as stressful. It consists of 17 items in total, consisting 6 items related to effort and 11 items related to reward. A "high-effort/low-reward condition" which reflects an imbalance

between the effort put in occupational life and the reward received/expected to be received is considered as stressful. The threshold of the effort/reward ratio is 1.0, and groups with a ratio of more than 1.0 were considered as showing effort-reward imbalance.

3. Analytical Methods

The relationship between mood/anxiety disorder and various factors was analyzed using univariate logistic regression, in which the dependent variable was a score of 9 or more vs. a score of less than 9 on K6, and the independent variables included each of the investigation items. To adjust for confounding factors, a multivariate logistic regression analyses with step-down procedures was performed in which all variables (except presence/absence of feeling "I want to die" during the previous one month) that showed statistical significance in the univariate model. Answers to the items asked with the three or four-factor method were categorized into two groups.

Categorical data were analyzed by the χ^2 test. SPSS 16.0 for Windows (Version 16.0J) was used for the statistical analyses. P values of less than 0.05 were considered to be significant.

III. Results

1. Characteristics of the subjects

Table 1 shows the characteristics of the respondents. The mean age of the respondents was 42.1 years (SD = 11.9) for the males and 41.1 years (SD = 12.5) for the females.

2. Mood/anxiety disorder, occupational stress and life situation

Table 2 shows the distribution of the K6 scores of the subjects. Subjects who showed a positive result of screening for mood/anxiety disorder (score of 9 or more) accounted for 8.2% of the total subject population, of which, 2.5% had a score of 13 or more. Subjects with a positive result of screening (score of 9 or more) were seen more frequently among females and

Table 1 Characteristics of the subjects

	Total	Male (n=163)	Female (n=81)
	n	n (%)	n (%)
Age (mean \pm SD, year)	41.7 \pm 12.1	42.1 \pm 11.9	41.1 \pm 12.5
Marriage status			
Live with spouse	176	123 (69.9)	53 (30.1)
Not married/separated/divorced/widowed	68	40 (58.8)	28 (41.2)
Families living together			
With family	231	159 (68.8)	72 (31.2)
Alone	13	4 (30.8)	9 (69.2)
Length of education			
6-9 years	8	7 (87.5)	1 (12.5)
10-12 years	97	69 (71.1)	28 (28.9)
13 years or more	137	86 (62.8)	51 (37.2)
others	2	1 (50.0)	1 (50.0)

Table 2 K6 score distributions

K6 score	0-4	5-8	9-12	13-24
	n (%)	n (%)	n (%)	n (%)
Male	143 (87.7)	12 (7.4)	6 (3.7)	2 (1.2)
Female	58 (71.6)	11 (13.6)	8 (9.9)	4 (4.9)
Total	201 (82.4)	23 (9.4)	14 (5.7)	6 (2.5)

subjects who were in their 20's to 30's and not-married/divorced/separated or widowed ($p < 0.05$).

Table 3 shows the results in regard to occupational stress/life situation analyzed by sex. The percentages of subjects who "often" or "sometimes" felt stress at work in the previous one month were 17.8% and 60.7%, respectively, in males and 30.9% and 51.9%, respectively, in females, indicating that females were more likely to feel stressed at work ($p < 0.1$). The percent-

age of subjects in the overall subject population who had problems in human relations "often" was 8.2%, and again, females appeared to be likely to have problems in human relations ($p < 0.1$).

The effort/reward ratios calculated using the effort-reward imbalance model ranged from 0.20-1.76 (mean 0.51, median 0.45, SD:0.26). The percentage of subjects with an effort/reward ratio of 1.0 or more (hereinafter called effort-reward imbalance) was 5.7%. There were no

Table 3 Occupational stress/life situation by sex

	Total (n = 244)	Male (n = 163)	Female (n = 81)	P-value
Subjective job stress				
Often	22.1	17.8	30.9	0.068
Sometimes	57.8	60.7	51.9	
Not often/rarely	20.1	21.5	17.3	
Effort/reward ratio (effort/reward imbalance model)				
≤1.0	94.3	95.7	91.4	0.240
>1.0	5.7	4.3	8.6	
Sense of physical health				
Good	24.2	25.2	22.2	0.198
Fair	62.3	58.9	69.1	
Poor/Unknown	13.5	16.0	8.6	
Problems in human relations at work				
Often	8.2	6.1	12.3	0.065
Sometimes	44.3	41.7	49.4	
Not often/rarely	47.5	52.1	38.3	
Feeling of "want to die" during previous one month				
No	84.0	85.3	81.5	0.183
A little	11.9	12.3	11.1	
Yes	4.1	2.5	7.4	
Exercise habit				
Yes	16.0	18.4	11.1	0.099
No	84.0	81.6	88.9	
Frequency of drinking of alcohol				
Once a week or less/not at all	50.4	39.9	71.6	<0.001
3 or 4 days per week or more/daily	49.6	60.1	28.4	
Smoking				
Smoker	28.3	39.9	4.9	<0.001
Not smoker (including ex-smoker)	71.7	60.1	95.1	
Mean working hours per day				
<10 hours	48.8	57.7	30.9	<0.001
≥10 hours	51.2	42.3	69.1	
Mean sleeping hours per day				
≥6 hours	88.1	90.2	84.4	0.072
<6 hours	11.9	9.8	15.6	

Figures in the table represent the response rates (%) for the total subject population and by sex. P-values were calculated by the χ^2 test.

significant differences in the percentage of patients with effort-reward imbalance among different age-groups or between the two sexes.

In regard to the subjective physical health, 86.5% perceived it as being “good” or “fair”. The percentages of patients whose response was “yes” and “a little” to the question of whether they had felt “I want to die” during the previous one

month were 4.1% and 11.9%, respectively. More males were likely to exercise regularly ($p < 0.1$). More males were in the habit of drinking alcohol and smoking ($p < 0.001$), particularly males in the age group of 40-50 years, in which 53.3% indicated that they drank alcohol almost everyday.

In relation to the average number of

Table 4 Relationship between positive results of screening for mood/anxiety disorder and each of the factors (univariate analysis)

Variables	n	Odds ratio	(95%CI)	P-value
Sex				
Male	163	1		
Female	81	3.37	(1.32-8.61)	0.012
Age group				
40-60y	116	1		
20-39y	128	4.00	(1.30-12.34)	0.010
Marriage status				
Live with spouse	176	1		
Not married/separated/divorced/widowed	68	3.58	(1.41-9.08)	0.008
Subjective job stress				
Sometimes/not often/rarely	190	1		
Often	54	19.58	(6.20-61.83)	<0.001
Effort/reward ratio (effort/reward imbalance model)				
≤ 1.0	230	1		
> 1.0	14	16.69	(5.09-54.75)	<0.001
Sense of physical health				
Good/fair	211	1		
Poor/ Unknown	33	4.10	(1.50-11.21)	0.009
Problems in human relations				
Not often/rarely	116	1		
Often/ sometimes	128	5.77	(1.65-20.24)	0.002
Feeling of “want to die” during previous one month				
No	199	1		
Yes/a little	25	18.57	(6.55-52.70)	<0.001
Exercise habit				
Yes	39	1		
No	205	1.09	(0.30-3.90)	0.599
Frequency of drinking alcohol				
One a week or less/not at all	123	1		
3 or 4 days per week/daily	121	0.66	(0.26-1.66)	0.255
Smoking				
Non smoker (including ex-smoker)	175	1		
Smoker	69	0.61	(0.20-1.90)	0.282
Mean working hours per day				
<10 hours	113	1		
≥ 10 hours	120	2.36	(0.87-6.36)	0.066
Mean sleeping hours per day				
≥ 6 hours	178	1		
<6 hours	25	3.80	(1.20-12.04)	0.032

working hours, including housework, 69.1% of the female subjects worked for 10 hours or more, and more females worked for longer durations of the day than males ($p < 0.001$). The average sleeping hours was less than 6 hours in 15.6% of the females, and the sleep duration was likely to be shorter in the females than in the males ($p < 0.1$).

3. Factors related to a positive result in the screening for mood/anxiety disorder

Tables 4 and 5 show the results of the logistic regression analysis to determine the factors that were related to a positive result in the screening for mood/anxiety disorder.

The factors significantly related to a positive screening result for mood/anxiety disorder as determined by univariate analysis were female gender, age in the 20s or 30s, not-married/divorced/separated or widowed status, frequent job stress, effort-reward imbalance, low sense of physical health, presence of feeling "I want to die" during the previous one month, problems in human relations at work, and mean daily sleep duration of less than six hours. The subjects who worked for more than 10 hours a day, on average, were also likely to show a positive screening result. Exercise, alcohol drinking and smoking habit were not identified as being significantly related to the risk by this analysis.

The results of multivariate analysis (sex and

age adjusted), using factors that were identified by univariate analysis as showing a significant relationship as independent variables and a positive result of screening for mood/anxiety disorder as a dependent variable identified effort-reward imbalance (OR = 10.53, 95%CI : 2.06-53.94) and frequent job stress (OR = 6.36, 95%CI : 1.71-23.70) as being significantly related factors to a positive result of screening for mood/anxiety disorder.

IV. Discussion

The distinguishing feature of this study was that it analyzed the relationship between the risk of mood/anxiety disorder and occupational stress, subjective sense of well-being, and the life situation in the staff of a local government. Although the sample size was limited, the recovery rate was high, and the mean value of the effort/reward ratio in the local governmental staff was 0.51 (SD:0.26), which was slightly lower than the average of 0.56 (SD:0.33) for all Japanese employees¹²⁾ and was approximately equal to 0.50(SD:0.27) determined for the Japanese government staff¹²⁾, suggesting that the results of the study may reflect the actual situation of the local government staff.

Table 5 Relationship between positive results in screening for mood/anxiety disorder and each factor (multivariate analysis)

Variables	n	Odds ratio	(95%CI)	P-value
Sex				
Male	163	1		
Female	81	2.47	(0.72-8.46)	0.150
Age group				
40-60y	116	1		
20-39y	128	2.83	(0.65-12.34)	0.167
Subjective job stress				
Sometimes/not often/rarely	190	1		
Often	54	6.36	(1.71-23.70)	0.006
Effort/reward ratio (effort/reward imbalance model)				
≤ 1.0	230	1		
> 1.0	14	10.53	(2.06-53.94)	0.005

R²=0.364

1. Symptom prevalence of mood/anxiety disorder

The results of the mood/anxiety disorder screening using K6 showed that 8.2% of the total subject population had a score of 9 or more, of which 2.5% had a score of 13 or more. A survey of Japanese local residents aged 40 years or older (n = 43,716) reported that 6.7% received a score of 13 points or more¹³⁾. The positivity rate in this study was relatively low; however, the percentage of subjects whose response to the question of whether they had ever felt "I want to die" during the previous month was as high as 16%. Among the identified risk factors for suicide, engagement in the wish for death is known to be of paramount importance. As Japan's society has grown more complex and the citizen's thinking and values have become increasingly diverse, the role of local authorities is increasingly important in improving the quality of life of the people and identifying their needs, however, the revenues and human resources are limited¹⁴⁾. Under such circumstances, long-term sick leave or absence because of mental disease in 2008 among the local governmental staff in Japan was 1,142.1 (per 100,000 staff), representing an increase by 62.6% as compared with the estimate in 2004¹⁵⁾. Despite the relative high stability of their employment situation, the study results emphasize the need for further advancement of mental health measures for local governmental staff.

2. Factors correlated with a positive result of screening for mood/anxiety disorder

The result of univariate analysis to determine the factors related to the results of mood/anxiety disorder screening indicated that a positive result of the screening was associated with variables such as female gender, 20s or 30s age group, not-marriage/divorced/separated or widowed status. It was reported from a previous survey in Japan that in the manufacturing industry, the rate of workers with a tendency towards depression was higher among non-married females in their 20s¹⁶⁾, and from another of workers in the chemicals industry that the number of

depressed workers was higher among females in their 30s or 40s¹⁷⁾. The results of the present study were generally consistent with those obtained for corporate workers in Japan.

Many previous studies investigating factors related to mental health have suggested that healthy lifestyle habits were correlated with a healthy mental state. For example, it has been reported that healthy lifestyle habits were closely related to a healthy mental state among male factory workers⁴⁾, that an unhealthy mental state was related to insufficient exercise, frequent smoking, and high BMI values in 50 to 69 year-old male corporate workers⁵⁾. The results of the univariate analysis in this study showed that long working hours and short sleeping hours were correlated with a positive result of screening for mood/anxiety disorder; on the other hand, it was not correlated significantly with exercise, alcohol drinking or smoking habit. Effort/reward imbalance and subjective job stress were strongly correlated with a positive result of screening for mood/anxiety disorder screening. As a whole, the study suggested the need for reviewing the mental health of workers from the aspects of effort/reward imbalance and subjective job stress, in addition to conventional risk factors related to health habits.

3. Measures for mental health improvement

Two measures are suggested for improvement of the mental health of workers.

First, in terms of the effort/reward imbalance model, the following approach might correct effort/reward imbalance: (1) reducing extrinsic effort by even distribution of workloads, reducing long periods of overtime work, and allowing a sufficient amount of rest or holidays; (2) improving reward by additional employee benefits, for example, encouraging praise for good work, skill-up of managers for interpersonal relationships, and outlining career opportunities¹⁸⁾. A previous study⁶⁾ suggested that employers rarely suggest that their employees are working too hard and that they should "ease up", and at the same time, the average employee also accepts the situation as it is. Assessing the

risk factors that are likely to cause mental stress to the employee is needed. These improvements are beyond the capacity of individual workers and should be done at the organizational level, which may require the understanding and cooperation of administrators, such as managers. Moreover, effort-reward imbalance is also powerful predictors of poor health functioning¹⁹⁾. Correction of harmful working conditions for occupational health may decrease the harmful effects on health functioning.

Secondly, health guidance should be tailored to the actual situation reflected by the survey results. In the study, subjective job stress was found to be significantly related to the risk mood/anxiety disorder. Even in the absence of mental symptoms and troubles, it is easy to question or complain about presence or absence of job stress. Job stress can be used as an indicator to lead to interviews and health guidance or health support activities, including application of external resources, as needed. These supportive interventions would also lead to the prevention of a crisis in the mental health of individual workers. In addition, effectiveness of a stress management program at the workplace²⁰⁾²¹⁾ has been reported, and such programs may have the potential for prevention of psychological stress.

Since the mental health of workers affects not only the QOL of the workers themselves, but also of their families, workplaces and societies, implementation of health support measures at workplaces is important. It is important that individual workers understand the importance of health and an environment for good health is created. Measures designed taking into consideration the results of the survey are important for creating such an environment.

This study had some limitations. First, the subjects of this study were drawn from only one specific local government; therefore, it may be difficult to generalize the results. Second, because of the cross-sectional design of the survey, the causal relation between the risk of mood/anxiety disorder and job stress and the life situation cannot yet be concluded. Further studies should

be conducted to determine mental health-related factors and measures to improve the mental health of employees by incorporating sample size expansion, cohort study or intervention study. Despite these limitations, this was one of the few studies to have addressed the issue of mood/anxiety disorder and occupational stress of the local governmental staff in a prefecture in Japan. The results of this study are therefore expected to serve as a guide for targeting of mental health promotion, prevention and screening programs.

V. Conclusion

The results of the survey of the local governmental staff were as follows :

1. The results of the screening for mood/anxiety disorder using K6 (scores can range from 0 to 24) showed that 8.2% of the total surveyed population received a score of 9 points or more, of which 2.5% had a score of 13 or more, indicating that further advancement of mental health measures at the workplace is necessary for local governmental staff, despite the relatively high stability of their employment situation.
2. Sex- and age-adjusted multiple logistic regression analysis showed that the risk of mood/anxiety disorder was significantly elevated by effort-reward imbalance and frequent job stress. The analysis revealed no significant association of this with physical exercise, alcohol drinking and smoking habit.

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気分・不安障害と職業性ストレス，生活状況の関連： 一地方自治体職員を対象とした調査結果

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気分・不安障害と職業性ストレス，生活状況の関連を明らかにすることを目的に，A市職員312名を対象とした質問紙調査を行った。244の回答を分析した結果，以下が明らかになった。1) K6(得点範囲：0-24)による気分・不安障害のスクリーニング結果，9点以上の割合は全体の8.2%，13点以上の割合は2.5%であった。性別では女性に，年齢階級別では20~30代に，婚姻状況別では非婚・別居・離婚・死別者に多かった。2) 性・年齢を調整した多重ロジスティック回帰分析の結果，気分・不安障害のリスクには，努力/報酬不均衡(OR=10.53, 95%CI: 2.06-53.94)，仕事上のストレスがよくある(OR=6.36, 95%CI: 1.71-23.70)が有意に関連する要因として選択された。