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Medical Group

Archives of Depression and Anxiety

DOI:http://dx.doi.org/10.17352/ada

ISSN: 2455-5460 CC By

Makie Nagai[1]*, Yuko Morikawa[2], Yuko Hamazaki[3] and Hideaki Nakagawa[2]

[1]Professor of Tsuruga Nursing University, Faculty of Nursing Science, Psychiatric and Mental Health Nursing, Japan
[2]Kanazawa Medical University, Japan
[3]Bukkyo Univercity, Japan

Received: 02 April, 2019
Accepted: 19 April, 2019
Published: 20 April, 2019

***Corresponding author:** Makie Nagai, Professor of Tsuruga Nursing University, Faculty of Nursing Science, Psychiatric and Mental Health Nursing, 78-21 Kizaki, Tsuruga-city, Fukui, Japan, Tel: +81 770 20 5500; E-mail: m-long@kanazawa-med.ac.jp

Keywords: Coping; Stress response; Mental health promotion

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Research Article

An assessment of stress coping for mental health promotion among Information Technology employees in Japan

Abstract

Primary health care for mental health in workers should apply to actualities of workers' stress coping and stress response. We conducted an assessment by cross-sectional study concerning stress coping, job stress, and stress response among IT employees in Japan.

Subjects were 75 healthy new employees (males). We used the 54-item Maslach Burnout Inventory-General Survey (MBI-GS, domains: exhaustion, cynicism, professional efficacy), the Job Content Questionnaire (JCQ, domains: demand, control, social support), the General Coping Questionnaire (GCQ, domains: emotion expression, emotional support seeking, cognitive reinterpretation, problem solving).

All subjects attained high scores for job demand. High scores for the coping domains emotional expression was associated with high scores for the burnout domain cynicism (p=0.019). High scores for the coping domains cognitive reinterpretation associated with low scores for the burnout domain cynicism (p=0.002).

The result suggested that high expressing emotion which is not usual their coping associated to low concern and passion for work. Furthermore, cognitive reinterpretation against stress factors associated to passion for work.

Introduction

According to a Japanese Ministry of Health report, 42.5% of companies which employed young workers in the last year lost these workers for personal reasons. Information technology companies in particular employ many young workers. These companies are especially interested in mental health promotion.

Job stress has been shown to be related to worker resignation in the IT industry in Japan [1]. Job stress has also been associated with decline in mental health in Japan [2,3]. Additionally, the main job stress of 20-29 years-old employees has reported job demand [4].

The Global Burden of Disease in 1990 [5], reported that psychiatric disease is major risk of DALY (disability- adjusted life years) as well as heart disease and cancer. Psychiatric disease is related to stress response that is need effective measures for mental health promotion.

Mental Health Promotion should apply to actualities of workers' stress circumstances. It is necessary to assess coping strategies and their effects on the stress responses of individual workers. The purpose of this study is to assessment by cross-sectional study concerning stress coping, job stress, and stress response among IT employees in Japan.

Methods

Design and sample

A cross-sectional study was conducted concerning stress coping, job stress, and stress response (burnout). Subjects were new employees of information technology companies in Japan. Surveys were conducted 10 months from the start of their employment. After one survey was excluded for incomplete data, 76 healthy new employees (males) participated. The company in question has approximately 2500 employees, with research and development centers, factories, and offices throughout Japan. Subjects' occupations included programming, technical support, system maintenance, component manufacture, and various business activities.

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Measures

The questionnaire was structured using 3 scales, and the total number of items was 54.

Job Content Questionnaire Japanese Version (JCQ-J, [6])

This scale measures job stress [7]. JCQ-J is validated for all users in Japan. This scale measures 3 elements: demand (quantity and quality), control (decision latitude), and social support (supervisor support and coworker support).

Kawakami [6], demonstrated the equivalence of American and Japanese responses for this tool. Demand (12-48 point) is considered high above 31 points. Control (24-96 point) is considered high above 66 points. Higher scores in social support are considered advantageous.

Maslach burnout inventory-general survey japanese version (MBI-GS, [8])

MBI-GS measures stress response [9]. The scale measures 3 elements: exhaustion, cynicism, and professional efficacy. Exhaustion (0.0-6.0 points) is considered high above 4.0 points. Cynicism is defined as an attitude marked by loss of job enthusiasm and is considered high above 2.6 points. Professional efficacy is considered low below 1.5 points. Criteria for defining burnout in Japan include high levels of exhaustion and either high levels of cynicism or low levels of professional efficacy [10].

General coping questionnaire [11]

There are two types of stress coping scales: one which was developed based on general characteristics (i.e. coping strategies in daily life) and one which was developed for certain situations (i.e. coping strategies in special situations) (Oscar, 2011). GCQ (General Coping Questionnaire) measures 4 generalized characteristics. Emotion expression (8-40 point) is coping based on expressions and attitude in negative situations. Emotional support seeking is coping by relaxing and communicating with others. Cognitive reinterpretation refers to coping by reconsidering negative situations as positive situations. Problem solving is coping by actively solving the problem. These criteria were reported for Japanese college students [11]. This serves as an appropriate comparison group with the present study's participants.

Analytic strategy

Total scores of each element of JCQ-J were calculated to compare to previous study [12]. Kawakami administered the same questionnaire to 603 men (average age 27.9 years, SD=5.4) at Japanese IT companies.

This entailed JCQ-J and MBI-GS scores compared between the two groups divided by GCQ score median. These data were only applicable in males due to effect modification of sex in stress coping [11].

In all analysis, the level of significance was set at $p \leq 0.05$ (two sided). Statistical analyses were conducted using SPSS version 16.0 (SPSS Inc., Chicago, IL, USA).

Ethical standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional guidelines on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. Ethical approval was obtained from Epidemiology Research Ethics of Kanazawa Medical University (No.68, 2010).

Results

Seventy- six questionnaires were collected (100%). One was excluded for missing data. Seventy- five were subject to analysis.

Subject attributes

There were 75 male employees. The average age was 22.1 years (SD=0.46). Occupations included manufacturing, systems management, system engineer, development, etc.

New employees' occupational stress

Occupational stress mean and standard deviation (SD) are shown in table 1. New employees had a mean of 33.3 (SD=5.2) for work demand score, which is a subscale of occupational stress. It was higher than previous study [12]. The other scores (control, supervisor support and coworker support) were also higher than previous study.

No employee satisfied burnout criteria based on stress response.

Stress levels of employees by high and low coping groups

Next, we analyzed stress by stratifying into two groups at the median for each coping subscale score.

Table 2 shows occupational stress and burnout scores stratified by performance on the high empathy, cognitive reinterpretation, and problem solving coping subscales.

In those scoring low in coping: emotional expression (11 points or less), the median burnout: cynicism score was 1.2 (quartile 0.6 - 2.2). The median score was 1.7 (quartile 0.9 -

Table 1: Difference Job stress scores between present study subjects and previous study subjects [12].

	present study (n=75)		previous study (n=603)	
	Mean	(SD)	Mean	(SD)
Job steress				
Demand	33.3	(5.2)	31.1	(6.0)
Control	68.5	(8.3)	64.2	(12.1)
Supervisor support	12.8	(1.9)	10.8	(2.5)
Coworker support	13.1	(1.8)	11.3	(1.7)
SD=standard deviation				

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Table 2: Difference of job stress and burnout scores between two groups of divided by their coping.

	Emotional expression				p value	Cognitive reinterpretation				p value	Problem solving				p value
	Low (=≤ 11, n=43)		High (12+, n=32)			Low (≤= 14, n=49		High (15+, n=26)			Low (≤= 15, n=48)		High (16+, n=27)		
	median(quartile)		median(quartile)			median(quartile)		median(quartile)			median(quartile)		median(quartile)		
Job Stress															
Demand	32	(29-37)	33	(30-37)	0.998	33	(30.0-37.5)	32	(29.8-36.3)	0.531	33.5	(29.3-37)	32	(22-37)	0.400
Control	44	(41-46)	45	(43-47.8)	0.255	44	(41-46)	45	(43-47)	0.314	43.5	(41-45.8)	45	(43-49)	0.025
Supervisor support	13	(12-14)	12	(12-14.8)	0.286	12	(12-14)	13	(11.8-15)	0.744	12	(12-14)	13	(12-15)	0.294
Coworker Support	13	(12-14)	13	(11.3-14.8)	0.897	13	(12-14)	13	(12-14.3)	0.903	13	(12-14)	14	(12-15)	0.253
Burn out															
Exhaustion	2.8	(1.8-3.6)	2.6	(1.8-4.2)	1.000	2.8	(1.8-4.1)	2.6	(1.8-3.4)	0.531	2.8	(1.8-4.2)	2.6	(1.8-3.7)	0.900
Cynicism	1.2	(0.6-2.2)	1.7	(0.9-2.6)	0.019	1.8	(1.1-2.6)	0.9	(0.6-1.3)	0.002	1.6	(0.9-2.6)	1.0	(0.6-1.8)	0.071
Professional Efficacy	2.7	(2.0-3.3)	2.2	(1.7-3.2)	0.410	2.5	(1.8-3.2)	2.7	(1.8-3.7)	0.787	2.5	(2.0-3.2)	2.8	(1.8-3.7)	0.310

n=75, Mann-whitney U test.
Subjects were categorized into two groups, small and large, by dichotomy of the score of emotional expression, cognitive reinterpretation, and problem solving related coping.

2.6) for those scoring high in emotional expression (12.0 points or higher) (p=0.019). There were no significant differences in terms of other factors.

In the group performing highly in coping: cognitive reinterpretation (15 points or higher), cynicism median score was 0.9 (quartile 0.6 – 1.3). For those with low scores in cognitive reinterpretation (14 or less), median was 1.8 (quartile 1.1 – 2.6) (p=0.002). There were no significant differences in other factors.

There was no significant difference in occupational stress and burnout scores when stratifying high and low groups for coping: emotional support.

Discussion

Difference job stress scores between present study subjects and previous study subjects

Regarding occupational stress, this result was somewhat higher than the previous study [12], on all subscales: degree of work demand, work control (technology and decision-making), supervisor support, and colleague support. It may be the differences of work environment between two generations. The present workers' average age (22.1 years, SD=0.5) was lower than the subjects' average age attributes Kawakami (males 27.9 years, SD=5.4; females 25.8 years, SD=3.4; 1996). The present new employees receive psychological support from superiors and colleagues. Nevertheless, the psychological burden of work is high.

Takesaki et al. report that subjective symptoms such as depressive feelings increase over time based on a follow-up survey of employees 5 years after joining IT companies. Mental health promotion is important from an early stage.

Difference of burnout scores between two groups of their emotional expression

In groups that cope by expressing emotion, there was a tendency decline to interest in work. Takaya et al. report that high emotional expression associated to low stress response. Additionally, it has been pointed out negatively that Japanese young people working in the IT industry have the tendency to avoid communication with others [13]. Nevertheless, this result showed that high expressing emotion which is not usual their coping associated to low concern and passion for work.

It seemed that high expressing emotion means shame and non-assertiveness communication for Japanese employees in their cognition. Assertiveness communication is a chance to gain mutual understanding, moreover it may connect to interest in work. Assertiveness training may be useful to increase interest in work for the newly-recruited employees.

Difference of burnout scores between two groups of their cognitive reinterpretation

In the group using cognitive reinterpretation against stress factors, there was a tendency to retain concern and passion for work. Suzuki [14], evaluated cognition against stress factors from the perspective of how much stress influences individuals, whether or not it is a threat, and whether it can be controlled. By sober evaluation of cognition, by thinking about controllable aspects, it is possible to remove oneself from a problem and to interpret that problem positively, in order to find hope in stressful job demand. Incorporating such reconstructive cognitive reinterpretation into mental health promotion is considered to be important in career development.

The result suggested that some measures for mental health promotion in the IT industry. It is assertiveness training for appropriate expression of emotion and reconstructive cognitive reinterpretation based on cognitive behavioral therapy. Recently, effect of brief training program based on cognitive behavioral therapy in workplace are showed [15,16]. We need to study to effect of intervention of assertiveness training and adapting cognitive restructuring for mental health promotion for new employees in the IT industry in Japan.

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The main weakness our study was the small size of participant. Although we suggested that some measures for mental health promotion based on assessment of coping strategies and their effects on the stress responses of individual workers [17-19].

Acknowledgment

We would like to express our deepest appreciation for all the Company employees who cooperated in this research.

Financial Support

This work was supported by JSPS KAKENHI Grant Number JP 21592929.

Conflicts of Interest

An outline of the present study was presented at the 2rd Japan-Korea Joint Conference on Community Health Nursing in 2011.

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