

Mental Health, Job Stress, and Character Traits in Japanese Male Workers

Chieko KAJIHARA¹, Katsuhito ITOH², Toshihiko AGATA³,
Machi SUKA¹, and Hiroyuki YANAGISAWA¹

¹Department of Public Health and Environmental Medicine, The Jikei University School of Medicine

²Tokyu Hospital Health Management Center

³Graduate School, International University of Health and Welfare

ABSTRACT

Objective : The objective of this study was to analyze the association of workers' mental health with job stress and character traits.

Methods : We distributed a questionnaire to Japanese workers at 3 companies. Mental health and job stress were assessed with the Brief Job Stress Questionnaire and the Occupational Psychological Stress Assessment Chart. We divided the respondents into those with good mental health, poor mental health, and other. We compared the level of job stress and character traits between workers with poor mental health ($n=32$) and those with good mental health ($n=34$). We performed logistic regression analysis with mental health as a dependent variable and job stress and character traits as independent variables.

Results : Poor mental health was associated with factors related to job stress, including "having a large amount of work," "asked to always be ready for work," "the current work is not right for me," and "no place to talk about workplace problems" and the character trait of "feeling distressed for an extended period of time because of a past event."

Conclusions : Job stress and negative character traits are associated with poor mental health.

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Key words : mental health, character traits, job stress, questionnaire

INTRODUCTION

Poor mental health, such as depression, has been a serious issue that may require workers to take sick leave¹. Absence from work or the retirement of workers because of mental health problems leads to financial losses for companies. Therefore, measures to prevent mental health problems in workers must be implemented.

Previous studies analyzed the relationship between job stress and depressive symptoms^{2,3}. Elements that cause job stress for workers are listed in the Occupational Psychological Stress Assessment Chart⁴ published by the Ministry of Health, Labour and Welfare of Japan. Job stress

includes quantitative work overload, qualitative work overload, and problems with workplace interpersonal relationships^{5,6}. Job stress due to quantitative work overload is stress caused by long hours of work or an increase in workload⁵, and qualitative work overload is work that is beyond the mental capacity of a worker⁷. Problems with office interpersonal relationships include issues concerning communication with superiors, coworkers, or subordinates^{8,9}.

Several studies have analyzed the relationship between character traits and job stress. Jurado et al.¹⁰ have emphasized the effect of personality traits on the development of depressive symptoms independently of other individual characteristics and the occupational context. Sakai et al.¹¹

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梶原千絵子, 伊藤 克人, 縣 俊彦, 須賀 万智, 柳澤 裕之

Mailing address : Chieko KAJIHARA, Department of Public Health and Environmental Medicine, The Jikei University School of Medicine, 3-25-8 Nishi-shimbashi, Minato-ku, Tokyo 105-8461, Japan.

E-mail : chiekokajihara@jikei.ac.jp

have reported that character traits significantly affect job stress and more strongly affect job stress than do age, sex, or job rank in most areas examined. Character traits are important factors that affect mental health. Tei-Tominaga et al.¹² have shown that depressive and anxious temperaments attenuate the effect of working hours and independently affect effort and rewards. In particular, being nervous, scrupulous, serious, inflexible, immature, and self-centered are character traits that affect mental health.

Previous studies have examined the relationship between work hours and mental health¹³, but few studies have included in their analysis the character traits of workers. The objective of the present study was to analyze job stress and character traits as factors affecting the mental health of workers.

METHOD

1. Subjects

We distributed an anonymous questionnaire from 2009 through 2011 to 300 workers at 3 companies in Japan: a railway management company (400 workers), a hotel management company (140 workers), and a building-design company (100 workers). Responses were collected from a total of 207 respondents: 90, 53, and 64 workers at the 3 companies. Eighteen respondents were women, 12 respondents did not specify their sex, and 14 respondents did not answer a sufficient number of questions; these 44 respondents were excluded from the analysis. On the basis of the questionnaire, the 163 remaining respondents were divided into those with good mental health, poor mental health, and other. We compared the job stress and character traits of workers with poor mental health and workers with good mental health to obtain a clear result.

2. Questionnaire

The cover sheet of the questionnaire described the purpose of the study and the usage of collected data. The submission of responses was voluntary, and if a questionnaire was returned to us, we assumed that the respondent agreed with the purpose of the study and the usage of collected data. This survey study was approved by the ethics committee of The Jikei University School of Medicine (file number 21-052).

The questionnaire had 4 parts: 1) basic characteris-

tics, 2) items related to job stress (39 items), 3) items related to character traits (20 items), and 4) items related to mental health (30 items) (Table 1). In parts 2 to 4, the respondents could choose from among 4 answers: "disagree," "somewhat disagree," "somewhat agree," and "agree."

1) Basic characteristics

Basic characteristics included age, sex, education, commute time, hours of sleep, smoking habit, frequency of alcohol consumption, and eating habits.

2) Job stress

Job stress items included quantitative work overload, qualitative work overload, and problems with workplace interpersonal relationships. Referring to the Brief Job Stress Questionnaire (BJSQ)^{14,15} and the Occupational Psychological Stress Assessment Chart⁴ published by the Ministry of Health, Labour and Welfare of Japan, we examined events in the subjects' lives during the past month (Table 1) which may be a cause of poor mental health. The reliability and validity of the BJSQ have been evaluated.

3) Character traits

The mental health check sheet "Sawayaka Friends"¹⁶, developed by the Computer System Laboratory, a developer of a mental health self-care system, was used to assess the character traits of subjects. Consent was obtained to use the questionnaire and the English notation. This questionnaire was developed from worker's point of view and it has been used in many companies. Individuals with such character traits as being scrupulous, serious and inflexible, immature, self-centered, and nervous are generally considered to be susceptible to depression or to be unable to adapt to a workplace¹⁷.

4) Mental health

Items expressing a psychological reaction in BJSQ are 1) vigor, 2) a feeling of irritation, 3) fatigue, 4) uneasiness, and 5) dejection. We chose items in "Sawayaka Friends" corresponding to these 5 items: 1) "I feel energetic every day," 2) "I often become upset or irritated by very small things," 3) "I become easily tired and exhausted," 4) "I feel sad," and 5) "I often feel anxious and restless." More specifically, subjects who answered "somewhat agree" or "agree" to all of these items ("disagree" or "somewhat disagree" for item 1) "I feel energetic every day") were considered to have a "poor" mental health condition. Those who answered "disagree" or "somewhat disagree" to all of these items ("agree" or "somewhat agree" for item 1) "I

Table 1. Questionnaire items

Please answer items about your workplace experience in the past month. Read the statements below and circle the one that describes your experience the best from Disagree, Somewhat disagree, Somewhat agree, and Agree.				
I experienced (or witnessed) a devastating accident or disaster	Disagree	Somewhat disagree	Somewhat agree	Agree
I made a serious mistake at work that would affect the management of the company	Disagree	Somewhat disagree	Somewhat agree	Agree
I caused a large financial loss in the job I am involved in	Disagree	Somewhat disagree	Somewhat agree	Agree
I have to do quite a large amount of work	Disagree	Somewhat disagree	Somewhat agree	Agree
I received an unreasonable request or requests from a customer / business partner	Disagree	Somewhat disagree	Somewhat agree	Agree
I received a complaint or complaints from a customer / business partner	Disagree	Somewhat disagree	Somewhat agree	Agree
I became busy, could not finish my work within the specified work hours, and hours of overtime work increased	Disagree	Somewhat disagree	Somewhat agree	Agree
I work more frequently on my days off than before	Disagree	Somewhat disagree	Somewhat agree	Agree
I am now always dealing with a constant stream of tasks during my working hours	Disagree	Somewhat disagree	Somewhat agree	Agree
I am now appointed to work that allows no mistakes	Disagree	Somewhat disagree	Somewhat agree	Agree
I am now required to obtain new knowledge and skills since my past experience is not applicable	Disagree	Somewhat disagree	Somewhat agree	Agree
I now work irregular shifts including graveyard shifts	Disagree	Somewhat disagree	Somewhat agree	Agree
I have now been asked to always be ready for work	Disagree	Somewhat disagree	Somewhat agree	Agree
I am engaged in a rare type of work, so only a few people understand my situation, and I am having a hard time	Disagree	Somewhat disagree	Somewhat agree	Agree
I am now required to have more advanced knowledge and skills	Disagree	Somewhat disagree	Somewhat agree	Agree
I can not work at my own pace	Disagree	Somewhat disagree	Somewhat agree	Agree
The current work is not right for me	Disagree	Somewhat disagree	Somewhat agree	Agree
I can not decide the priority of tasks or how I carry out work	Disagree	Somewhat disagree	Somewhat agree	Agree
I can incorporate my opinions in the work policy of my workplace	Disagree	Somewhat disagree	Somewhat agree	Agree
I feel isolated in the workplace	Disagree	Somewhat disagree	Somewhat agree	Agree
The work environment has deteriorated (noise, lighting, temperature, humidity, ventilation, smell, and so on)	Disagree	Somewhat disagree	Somewhat agree	Agree
My work now requires physical strength	Disagree	Somewhat disagree	Somewhat agree	Agree
I was forced to quit my job	Disagree	Somewhat disagree	Somewhat agree	Agree
I am not satisfied with the compensation package because I am not a full-time worker	Disagree	Somewhat disagree	Somewhat agree	Agree
I have been promoted	Disagree	Somewhat disagree	Somewhat agree	Agree
I was sexually harassed	Disagree	Somewhat disagree	Somewhat agree	Agree
I am having a conflict with my boss	Disagree	Somewhat disagree	Somewhat agree	Agree
My boss gives me precise orders	Disagree	Somewhat disagree	Somewhat agree	Agree
My boss does not show favoritism	Disagree	Somewhat disagree	Somewhat agree	Agree
I am having a conflict with my subordinate	Disagree	Somewhat disagree	Somewhat agree	Agree
I feel troubled because I am not confident in leading my subordinates	Disagree	Somewhat disagree	Somewhat agree	Agree
I am having a hard time because my subordinates will not work the way I want them to	Disagree	Somewhat disagree	Somewhat agree	Agree
I am having a conflict with my coworker	Disagree	Somewhat disagree	Somewhat agree	Agree
There is a no place to talk about workplace problems	Disagree	Somewhat disagree	Somewhat agree	Agree
My workplace does not have a friendly atmosphere	Disagree	Somewhat disagree	Somewhat agree	Agree
My workplace provides a rewarding and satisfying job	Disagree	Somewhat disagree	Somewhat agree	Agree
There are disagreements in the workplace	Disagree	Somewhat disagree	Somewhat agree	Agree
It is difficult to coordinate with other departments	Disagree	Somewhat disagree	Somewhat agree	Agree
I am troubled by my reduced income	Disagree	Somewhat disagree	Somewhat agree	Agree

feel energetic every day”) were considered to have “good” mental health.

3. Statistical analysis

The outcome measure was poor mental health due to

job stress and character traits. We performed Fisher’s exact test to examine the relationships between job stress and mental health and between character traits and mental health. Next, we performed logistic regression analysis (stepwise procedure) with mental health as a dependent

Table 1. Continued

Please answer items about your personality.				
Read the statements below and circle the one that describes you the best from Disagree, Somewhat disagree, Somewhat agree, and Agree.				
I usually observe regulations and social rules	Disagree	Somewhat disagree	Somewhat agree	Agree
I cannot ignore even a minor illicit act	Disagree	Somewhat disagree	Somewhat agree	Agree
I believe I have a strong sense of responsibility	Disagree	Somewhat disagree	Somewhat agree	Agree
I believe promises should always be kept	Disagree	Somewhat disagree	Somewhat agree	Agree
I am not satisfied without a clear yes or no answer	Disagree	Somewhat disagree	Somewhat agree	Agree
I tend to give clear opinions	Disagree	Somewhat disagree	Somewhat agree	Agree
I tend to accept most requests	Disagree	Somewhat disagree	Somewhat agree	Agree
I listen carefully to others and often empathize with them	Disagree	Somewhat disagree	Somewhat agree	Agree
I cannot help but do something when I see people in trouble	Disagree	Somewhat disagree	Somewhat agree	Agree
I take a moment to calmly make a decision when faced with hardship	Disagree	Somewhat disagree	Somewhat agree	Agree
I always think of my own interests before taking action	Disagree	Somewhat disagree	Somewhat agree	Agree
I try to judge others' opinions after hearing the pros and cons	Disagree	Somewhat disagree	Somewhat agree	Agree
I make plans for work and everyday life and follow the plans	Disagree	Somewhat disagree	Somewhat agree	Agree
I tend to be optimistic about things	Disagree	Somewhat disagree	Somewhat agree	Agree
I tend to force myself to behave in a way that others will like	Disagree	Somewhat disagree	Somewhat agree	Agree
I have many things I would like to try	Disagree	Somewhat disagree	Somewhat agree	Agree
I often regret that I was unable to articulate my feelings	Disagree	Somewhat disagree	Somewhat agree	Agree
I tend to be reserved and often become passive as a result	Disagree	Somewhat disagree	Somewhat agree	Agree
I often follow the directions of others	Disagree	Somewhat disagree	Somewhat agree	Agree
I feel distressed for an extended period of time because of a past event	Disagree	Somewhat disagree	Somewhat agree	Agree
Please answer items about your recent state.				
Read the statements below and circle the one that describes you the best from Disagree, Somewhat disagree, Somewhat agree, and Agree.				
I feel energetic every day	Disagree	Somewhat disagree	Somewhat agree	Agree
I often become upset or irritated by very small things	Disagree	Somewhat disagree	Somewhat agree	Agree
I become easily tired and exhausted	Disagree	Somewhat disagree	Somewhat agree	Agree
I feel sad	Disagree	Somewhat disagree	Somewhat agree	Agree
I feel tense every day and cannot relax	Disagree	Somewhat disagree	Somewhat agree	Agree
I often feel anxious and restless	Disagree	Somewhat disagree	Somewhat agree	Agree
I cannot concentrate on things and cannot work properly	Disagree	Somewhat disagree	Somewhat agree	Agree
I have a hard time falling asleep and have been suffering from a lack of sleep	Disagree	Somewhat disagree	Somewhat agree	Agree
I often wake up in the middle of the night and cannot go back to sleep	Disagree	Somewhat disagree	Somewhat agree	Agree
I have been having nightmare	Disagree	Somewhat disagree	Somewhat agree	Agree
I wake up early in the morning and have been suffering from a lack of sleep	Disagree	Somewhat disagree	Somewhat agree	Agree
I am being treated for insomnia	Disagree	Somewhat disagree	Somewhat agree	Agree
I do not feel refreshed or I feel depressed when I wake up in the morning	Disagree	Somewhat disagree	Somewhat agree	Agree
I become very sleepy during the daytime	Disagree	Somewhat disagree	Somewhat agree	Agree
My joints ache	Disagree	Somewhat disagree	Somewhat agree	Agree
I am suffering from a lack of appetite	Disagree	Somewhat disagree	Somewhat agree	Agree
I often suffer from repeated diarrhea and constipation	Disagree	Somewhat disagree	Somewhat agree	Agree
My eyes are tired every day	Disagree	Somewhat disagree	Somewhat agree	Agree
My neck and shoulders are stiff	Disagree	Somewhat disagree	Somewhat agree	Agree
My lower back hurts	Disagree	Somewhat disagree	Somewhat agree	Agree
I have gastrointestinal problems	Disagree	Somewhat disagree	Somewhat agree	Agree
I experience a rapid heartbeat or shortness of breath even though I have no cardiac or respiratory conditions	Disagree	Somewhat disagree	Somewhat agree	Agree
I sometimes feel dizzy or lightheaded even though I am not sick	Disagree	Somewhat disagree	Somewhat agree	Agree
My palms or armpits often get sweaty when I am nervous	Disagree	Somewhat disagree	Somewhat agree	Agree
Meeting other people is often very cumbersome for me	Disagree	Somewhat disagree	Somewhat agree	Agree
My sexual appetite has decreased	Disagree	Somewhat disagree	Somewhat agree	Agree
I do not feel motivated and everything seems troublesome	Disagree	Somewhat disagree	Somewhat agree	Agree
I am currently under psychosomatic or psychiatric care	Disagree	Somewhat disagree	Somewhat agree	Agree
I am often self-conscious	Disagree	Somewhat disagree	Somewhat agree	Agree
I often redo what I have done to make sure what I have done is not incomplete	Disagree	Somewhat disagree	Somewhat agree	Agree

variable and job stress and character traits as independent variables. Significance was set at $p < 0.05$. The SPSS 18.0J statistics package (IBM SPSS Statistics) was used.

RESULTS

Of the 163 respondents, 34 had good mental health and 32 had poor mental health. The rate of poor mental health was highest for respondents in their 40s (28.1%) and was followed by those in their 20s (25.0%) and those in their 50s (25.0%) (Table 2).

Twenty questionnaire items related to job stress (Table 3) and 10 character traits (Table 4) were significantly associated with poor mental health. Multivariate analysis (stepwise procedure) of these findings showed a significant association between the mental health condition and the following items related to job stress: "feeling distressed for an extended of time because of a past event," "I have to do quite a large amount of work," "I have been asked to always be ready for work," "the work is not right for me," and "there is no place for me to talk about workplace problems" (Table 5).

DISCUSSION

In this study, we analyzed workplace factors that affected the mental health of workers. Multivariate analysis indicated that the mental health condition was associated with character traits and quantitative and qualitative work overload.

Multivariate analysis showed that the character trait of "feeling distressed for an extended of time because of a past event" was significantly associated with the mental health condition. Shimizu et al.¹⁸ have examined the relationship between occupational depression and perfectionism and have found that the tendency to overly worry about mistakes was positively correlated with depression regardless of age. They suggested that a strong tendency to worry about mistakes prevented individuals from undertaking physical exercise or cognitive behavior that would allow them to refresh their minds and feel positive. As a result, negativity and a susceptibility to ill health, such as depression, would develop. Nakamura et al.¹⁹ have examined background factors affecting depression among white-collar workers and have reported that the tendency to overly wor-

ry about mistakes was associated with anxiety and mood changes. The results of their study agreed with our results. The character trait of regretting the past indicates a vulnerability of personality, such as a lack of confidence and being extremely sensitive to the feelings of others. In addition to depression of the "burnout" or exhaustion type triggered by the combination of overwork and having a serious personality, the inability to adapt to a workplace because of a personality vulnerability has recently become a serious mental health issue²⁰. Personality traits are pervasive and enduring patterns of thoughts, feelings, and behaviors which are formed during childhood and increase in consistency throughout a person's life until a peak after the age of 50 years²¹. Shimizu et al.¹⁸ have studied age-specific personality traits in detail and have concluded that younger persons who tended to set high goals for themselves were unlikely to have depression, even though they had a strong tendency to worry about mistakes. To develop a psychological approach based on a good understanding of character traits requires a careful and thorough examination of a person's attitude toward work, aptitude for the work, perspective on work, and future visions.

Occupational health management has conventionally focused on preventing physical illnesses associated with long hours of work²². Recently, however, an increasing number of workers have reported poor mental health, and, therefore, appropriate measures must be implemented. Multivariate analysis in the present study showed that the mental health condition was associated with questionnaire items regarding quantitative and qualitative work overload, such as "I have to do quite a large amount of work," "I have been asked to always be ready for work," and "The current work is not right for me." However, no association was found between mental health condition and the hours of overtime work in the past month. Fujino et al.¹³ have found in their examination of the relationship between the hours of work and psychological burden, that both the actual hours of work and the level of overwork (work beyond the ability and mental capacity of a worker) should be assessed. An increase in the hours of work is unlikely to reduce the psychological burden of a worker, and a worker who is already psychologically burdened likely has a reduced ability to work or works fewer hours because of an accident or organizational control.

In the present study we found an association between

Table 2. Cross-tabulation of mental health and basic attributes of respondents

Mental health		Good (<i>n</i> =34)		Poor (<i>n</i> =32)	
		<i>N</i>	%	<i>N</i>	%
Age					
	Younger than 20 years	1	2.9	1	3.1
	20 to 29 years	4	11.8	8	25
	30 to 39 years	7	20.6	6	18.8
	40 to 49 years	9	26.5	9	28.1
	50 to 59 years	4	11.8	8	25
	60 years or older	9	26.5	0	0
Educational background					
	Junior high school	1	2.9	0	0
	Senior high school	8	23.5	14	43.8
	University	24	70.6	18	56.3
	Other	1	2.9	0	0
Hours of overtime work in the past month					
	Less than 45 hours	26	76.5	10	31.3
	45 to 79 hours	4	11.8	11	34.4
	80 to 99 hours	4	11.8	9	28.1
	100 to 149 hours	0	0	1	3.1
	150 hours or more	0	0	1	3.1
Work commute time					
	Less than 30 minutes	5	14.7	2	6.3
	30 to 59 minutes	10	29.4	11	34.4
	60 to 89 minutes	13	38.2	16	50
	90 minutes or longer	6	17.6	3	9.4
Hours of sleep					
	Less than 6 hours	14	41.2	23	71.9
	6 to less than 8 hours	20	58.8	9	28.1
Frequency of alcohol consumption					
	Every day	10	29.4	15	46.9
	A few times a week	10	29.4	10	31.3
	A few times a month	5	14.7	4	12.5
	Almost never	9	26.5	3	9.4
Smoking					
	Do not smoke	19	55.9	11	34.4
	Quit smoking	4	11.8	6	18.8
	Smoke	11	32.4	15	46.9
Eating					
	Eat regularly	23	67.6	12	37.5
	Do not eat regularly	11	32.4	20	62.5
Exercise frequency					
	Every day	0	0	3	9.4
	A few times a week	14	41.2	12	37.5
	A few times a month	6	17.6	4	12.5
	Almost never	14	41.2	13	40.6

Table 3. Relationship between events that occurred in the workplace in the past month and poor mental health

1. Qualitative work overload					
Event	Good mental health (<i>n</i> =34)		Poor mental health (<i>n</i> =32)		<i>p</i>
	<i>N</i>	%	<i>N</i>	%	
I experienced a devastating accident or disaster	1	2.9	9	28.1	0.005
I received an unreasonable request or requests from a customer	3	8.8	17	53.1	<0.001
I received a complaint or complaints from a customer	4	11.8	17	53.1	<0.001
I am now appointed to work that allows no mistakes	16	47.1	28	87.5	0.001
I feel isolated in the workplace	3	8.8	12	37.5	0.008
I cannot work at my own pace	9	26.5	26	81.3	<0.001
The current work is not right for me	5	14.7	23	71.9	<0.001
I cannot decide the priority of tasks or how I carry out work	4	11.8	15	46.9	0.002
2. Quantitative work overload					
Event	Good mental health (<i>n</i> =34)		Poor mental health (<i>n</i> =32)		<i>p</i>
	<i>N</i>	%	<i>N</i>	%	
I became busy, and hours of overtime work increased	6	17.6	20	62.5	<0.001
I have to do quite a large amount of work	13	38.2	25	78.1	0.001
I am always dealing with a constant stream of tasks during my working hours	6	17.6	23	71.9	0.001
I work more frequently on days off than before	3	8.8	11	34.4	0.016
I have now been asked to always be ready for work	8	23.5	17	53.1	0.022
My work now requires physical strength	3	8.8	15	46.9	0.001
3. Workplace interpersonal relationships					
Event	Good mental health (<i>n</i> =34)		Poor mental health (<i>n</i> =32)		<i>p</i>
	<i>N</i>	%	<i>N</i>	%	
I am having a conflict with my boss	0	0	5	15.6	0.023
I am not confident in leading my subordinates	3	8.8	11	34.4	0.016
There are disagreements in the workplace	14	41.2	24	75.0	0.007
My workplace does not have a friendly atmosphere	4	11.8	16	50.0	0.001
There is no place to talk about workplace problems	8	25.0	24	75.0	<0.001
I am engaged in a rare type of work, so only a few people understand my situation, and I am having a hard time	10	29.4	18	56.3	0.045

the mental health condition and the factor “There is no place for me to talk about workplace problems.” To address this association, we expect that an external consultation system, such as the Employee Assistance Program, will be used in the future^{23,24}. The roles of the Employee Assistance Program include assessing workers’ stress and health, introducing workers to specialized organizations, and providing psychological counseling.

STUDY LIMITATIONS

This study had several limitations. The first is that data obtained from only male workers were analyzed. Sex differences, therefore, were not studied. Because the respondents were persons who were interested in mental health, a selection bias may have been present. The second limitation is that the questionnaire was administered to workers of only 3 companies. The number of respondents in each company varied among these companies because of

Table 4. Relationship between mental health and character traits

Character trait		Good mental health		Poor mental health		<i>p</i>
		<i>N</i>	%	<i>N</i>	%	
I usually observe regulations and social rules	agree	34	100	22	68.8	<0.001
I cannot ignore even a minor illicit act	disagree	10	29.4	19	59.4	0.025
I believe I have a strong sense of responsibility	agree	32	94.1	22	68.8	0.001
I tend to give clear opinions	disagree	8	23.5	20	62.5	0.003
I listen carefully to others and often empathize with them	agree	33	97.1	21	65.6	0.001
I take a moment to calmly make a decision when facing hardship	disagree	9	26.5	19	59.4	0.012
I make plans for work and everyday life and follow plans	disagree	9	26.5	19	59.4	0.012
I often regret that I was unable to articulate my feelings	agree	13	38.2	25	78.1	0.001
I often follow the directions of others	agree	12	35.3	22	68.8	0.008
I feel distressed for an extended period of time because of a past event	agree	5	14.7	25	78.1	<0.001

Table 5. Result of multivariate analysis to examine the relationship between character traits and job stress, and mental health

Questionnaire item	<i>p</i>	Odds ratio	95% confidence interval of odds ratio
I have to do quite a large amount of work	0.015	27.88	1.75-444.24
I have now been asked to always be ready for work	0.029	11.35	1.28-100.14
The current work is not right for me	0.032	15.38	1.25-188.17
There is no place to talk about workplace problems	0.008	27.81	2.40-322.21
I feel distressed for an extended period of time because of a past event	0.005	26.97	2.77-262.74

the time the questionnaire was administered (which included the summer vacation period). The small number of subjects might have affected the analysis. The third limitation of this study is that it was a cross-sectional study, so a causal relationship is difficult to assess. A final limitation is that the questionnaire has not been used by a previous study and that its reliability and validity have not been verified. The judgment of mental health will have to be re-examined in future.

Because the “other” mental health group was difficult to evaluate, we compared persons with poor mental health and persons with good mental health to obtain a clear result. Further examination may be necessary because the precondition of our logistic regression analysis might not have been followed owing to the exclusion of the “other” group. To more thoroughly examine the factors that influence mental health conditions, it is necessary to increase the number of respondents and conduct a longer-term study.

CONCLUSIONS

The present study found that factors associated with work overload and character tendency affect the mental health of male workers. A measure of occupational mental health must be developed to provide an appropriate psychological approach based on the examination of quantitative and qualitative work overload and a good understanding of character tendencies of workers.

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