

J-HOPE

Japanese study of Health, Occupation and Psychosocial factors related Equity





J-HOPE (Japanese study of Health, Occupation and Psychosocial factors related to Equity) is a study that was started with the aim of elucidating the state of the health status disparity amongst workers and its mechanisms. This study was initiated in 2009 as a "Multipurpose Panel Survey" in a novel academic field (research area proposal type) and with a KAKENHI Grant-in-Aid for Scientific Research by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). It is being conducted within the framework of a panel study that repeatedly investigates important indices each year.

Because the problem of the health status disparity amongst workers cannot be solved with simple medical knowledge, research teams are composed of not only medical specialists, but also experts in psychology, economics and social studies. By 2014, 14,000 workers spanning 12 business sites throughout Japan had been surveyed over 4 years. In some workplaces, follow-up surveys were conducted over the following 4 years.

In this panel study, socioeconomic attributes of workers with diverse backgrounds and occupational stress scales that are newly garnering attention, together with detailed questionnaires on lifestyle-related diseases, typical cardiovascular disease risk factors and mental health indicators such as for depression, undergo yearly measurement and data storage with standardized methods.

Basic measurement items

As of February 2018, panel data following up 14,000 workers at domestic workplaces over 4 years (for some subjects, 8 years) has been registered and we are measuring individual attributes, socioeconomic factors, occupational stress and health behavior with a comprehensive questionnaire. Occupational stress can be measured by conventional demand - control models as well as by more recent models such as effort-reward imbalance, organizational justice and work engagement using internationally established questionnaires. At workplaces where this is possible, the online version of WHO international comprehensive structured diagnostic interviews is used to evaluate the onset of major depression and anxiety disorders. Health diagnosis opportunities are also used to measure biomarkers that can link stress with physical disease. At almost all workplaces, health checkups are used to measure blood pressure, height, weight, abdominal circumference and blood test values (blood glucose, HbA1c, blood lipids) and, in workplaces where this is possible, stress-related genes, inflammatory markers, and objective sleep indices using Actiwatch activity monitoring are measured.

Multipurpose worker panel

Basic structure

Subjects
Workers: Total 14,000
From multiple workplaces with differing industries and occupational roles (diverse)

Measurement details - Comprehensive measurement items related to health, society and economics
Socioeconomic indices: Position, income, academic history
Psychosocial indices: Occupational stress according to an established stress model
Lifestyle: Health-related behavior
Biological indices: Cardiovascular disease risk factors, stress-related biomarkers, anxiety genes
Mental health status: Identify depression, anxiety disorder

Outcomes
Disease exacerbation including cardiovascular diseases/poor mental health and time off work due to illness
Presence of major depression/anxiety disorder (WHO structured diagnostic interview) Hierarchy change, quitting job

Occupational field cohort characteristics
High follow-up precision
Comprehensive and highly precise health management data by means of health diagnosis

Coordination with other planned research teams

Correlation between brain function and job rank/work burden

Correlation between mental disorder and job rank/work burden

Health status of workers in difficult economic conditions

Disparity in access to health, medical and social services, and associated health status disparity

Effects of stress resulting from job conditions etc. related to job rank

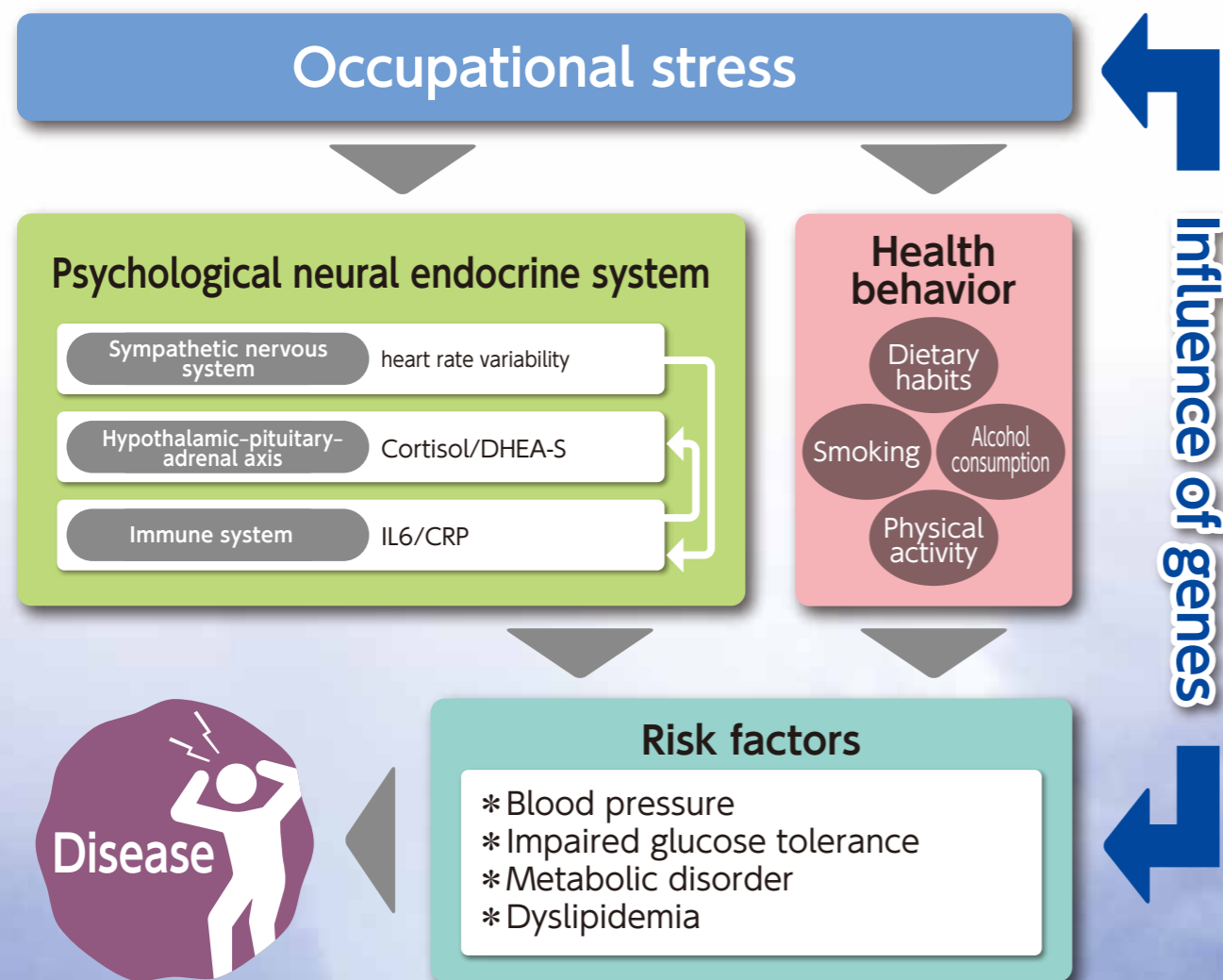
Psychosocial factors/indices

- Psychosocial factors/indices
- Level of demand, control
- Level of demand
- Control
- Support from superior
- Support from colleagues
- Effort/reward imbalance
- Effort
- Reward
- Organizational justice
- Procedural justice
- Interactional justice
- Work engagement
- Social capital
- K6

Biological indices

- Cardiovascular disease risk factors
- Options
- Stress-related biomarkers
- IL6
- High sensitivity CRP
- Homocysteine
- DHEA
- Cortisol
- NT-proBNP
- Sleep patterns/autonomous nervous system examination
- Serotonin transporter genes (5-HTTLPR)

Mechanisms linking stress and disease that are being investigated by J-HOPE



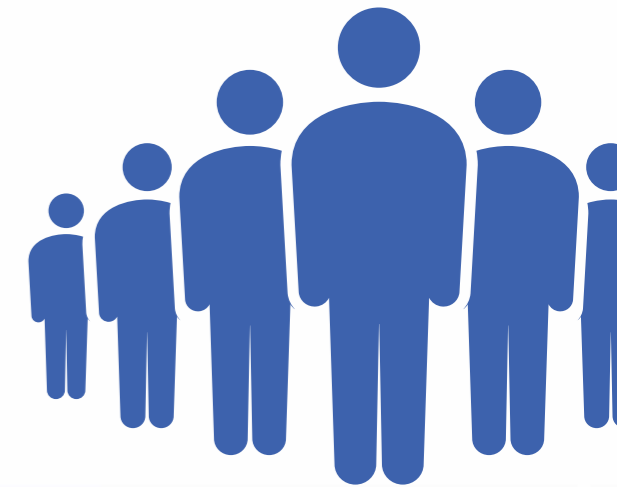
Current disclosure status

In response to requests by researchers in the fields of social medicine, psychology, economics and policy studies who are interested in social health disparities, a DVD-ROM is provided to transmit information free of charge with the approval of the Data Management Committee.

To encourage use of this data by many, we hold research (database) information briefings as necessary to researchers deemed eligible by the Data Management Committee.

Future plans

Cleaning of the J-HOPE data, including biological data that was measured between 2009 and 2013 and some workplace data that was followed up between 2014 and 2017, has been just finished. While confirming procedures to make it possible to respond to changes such as ethical policies in accordance with revisions to the Protection of Personal Information Act, data cleaning is being performed. As a result, the data is becoming completely anonymized and rules for data use are being prepared. There are plans to make the data fully accessible, including to overseas researchers.



Expectations for this study

- 1) Verification of the impact of socioeconomic factors such as income and education, and occupational stress on worker health
- 2) Possible clarification of genetic mutations that affect occupational stress effects and are susceptible to the harmful effects of occupational stress.
- 3) Clarification of not only the effects of occupational stress on biomarkers using the structure of panel data, but also determination of whether biomarkers affect mental stress in the opposite direction.
- 4) It is also anticipated that the results of this study will be used to contribute to the collective formulation of prevention measures for various stress factors; individuals with certain genetic predispositions can be provided with health guidance and clinical intervention to establish future preventive measures for health disorders caused by occupational stress.
- 5) It is anticipated that the database planned for public release going forward will be used by researchers around the world who are interested in social disparity in health and are active in the fields of social medicine, psychology, economics and policy studies, and that it will be utilized as basic data for elucidating social disparities in worker health and to promote the health of workers.

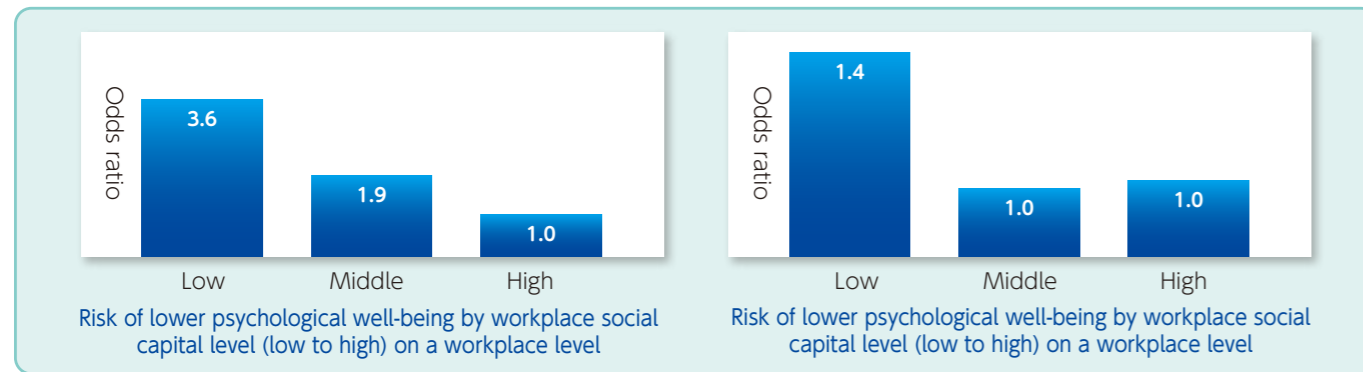
Presentation of results

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Since its predecessor study in a novel academic field, J-HOPE has produced many notable results. Here, we will present results that have recently garnered attention for demonstrating that psychologically positive workplace elements are related to worker health, and results regarding dietary patterns that contribute to worker health.

Workplaces with strong ties (social capital) produce good mental health

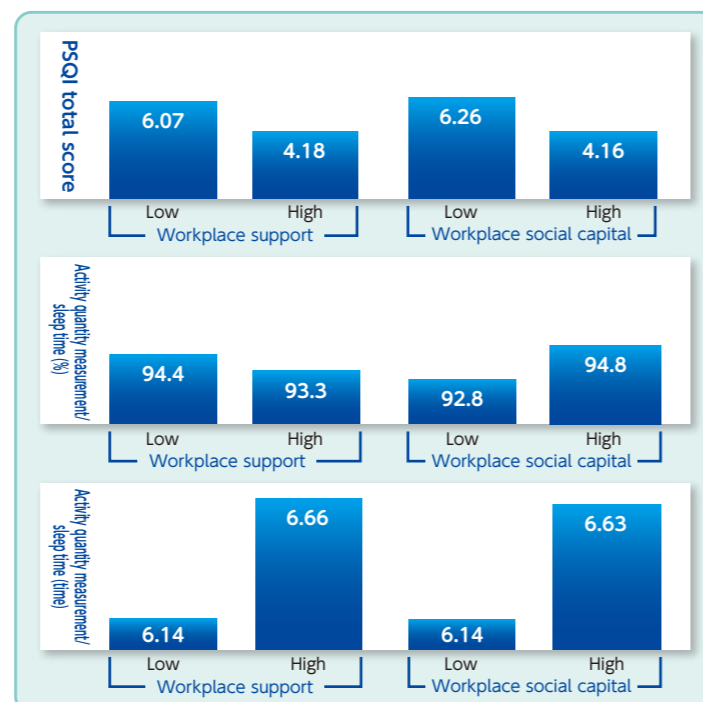
The concept of social capital is garnering attention. It has been shown that workers have better psychological well-being in workplaces with high social capital in the form of stronger efforts at the workplace, and trusting one's colleagues.



Oshio et al, Ind Health 2014

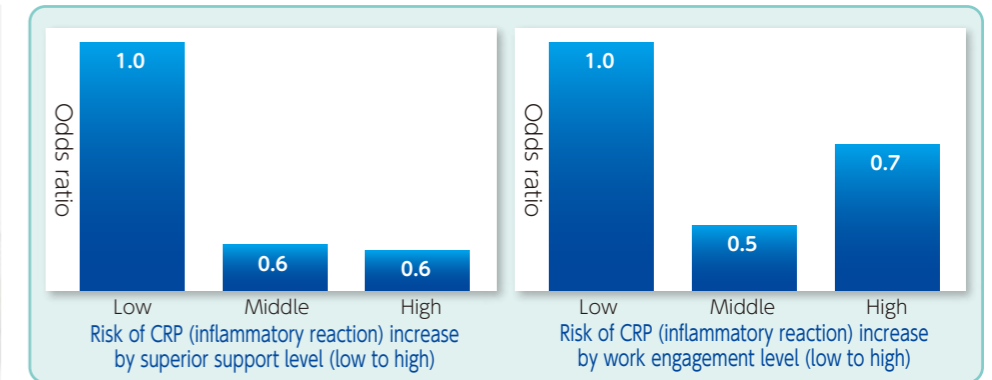
Workplace social capital is related to good sleep quality and quantity

Results have demonstrated that in addition to social capital, good workplace support results in good sleep quality and quantity.



Takahashi et al, J Sleep Res 2014

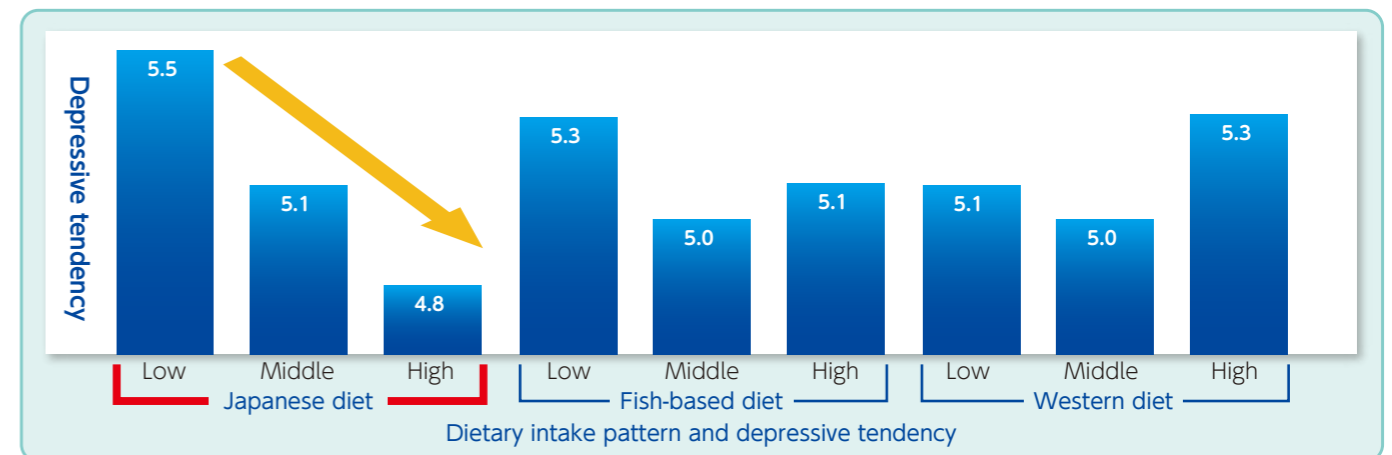
Workers who feel that they have much support from their superior and colleagues, and with strong work engagement have low CRP (inflammation)



Eguchi et al, Am J Ind Med 2015

Support from one's superior and being able to actively be involved in one's work (work engagement) are also positive psychological factors at workplaces that have recently been garnering attention. It has been found that when these are in a good state, inflammatory response markers measured 1 year later are also low.

Workers who intake a well-balanced Japanese diet tend to be less depressed



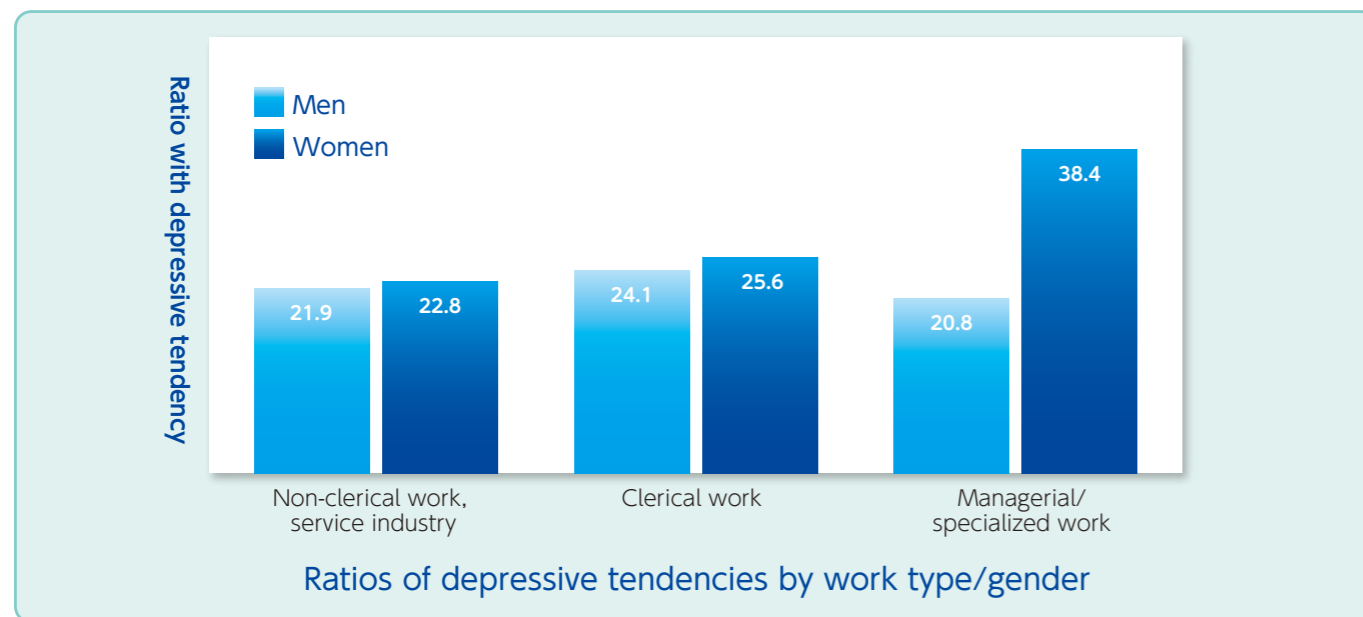
Suzuki et al, J Affect Disord 2013

Interesting results were also obtained with regards to diet. It was found that workers who consumed a well-balanced diet and those who ate a Japanese diet in particular had a tendency for less depression. Dietary balance is an important health behavior that supports overall health.

The J-HOPE database was constructed with the support of grants in the form of a MEXT "Multipurpose Panel Study" in a novel academic field (research area proposal type) (2009 - 2013) and a KAKENHI Grant-in-Aid for Scientific Research A by MEXT (2014 - 2017) as "Comprehensive elucidation of the effects of occupational stress on health according to a multipurpose panel follow-up of 10,000 workers".

Women have greater depressive tendencies the higher their occupational position

Although the number of women with important corporate positions is increasing, it was found that women had greater depressive tendencies the higher their occupational standing. Not receiving adequate remuneration for their work volume was found to be among the top reasons for this.



Umeda et al, SSM Popul Health 2015

The results of regular health checkups are improved by starting with light exercise

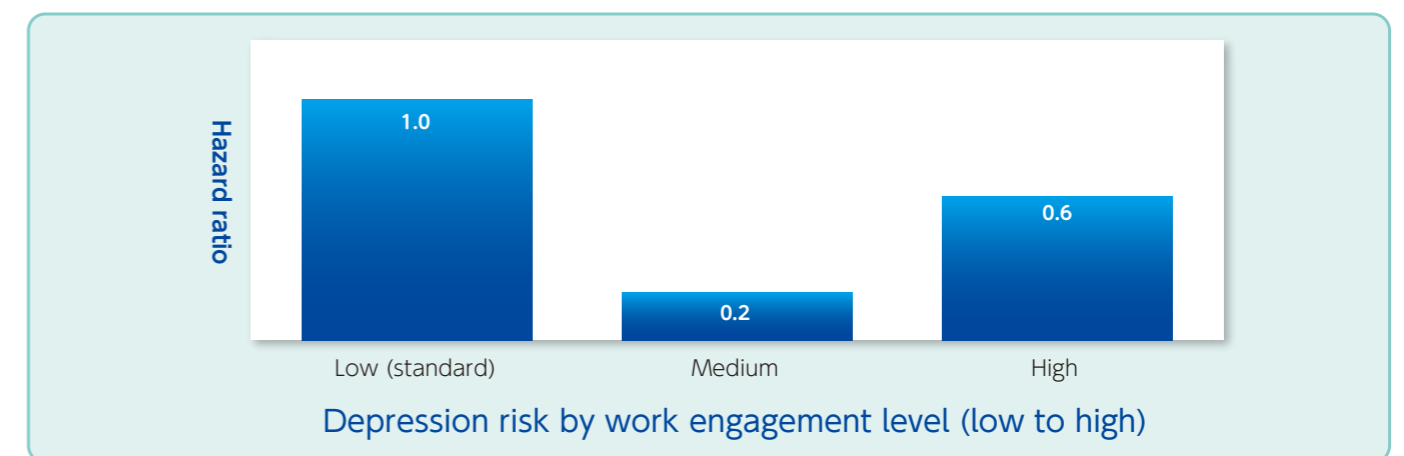
It was found that when workers who do not exercise at all start performing light exercise that does not leave them breathless or cause palpitations at least once per week, their regular health checkup results (in particular, LDL cholesterol and hemoglobin A1c in men and hemoglobin A1c in women) 1 year later improve.

Oshio et al, J Occup Health 2016



Workers with medium work engagement have the lowest risk of depression onset

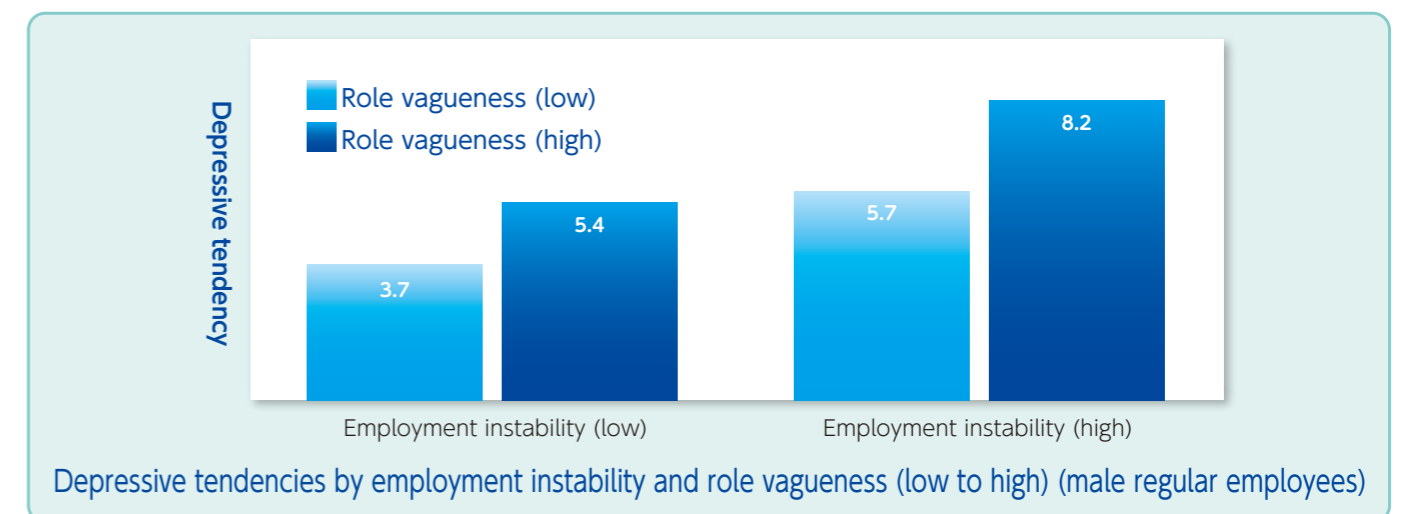
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Imamura et al, PLOS ONE 2016

Regular male employees have increased depressive tendencies as their employment is unstable and workplace role is vague

Employment anxiety is becoming more common with the increase in non-regular employees and regular employees are also afflicted without exception. Male regular employees in particular were found to have strong depressive tendencies when in workplaces with unstable employment and vague roles.



Inoue et al, Int Arch Occup Environ Health 2018