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Spouse Factors Related to the Leave Period of Employees on Temporary Leave for Depression

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Abstract : In depression, the health condition of family members (particularly spouses) may influence the reinstatement process of employees on temporary leave. The length of leave from work may reflect the quality of the process leading to the stage of reinstatement, and a short period to reinstatement may increase the possibility of a smooth reinstatement. In this study we investigated the relationship between spouse factors and length of leave period. The subjects were 63 permanent employees on temporary leave for depression and their spouses. We investigated demographic characteristics, spouse factors, individual factors, household factors, and workplace factors, and extracted the factors related to the length of leave period through hierarchical multiple regression analysis. Results revealed that the Frenchay Activities Index (FAI), a spouse factor, was consistently and significantly related to the length of leave ($\beta = -0.37, P < 0.01$). The higher the spouse FAI, the shorter the leave period of employees on temporary leave. In particular, the spouses' leisure activities were related to the leave period, whereas the effects of housework and work were unclear. The results suggest that the assessment and intervention of the spouses' activities of daily living are important in reinstatement support.

Keywords : activity of daily living, depression, leave period, return to work, spouse.

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Introduction

In recent years, an increasing number of employees have been opting for temporary leave from the workplace owing to mental health disorders, and it is common for them to return to work only to leave again. In the past year, 6.7% of offices in Japan reported workers who took temporary leave for at least 1 month

owing to mental health disorders, and 5.8% of offices reported workers who resigned [1]. Of the 25.7% of workers who were aware of their mental health disorders, 8.7% had previously taken temporary leave, and 13.3% had resigned [2]. Depression tends to relapse [3–6], and the rate of work continuation for six months after reinstatement is only 44%, with approximately 20% of workers returning to temporary leave within

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the first month after returning to work [7]. Approximately half of the workers who return to work from sick leave take sick leave again within 5 years after reinstatement [1]. These data indicate that work continuation is difficult after temporary leave owing to mental health disorders.

Among those experiencing depression, the health condition of family members (spouse) may influence the reinstatement process of employees on temporary leave. Previous studies have found that, when comparing reinstatement success and failure groups, the successful group included significantly more married employees [8] and had better family relationships [9], while unmarried or single status was a factor found to shorten the period of leaving again after returning to work [10]. Thus, the existence of a spouse may have a positive effect on the reinstatement of employees on temporary leave. In contrast, psychiatrists have reported that approximately 40% of patients who face difficulties in reinstatement had family problems other than their own medical condition, personality, and workplace factors [11]. Family members of patients with depression tend to experience stress as a result of nursing care and personal burdens [12], and they may be socially isolated, thereby becoming depressed themselves [13].

A long total period of leave has been found to be disadvantageous for work continuation [14], indicating that the length of leave may reflect the quality of the process leading to possible reinstatement. A short period of leave may increase the likelihood of a smooth reinstatement. This study aims to investigate the relationship between spouse factors and length of leave period.

Methods

Subjects and Procedure

We collected data for this study from September 2019 to March 2020. Research collaborators selected the subjects from employees on temporary leave who were outpatients at 18 cooperating research institutions (eight psychiatric hospitals and 10 psychiatric clinics) in nine prefectures in Japan. The occupations of the research collaborators were doctor, nurse, occupational therapist, psychiatric social worker, clini-

cal psychologist, and medical clerk. The inclusion criteria were employees on temporary leave who were diagnosed with a major depressive disorder according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, who were married at the time of the survey, who were employed but on temporary leave and expected to return to work within one month from the time of the survey, and who were aged between 20 and 65 years. The exclusion criteria were having a history of intellectual disabilities; substance dependence; and complications such as dementia, epilepsy, head trauma, or cerebrovascular diseases. The research collaborators distributed a consent form and questionnaire to the target respondents (N=67 households) after explaining the research aim verbally and in writing. The target respondents took the consent form and questionnaire home and returned both to the principal investigator later. A total of 66 households (98.5%) responded. Of these, we analyzed the data of 63 households in which employees on temporary leave were permanent employees.

Content and Methods

Survey Content

Outcome Measures

We asked the employees on temporary leave to provide the period from the start of their temporary leave to the time of reinstatement (i.e., their total period of leave) in continuous variables.

Spouse Factors (Exposure)

Spouse factors included age, type of employment contract, need for outpatient treatment, psychosocial condition, resilience, and performance of activities of daily living. These questions were answered by the spouse.

The employees' spouses' age was provided in terms of continuous variables. Type of employment was selected from four options: permanent employee, dispatched employee, part-time employee, and unemployed. We asked the spouses if they required outpatient treatment. These questions were answered in two separate situations, i.e., at the start of the temporary leave and at the time of reinstatement.

The following questionnaires were used to assess the employees' psychosocial condition at the time of

reinstatement: K6, the Japanese version of the brief resilience scale (BRS-J), and the revised Frenchay Activities Index self-assessment table (FAI).

K6, a 5-point self-administered questionnaire comprising six items that measure conditions such as depression and anxiety in the past 30 days, was used for the mental health assessment [15]. The higher the total score (0–24 points), the higher the mental health risk. K6 has shown excellent screening results for depression and anxiety disorders [16–18], and the reliability and validity of the Japanese version have been validated [19].

The Japanese version of the brief resilience scale (BRS-J) was used to assess resilience. In this study, of the different definitions of resilience used in previous studies, we selected the concept of “ability to bounce back or recover from stress,” as described by Smith *et al* [20]. Resilience has two aspects: an innate quality and an acquired quality [21]. Tokuyoshi *et al* translated the BRS developed by Smith *et al* into Japanese, created the BRS-J, and validated the reliability and validity of the rating scale [22]. It is a 5-point self-administered questionnaire comprising six simple questions regarding resilience. The higher the total score (6–30 points), the higher the resilience.

We used the revised Frenchay Activities Index self-assessment table (FAI) to assess the performance of activities of daily living. The FAI is an instrument developed to assess the activities of daily living among stroke patients [23, 24], wherein standard values have been shown in a survey of local residents [25], and it has also been used in depression patients [26]. The FAI measures the frequency of 15 activities of daily living across a span of 3–6 months with a 4-point scale ranging from 0 to 3, and the total score is calculated. The higher the total score (0–45 points), the better the performance of activities of daily living. The FAI is divided into the three subgroups: housework, leisure activities, and work.

Individual Factors (Temporary Leave)

We asked the subjects to provide their cumulative employment period and their cumulative number of temporary leaves in continuous variables. For treatment details, we requested the subjects to specify whether they had received drug therapy, cognitive-be-

havioral therapy, interpersonal psychotherapy, counseling, daycare, occupational therapy, the Rework Program, psychoeducation, or modified electro convulsive therapy. To assess the employees’ psychosocial conditions at the time of reinstatement, we asked the subjects to complete the K6 and BRS-J questionnaires, following which we calculated the total scores.

Assessment of Covariates

We asked the employees on temporary leave to provide their age in continuous variables, and to identify their sex as male or female. They provided their household income based on three options (i.e., <5 million yen, 5–9.99 million yen, and ≥ 10 million yen) based on when they were healthy and the household income of the previous year. We asked the subjects to indicate whether they had debts, and to specify whether they were dependent, required assistance, and/or required long-term care during two separate situations: at the start of the temporary leave and at the time of reinstatement. We asked the subjects to indicate their occupation from 20 options based on the Japan Standard Industrial Classification [27], and to select between the two options of public servant or private citizen for occupation (identity), and general staff (no official position) or executive position (official position). To determine company and office size, we asked them to specify whether their workplace employed more than 200 or more than 300 employees, and to indicate whether their workplace implemented a trial attendance system. We asked the subjects to choose from three options to evaluate their self-awareness of temporary leave factors (i.e., workplace factors were larger, individual factors were larger, or workplace factors and individual factors were equal). Temporary leave factors for the purpose of this study refer to the subjective perception of the employees on temporary leave themselves regarding the causes leading to the temporary leave.

Analysis Methods

We obtained the descriptive statistics of each surveyed item, then we performed hierarchical multiple regression analysis using the forced entry method to extract predictors of the length of period of leave (dependent variable). Four hierarchies were utilized:

Model 1, spouse factors; Model 2, individual factors of employees on temporary leave; Model 3, household factors; and Model 4, workplace factors. The moderator variables of Model 1 were the age and sex of the employees on temporary leave, spouse K6, spouse BRS-J, spouse FAI, spouse's employment status, and spouse's need for outpatient treatment. In Model 2, the following variables were adjusted: the K6 and BRS-J responses of the employees on temporary leave, their number of temporary leaves, and participation in the Rework Program. In Model 3, the following variables were adjusted: income of the previous year being less or more than 5 million yen, debt status, dependence status, the state of being a dependent requiring assistance, and the state of being a dependent requiring long-term care. Finally, in Model 4, the following variables were adjusted: being a public servant or private citizen, general staff or executive, company size based on whether there were less than or more than 300 employees, implementation of trial attendance system, and self-awareness of temporary leave factors. The total score of each spouse FAI subgroup (housework, leisure activities, and work) were separately subjected to a hierarchical multiple regression analysis. We calculated the coefficient of determination (R^2) and P -value of each model, and also calculated the standardized coefficient (β) and P -value of the variables.

We used SPSS Statistics 25 statistical analysis software (IBM, Corp., Armonk, NY) for data analysis.

Ethical Considerations

This study was conducted with the approval of the Ethics Review Committee of the principal investigator's affiliated institution, Kanagawa University of Human Services (Permit number: 17-20). Written consent for research participation was obtained from each participant. The subjects were guaranteed of the right to withdraw consent. Personal information was strictly managed by the principal investigator's affiliated institution.

Results

Attributes of Subjects

Table 1 shows the characteristics of the participants and the results of the assessment rating scale. Sixty-

six married couples participated in this study. Among them, the responses of 63 couples in which the employee on temporary leave was a permanent employee were used for analysis. There were 53 men and 10 women on temporary leave, with a mean age of 48.7 ± 6.1 years and a mean cumulative employment period of 305.8 ± 80.1 months. The mean duration of the leave period was 15.2 ± 7.3 months, and the mean cumulative number of temporary leaves was 2.2 ± 1.4 . In terms of type of industry, the majority of the subjects ($n = 27$) worked in manufacturing, and 38 subjects held executive positions. In terms of temporary leave factors, 23 subjects perceived workplace factors to be larger than individual factors. At the time of reinstatement, two households had dependents requiring assistance, and 14 households had persons requiring long-term care. There were 22 spouses who were permanent employees at the start of the temporary leave, dropping to 18 at the time of reinstatement. Eleven and 16 subjects had spouses that required outpatient treatment for some illness at the start of the temporary leave and at the time of reinstatement, respectively.

Spouse Factors Contributing to Leave Period

Table 2 shows the results of the hierarchical multiple regression analysis. In Model 1, which added spouse factors to age and sex, spouse FAI and the spouse's need for outpatient treatment were extracted as significant variables. Spouse FAI was consistently and significantly related to the length of leave, even after adjusting for individual factors (Model 2), household factors (Model 3), and workplace factors (Model 4). In Model 4, adjusted for workplace factors, the spouse's need for outpatient treatment was not significantly related. For Model 4, $R^2 = 0.73$, proving it to be a sufficiently valid model. Spouse FAI had a β of -0.37 ($P < 0.01$).

Next, FAI was divided into three subgroups, and housework, leisure activities, and work were separately plugged into the model. The spouses' leisure activities were used in Model 4, which was found to have a coefficient of determination of $R^2 = 0.72$ and to significantly predict the length of leave ($\beta = -0.31$, $P = 0.01$). The effects of housework and work of spouse FAI on the length of leave were unclear.

Table 1. Subject characteristics

	Permanent employee (n = 63)					
	Min	Max	Mean	SD	N	%
Employee on temporary leave						
Sex						
Male					53	(84.1)
Female					10	(15.9)
Age (years)	32	64	48.7	6.1		
Cumulative employment period (months)	69	503	305.8	80.1		
Temporary leave period (months)	3	34	15.2	7.3		
Cumulative number of temporary leaves (times)	1	9	2.2	1.4		
Type of industry						
Manufacturing					27	(42.9)
Public service					10	(15.9)
Academic research, professional, and technical service					6	(9.5)
Telecommunications					4	(6.3)
Transportation, postal industry					4	(6.3)
Combined service business					4	(6.3)
Education and learning support					3	(4.8)
Medical care, welfare					3	(4.8)
Wholesale, retail					2	(3.2)
Occupation (identity)						
Public servant					11	(17.5)
Private citizen					52	(82.5)
Company size						
≤299 people					7	(11.1)
≥300 people					56	(88.9)
Office scale						
≤199 people					23	(36.5)
≥200 people					40	(63.5)
Position						
General staff (no official position)					25	(39.7)
Executive (official position)					38	(60.3)
Treatment content						
Drug therapy					63	(100)
Cognitive-behavioral therapy					50	(79.4)
Interpersonal psychotherapy					34	(54.0)
Counseling					27	(42.9)
Daycare and occupational therapy					33	(52.4)
Rework Program					60	(95.2)
Psychoeducation					34	(54.0)
m-ECT					0	(0.0)
Trial attendance system						
Yes					33	(52.4)
Self-awareness of temporary leave factors						
Workplace > individual					23	(36.5)
Workplace = individual					20	(31.7)
Workplace < individual					20	(31.7)

Table 1. Subject characteristics (Continued)

	Permanent employee (n = 63)					
	Min	Max	Mean	SD	N	%
Household						
Household income when healthy						
5–9.99 million yen					41	(65.1)
≥10 million yen					22	(34.9)
Household income in the previous year						
≤4.99 million yen					25	(39.7)
5–9.99 million yen					28	(44.4)
≥10 million yen					10	(15.9)
Debt						
Yes					24	(38.1)
Dependent child						
Yes (at the start of temporary leave)					56	(88.9)
Yes (at the time of reinstatement)					55	(87.3)
Requiring assistance						
Yes (at the start of temporary leave)					3	(4.8)
Yes (at the time of reinstatement)					2	(3.2)
Requiring long-term care						
Yes (at the start of temporary leave)					14	(22.2)
Yes (at the time of reinstatement)					14	(22.2)
Spouse						
Age (years)	31	63	47.5	6.3		
Employment status at the start of temporary leave						
Permanent employee					22	(34.9)
Contract employee, fixed-term employee					7	(11.1)
Part-time					13	(20.6)
Unemployed					21	(33.3)
Employment status at the time of reinstatement						
Permanent employee					18	(28.6)
Contract employee, fixed-term employee					7	(11.1)
Part-time					16	(25.4)
Unemployed					22	(34.9)
Need for outpatient treatment						
Yes (at the start of temporary leave)					11	(17.5)
Yes (at the time of reinstatement)					16	(25.4)
Employee on temporary leave						
K6	0	12	5.2	4.2		
BRS-J	8	27	16.3	4.7		
Spouse						
K6	0	14	5.9	3.3		
BRS-J	10	26	17.7	3.3		
FAI	20	39	29.8	5.6		
-Housework	8	18	15.1	2.4		
-Leisure	6	22	13.1	4.1		
-Work	0	3	1.7	1.3		

SD: standard deviation, m-ECT: modified electro convulsive therapy, BRS-J: Brief Resilience Scale-Japanese version, FAI: Frenchay Activities Index

Table 2. Hierarchical multiple regression analysis results for spouse factors during temporary leave

	Model 1		Model 2		Model 3		Model 4	
	β	<i>P</i> -value	β	<i>P</i> -value	β	<i>P</i> -value	β	<i>P</i> -value
Spouse FAI (total)	-0.38	0.01*	-0.37	0.02*	-0.38	0.01*	-0.37	0.00**
Spouse's need for outpatient visits	0.32	0.03*	0.34	0.03*	0.30	0.05	0.17	0.18
R ²	0.32		0.35		0.54		0.73	
<i>P</i> -value	<0.01		<0.05		<0.01		<0.01	
Spouse FAI (housework)	-0.37	0.07	-0.40	0.08	-0.35	0.09	-0.28	0.11
Spouse's need for outpatient visits	0.34	0.02*	0.34	0.04*	0.30	0.04*	0.19	0.15
R ²	0.27		0.31		0.50		0.69	
<i>P</i> -value	<0.05		<0.05		<0.01		<0.01	
Spouse FAI (leisure)	-0.31	0.02*	-0.30	0.04*	-0.30	0.03*	-0.31	0.01*
Spouse's need for outpatient visits	0.33	0.02*	0.32	0.04*	0.29	0.04	0.19	0.13
R ²	0.30		0.32		0.52		0.72	
<i>P</i> -value	<0.01		<0.05		<0.01		<0.01	
Spouse FAI (work)	-0.03	0.83	-0.04	0.78	-0.01	0.89	-0.05	0.69
Spouse's need for outpatient visits	0.38	0.01*	0.34	0.04*	0.30	0.05*	0.18	0.20
R ²	0.23		0.26		0.46		0.66	
<i>P</i> -value	<0.01		<0.05		<0.01		<0.01	

Model 1: Age, sex, spouse factors (K6, BRS-J, FAI, employment status, and need for outpatient treatment).

Model 2: Age, sex, spouse factors, and individual factors (K6, BRS-J, number of temporary leaves, and Rework Program participation).

Model 3: Age, sex, spouse factors, individual factors, and household factors (income of 5 million yen in the previous year, debt, dependent, dependent requiring assistance, and persons requiring long-term care).

Model 4: Age, sex, spouse factors, individual factors, household factors, and workplace factors (public servant/non-public servant, general staff/executive, company size of less or more than 300, trial attendance system, and awareness of temporary leave factors: workplace factors are larger/same or individual factors are larger).

Multiple regression analysis: * $P < 0.05$, ** $P < 0.01$. BRS-J: The Japanese version of the brief resilience scale, FAI: The revised Frenchay Activities Index self-assessment table.

Discussion

This cross-sectional survey on 63 employees on temporary leave for depression and their spouses showed that the higher the spouse FAI, the shorter the length of leave of the employees on temporary leave. To the best of our knowledge, this is a new finding demonstrating that the performance of a spouse's activities of daily living is related to the quality of the reinstatement process of employees on temporary leave.

The higher the spouse's FAI, the shorter the period of leave of the employees on temporary leave. In particular, the spouse's leisure activities predicted the length of leave, whereas housework or work performed by the spouse were not predictors. It is reportedly important in enhancing performance to have free time that allows one to take a break from work and engage in leisure

time, such as rest and recreation [28]. Leisure activities include activities that couples can perform together, and a spouse's leisure activities might influence employees on temporary leave and facilitate their recovery, whereas, in the present study, housework and work had no effects on employees on temporary leave, presumably because they involve a clear division of labor.

Other spouse factors (mental health, resilience, employment status, and need for outpatient treatment) investigated herein did not significantly predict the length of leave. This may have been due to a selection bias. In particular, the subjects in this study were limited to employees on temporary leave who were at a level where reinstatement was possible; thus, it is possible that their spouses were already in good mental health and were cooperative with the survey. The roles of family members during temporary leave are

important [29], and it has been reported that burnout in one member of a couple makes the spouse prone to burnout [30, 31]. In the future, spouse factors influencing the length of leave could be further clarified if a reinstatement failure group and condition of the spouse are also considered.

The length of leave of employees on temporary leave for depression could be shortened by increasing their spouse's activities of daily living. Free time to indulge in leisure activities is important for maintaining mental health [32, 33]. It is important for occupational health professionals to play a role in assessing not only the individual factors of employees on temporary leave and workplace factors but also the spouses' performance of activities of daily living, and in planning adjustments for the spouses to perform meaningful leisure activities.

The present is a cross-sectional study and was unable to clarify a causal relationship between leave period and spouse factors. The survey was fully conducted with self-administered questionnaires that did not include objective indicators of severity. In terms of the sampling of subjects, it is possible that more subjects with a relatively better marital relationship were selected and that the data of cases in which a spouse's mental health significantly deteriorated were not included. Many depression patients return to work after follow-up as outpatients, but many of our subjects participated in the Rework Program. Thus it is necessary to consider sampling bias.

Conclusion

We performed a hierarchical multiple regression analysis adjusted for demographic characteristics, individual factors, household factors, and workplace factors in order to investigate spouse factors related to the length of the period of leave of employees on temporary leave for depression until reinstatement. Our results show that spouse FAI is consistently and significantly related to the length of the period of leave. In particular, the higher the spouse FAI, the shorter the leave of employees on temporary leave. The spouses' leisure activities predicted the length of leave, whereas the effects of housework and work were unclear, suggesting that the assessment and intervention of the spouses' activities of

daily living are important in reinstatement support.

Acknowledgment

The research institutions and research collaborators that cooperated in this study are listed in the appendix. We sincerely thank everyone who helped with this study.

Conflicts of Interest

None

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Appendix. List of collaborating research institutions and research collaborators

Research cooperating institution	Individual in charge	Research collaborator
Hannan Hospital	Kenji Kuroda	Kyoko Koizumi
Saito Clinic	Yoshio Saito	Yoshio Saito
Ochanomizu Mental Clinic	Hitoshi Kaneda	Hitoshi Kaneda
Yokohama City Comprehensive Medical Health Care Center, Yokohama City Comprehensive Medical Health Care Foundation	Hideo Iwaki	Sakae Aso
Chiba Rework Center, Kashiwa Mental Clinic	Yusuke Horie	Yuki Takei Ken Takahashi
Nagano Prefectural Mental Wellness Center - Komagane	Tokiji Hanihara	Noriko Okubo Yuri Moriguchi
Tikumaso Mental Hospital	Kenji Endo	Koujiro Kawano
Fujisawa Hospital	Norio Ishii	Hideki Nishimae
Links Mental Clinic	Hiroshi Aoyama	Aya Takemura
Yamagata Sakuracho Hospital	Takuya Eguchi	Daisuke Sato
Akashi Mental Hospital	Koichi Nishimura	Toshiro Murata
Shioiri Mental Clinic	Kenichi Goto	Takaharu Azekawa Yoichi Funaoka
Kyoto Ekimae Mental Clinic Backup Center, Kyoto	Hideki Miki	Miyako Tsuyuki Masahiro Matsuda
Tokyo Rework Center, Sangenjaya Clinic	Yasuhiro Takahashi	Toshiyuki Sato
Ueno Hospital	Fumio Hirao	Shohei Kawauchi
Atsugi Mental Clinic	Arimitsu Ota	Kazuya Ariga
Furusho Clinic	Ryo Furusho	Ryo Furusho
THP Medical Clinic	Shigeru Uemura	Masae Ishii

(in the order of registration, titles omitted)

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