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Original Article

Employment Status Change and New-Onset Depressive Symptoms in Permanent Waged Workers

Hyung Doo Kim^{1,2}, Shin-Goo Park^{1,*}¹ Department of Occupational and Environmental Medicine, Inha University Hospital, Incheon, Republic of Korea² Department of Environmental Sciences, Seoul National University Graduate School of Public Health, Seoul, Republic of Korea

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ABSTRACT

Background: This study aimed to investigate the relationship between changes in employment status and new-onset depressive symptoms through a one-year follow-up of permanent waged workers.

Methods: We analyzed the open-source data from the Korea Welfare Panel Study. Using the 2017 data, we selected 2,314 permanent waged workers aged 19 to 59 years without depressive symptoms as a base group. The final analysis targeted 2,073 workers who were followed up in 2018. In 2018, there were five categories of employment status for workers who were followed up: permanent, precarious, unemployed, self-employed, and economically inactive. Multiple logistic regression was used to determine the association between employment status change and new-onset depressive symptoms.

Results: Adjusted multiple logistic regression analysis showed that among male workers, workers who went from permanent status to being unemployed (odds ratio: 4.50, 95% confidence interval: 1.19 to 17.06) and from permanent status to being precarious workers (odds ratio: 3.15, 95% confidence interval: 1.30 to 7.65) had significantly high levels of new-onset depressive symptoms compared with those who retained their permanent employment status. There were no significant increases in new-onset depressive symptoms of male workers who went from permanent status to being self-employed or economically inactive. On the other hand, no significant differences were found among female workers.

Conclusion: Our study suggests that the change of employment status to precarious workers or unemployment can cause new-onset depressive symptoms in male permanent waged workers.

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1. Introduction

Globalization and the free market economy threatened stable employment; the fast-changing and competitive working environment placed many with precarious work situations and unemployment [1]. As per the International Labour Organization report in 2012, in many countries where employment grew after economic stagnation, most new employment was involuntary part-time or temporary employment [2]. Globally, the number of precarious workers and job insecurity are still on the rise, and this trend is expected to continue in the future [3]. Thus, employment status and employment instability can be an important determining factor for the mental health of workers in an increasingly insecure labor market.

The link between employment status and mental health, especially depression, has already been identified in several previous studies [4,5]. Most of those studies were cross-sectional ones or only focused on unemployment [6,7]. Some longitudinal studies showed that the change in the employment status of workers was an important variable in the occurrence of depressive symptoms [8,9]. Reviewing the results of previous studies, it is presumed that workers, especially permanent workers whose employment status changes to being precarious workers or to unemployment, are prone to developing depressive symptoms [10]. Even among prospective studies, the association between changes in employment status from permanent to precarious workers and depression is controversial. The Whitehall II study showed that change from secure to insecure employment was associated with depression in male civil servants and not in females [11].

* Corresponding author. Department of Occupational and Environmental Medicine, School of Medicine, Inha University Hospital, 7-206 3rd St. Shinhung-dong, Jung-gu, Incheon, 400-711, Republic of Korea.

E-mail address: stressdr@naver.com (S.-G. Park).

In the study by Kim et al. [8], after adjusting for confounding factors, no significant differences were found in depressive symptoms of permanent workers who changed into precarious workers. The only significant difference found in precarious workers whose status changed to unemployment. In addition, after stratifying the data by gender, a significant increase in depressive symptoms was found only in female workers, when they changed from permanent to precarious workers [8]. In another longitudinal study by Yoo et al. [9], changing from a permanent worker to being a precarious worker led to no significant difference in males or females who were not heads of households, while being the head of the household changed the significance in male and female workers. A longitudinal 6-year follow-up study showed that precarious employment is associated with the development of new-onset severe depressive symptoms. However, in this study, there was a limit to clarifying the relationship between changes in employment status from permanent to precarious employment and depressive symptoms by creating an operational definition that precarious employment included unemployment [12]. It has been shown that unemployment leads to increased depressive symptoms. However, there is little evidence on the depressive effect of changing into precarious waged workers from permanent ones [13]. It is estimated that the likelihood of depression is relatively high when a permanent waged worker with stable employment changes to a different state, but there has been no follow-up study so far with only a permanent waged worker as a baseline study population. Permanent waged workers can change their employment status to various forms, such as precarious waged workers, unemployed, self-employed, and economically inactive, but previous studies have not sufficiently reflected these changes [8,9,12]. The purpose of this study is to determine the effect of employment change on the occurrence of new-onset depressive symptoms in permanent waged workers, through one year of follow-up using the Korea Welfare Panel Study (KOWEPS) data.

2. Materials and methods

We analyzed data from the KOWEPS for this study, which is collected annually with the support of the Korean government. The interviewer visited the subject panel of the survey and introduced the subject of the questionnaire. The interviewer then directly interviewed the respondents for the study. To promote cooperation with the investigation and identify moving households, telephone surveys are conducted before the meeting, and the survey instructors visit local governments and request the panelists in the local area for cooperation. The present analyses used participants from the survey in 2017 as a baseline study population to maintain a consistent classification of employment status over time. Using the 2017 KOWEPS data, permanent waged workers without depressive symptoms were selected as a research group, and their relevance was assessed by performing multiple logistic regression analysis on their 2018 follow-up data. Ethical approval was not required because the KOWEPS provides secondary data that are publicly available for scientific use and do not contain private information.

2.1. Study participants and employment status

The KOWEPS has a structured set of questions to define precarious employment considering the employment situation in South Korea. In this study, the employment status was classified into five types with reference to the criteria for evaluation of employment status proposed by the KOWEPS: permanent, precarious, unemployed, self-employed, and economically inactive. Permanent waged workers were defined as those who have a

working contract period of one year or more or who can continue working if they wish without a fixed contract period. Temporary workers were defined as workers whose work contract period was more than 1 month and less than 1 year. Temporary workers and day laborers were also classified as precarious workers. The unemployed refers to people who have not been employed at the time of the survey but have been actively looking for work in the past 4 weeks. The self-employment was defined as a person who undertakes professional business or runs a business in an independent form under his/her own responsibility. An economically inactive state meant a state of voluntary termination of economic activity for reasons of schooling, parenting, family care, mandatory military service, retirement, or other reasons.

Because permanent waged workers typically retire at the age of 60 years, this study selected workers younger than 59 years in 2017, considering that this is a one-year follow-up study. Of the 15,422 participants, only permanent workers aged 19 to 59 years were considered for inclusion in this study (Fig. 1). Permanent employment was identified by extracting from the labor sector data the answers to the question asking respondents whether they were permanent or not. In the survey, in 2017 of the KOWEPS, 2,402 permanent waged workers were enrolled; of which, 2,314 workers were selected for the study by excluding 88 workers already having depressive symptoms. Of these 2,314 workers, 241 were lost to follow-up after one year, and the remaining 2,073 workers formed the final study sample. Changes in employment status in 2018 were tracked by classifying the current employment status into permanent, precarious, unemployed, self-employed, and economically inactive.

2.2. Outcomes variables and covariates

To estimate depressive symptoms, the KOWEPS used an 11-item self-report questionnaire (hereafter, CES-D11), which is comparable with the 20-item Center for Epidemiologic Studies Depression Scale [14]. CES-D11—summed scores range from 0 to 33, with 9 or a higher score usually indicating the presence of depressive symptoms [15]. The KOWEPS assessed depressive symptoms annually. All potential confounders were measured at the follow-up survey (2018). This is because the survey results measured in 2018 are expected to better reflect the potential confounding factors of the new-onset depressive symptoms in 2018. The 2017 survey results were used only for the purpose of selecting only permanent waged workers without depressive symptoms. Ages, gender, religion, education, marital status, the status of the head of the household, and self-rated health were used as covariates. These covariates are well-known risk factors for depressive symptoms [16,17]. However, income data were excluded from covariates owing to multicollinearity with employment status.

2.3. Statistical analysis

Univariate analysis was performed using a Chi-square test to identify the characteristics of workers' new-onset depressive symptoms. After that, multiple logistic regression was used to determine the association between employment status change and new-onset depressive symptoms. Because the differences in the characteristics of depressive symptoms between males and females were clear [18], the data were stratified by gender and analyzed.

3. Results

3.1. General characteristics of new-onset depressive symptoms

Table 1 presents the general characteristics of the study participants in 2018. There were some statistically significant

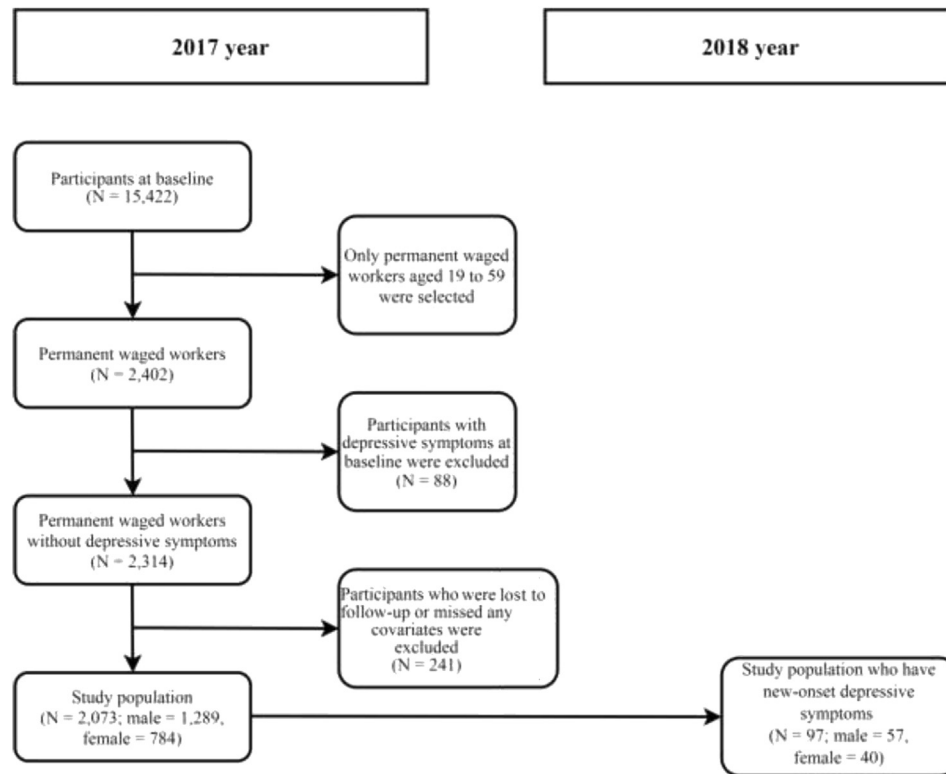


Fig. 1. Flow diagram displaying the process of selection of the study participants.

differences in the distribution, as revealed by the Chi-square test. In male workers, new-onset depressive symptoms showed a significant difference determined by self-rated health and employment status, whereas in female workers, new-onset depressive symptoms showed a significant difference determined by marital status (p -value < 0.05). When we analyzed with a 90% confidence interval, the male workers' marital status was additionally significant, and female workers' heads of household and employment status were related. Both male and female workers' new-onset depressive symptoms were highest during unemployment, followed by when they were precarious workers and, finally, economically inactive people.

3.2. Association between employment status change and new-onset depressive symptoms

Table 2 presents the results of the multivariate logistic regression analysis.

After adjusting for covariates, significant differences in new-onset depressive symptoms were found among male workers who went from being permanent workers to being unemployed (odds ratio: 4.50, 95% confidence interval: 1.19 to 17.06) and from being permanent workers to being precarious workers (odds ratio: 3.15, 95% confidence interval: 1.30 to 7.65), compared with male workers who retained their permanent employment status. On the other hand, female workers showed no such differences.

There were no new cases of depressive symptoms among workers whose employment status changed from permanent workers into self-employment. Thus, no further statistical analysis could be performed.

4. Discussion

This study is meaningful in that it enrolled and followed up with a large sample of participants to identify the occurrence of new-onset depressive symptoms due to a change in employment status. This longitudinal study limited its sample to permanent waged workers and clearly showed the following changes. The results showed that the change from permanent to the precarious workers or to unemployment could lead to new-onset depressive symptoms in male workers.

The risk of new-onset depressive symptoms increased by 3.15 times when male permanent workers transitioned to precarious workers. There are several similar studies using KOWEPS data like our study. A one-year follow-up study based on KOWEPS data in 2007 reported that new-onset depressive symptoms were associated with a change from permanent to precarious employment only in females. This is inconsistent with the results of our study, which is presumed to be because social welfare for female workers was relatively improved compared with the past study, and the definitions of permanent waged workers were different from our study [8]. This seems to have been impacted by the changes in Korean society, and the characteristics of the population have changed as more participants were enrolled in the KOWEPS data after a previous study published. A six-year follow-up study using KOWEPS data in 2007–2013 showed the change from permanent to precarious employment was associated with the development of new-onset severe depressive symptoms among heads of households of both sexes. This is consistent with the results of our study in male workers, but not in female workers. It is presumed to be because the six-year follow-up study used an operational definition that precarious employment included unemployment, and the cutoff point of depressive symptoms was also different

Table 1
General characteristics of the study participants (2018 year)

Variables	New-onset depressive symptoms					
	Male			Female		
	No	Yes	p	No	Yes	p
	N (%)	N (%)		N (%)	N (%)	
Age (years)						
≤29	66 (91.7)	6 (8.3)	0.119	125 (94.7)	7 (5.3)	0.412
30–39	335 (95.7)	15 (4.3)		215 (96.0)	9 (4.0)	
40–49	517 (96.8)	17 (3.2)		274 (95.5)	13 (4.5)	
≥50	314 (94.3)	19 (5.7)		130 (92.2)	11 (7.8)	
Education						
≤Middle school	47 (92.2)	4 (7.8)	0.130	28 (93.3)	2 (6.7)	0.545
High school	345 (94.3)	21 (5.7)		243 (93.8)	16 (6.2)	
≥College	840 (96.3)	32 (3.7)		473 (95.6)	22 (4.4)	
Religion						
Yes	450 (95.9)	19 (4.1)	0.624	315 (95.2)	16 (4.8)	0.770
No	782 (95.4)	38 (4.6)		429 (94.7)	24 (5.3)	
Marital status						
Married	974 (96.2)	38 (3.8)	0.056	479 (96.6)	17 (3.4)	0.005
Bereaved, divorced	44 (95.7)	2 (4.3)		49 (87.5)	7 (12.5)	
Single	214 (92.6)	17 (7.4)		216 (93.1)	16 (6.9)	
Self-rated health						
Very good	234 (96.7)	8 (3.3)	0.013	125 (96.2)	5 (3.8)	0.163
Good	872 (95.7)	39 (4.3)		537 (95.4)	26 (4.6)	
Normal	108 (94.7)	6 (5.3)		58 (90.6)	6 (9.4)	
Bad and very bad	18 (81.8)	4 (18.2)		24 (88.9)	3 (11.1)	
Head of the household						
No	167 (95.4)	8 (4.6)	0.918	625 (95.6)	29 (4.4)	0.057
Yes	1065 (95.6)	49 (4.4)		119 (91.5)	11 (8.5)	
Employment status						
Permanent	1131 (96.2)	45 (3.8)	0.002	637 (95.4)	31 (4.6)	0.051
Precarious	45 (86.5)	7 (13.5)		55 (90.2)	6 (9.8)	
Self-employed	21 (100.0)	0 (0.0)		4 (100.0)	0 (0.0)	
Unemployment	15 (83.3)	3 (16.7)		7 (77.8)	2 (22.2)	
Economically inactive	20 (90.9)	2 (9.1)		41 (97.6)	1 (2.4)	

from our study. In the present study, changes in employment status from permanent workers are clearly classified. Thus, it shows clear results of the relationship between the transition from permanent to precarious employment and new-onset depressive symptoms. In general, it is well known that unemployment can cause depressive symptoms in workers [19,20]. This was consistent with the results of our study. Female workers were only significant in univariate analysis. There were no new-onset cases of depressive symptoms among the workers who changed from permanent workers to self-employment in the follow-up. This is

similar to the results of past studies, which suggest that a self-employed individual has higher job satisfaction and shows lower depressive symptoms than a waged worker [21,22]. Job satisfaction could be defined as a positive and pleasurable state resulting from an individual's job appraisal or job experience [23]. As per the Job Demand–Control model, self-employment entails lower job demand and higher control than waged workers [24]. For this reason, it may be expected that self-employed individuals experience lower occupational stress and higher job satisfaction than waged workers.

Table 2
The association between employment status change and new-onset depressive symptoms in permanent waged workers

Employment status of follow-up (2018) from baseline (2017: permanent)	New-onset depressive symptoms							
	Male				Female			
	Crude		Adjusted*		Crude		Adjusted*	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Permanent	1.00		1.00		1.00		1.00	
Precarious	3.91	1.67-9.15	3.15	1.30-7.65	2.24	0.90-5.61	1.99	0.75-5.24
Self-employed	—	—	—	—	—	—	—	—
Unemployed	5.03	1.41-17.99	4.50	1.19-17.06	5.87	1.17-29.44	5.12	0.88-29.75
Economically inactive	2.51	0.57-11.08	1.93	0.41-8.95	0.50	0.07-3.76	0.50	0.06-3.95

CI, confidence interval; OR, odds ratio.

* Age, religion, education, marital status, head of the household, and self-rated health variables were adjusted.

In this study, among the people who were permanent waged workers in 2017, the cases of depressive symptoms newly created in 2018 were considered as participants, so there were not many cases with depressive symptoms. A cross-sectional analysis was also conducted for workers aged 19 to 59 years in the 2018 data. In the cross-sectional study, both men and women showed a high prevalence of depressive symptoms, the same result as the results of the longitudinal study in precarious state and unemployment. Self-employed people showed low prevalence of depressive symptoms, the same result as in the longitudinal study. The economically inactive population showed a relatively high prevalence of depressive symptoms in the cross-sectional study, unlike the longitudinal study. This is because it is estimated that most of the economically inactive population in the longitudinal study consisted of people who voluntarily quit their jobs owing to retirement, childcare, and so on.

As already known, there are differences between male and female workers in the prevalence and development of depressive symptoms [25–27]. Consistent with previous studies, our study shows that male workers are more sensitive to changes in employment status than female workers [28,29].

This can be thought of as the gender difference influence. Males and females have different sensitivity and pathology to depression, which is the main reason why many previous studies analyze gender separately. Parker and Brotchie [30] analyzed the cause of depression based on gender by three factors: sex-role change, social factors, and biological factors. Among them, sex-role change and social factors are linked to the overall characteristics of Korean society.

We could think about the possibility that the characteristics of Korean society were an influencing factor in the differences between male and female workers. Korea has traditionally had a low economic participation rate for women. Although this rate has continuously increased, the difference in the economic participation rate of Korean males and females was 20.5% in 2016, far higher than the Organization for Economic Cooperation and Development average of 16.4%, making Korea the fourth highest country in this respect after Turkey, Mexico, and Chile [31]. Lower economic participation is especially noticeable in married women, and men often bear the much of the economic burden of their family after marriage. The structural characteristics of the Korean society can still make a male worker's mental health more vulnerable to changes in employment status.

About biological factors, gonadal hormone stimulation could contribute a diathesis factor of “emotional dysregulation” in females. It can dispose of women to a greater propensity to depression [30]. However, in this study result, changes in the employment status of female workers do not appear to cause emotional changes prominently.

There are several limitations to this study. Despite adjusting for potential confounding factors, unmeasured confounding factors may exist. The unmeasured confounding factors may affect the association between employment status and new-onset depressive symptoms. Because all data were gathered from the self-report survey, the data potentially included recall bias. There are also limitations in that it has not sufficiently reflected the recent social change, such as diversifying job types and increasing the types of work with second or multiple jobs, which are not sufficiently reflected.

The advantage of this study was that the study participants were only permanent waged workers, and the relationship between changes in employment status and new-onset depressive symptoms in permanent waged workers was clearly confirmed. The present study clearly shows the relationship between the employment change from permanent to precarious employment

and new-onset depressive symptoms, which has been controversial in previous studies [8,12]. The results of this study could be used as evidence on which future research could be based.

5. Conclusion

Our study suggests that employment status change can cause new-onset depressive symptoms in permanent waged workers. In male permanent waged workers, change of employment status to being precarious workers or to unemployment can cause depressive symptoms. In female permanent waged workers, no significant differences in new-onset depressive symptoms were caused by changes in employment status.

Conflicts of interest

The authors declare no conflicts of interest.

Institution and ethics approval and informed consent

Review and approval by the institutional review board were not needed because the source of this study data is public and analysis of the data will not make the data individually identifiable.

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Author contributions

H.D.K. is the first author of this article. He designed the study, interpreted the data, and drafted the manuscript. S.-G.P. is the corresponding author of this article. He suggested the study design, interpreted the data, and revised the manuscript.

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