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Gain of employment and depressive symptoms among previously unemployed workers: A longitudinal cohort study in South Korea

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Abstract

BACKGROUND—The goal of this study is to examine the association between gain of employment and depressive symptoms among previously unemployed workers in South Korea

METHODS—Using data from the on-going Korean Welfare Panel Study, we determined four different employment statuses (i.e. unemployment, part-time precarious, full-time precarious, full-time permanent employment) at follow up (2008 or 2010) among the unemployed at baseline (2007 or 2009) and examined their association with depressive symptoms after excluding the people with depressive symptoms at baseline (N=308). Depressive symptoms were assessed annually using the 11-item Center for Epidemiologic Studies Depression Scale.

RESULTS—After adjusting for covariates including health-related variables, unemployed individuals who gained full-time permanent employment (RR: 0.38, 95% CI: 0.18, 0.83) and those who gained full-time precarious employment (RR: 0.26, 95% CI: 0.11, 0.63) were less likely to have depressive symptoms compared to those with persistent unemployment. In a subpopulation analysis conducted after additionally excluding the people with depressive symptoms one year before baseline, only the association between gaining full-time permanent employment and depressive symptoms was significant (RR: 0.27, 95% CI: 0.08, 0.86).

CONCLUSIONS—Our findings highlight the benefits of full-time permanent employment on worker's mental health.

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Keywords

unemployment; precarious employment; depressive symptoms; South Korea

Introduction

Unemployment can aggravate mental health through deteriorated economic condition and psychosocial stress [Paul and Moser 2009, Murphy and Athanasou 1999]. A growing body of studies report that becoming unemployed [Breslin and Mustard 2003, Kim, et al. 2012] or experiencing prolonged unemployment [Frese and Mohr 1987, Mossakowski 2009, Rugulies, et al. 2010] are related to increased risk of depressive symptoms.

However, there are knowledge gaps in the current literature. First, relatively few studies have investigated how gain of employment among the unemployed is associated with depressive symptoms despite mounting evidence of an association between unemployment and depression [Breslin and Mustard 2003, Kim, et al. 2012, Frese and Mohr 1987, Mossakowski 2009, Rugulies, et al. 2010]. The health impact of gain of employment is important issue, particularly given the current global economic recession and debates on of job creation policies [Haveman, et al. 2012]. Second, most of the previous studies on the association between gained employment and mental health dichotomized employment status into employed and unemployed [Claussen 1999, Claussen, et al. 1993, Lamberg, et al. 2010, Ostamo, et al. 2001, Payne and Jones 1987, Thomas, et al. 2005]. Prior studies, however, suggest that employment status need to be considered as a continuum from unemployment to full-time permanent employment with regard to its health effects [Kim, et al. 2008, Grzywacz and Dooley 2003, Dooley 2003], particularly considering global increase of part-time and temporary employment [Quinlan, et al. 2001].

Expanding on our previous finding that unemployment is related to depressive symptoms [Kim, et al. 2012], we sought to examine the association between gain of different employment status (i.e. unemployment, part-time precarious, full-time precarious, full-time permanent employment) and risk of depressive symptoms among those unemployed at baseline, adjusting for socio-demographic and health related variables in South Korea.

Materials and Methods

We employed data from the on-going Korean Welfare Panel Study (hereafter KOWEPS). KOWEPS is a nationally representative, longitudinal study of 18,856 participants from 7,072 households residing in South Korea who have surveyed annually since 2006 [www.koweps.re.kr, accessed 11/08/2012] [Affairs and University 2010]. To date, data from the first five waves of the KOWEPS has been publicly released and the follow-up rate was 80.3% at the 5th wave. The data did not require protocol approval, nor was informed consent.

To maximize the power of the analysis, we combined two sets of data extracted from KOWEPS. To provide an overall picture on the association between change in employment status and incidence of depressive symptoms in general, we described the burden of

depressive symptoms at follow-up (3th wave or 5th wave of the KOWEPS) among the workers without depressive symptoms at baseline (2nd wave or 4th wave of the KOWEPS) by 16 possible changes in employment status after excluding workers with missing values for their employment status or depressive symptoms. Then to examine specifically the association between gain of different employment status and incidence of depressive symptoms among those unemployed, we followed the selection process of study population as described below (Figure 1).

Study population I includes respondents who remained unemployed or became employed at the 3rd wave of the KOWEPS (2008) among respondents who were unemployed at the 2nd wave of the KOWEPS (2007). Study population II includes respondents who remained unemployed or became employed at 5th wave of the KOWEPS (2010) among respondents who were unemployed at 4th wave of the KOWEPS (2009). For study populations I and II, the baseline surveys were the 2nd wave and 4th wave of the KOWEPS, respectively, and the follow-up surveys were the 3th wave and 5th wave of the KOWEPS, respectively. After excluding 20 respondents from the study population II, who were also represented in study population I, we merged the two populations and further excluded people who were under 18 years old or who were employed or economically inactive or who had depressive symptoms at baseline (2007 or 2009). We excluded people who had depressive symptoms at baseline and conducted a subpopulation analysis further excluding people with depressive symptoms one year before baseline.

Employment status was classified into four categories: unemployment, part-time precarious employment, full-time precarious employment, and full-time permanent employment. A participant was considered to have full-time permanent employment when the employment contract satisfied all four of the following conditions: direct hire by their employers (not subcontracted or dispatched workers or self-employed workers without employees); full-time position (not part-time workers); no fixed-term in their employment contract (not temporary workers); and a high probability of maintaining the current job (less likely to be laid off depending on company's circumstance regardless of the employee's intention). If employment contract did not meet all of four criteria, full-time or part-time employment was defined based on the working time. A participant was considered to be 'unemployed' if he or she was without a job at the time of the survey and had been actively looking for a job during the previous 4 weeks.

Change in employment status was categorized into four groups: persistent unemployment (reference group), change from unemployment to part-time precarious employment, change from unemployment to full-time precarious employment, and change from unemployment to full-time permanent employment.

Depressive symptoms were annually assessed by using the 11-question version of the Centers for Epidemiologic Studies Depression Scale (hereafter, CES-D) [Radloff 1977]. The responses for 11 questions were summed and the resulting score ranged from 0 to 33. Workers with a score of 9 or greater were defined to have depressive symptoms [Takeshita, et al. 2002]. CES-D has been validated in South Korea [Cho and Kim 1998].

Data analysis

First, we described the incidence of depressive symptoms at follow-up (2008 or 2010) among the workers without depressive symptoms at baseline (2007 or 2009) based on 16 possible changes in employment status. And then, we specifically examined the association between gain of different employment status (i.e. unemployment, part-time precarious, full-time precarious, full-time permanent employment) and risk of depressive symptoms among those unemployed at baseline after adjusting for potential confounders. We adjusted for socio-demographic variables and health-related variables which were measured at baseline (2007 or 2009). Age was included as a continuous variable. Education was coded into four categories (i.e. junior high or less, high school, college, and university or more). Marital status was classified into currently married, never married, and previously married including the widowed and divorced. Residential area was measured as living in a metropolitan area or in a rural area. To calculate equivalised household income, the sum of household income from all sources including earning, interest, rent, and dividends, was divided by the square root of the number of household members. The resulting income was further log-transformed and included as a continuous variable. We also considered health-related confounders, including disability, chronic disease, and smoking measured at baseline. They were included as dichotomous variables: having any disability (vs. none), having any chronic disease (vs. none), and being a current smoker (vs. non-smoker).

Multivariable Poisson regression with robust variance was used to examine the association between gain of employment and depressive symptoms and estimate the rate ratio (hereafter, RR) [Barros and Hirakata 2003]. Model I analyzed the data after excluding the people who had depressive symptoms at baseline, and model II analyzed the data after additionally excluding the people who had depressive symptoms one year before baseline. All analyses were performed using STATA/SE version 11.0 (StataCorp, College Station, TX).

Results

A total of 6,084 individuals with employment data at baseline and follow-up presented no depressive symptoms at baseline. When we examined the incidence of depressive symptoms at follow-up by 16 possible changes in employment status, we found a clear inverse relationship between employment and depressive symptoms. Incidence of depressive symptoms was highest among the workers who became or remained unemployed at follow-up (12.5% to 25.3%) and was lowest among those who gained or maintained full-time permanent job at follow-up (5.7% to 11.3%) regardless of employment status at baseline (Table 1).

After applying our exclusion criteria to specifically examine the impact of gain of employment among those unemployed initially, the final analysis included 308 respondents for the full-population analysis, and 249 respondents for the subpopulation analysis (Figure 1). Mean age of the study population was 55 years, ranging from 18 to 76 years, and 144 of them (46.8%) were women among 308 respondents included in the full-population analysis. In the full-population analysis, unemployed individuals who gained full-time permanent employment (RR: 0.26, 95% CI: 0.11, 0.63) and those who gained full-time precarious employment (RR: 0.38, 95% CI: 0.18, 0.83) were less likely to have depressive symptoms

compared to those with persistent unemployment (Table 2). When we additionally excluded respondents who had depressive symptom one year before baseline, the association with the unemployed who gained full-time precarious employment (RR: 0.49, 95% CI: 0.19, 1.25) was attenuated and became non-significant whereas the association with the unemployed who gained full-time permanent employment (RR: 0.27, 95% CI: 0.08, 0.86) remained significant. The association between change from unemployment to part-time precarious employment and depressive symptom was not significant in the subpopulation analysis (RR: 0.87, 95% CI: 0.21, 3.60) as well as in the full-population analysis (RR: 0.51, 95% CI: 0.15, 1.76). Across the two different analyses, there was a consistent dose-response relationship in the magnitude of the observed association based on a quality of employment status at follow-up (persistent unemployment > gained part-time precarious employment > gained full-time precarious employment > gained full-time permanent employment).

Discussion

This study found that workers who gained a full-time permanent job are 74% less likely to develop depressive symptoms compared to those who remained unemployed. In contrast, the protective effects of gaining a full-time or part-time precarious job on developing depressive symptoms were less clear. These findings suggest that policy providing precarious jobs such as temporary employment or daily labor would not be equally beneficial to workers' mental health compared to full-time permanent jobs.

Our results are consistent with previous studies that reported that the benefit of gained employment on mental health could vary based on the type of employment contract [Strandh 2000, Reine, et al. 2008]. One Swedish national survey with 3,500 unemployed found that gaining permanent employment may have a larger benefit in mental well-being compared to temporary employment or self-employment, through resolving economic difficulty and the uncertainty faced during the unemployment [Strandh 2000].

Although we combined two sets of data from KOWEPS, our study was not powered to examine difference in gender. A patriarchal social structure in South Korea may influence the association between getting full-time employment and depressive symptoms for female workers, given that female workers may be required to carry out domestic responsibility even when they were hired as a full-time employee [Kim, et al. 2012]. Furthermore, non-significant findings among the workers who gained part-time precarious employment could be influenced by small sample size (N=20 or 26).

This study has several strengths. First, the longitudinal design of this study allowed for robustness against potential reverse causation (i.e. depressed people are more likely to remain unemployed or to get precarious job instead of getting a full-time permanent job). Second, we were able to adjust for potential confounders including chronic disease and disability status, in addition to socio-demographic variables. Finally, high follow-up rate enabled us to get findings that are relatively robust against selection bias.

Our findings highlight the benefits of full-time permanent employment, that came to be known as "standard" in employment relationship in the post WWII era [Kalleberg, et al.

2000] and the limited benefits to workers of non-standard employment such as full-time and part-time precarious employment contracts. Future research should probe whether high levels of social protection can offset the negative mental health effects of precarious employment contracts in unregulated labor markets. If such social protection is found ineffective, policies will have to focus on a return to stable long-term full time employment to achieve optimum mental health in the workforce. In addition to social protection, stable employment and an improved psychosocial work environment might be necessary to achieve optimum mental health among workers. [Lamontagne, et al. 2007]

References

- Barros A, Hiraakata V. Alternatives for logistic regression in cross-sectional studies: an empirical comparison of models that directly estimate the prevalence ratio. *BMC Med Res Methodol.* 2003; 3:21. [PubMed: 14567763]
- Breslin FC, Mustard C. Factors influencing the impact of unemployment on mental health among young and older adults in a longitudinal, population-based survey. *Scand J Work Environ Health.* 2003; 29:5–14. [PubMed: 12630430]
- Cho MJ, Kim KH. Use of the Center for Epidemiologic Studies Depression (CES-D) Scale in Korea. *J Nerv Ment Dis.* 1998; 186:304–310. [PubMed: 9612448]
- Claussen B, Bjorndal A, Hjort PF. Health and re-employment in a two year follow up of long term unemployed. *J Epidemiol Commun H.* 1993; 47:14–18.
- Claussen B. Health and re-employment in a five-year follow-up of long-term unemployed. *Scand J Public Health.* 1999; 27:94–100. [PubMed: 10421716]
- Dooley D. Unemployment, underemployment, and mental health: conceptualizing employment status as a continuum. *Am J Community Psychol.* 2003; 32:9–20. [PubMed: 14570431]
- Frese M, Mohr G. Prolonged unemployment and depression in older workers: a longitudinal study of intervening variables. *Soc Sci Med.* 1987; 25:173–178. [PubMed: 3660007]
- Grzywacz JG, Dooley D. “Good jobs” to “bad jobs”: replicated evidence of an employment continuum from two large surveys. *Soc Sci Med.* 2003; 56:1749–1760. [PubMed: 12639591]
- Haveman R, Heinrich C, Smeeding T. Policy responses to the recent poor performance of the U.S. labor market. *J Policy Anal Manage.* 2012; 31:177–186.
- Kalleberg AL, Reskin BF, Hudson K. Bad Jobs in America: Standard and Nonstandard Employment Relations and Job Quality in the United States. *Am Sociol Rev.* 2000; 65:256–278.
- Kim MH, Kim CY, Park JK, Kawachi I. Is precarious employment damaging to self-rated health? Results of propensity score matching methods, using longitudinal data in South Korea. *Soc Sci Med.* 2008; 67:1982–1994. [PubMed: 18951671]
- Kim S-S, Subramanian SV, Sorensen G, Perry MJ, Christiani DC. Association between change in employment status and new-onset depressive symptoms in South Korea - a gender analysis. *Scand J Work Environ Health.* 2012; 38(6):537–45. [PubMed: 22370923]
- Korean Institute of Social and Health Affairs, Social Welfare Research Institute of Seoul National University. Users’ guide: Korea Welfare Panel Study. Seoul: Korean Institute of Social and Health Affairs, Social Welfare Research Institute of Seoul National University; 2010.
- Lamberg T, Virtanen P, Vahtera J, Luukkaala T, Koskenvuo M. Unemployment, depressiveness and disability retirement: a follow-up study of the Finnish HeSSup population sample. *Soc Psychiatry Psychiatr Epidemiol.* 2010; 45:259–264. [PubMed: 19495533]
- Lamontagne AD, Keegel T, Louie AM, Ostry A, Landsbergis PA. A systematic review of the job-stress intervention evaluation literature, 1990–2005. *Int J Occup Environ Health.* 2007; 13:268–280. [PubMed: 17915541]
- Mossakowski KN. The influence of past unemployment duration on symptoms of depression among young women and men in the United States. *Am J Public Health.* 2009; 99:1826–1832. [PubMed: 19696382]

- Murphy GC, Athanasou JA. The effect of unemployment on mental health. *J Occup Organ Psychol*. 1999; 72:83–99.
- Ostamo A, Lahelma E, Lonnqvist J. Transitions of employment status among suicide attempters during a severe economic recession. *Soc Sci Med*. 2001; 52:1741–1750. [PubMed: 11327145]
- Paul KI, Moser K. Unemployment impairs mental health: Meta-analyses. *J Vocat Behav*. 2009; 74:264–282.
- Payne R, Jones JG. Social Class and Re-Employment: Changes in Health and Perceived Financial Circumstances. *J Organ Behav*. 1987; 8:175–184.
- Quinlan M, Mayhew C, Bohle P. The global expansion of precarious employment, work disorganization, and consequences for occupational health: a review of recent research. *Int J Health Serv*. 2001; 31:335–414. [PubMed: 11407174]
- Radloff LS. The CES-D Scale, A Self-Report Depression Scale for Research in the General Population. *Appl Psychol Meas*. 1977; 1:385–401.
- Reine I, Novo M, Hammarstrom A. Does transition from an unstable labour market position to permanent employment protect mental health? Results from a 14-year follow-up of school-leavers. *BMC Public Health*. 2008; 8:159. [PubMed: 18477384]
- Rugulies R, Thielen K, Nygaard E, Diderichsen F. Job insecurity and the use of antidepressant medication among Danish employees with and without a history of prolonged unemployment: a 3.5-year follow-up study. *J Epidemiol Commun H*. 2010; 64:75–81.
- Strandh M. Different Exit Routes from Unemployment and their Impact on Mental Well-Being: The Role of the Economic Situation and the Predictability of the Life Course. *Work Employ & Soc*. 2000; 14:459–479.
- Takeshita J, Masaki K, Ahmed I, Foley DJ, Li YQ, Chen R, Fujii D, Ross GW, Petrovitch H, White L. Are depressive symptoms a risk factor for mortality in elderly Japanese American men?: the Honolulu-Asia Aging Study. *Am J Psychiatry*. 2002; 159:1127–1132. [PubMed: 12091190]
- Thomas C, Benzeval M, Stansfeld SA. Employment transitions and mental health: an analysis from the British household panel survey. *J Epidemiol Commun H*. 2005; 59:243–249.

Figure I.
Selection of study population from Korean Welfare Panel Study (KOWEPS)

Table 1

Distribution of depressive symptom at follow-up (2008 or 2010) among workers without depressive symptom at baseline (2007 or 2009) by 16 possible changes in employment status (N=6,084)

Change in employment status		Total	Depressive symptoms at follow-up
Baseline	Follow-up	N	N (%)
Unemployed	Unemployed	91	23 (25.3)
	Part-time precarious	28	3 (10.7)
	Full-time precarious	111	10 (9.0)
	Full-time permanent	90	6 (6.7)
Part-time precarious	Unemployed	5	0 (0)
	Part-time precarious	111	15 (13.5)
	Full-time precarious	118	17 (14.4)
	Full-time permanent	53	6 (11.3)
Full-time precarious	Unemployed	58	11 (19.0)
	Part-time precarious	106	17 (16.0)
	Full-time precarious	1,145	112 (9.8)
	Full-time permanent	771	56 (7.3)
Full-time permanent	Unemployed	56	7 (12.5)
	Part-time precarious	39	2 (5.1)
	Full-time precarious	512	46 (9.0)
	Full-time permanent	2,790	135 (4.8)

Table 2

Association between gain of employment and depressive symptoms at follow up (2008 or 2010) among workers who were unemployed at baseline (2007 or 2009) in South Korea in the adjusted model^a

Employment status at follow-up	Full population (N=308) ^b			Subpopulation (N=249) ^c		
	N ^e (%) ^f	RR	95% CI	N ^e (%) ^f	RR	95% CI
Unemployed	88 (25.0)	1	Referent	66 (18.2)	1	Referent
Part-time precarious	26 (11.5)	0.51	(0.15, 1.76)	20 (15.0)	0.87	(0.21, 3.60)
Full-time precarious	105 (8.6)	0.38*	(0.18, 0.83)	91 (7.7)	0.49	(0.19, 1.25)
Full-time permanent	89 (5.6)	0.26**	(0.11, 0.63)	72 (4.4)	0.27*	(0.08, 0.86)

* p<0.05,

** p<0.001

^a Adjusted for age, sex, education, marital status, residential area, household income, having a chronic disease, having a disability, smoking at baseline (2007 or 2009)

^b excluded respondents who had depressive symptoms at baseline (2007 or 2009)

^c excluded respondents who had depressive symptoms in any of the two prior years (2006/2007 or 2008/2009)

^e A number of total respondents in each category

^f Incidence of depressive symptoms at follow-up (2008 or 2010)