SJWEH Suppl 2008;(6):60–65

Social class, job insecurity and job strain in Korea

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Cho S-I, Eum K-D, Choi BK, Paek D, Karasek R. Social class, job insecurity and job strain in Korea. *SJWEH Suppl.* 2008;(6):60–65.

Objectives This study explored the associations between social class, job insecurity, and job strain among Korean workers.

Methods Data on 6143 participants (253 health care workers, 5113 subway workers, and 777 petrochemical refinery workers) from three Korean job-stress studies were used. Job strain and job insecurity were measured with the job content questionnaire. Job strain was defined as a continuous variable according to the demand-to-control ratio and as a binary variable as the highest quartile of this ratio. Social class was defined by indicators of socioeconomic status. The combined effects of job insecurity and socioeconomic status were examined with generalized linear models and logistic regression models.

Results Job insecurity was relatively higher than in other countries (scale mean 5.8). Higher job insecurity was associated with lower social class, and it appeared to partially mediate the effect of socioeconomic status on job strain. Job insecurity and low social class independently elevated job strain. Job strain was the highest among those with a low social class and job insecurity for each socioeconomic indicator. According to the logistic regression models, the odds ratio for high strain was 2.0 ($P<0.05$) for low job security and low education, 2.4 ($P<0.05$) for low job security and low income, and 2.4 ($P<0.05$) for low job security and low occupational class, when compared with the baseline values.

Conclusions Low social class is associated with higher job strain. Job insecurity is higher among persons in a lower social class, the highest job strain occurring among workers with both factors. Job insecurity appears to intensify the overall effect of social class on job strain.

Key terms demand–control model; social class; socioeconomic status.

The demand–control model has resulted in numerous studies showing that job strain, defined as a combination of high job demands and low job control, is associated with adverse health outcomes. The stress-induced health effects were well documented for mental health, cardiovascular disease, musculoskeletal disorder, and sickness absence (1–3).

Different aspects of job demands and control have been associated with social class (4, 5). There is evidence that job strain plays the role of mediator in the causal pathway of health disparity among social classes (6). Some critics have even argued that high job strain is merely a marker of low social class, without much gain as a separate dimension (7). However, job strain may not necessarily correlate with social class. For example, one study showed that job strain was lower among male blue-collar workers than among low-level white-collar workers (8).

In a recent analysis, the covariance between job strain and indicators of socioeconomic status was less than 20% in large international datasets (9). Particularly, job strain showed an orthogonal relationship to socioeconomic indicators among Belgian workers, for example, education, income, and occupational class. In contrast, there was no such a relationship between job strain and socioeconomic indicators among Korean workers. Furthermore, among Japanese workers, there was an orthogonal pattern for men but not for women. Therefore, the distribution of job strain among different social classes needs to be assessed in the specific

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context of society. Moreover, different social mechanisms may play a role in generating the different patterns of association between social class and job strain.

Over the past several decades, economic globalization has been gaining a powerful influence in most parts of the world. Its rapid acceleration has forced reconstruction, downsizing, and flexibility with respect to the labor market (10). Loss of job security became widespread as a consequence of a flexible labor market. This threat to job security is likely more common and more damaging among vulnerable workers in the lower social classes, who lack the power to protect themselves. Job insecurity is known to have adverse effects on various health outcomes (11–13). Such health effects have been found to be partially explained by the increased demand and reduced control associated with job insecurity (14, 15). Therefore, a reduction in job security in the globalizing economy is likely to intensify job strain, particularly among low-class workers. This complex relationship may be represented by direct and indirect effects of socioeconomic status on job strain, as shown in figure 1.

South Korean workers are suffering from high job insecurity and unequal socioeconomic status due to the rapid extension of labor flexibility as a result of globalization. Extensive restructuring in the labor market and massive layoffs have occurred since South Korea faced an economic crisis in 1997 (16). Precarious employment rose from 43% in 1996 to 52% in 2002 (17). Less-skilled or less-educated workers have little opportunity to find a job with stable employment. Workers with insecure nonstandard employment face severely low income when compared with standard employment workers, and they are more commonly exposed to high psychosocial work demands. These situations lead to unfavorable health outcomes among workers with precarious employment (18, 19). South Korean workers have been suffering from the negative consequences in the psychosocial work environment associated with adaptation to globalization while the social safety net is not ready.

This study explored the relationship between social class, job insecurity, and job strain among Korean workers. We assessed whether there is a possibility that job insecurity serves as a mediator of the effect of socioeconomic status on job strain. In addition, we investigated the combined effects of social class and job insecurity on job strain.

Study population and methods

Study population

Data on university hospital workers (N=253), subway workers (N=5113), and petrochemical refinery workers (N=777) were derived from three Korean job stress studies conducted from 2001 to 2005. Job strain and job insecurity were measured using the Korean version of the job content questionnaire, whose validity and reliability has been reported earlier (20). The scale calculation and definition for decision latitude, psychosocial demands, job insecurity, and job strain are available online (www.jcqcenter.org) as previously published. In addition, we calculated the demand-to-control ratio according to previous studies to avoid the loss of statistic power due to dichotomizing the variables.

For the socioeconomic indicators, educational level, monthly income, and job position were used. These indicators are usually intercorrelated and represent different aspects of socioeconomic status (21). Educational level is generally more of a representation of social status in early life than a representation of occupation (22). Income represents material resources and the level of prestige (23). For occupation, the following three grades were constructed from the companies' personnel records: grade 1 (manager and professionals), grade 2 (intermediate clerical, services, and technical occupations), and grade 3 (lower supervisory, craft and related occupations, as well as semiroutine and routine occupations).

Statistical analysis

In addition to a descriptive data analysis, multiple linear regression models were constructed for demand, control, and the demand-to-control ratio with adjustment for covariates such as age, gender, shiftwork, and workplace (hospital, subway, or refinery). Models with and without adjustment for job insecurity were compared for an assessment of the direct and overall effects of socioeconomic status on the demand-to-control ratio. This method of analysis assumes that there is no unmeasured confounding between job insecurity and job strain (24). Logistic regression was performed for the high-strain group, defined by two methods, the highest quartile of the demand-to-control ratio and the group with demand above the median and control below the median. Social class indicators and job insecurity were dichotomized and combined to form the exposure categories. All of

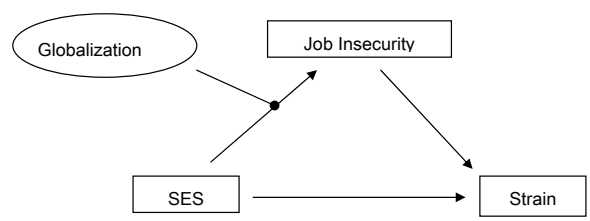

Figure 1. Hypothesized pathways between direct and indirect effects of socioeconomic status (SES) and job strain.

the analyses were conducted using SAS 9.1 (SAS Inc, Cary, NC, USA).

Results

Study population

The general characteristics and psychosocial properties of the participants are presented in table 1. The mean age of the participants was 41.1 (SD 7.4) years, with a mean education of 13. 7 (SD 1.9) years and an average salary per month of USD 4259 (SD 962). Men made up 93% of the participants, and about 70% were skilled or low-skilled workers. The means of the psychosocial properties were 58.9 (SD 8.8) and 31.9 (SD 4.5) for decision latitude and psychosocial demand, respectively. It is notable that job insecurity was relatively high when compared with that of employees in other countries (mean 5.8, SD 1.6).

Table 1. Characteristics of the participants (N=6143).

Variables	N	%	Mean	SD	Range
Age (years)	–	·	41.08	7.37	18–59
Education (years)	–	·	13.70	1.89	6–18
Monthly income (USD)	–	·	4259	962	1000–10000
Job content questionnare					
Decision latitude	–	·	58.92	8.75	24–92
Psychosocial demand	–	·	31.91	4.45	14–48
Demand-to-control ratio [a]	–	·	1.11	0.24	0.47–3.08
Job insecurity	–	·	5.80	1.57	3–17
Gender					
Male	5687	92.58	·	·	··
Female	456	7.42	·	·	··
Employment grade					
Grade 3, manager or professional	1954	31.81	·	·	··
Grade 2, skilled	3168	51.57	·	·	··
Grade 1, low-skilled	1021	16.62	·	·	··

[a] Psychosocial demand × 2 divided by decision latitude.

Table 2. Odds ratios (OR) and 95% confidence intervals (95% CI) for high job insecurity [a] according to indicators of socioeconomic status.

Indicator	N	OR [b]	95% CI
Education (years)			
Above 4 years of college	1828	Reference	··
2 years of college	1639	1.264	1.099–1.453
Below high school	2676	1.210	1.067–1.373
Annual income (USD)			
4800~10000	2021	Reference	··
4000~4780	2121	1.473	1.271–1.707
1000~3992	2001	1.747	1.452–2.102
Job position			
Grade 3, manager or professional	1954	Reference	··
Grade 2, skilled	3168	1.656	1.421–1.930
Grade 1, low-skilled	1021	2.043	1.623–2.572

[a] Value for job insecurity >5.
[b] Adjusted for age, gender, types of shift work, and workplace.

Effect of social class indicators on job insecurity

Table 2 presents the effects of socioeconomic status on job strain after adjustment for age, gender, type of shift work, and workplace. The lower socioeconomic statuses were associated with an increase in job insecurity. The odds ratios for job insecurity were 1.3 and 1.2 for the medium and low educational levels, respectively. Workers with a lower income and lower job grade showed an even greater association.

Direct and overall effects of socioeconomic status on job strain

Since job insecurity may play a role as a mediator (intermediate variable) between socioeconomic status and job strain (demand-to-control ratio), the association was assessed for direct effect (ie, adjustment for job insecurity), as well as for overall effect (ie, no adjustment for job insecurity) (table 3). The educational levels did

Table 3. Effect sizes (standardized beta coefficients) of socioeconomic status on the demand-to-control ratio [a] in generalized linear models.

Indicator of socioeconomic status	N	Direct effect [b]	Overall effect [c]	Increase due to indirect effect [d] (%)
Education (years)				
Above 4 years of college	1828	Reference	Reference	·
2 years of college	1639	–0.152 [e]	–0.131 [e]	–13.8
Below high school	2676	–0.051	–0.032	NA [f]
Annual income (USD)				
4800~10000	2021	Reference	Reference	·
4000~4780	2121	0.112 [e]	0.135 [e]	20.5
1000~3992	2001	0.137 [e]	0.169 [e]	23.4
Job position				
Grade 3, manager or professional	1954	Reference	Reference	·
Grade 2, skilled	3168	0.214 [e]	0.242 [e]	13.1
Grade 1, low-skilled	1021	0.286 [e]	0.340 [e]	18.9

[a] Psychosocial demand divided by decision latitude.
[b] Adjusted for age, gender, types of shift work, workplace, and job insecurity.
[c] Adjusted for age, gender, types of shift work, and workplace.
[d] Indirect effect via job insecurity; percentage increase = (overall effect – direct effect)/direct effect.
[e] P<0.01.
[f] Not calculated because of insignificant direct and overall effects.

Table 4. Effect sizes (standardized beta coefficients) of the combination of job security and indicators of socioeconomic status on demand, control, and demand-to-control ratio in generalized linear models.

Combination	Job security	Socioeconomic status	N	Demand [a]	Control [a]	Ratio [b]
Job security and education	High	High	1604	Reference	Reference	Reference
	High	Low	1209	–0.062	–0.062	–0.012
	Low	High	1863	0.233 [c]	–0.153 [c]	0.253 [c]
	Low	Low	1467	0.192 [c]	–0.242 [c]	0.302 [c]
Job security and income	High	High	1043	Reference	Reference	Reference
	High	Low	1770	–0.029	–0.223 [c]	0.125 [c]
	Low	High	978	0.244 [c]	–0.186 [c]	0.287 [c]
	Low	Low	2352	0.214 [c]	–0.363 [c]	0.391 [c]
Job security and job position	High	High	1012	Reference	Reference	Reference
	High	Low	1801	–0.053	–0.284 [c]	0.184 [c]
	Low	High	942	0.229 [c]	–0.110 [c]	0.220 [c]
	Low	Low	2388	0.198 [c]	–0.450 [c]	0.472 [c]

[a] Adjusted for age, gender, types of shift work, and workplace.
[b] Psychosocial demand divided by decision latitude.
[c] P<0.01.

not show a consistent pattern. Income and job position showed a significant association with job strain. When job insecurity was not adjusted, the lowest income class and occupational class showed an increase in the effect size by 23% and 19%, respectively, these figures suggesting that there was a contribution from indirect effect through job insecurity.

Combined effects of job insecurity and socioeconomic status on job strain

The combined effects of job insecurity and socioeconomic status on psychosocial demand, decision latitude, and demand-to-control ratio after control for age, gender, type of shift work, and workplace are presented in table 4. There was no statistical interaction between job insecurity and socioeconomic status (P>0.05). As expected, the combination of low job security and low socioeconomic status was related to low control both independently and in combination, and the effect sizes slightly varied depending on the socioeconomic indicators. However, low job security was consistently associated with higher demand, lower control, and higher strain (demand-to-control ratio).

The effect on the ratio was stronger than those on demand or control. The effects were assessed also with the use of logistic regression models for the binary definition of job strain (table 5). For both the continuous and binary definition of job strain, job insecurity and the social class indicators showed additive effects, the low job security and socioeconomic status categories showing the highest risk of job strain. Interestingly, the effect of job insecurity appeared to be larger than that of lower socioeconomic status.

Table 5. Odds ratios (OR) and 95% confidence intervals (95% CI) for job strain according to the combination of job security and indicators of socioeconomic status.

Combination	Job security	Socio-economic status	N	OR [a] (job strain 1 [b])	OR [a] (job strain 2 [c])
Job security and education	High	High	1604	Reference	Reference
	High	Low	1209	1.163	1.184
	Low	High	1863	1.903 [d]	1.693 [d]
	Low	Low	1467	1.991 [d]	1.935 [d]
Job security and income	High	High	1043	Reference	Reference
	High	Low	1770	1.329 [d]	1.244
	Low	High	978	1.821 [d]	1.564 [d]
	Low	Low	2352	2.372 [d]	2.101 [d]
Job security and job position	High	High	1012	Reference	Reference
	High	Low	1801	1.292 [d]	1.257
	Low	High	942	1.618 [d]	1.430 [d]
	Low	Low	2388	2.412 [d]	2.195 [d]

[a] Adjusted for age, gender, types of shift work, and workplace.
[b] Group with the highest quartile of the demand-to-control ratio (N=1610).
[c] Workers with demand above the median and control below the median (N=1342).
[d] P<0.05.

Discussion

This study showed that South Korean workers are exposed to high job insecurity, which appeared to intensify the gradient of job strain across social class groups. The combination of low social class and insecure employment was associated with the highest job strain.

The psychological demand in this population in Korea was generally comparable with the results of an earlier international study (25). However, decision

latitude was relatively lower, and job insecurity was remarkably higher than those in previous studies. Lower decision latitude may result from various cultural and organizational factors. However, it can be partly explained by high job insecurity since the fear of losing a job is likely to reduce the level of control in the contractual relationship with the employer. Korea faced an economic crisis in 1997, and this crisis resulted in an extensive restructuring of the labor market, for example, massive layoffs and frequent flexible contracts. Afterwards, the job insecurity of workers became high (20). Over the same period, compensation claims for work-related musculoskeletal disease, cardiovascular disease, and mental disorder steeply rose (26). Various stress-induced health effects were reported by the workers (27). Empirical studies suggested the effects of job insecurity on job strain (28).

It is notable that there was inequality in job insecurity across the social class groups in our study. After control for relevant covariates, the workers with a low socioeconomic status had lower job security. Specifically, income and job position as socioeconomic indicators showed a more robust association than educational level. These findings indicate that the lower social groups are more vulnerable to job insecurity during labor market restructuring. Without a social policy to protect workers from job loss or insecurity, lower social groups have less control and competitive power to obtain securer jobs of higher quality.

Several previous studies supported the association between job strain and social class (29–32) or job insecurity (14, 15, 33). In our study, lower social class was associated with both low job security and high job strain. Consequently, job strain was the highest among those with both factors. Since workers in the lower social class are more likely to belong to this group with combined exposures, their high-strain results did not only come from the direct effect of social class, but also from an indirect effect through job insecurity, which adds to their job strain. This phenomenon leads to an increased number of workers experiencing job strain in society by exposing more workers to the combined exposure, even though there is no interaction (ie, effect modification) between social class and job insecurity among those with both factors. Our results show that job insecurity plays a role as a mediator (intermediate variable), rather than a role as a moderator (ie, effect modifier).

This study could not avoid several limitations. First, the study design was cross-sectional, which limits the inference on the direction of effects. We could not ignore the possibility that workers with job strain had higher fear of job loss. However, previous prospective studies confirmed that the direction of the effect of job insecurity on job strain is more plausible than its reverse causation (14, 15, 33). If job insecurity caused changes in socioeconomic status, instead of being affected, job insecurity would be a confounder, rather than a mediator. This possibility is unlikely because job insecurity was consistently associated with all three of the socioeconomic indicators, including education, which cannot be changed retrospectively. The second limitation was the lack of a representative sample of the entire Korean working population. Therefore, it is difficult to generalize the findings without appropriate caution over all occupations in Korea. Despite these limitations, the relationships among social class, job insecurity, and job strain in Korea suggest the importance of there being appropriate social policy considerations to protect workers from job strain.

In conclusion, this study showed that low social class is associated with higher job strain, and the flexibility of the labor market in the globalizing process appears to intensify the association through the unequal distribution of job insecurity, which is concentrated in the lower social classes.

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