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Combined exposure of emotional labor and job insecurity on depressive symptoms among female call-center workers

A cross-sectional study

Seong-Sik Cho, MD, PhD[a], Hyunjoo Kim, MD, PhD[b,*], JinWoo Lee, MD[c], Sinye Lim, MD, PhD[d], Woo Chul Jeong, MD[e]

Abstract

Call-center workers work under unfavorable psychosocial working conditions, including, emotional labor and job insecurity, which might be linked to depressive symptoms.

The purpose of this study was to explore the link between emotional labor and depressive symptoms and to investigate the influence of combined exposure to emotional labor and job insecurity on depressive symptoms.

A health survey was conducted among female call-center workers in Geumcheon-gu (a district in Seoul), South Korea, in November 2012. The short form of the Korean occupational stress scale was used to measure occupational stressors. A questionnaire with 8 items was employed to assess emotional labor. Depressive symptoms were estimated using the Korean Version of the Centre for Epidemiologic Studies Depression Scale (CES-D). The association of emotional labor and occupational stressors with depressive symptoms was assessed using multilevel mixed-effects logistic regression.

Overall, 699 female call-center workers were enrolled into this study. The odds ratios of experiencing depressive symptoms in workers exposed to emotional labor and job insecurity were 5.45 (95% confidence interval [CI]: 3.38–8.80) and 2.37 (95% CI: 0.86–6.50), respectively. When workers were simultaneously exposed to excessive emotional labor and high job insecurity levels, the odds ratio of experiencing depressive symptoms was 10.13 (95% CI: 3.51–29.23). The Relative Excess Risk due to the Interaction (RERI) of job insecurity and emotional labor was 3.30 (95% CI: −5.50 to 12.11); however, this was not statistically significant ($P = .46$).

Although a causal relationship could not be established due to the cross-sectional study design, the combined effect of emotional labor and job insecurity might have a serious influence on behavioral health among call-center female workers.

Abbreviations: CES-D = Centre for Epidemiologic Studies Depression Scale, CI = confidence interval, IT = information technology, ORs = odds ratios, RERI = relative excessive risk due to interaction.

Keywords: call-center workers, depression, emotional labor, job insecurity

1. Introduction

In the era of post-industrialization, the majority of the working population have been engaged in the service sector. In Korea, the service sector accounts for more than two-thirds of the labor-force, similar to that in European countries and the US. The percentage of workers who were engaged in the service sector increased from 38% to 69% over 30 years (1981–2011).[1] Workers in the service sector experience various kinds of psychosocial risks, including occupational stressors and emotional labor, throughout their working lives.[2–4]

Health researchers have paid attention to the impact of psychosocial work environment on workers' mental health, such as depression.[5–8] A recently published review reported that among the psychosocial risk factors, job stress, low levels of job control, and bullying are more clearly linked with depressive symptoms. These findings highlight the fact that job demand, job insecurity, and effort-reward imbalance have relatively less clear associations with depressive symptoms.[9]

According to the study conducted by Morris et al emotional labor was defined as "the effort, planning, and control needed to express organizationally desired emotion during interpersonal transactions".[10] Although emotional labor might have some positive effects on workers' mental health, some researchers reported its negative consequences such as burnout, low self-efficacy, low job satisfaction, and impaired well-being.[3,11,12]

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[a] Department of Occupational & Environmental Medicine, College of Medicine, Dong-A University, 32 Daesingonwon-ro, Seo-gu, Busan, [b] Department of Occupational & Environmental Medicine, Ewha Womans University Mokdong Hospital, 1071 Anyangcheon-ro, Yangcheon-gu, [c] Korean Confederation of Trade Unions, 14th Fl. Kyunghyang Daily News Bldg., 3 Jeongdong-gil, Jung-gu, [d] Department of Occupational & Environmental Medicine, College of Medicine Kyung Hee University, 23 Kyungheedae-ro, Dongdaemun-gu, Seoul, [e] Department of Occupational & Environmental Medicine, Ewha Womans University Mokdong Hospital, 1071 Anyangcheon-ro, Yangcheon-gu, Republic of Korea.

[*] Correspondence: Hyunjoo Kim, Department of Occupational & Environmental Medicine, Ewha Womans University Mokdong Hospital, 1071 Anyangcheon-ro, Yangcheon-gu, Seoul 07985, Republic of Korea (e-mail: hyunjoo@ewha.ac.kr).

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This link between emotional labor and depressive symptoms has been explored recently.[13]

In Korea, most call-center workers are women, and their employment is based on temporary contracts with low pay. This unfavorable social circumstance which female workers encounter might reflect gender inequalities in the Korean labor market. Consequently, such call-center workers are exposed to a more unfavourable psychosocial work environment, including job insecurity, low levels of job control, and demand for emotional labor, than other standard workers.[14] The low socioeconomic status and unfavorable psychosocial circumstance could increase depression levels or the frequency of depressive symptoms.[15–17] Furthermore, call-center workers are engaged in emotional labor, because they are in contact with customers by telephone and they have to enhance the customers' satisfaction.[18–20] For these reasons, female call-center workers have a higher probability of being simultaneously exposed to emotional labor and job insecurity.

To date very few studies have investigated the combined influence of the emotional labor and other job insecurity on the mental health of workers, particularly among female workers. Therefore, the combined effect of the 2 occupational stressors (emotional labor and job insecurity), which call-center women are frequently exposed to in the workplace requires further exploration.

The aim of the present study was to investigate the associations between emotional labor and depressive symptoms among call-center female workers. Additionally, we aimed to explore the combined influence of emotional labor and job insecurity on depressive symptoms by interaction analysis.

2. Methods

2.1. Design and survey method

We conducted a health survey among female call-center workers in Geumcheon-gu (a district in Seoul), South Korea, in November 2012. As this study was supported by the Seoul Metropolitan and Municipal (district office) Governments, the municipal government sent a letter of cooperation to employers of call-centers before the visit to the workplaces. Following the employers' approval for conducting of the survey, interviewers visited the workplaces. These trained interviewers conducted face to face interviews to assess the working conditions and the health of workers. Telephone calls were made to verify the responses of the interviewees and to determine if there were logical errors in the responses. All female call-center workers who agreed to participate in the survey were interviewed at the time of the visit to the workplaces.

2.2. Study population and sample

The study population consisted of female call-center workers who participated in a health survey, which included working women from 53 call-centers in Gasan Digital Complex, located in South-West Seoul. This area is highly populated with call-centers and information technology (IT) companies. In total, there are approximately 5000 female call-center workers in Gasan Digital Complex (we included 7.1% of all call-center workers in this Complex in our study). The participants were restricted to workers who were working in the workplaces where the employers had agreed to the survey, and who also personally agreed with the study. For this reason, the study sample was a convenience sample.

2.3. Measurements

The questionnaire was used to obtain information on demographic and occupational characteristics, and depressive symptoms. The demographic characteristics included age, educational level, cohabiting status, health behaviors such as smoking and alcohol consumption, and the proportion of one's personal wage out of the total family income. Alcohol consumption was classified into 3 groups according to the frequency of drinking and amount of alcohol consumed. Risky drinking was defined as drinking more than twice a week or more than 8 units of alcoholic beverages regardless of type of alcohol consumed. Moderate alcohol consumption was defined as non-risky consumption of alcohol. No alcohol was defined as 'no alcohol consumption'.

The occupational characteristics included occupational stressors and emotional labor. Occupational stressors included job demand, job control, interpersonal conflict, and job insecurity, as assessed by the short form of the Korean Occupational Stress Scale.[21] Four subscales, for the 4 aforementioned stressors, were constructed using 13 items as follows: 4 items each for job demand and job control, respectively; 3 items for interpersonal conflict, and 2 for job insecurity. The study population was classified into 2 groups according to the score assigned out of a total of 100 points; the summation scores for the items from each subscale were used to ascertain the final score. The high-risk group for occupational stressors was defined as the highest quartile of each subscale score; the cut-off values for upper quartiles were 58.33 for job demand, 66.67 for job control, 44.44 for interpersonal conflict, and 50.00 for job insecurity. Emotional labor was assessed using 8 items, in the Korean language, that were included in the questionnaire (Supplemental Digital Content, http://links.lww.com/MD/C878); these items were based on the theory proposed by Morris and Feldman.[11] The Cronbach's alpha for the questionnaire on emotional labor was 0.852. Each item score was summated and the upper quartile of the summated score was defined as excessive emotional labor; the cut-off point was 24 or greater out of a total of 32 points. Depressive symptoms were estimated using the Centre for Epidemiologic Studies Depression Scale (CES-D) Korean version which includes 20 items. Those with a summation score of 25 points or greater were defined as having depressive symptoms.[22]

2.4. Statistical analysis

Frequencies and proportions were presented for simple descriptive analysis. To calculate the odds ratios (ORs) and to simultaneously consider the correlations among employees in the same companies, multilevel mixed-effects logistic regression analysis was conducted. Multivariable analysis included the following potential confounders: age, educational level, smoking, alcohol consumption, and employment status, in the model.

We followed the method that theoretical epidemiologists recommended for interaction analysis.[23] For the additive scale interaction analysis, the Relative Risk Excess due to the interaction (RERI) was estimated. The following formula was used to calculate RERI:

RERI = (OR concurrent exposure to emotional labor and job insecurity) – (OR exposure to only emotional labor) – (OR exposure to only job insecurity) + 1

If the RERI was larger than 0, a supra-additive interaction was suggested.

The ratio of ORs can estimate the interaction between 2 concurrent exposures by a multiplicative scale. It was calculated using the following formula:

Ratios of ORs = OR of concurrent exposures to emotional labor and job insecurity/(OR of exposure to only emotional labor × OR of exposure to only job insecurity)

If the ratio was larger than 1, the combined effect of the 2 exposures was larger than the product of the effect of the 2 single exposures.

Post-estimation analysis was conducted in order to estimate the combinations of 2 simultaneous risk factor exposures. For the interaction analyses, linear combination (lincom) command, and non-linear combination (nlcom) command were employed after the multilevel mixed-effects logistic regression (melogit). All statistical analyses were conducted using STATA ver.13.1 (Stata Corp LP, Texas, USA).

2.5. Ethical aspect of study

This study was approved by the ethics committee (IRB) of Dankook University Hospital (Reference number: 2012-10-010). All study participants provided informed consent prior to enrolment.

3. Results

In total, 699 female call-center workers were enrolled. Table 1 shows the characteristics of study participants; 42%, 40%, and 19% were in their twenties, thirties, and over forty, respectively. The majority of the call-center workers completed high school (56%), followed by college (28%), and university (16%). Fifty five percent of the participants lived alone and 24% contributed to more than 50% of the total household income. Twenty six percent of participants were current smokers and 12%, 60%, and 28% of participants was classified as risky, moderate, and non-consumers of alcohol, respectively. The majority of the participants were permanent workers (82%). Overall, the prevalence of depressive symptoms among participants was 26%.

Table 2 shows the prevalence of depressive symptom and socioeconomic and behavioral characteristics of study participants across different age groups. The prevalence of depressive symptoms was highest among workers in their twenties or younger (32%). A decreasing trend was observed in the prevalence of depressive symptoms as age increased. Similarly, the prevalence of risky alcohol consumption and current smoking were higher among the youngest age group and decreased as age increased. Additionally, as age increased, the proportion of workers who had spouses or children increased. Among workers at least 40 years of age, only 9% lived alone. We observed that the prevalence of depressive symptoms and socioeconomic and behavioral factors significantly differed among different age groups.

Table 3 demonstrates the associations between clinical and demographic characteristics of the study participants and depressive symptoms by multilevel mixed-effects logistic regression analysis. Multivariable analysis included age, the proportions of personal income in the total household income, employment type, cohabiting status, smoking, alcohol consumption and job demand, job control interpersonal conflict, job insecurity, and emotional labor. In the analysis, those involved in emotional labor had the highest odds of depressive symptoms (odds ratio [OR]: 5.08, 95% confidence interval [CI]: 3.40–7.60), followed by job insecurity (OR: 2.09, 95% CI: 0.83–5.28). Job demand (OR: 2.09, 95% CI: 1.29–3.21), smoking (OR: 2.00, 95% CI: 1.27–3.12), and alcohol consumption (moderate-risk of drinking, OR: 1.44, 95% CI: 0.88–2.34; high-risk of drinking, OR: 2.44, 95% CI: 1.25–4.75) also increased the odds of depressive symptoms.

Table 4 demonstrates the combined effects of emotional labor and job insecurity on depressive symptoms as well as the results of the interaction analysis. We included age, personal income proportion of the total household income, employment status, smoking, alcohol consumption, job demand, job control, and interpersonal conflict in the multiple logistic regression analysis. When workers were exposed to excessive emotional labor and

Table 1

Clinical and demographic characteristics of female call-center workers from Gasan Digital Complex (N = 699).

Characteristics	n (%; 95% CI)
Age (years)	
≤29	293 (42; 38–46)
30–39	276 (40; 36–43)
40≤	130 (19; 16–22)
Educational level	
high school	390 (56; 52–59)
college	196 (28; 25–31)
university	113 (16; 14–19)
Structure of household	
spouse or child	314 (45; 41–49)
alone	385 (55; 51–59)
Proportion of personal income (out of the total household income)	
≤ 50%	534 (76; 73–79)
> 50%	165 (24; 21–27)
Current smoker	
no	517 (74; 71–77)
yes	182 (26; 23–29)
Alcohol consumption	
no	193 (28; 24–31)
moderate risk	422 (60; 57–64)
high risk	84 (12; 10–15)
Employment status	
permanent	575 (82; 79–84)
temporary	124 (18; 15–21)
Occupational stress	
Job demand	
low (Q1–Q3)	542 (78; 74–80)
high (Q4)	157 (22; 19–26)
Job control	
high (Q1–Q3)	389 (56; 51–59)
low (Q4)	310 (44; 41–48)
Interpersonal conflict	
low (Q1–Q3)	465 (67; 63–70)
high (Q4)	234 (33; 30–37)
Job insecurity	
low (Q1–Q3)	501 (72: 68–75)
high (Q4)	198 (28; 25–32)
Emotional labour	
not-excessive (Q1–Q3)	477 (68; 65–72)
excessive (Q4)	222 (32; 28–35)
Depressive symptoms	
low	519 (74; 71–77)
high*	180 (26; 23–29)

* Depressive symptoms was defined as ≥25 point using the Center for Epidemiologic Studies Depression Scale CES-D questionnaires.

CI = confidence interval, Q = quartile.

Table 2

Characteristics of female call-center workers from Gasan Digital Complex based on age category*.

	Age						*P*
	≤29		30–39		40≤		
	n	%	n	%	n	%	
Educational level							.07
High school	157	53	148	54	85	65	
College	93	32	78	28	25	19	
University	43	15	50	18	30	15	
Structure of household							<.01
Spouse or child	44	15	152	55	118	91	
Alone	249	85	124	45	12	9	
Proportion of personal income in total household income							.86
≤50%	225	77	208	75	101	78	
>50%	68	23	68	25	29	22	
Current smoking							<.01
Yes	184	63	214	78	119	92	
No	109	37	62	22	11	8	
Alcohol consumption							<.01
No	65	22	79	28	49	38	
Moderate risk	177	60	170	62	75	58	
High risk	51	18	27	10	6	4	
Employment status							<.01
Permanent	253	86	230	83	92	71	
Temporary	40	14	46	17	38	29	
Depressive symptoms							<.01
Yes	95	32	66	24	20	15	
No	198	68	210	76	110	85	

* *P* was calculated by Chi-Squared test.

high levels of job insecurity concurrently, the odds ratio (OR: 10.13, 95% CI: 3.51–29.23) was the highest. The odds of developing depressive symptoms substantially increased with the combined exposures of emotional labor and job insecurity. The RERI for job insecurity and emotional labor was 3.30 (95% CI: −5.50 to 12.11), indicating that there was supra-additive interaction between emotional labor and job insecurity; however, this was not statistically significant. The ratio of ORs was smaller than 1, indicating that the combined effect of emotional labor and job insecurity was smaller than the product of the 2 separate ORs (OR of concurrent exposure to emotional labor and job insecurity < (OR of single exposure to emotional labor × OR of single exposure to job insecurity). However, we did not observe a statistically significant interaction between emotional labor and job insecurity either on the additive or multiplicative scale.

4. Discussion

The prevalence of depressive symptoms measured using CES-D among female call-center workers in this study was 26%. The CES-D has been used to determine the prevalence of depressive symptoms in communities. A review article reported that the prevalence of depressive symptom in the general population of South Korea varies from 9% to 21% when assessed with CES-D.[24] In the review, the prevalence of depressive symptoms was lower among the middle-aged population and higher among the younger age groups.[24] The prevalence of depressive symptoms in this present study (26%) was higher than the prevalence of depressive symptoms among the general population in the result of the review (9–21%).[24] The higher prevalence of depressive symptoms observed in this study might reflect the condition that call-center workers were exposed to, with unfavorable socioeconomic circumstances and stressful working conditions.

Considering the effect sizes, the most unfavorable psychosocial working condition related to depressive symptoms among female call-center workers was excessive emotional labor. This finding was consistent with those from a study on the impact of emotional labor on depressive symptoms among Korean Nurses.[13] As employment in service sectors has increased; the negative effects of emotional labor have been a concern among researchers.[18,19] However, studies on the link between emotional labor and mental health are scarce in the field of public health. Thus, there is a need for more evidence on the relationship between emotional labor and workers' health. In future, longitudinal studies with robust methods and studies on the biological mechanisms of emotional labor on health may be conducted.

In the current study, we also determined that job insecurity and high job demand were associated with a greater frequency of depressive symptoms. Previous studies have reported that call-center workers are engaged in precarious employment,[14] characterized by job insecurity, low wages, and less autonomy.[25,26] Job insecurity is an important feature of precarious employment that can have a negative effect on both physical and mental health.[27–29] The association between job insecurity and depressive symptoms in this study is consistent with the findings from previous studies. Moreover, because receiving customer complaints possibly threatens job security in workers with emotional labor, the mental health of workers is affected. For this reason, we attempted to estimate the combined effect of job insecurity and emotional labor. The OR of the combined effect of job insecurity and emotional labor on the frequency of depressive symptoms was higher than the addition of the 2 individual ORs and smaller than the multiplication of the 2 individual ORs. This finding implied that the interaction between different occupational stressors might aggravate workers mental health with a

Table 3

Associations between clinical and demographic characteristics and depressive symptoms among female call-center workers from Gasan Digital Complex by multilevel mixed-effects logistic regression (N = 699).

	Univariable analysis			Multivariable analysis*		
	OR	95% CI		OR	95% CI	
Age (years)						
≤29	1.00			1.00		
30–39	0.72	0.49	1.06	0.87	0.53	1.39
40≤	0.40	0.23	0.74	0.81	0.38	1.76
Cohabiting status						
Spouse or child	1.00			1.00		
None	1.86	1.27	2.71	1.40	0.85	2.32
Proportion of personal income in total household income						
≤50%	1.00			1.00		
>50%	1.58	1.06	2.35	1.46	0.92	2.29
Employment type						
Permanent	1.00			1.00		
Temporary	0.70	0.40	1.21	0.76	0.42	1.39
Current smoker						
No	1.00			1.00		
Yes	2.21	1.51	3.24	2.00	1.27	3.12
Alcohol consumption						
No	1.00			1.00		
Moderate risk	1.48	0.96	2.30	1.44	0.88	2.34
High risk	3.07	1.70	5.56	2.44	1.25	4.75
Occupational stressor						
Job demand						
Low (Q1–Q3)	1.00			1.00		
High (Q4)	2.30	1.54	3.43	2.09	1.29	3.21
Job control						
High (Q1–Q3)	1.00			1.00		
Low (Q4)	0.95	0.67	1.37	0.85	0.56	1.30
Interpersonal conflict						
Low (Q1–Q3)	1.00			1.00		
High (Q4)	1.36	0.93	1.99	0.66	0.29	1.71
Job insecurity						
Low (Q1–Q3)	1.00			1.00		
High (Q4)	1.43	0.97	2.09	2.09	0.83	5.28
Emotional labor						
Not-excessive (Q1–Q3)	1.00			1.00		
Excessive (Q4)	5.20	3.56	7.58	5.08	3.40	7.60

* Mutivariable analysis was conducted by multilevel mixed-effects logistic regression; and the model included age, cohabiting status, the proportions of personal income in the total household income, employment type, smoking, alcohol drinking and occupational stressors (job demand, job control interpersonal conflict, job insecurity, and emotional labor).
CI = confidence interval, OR = odds ratio, Q = quartile.

relatively larger effect size. However, the RERI was not statistically significant. Thus, we could not conclude that there was a significant supra-additive interaction between emotional labor and job insecurity. In the future, similar studies with larger sample sizes are required for more precise results.

The prevalence of depressive symptoms among female call-center workers was higher than that in the general population.[24,30,31] These findings might reflect that call-center workers are usually engaged in precarious employment, which generally consists of unstable and low paid jobs.[14,32] Such work might

Table 4

Combined effect of job insecurity and emotional labor on depressive symptoms: an interaction analysis* (N = 699).

	Emotional labor (−)	Emotional labor (+)	OR for emotional labor (−) vs emotional labor (+) within strata of job instability
	OR (95% CI):*P*	OR (95% CI):*P*	OR (95% CI):*P*
Job insecurity (−)	Reference	5.45 (3.38–8.80):*P* <.01	5.45 (3.38–8.80):*P* <.01
Job insecurity (+)	2.37 (0.86–6.50):*P*=.09	10.13 (3.51–29.23):*P* <.01	4.27 (2.04–8.91):*P* <.01
OR for job instability (−) vs job instability (+) within strata of emotional labor	2.60 (1.00–6.76):*P*=.05	1.86 (0.66–5.23):*P*<.24	
Measure of interaction on additive scale: RERI	3.30 (−5.50 to 12.11):*P*=.46		
Measure of interaction on multiplicative scale: ratio of ORs	0.78 (0.33–1.87):*P*=.58		

* The model was adjusted for age, the proportion of personal income in total household income, employment status, marital status, current smoking, alcohol consumption, job demand, job control, and interpersonal conflict. ORs and the ratio of ORs were estimated using the linear combination command; RERI was estimated using the non-linear combination command after multilevel mixed-effects logistic regression. (Linear combination and non-linear combination are post-estimation commands for the combination of effects in Stata).
CI = confidence interval, OR = odds ratio, RERI = relative excess risk due to interaction.

lead to more severe mental health problems due to the combined exposure to multiple occupational stressors. The results of this study suggest that multiple job stressors might have a more negative effect on workers' mental health than a simple additive effect in some social situations. In particular, this study implies that the influence of emotional labor might be more harmful to workers under unstable employment. Precarious workers tend to be exposed to multiple job stressors at the same time and preacarious employment has multi-dimensional constructs including jon security, low wage, and limited social protection and rights.[33,34] Thus, the mental health of workers in precarious employment may be investigated in future studies. To reduce the mental health problems among precarious workers, social protection programs might need to be developed for workers who are simultaneously exposed to multiple psychosocial hazards in the workplace. Additionally, psychosocial working conditions might be improved universally regardless of employment status.

This study was subject to several limitations. First, this was a cross-sectional study; for this reason, a robust causal relationship between the combined exposure to emotional labor and job insecurity and depressive symptoms cannot not be established. To enhance the ability to make causal inferences, longitudinal studies are required in future, although some previous prospective studies suggested that the negative psychological influence of emotional labor, such as burnout, was not due to reverse causation.[35,36] Second, the participants enrolled in the study were not selected using probability sampling methods. They were selected using convenient sampling which is prone to selection bias and is therefore not representative of the target population. The majority of call-center workers are usually employed for a small part of a company; therefore, it is difficult to obtain a representative sample of all the call-center workers. We attempted to select a sample representative of female workers in this small study area by surveying as many workers as possible. Although the study population did not represent all female call-center workers and the findings from this study could be a consequence of selection bias, the results of this study might reflect female call-center workers' working conditions to some extent in a small area in Korea. Also, the study only included employees who were working in workplaces where the employers had given approval for the conduct of the survey, and who also personally agreed to engage in the study. Due to this sampling method, it is possible that the working conditions of those who participated might be relatively better than the working conditions of employees who did not participate in the study. The survey was conducted during the day time, because the participants in this survey were restricted to day workers or workers during their day-shifts.

Finally, the participants enrolled in the present study were only female call-center workers. Thus, the findings from this study cannot be applied to male workers and/or workers in other occupations. Although different professions are exposed to different kinds of psychosocial risk factors, it is unclear whether psychosocial risk factors have different impacts on mental health across different occupations. Future studies may need to include participants with various occupations to overcome the limitations of this study.

In conclusion, emotional labor increased the risk of depressive symptoms among female call-center workers in this study. Moreover, workers who were concurrently exposed to emotional labor and job insecurity might have the possibility of higher depressive symptoms. However, the nature of the design used in this study hindered the establishment of the causal relationship between emotional labor and depressive symptoms. Public health researchers may need to pay attention to the mental health problems of precarious workers, since they could be exposed to multiple occupational stressors. This study implies that combined effect of multiple job stressors might more severely affect workers' mental health in some social context.

Author contributions

Conceptualization: Seong-Sik Cho, Hyunjoo Kim, JinWoo Lee.
Data curation: Seong-Sik Cho, Hyunjoo Kim, Sinye Lim.
Formal analysis: Seong-Sik Cho, Hyunjoo Kim, Sinye Lim.
Writing – original draft: Seong-Sik Cho, Hyunjoo Kim.
Writing – review & editing: Hyunjoo Kim, JinWoo Lee, Sinye Lim, Woo Chul Jeong.
Hyunjoo Kim orcid: 0000-0002-9806-981X.

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