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Effects of Emotional Labor and Workplace Violence on Health According to Employment Types Among Korean Employees

한국 임금근로자의 고용형태에 따라 감정노동과 작업장 폭력이 건강에 미치는 영향

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권 수 현

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ABSTRACT

Effects of Emotional Labor and Workplace Violence on Health According to Employment Types Among Korean Employees

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Introduction: Various occupations in the modern society conduct customer service, and workers have more opportunities for contact with customers to provide services. However, this situation result in emotional labor in which workers' emotions are managed and controlled according to the emotional expression rules required by companies, or problems such as physical violence or verbal abuse caused by customers. Through many studies, emotional labor and workplace violence are known to cause various health problems. In this study, work-related musculoskeletal disorders (WMSD) and work-related depression were selected as outcome variables in order to examine the effects of emotional labor and workplace violence on

physical health and mental health. Also, this study analyzed Korean employees by gender and employment types in order to explore the direction to improve Article 26-2 of the revised Industrial Safety and Health Act(ISHA) known as the 'Emotional Laborers Protection Act'. The biggest limitation of the current law is that even though many of the emotional laborers are indirect employment workers, the parent company has no obligation to protect them unless the employer of the parent company voluntarily makes efforts to protect the indirect employees. Therefore, the purpose of this study is to compare the distribution of emotional labor and workplace violence according to gender and employment types, to verify the association between two exposure variables and two outcome variables, and to identify the interaction effects between exposure variables and employment types on outcome variables.

Methods: This study is a cross-sectional study that analyzed the raw data of the fifth Korean Working Conditions Survey(5th KWCS) from the Occupational Safety and Health Research Institute, and of the 50,205 survey subjects in the 5th KWCS, 29,171 employees were analyzed. Among the main exposure variables, emotional labor was defined as hiding their own emotions and dealing directly with people who are not coworkers, or dealing with angry customers. Workplace violence was defined as cases that workers had suffered any one among 'physical violence, sexual harassment, bullying, verbal abuse, unwanted sexual interest, threat, and insulting behavior' while working. Workplace violence was divided into 'workplace violence by customers' and 'workplace violence by coworkers'. Among the outcome variables, WMSD was defined as cases that workers had experienced any one among 'work-related backache, work-related muscular pains in upper limbs(shoulders, neck,

arms, elbows, wrists, hands), and work-related muscular pains in lower limbs(hips, legs, knees, feet)' over the last 12 months. Work-related depression was defined as cases that workers had experienced work-related depression over the past 12 months. Employment types were largely divided into direct and indirect employment, and then each group was divided into standard and nonstandard employment using four questions: status of workers, contract period, whether work was short term work or not, and whether work was sustainable or unsustainable. Cross-tabulation analysis was conducted to determine whether there was a difference in the distribution of variables according to gender and employment types. Sociodemographic and occupational variables were adjusted, and survey logistic regression applying weight was conducted to verify associations between exposure and outcome variables. In addition, interaction terms were added to logistic regression in order to identify whether the effects of exposure variables on outcome variables differ by employment types. Standardized weights were applied to all analyses. R 3.6.1 and SPSS 25.0 were used for all statistical analyses.

Results: Among the employment types, indirect employment workers showed higher proportions of emotional labor, 'workplace violence by customers', and 'workplace violence by coworkers' than direct employment workers, and were in poor working conditions. Emotional labor was positively associated with work-related depression(OR: 1.74, 95% CI: 1.10-2.74) only in females, but 'workplace violence by customers' was positively associated with WMSD(male-OR: 2.27, 95% CI: 1.80-2.86; female- OR: 2.73, 95% CI: 2.14-3.47) and work-related depression(male-OR: 3.69, 95% CI: 2.17-6.28; female-OR: 3.86, 95% CI: 2.00-7.45), and 'workplace violence by coworkers' was also positively associated with

WMSD(male-OR: 2.70, 95% CI: 2.04-3.57; female- OR: 3.46, 95% CI: 2.27-5.29) and work-related depression(male-OR: 8.32, 95% CI: 5.17-13.39; female-OR: 5.27, 95% CI: 2.46-11.29). Both males and females had significant interaction effects between emotional labor and ergonomic risk factors on WMSD. The risk of WMSD was high when non-emotional laborers exposed to high levels of ergonomic risk factors. Two types of workplace violence and employment types had significant interaction effects on two outcome variables only in females. In particular, female employees with indirect employment and ‘workplace violence by coworkers’ were at the greatest risk of suffering WMSD and work-related depression, and female employees with indirect employment and 'workplace violence by customers' also had high risk of work-related depression.

Conclusion: This study found that workplace violence was associated with WMSD and work-related depression in both genders, and emotional labor was associated with work-related depression in females. In order to develop prevention and management programs of WMSD and work-related depression for Korean employees, two types of workplace violence need to be considered. Also, emotional labor should be managed to prevent female employees’ work-related depression. In females, since the effects of workplace violence on health differed according to employment types, it is suggested that interventions of workplace violence be conducted in a specialized way for each employment type. In particular, it is necessary to protect indirect employment workers from ‘workplace violence by coworkers’, also called ‘workplace harassment’. The most important implication of the study is to suggest the improvement direction of Article 26-2 of the revised ISHA, which deals with ‘preventive measures against health problems caused by verbal

abuse or assault etc. by customers'. Therefore, in order to properly protect indirect employment workers who are out of the law's boundary from 'workplace violence by customers', Article 29 of ISHA should also be applied to workplaces that use customer-facing workers who are regulated by Article 26-2 of ISHA, so that parent companies can be held accountable for the protection of indirect employment workers.

Keywords: Emotional labor, Workplace violence, Employment types, Work-related Musculoskeletal Disorders (WMSD), Work-related depression, Korean, Employees

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Chapter 1. INTRODUCTION

1.1 Background

History of human is the history of labor. In other words, various changes that human society has experienced coincide with changes of the form of labor. In the great historical flow, the industrial structure of capitalist society changed from the primary industry to the secondary and tertiary industries, and relatively recently, the fourth industry called information·knowledge industry appeared. Among them, the tertiary industry is an industry that sells and exchanges products of the first and secondary industry or provides services. In Korea, the share of the service industry in the whole industry continues to increase, as a result, service workers have more opportunities for contact with customers to provide services. However, this situation may cause emotional labor or problems such as physical violence or verbal abuse, and these can occur in all occupations dealing with customers, not just in the service industry.

Concepts of Emotional Labor and Workplace Violence

Emotional labor was first defined by the American sociologist Arlie R. Hochschild, and she defined emotional labor as a labor that manages emotions, such as maintaining appearances and expressions that can give consumers friendly and

caring feelings, suppressing worker's own real emotions, or expressing emotions that are different from real ones(Hochschild, 1983). One of the ways that companies dealing with customers has chosen to compete with other companies is to pursue 'customer satisfaction' by improving customer services. And this leads to emotional labor, as workers' emotions are managed and controlled according to the emotion expression rules required by company to generate profits. In Korea Occupational Safety and Health Agency, emotional labor is defined as a labor that provides customers with only emotions and expressions required by company even when their feelings are good, sad or upset(KOSHA, 2011).

Workplace violence refers to any unreasonable behaviors or incidents such as assaults, threats or injuries, that occurs in the course of a job or as a direct result of a job(ILO, 2016). And workplace violence is a risk factor that can lead to psychological problems, physical injuries or even death for workers who have experienced workplace, according to US National Institute for Occupational Safety and Health (NIOSH, 1996; NIOSH, 2006). In Korea, Article 76-2 of the revised Labor Standards Act, also known as the 'No Harassment at Work Act', has been forced since July 16, 2019. This means that 'employers or workers shall not give other workers physical and mental distress or aggravate the working environment, beyond the scope of their work using advantage of their position or relationship in the workplace.', therefore, the law prohibits 'workplace violence by coworkers'.

Several studies have shown that the emotional labor and the experience of workplace violence are closely related(Grandey et al., 2007; Joo & Rhie, 2017). However, when emotional labor and workplace violence are mixed, it can distort the

content of emotional labor or reduce the severity of workplace violence as the problems of verbal abuse and physical assault experienced by emotional laborers are dealt with emotional labor rather than workplace violence(Kim & Yoon, 2017). Therefore, in this study, emotional labor and workplace violence should be addressed together, but should be examined separately.

Effects of Emotional Labor and Workplace Violence on Health in Previous Studies

Emotional labor is known to cause a variety of health problems including mental diseases, cerebrovascular and cardiovascular diseases, musculoskeletal diseases, and digestive diseases in recent years(Chung et al., 2017; Yoon & Kim, 2013; Kim & Choo, 2017). Workplace violence is also associated with mental diseases, musculoskeletal diseases and sleep disorders(Roldan, 2013; Wieclaw, 2006; Rezaee, 2014; Sun, 2018). This study divided outcome into physical and mental health, and examined the effects of emotional labor and workplace violence on two outcome variables, since emotional labor and workplace violence had been found to be related to various health problems.

In physical health, the analysis focused on work-related musculoskeletal disorders (hereinafter called as 'WMSD'). The reason for this are as follows. First, according to a study using the fourth Korean Working Conditions Survey, although a quite large size of 38.8% among whole emotional laborers experienced musculoskeletal pain(Baek et al., 2018), relatively few related studies have been conducted. Secondly, WMSD related studies have been mostly focused on physical

and ergonomic risk factors(Andersen et al., 2007; Grooten et al., 2007). There are also studies that dealing with WMSD and psychosocial risk factors, but most have been limited to specific occupation known as high-risk groups of emotional labor, such as nurses, call center workers, hotel workers, postal workers, and carers(Bernal et al., 2014; Yoon et al., 2007; Lee et al., 2013; Harcombe et al., 2010; Gunnarsdottir et al., 2003). Thus this study examined the association between emotional labor, workplace violence and WMSD among Korean employees.

In mental health, I dealt with work-related depression. Enforcement Decree of the Industrial Accident Compensation Insurance Act [Attachment 3-Specific criteria for recognition of occupational diseases(related to Article 34-3)] states that 'adjustment disorder or depression episodes that arising from events or directly related stress that may cause psychological shock, such as violence or verbal abuse, from customers in relation to work'. In other words, depression episodes caused by 'workplace violence by customers' are recognized as occupational diseases. This means that it is proved that 'workplace violence by customers' causes depression episodes, enough to be recognized as an occupational disease. Therefore, at the same time as confirming association between 'workplace violence by customers' and work-related depression, I also analyzed further associations between emotional labor or 'workplace violence by coworkers' and work-related depression. In addition, work-related depression is thought to better demonstrate the interaction effects of 'workplace violence by customers' and employment types, so it was chosen as an outcome variable.

Necessity of Study That Divided by Gender and Employment Types

In this study, Korean employees were compared and analyzed by gender and employment types. First of all, the reason for dividing by gender is because Messing's studies criticized the method using gender as a confounding variable in occupational epidemiological studies, and proposed to analyze gender separately. Over-adjustment can occur if gender and occupation are adjusted together without considering gender-specific occupational distributions. Confounding variables are the factors that create spurious association between exposures and outcomes, and adjusting for gender as a confounding variable can cause difficulties in interpreting the association between exposures and outcomes(Messing et al., 2003; Messing & Ostlin, 2006; Messing et al., 2009).

Employment types were first divided into 'direct employment and indirect employment' for the following reasons. In Korea, Article 26-2 of the revised Industrial Safety and Health Act (hereinafter called as 'ISHA'), known as the 'Emotional Laborers Protection Act', went into effect on October 18, 2018. This act deals with 'preventive measures against health problems caused by verbal abuse or assault etc. by customers'. The institutionalization of emotional labor, which has been a social issue for nearly a decade, is certainly a worthwhile achievement. However, the biggest limitation of the current law is that even though many of the emotional laborers are indirect employment workers, the parent company has no obligation to protect them unless the employer of the parent company voluntarily makes efforts to protect the indirect employees. Indirect employment means a form of employment in which a company does not directly enter into a labor contract with

workers, but employs workers who is employed by other company. Dispatched work, outsourcing, or subcontract are all indirect employment. The Emotional Laborers Protection Act covers not only direct employment workers working at the parent company but also indirect employment workers. However, the duty of protection for indirect employment workers rests only with the dispatching or subcontracting company that employed them. Also, Article 29 of ISHA, which strengthens the responsibilities of the parent company, does not apply to workplaces using customer-facing workers regulated by Article 26-2 of ISHA. That is why we cannot hold the parent company accountable about emotional laborers working for dispatching or subcontracting company. In addition to preceding problem, there is also a problem that there is little practical protection effect because the prevention clauses of health problems by emotional labor are not mandatory and the penalties for the employer's failure to observe them are also minimal. Thus, the current 'Emotional Laborers Protection Act' is less effective, because it has not properly protected emotional laborers. In fact, according to the Ministry of Employment and Labor, only nine cases of violations of the 'Emotional Laborers Protection Act' were reported as of October 18, 2019, the first anniversary of the enforcement of the 'Emotional Laborers Protection Act'. Seven cases of them only took corrective action due to insufficient prevention measures about health problems caused by emotional labor, and two others imposed fines as poor protection measures for emotional laborers. Therefore, I divided employment types into direct employment and indirect employment in order to overcome these limitations and explore the direction of improvement in the current law.

According to several studies, workers with precarious employment showed higher levels of stress, lower working environment satisfaction and poor health conditions compared to workers with stable employment(Benach et al., 2014), and workers who experienced frequent job changes were found to related to health risk behaviors such as smoking, drinking, and lack of exercise(Metcalfe et al., 2003). Since most nonstandard workers are exposed to job insecurity(Seo, 2015), general characteristics and health conditions were expected to be different depending on whether workers are standard or nonstandard employment. In fact, nonstandard workers had lower subjective health than standard workers(Son, 2011), and as a result of a systematic review of studies related to nonstandard employment and health, 35 among 37 studies showed that health of nonstandard workers was significantly worse than standard workers(Park et al., 2016). In a study using the 3rd KWCS, employment types were divided into contract types(parent firm, and subcontract), and each group was divided into contract duration(permanent, long term, and short term). As a result, nonstandard employment such as 'parent-long term', 'subcontract-long term', and 'subcontract-short term' had a higher risk of presemteeism that means that workers work while sick due to their poor working conditions compared to standard employment(Kim et al., 2016). Therefore, this study divided each group of direct and indirect employment into standard and nonstandard employment.

1.2 Objectives

The ultimate goals of this study are providing evidence for intervention of emotional labor and workplace violence to prevent and manage health problems, and suggesting direction of improvement of current law by dividing Korean employees according to employment types.

The purposes of this study are as follows. The first purpose is to compare differences of the distribution of variables including emotional labor and workplace violence according to gender and employment types among Korean employees. The second purpose is to confirm the effects of emotional labor and workplace violence on WMSD or work-related depression among Korean employees. The final purpose is to identify whether the effects of exposure variables on outcome variables differ by employment types.

Chapter 2. METHODS

2.1 Data source and subjects

This study is a cross-sectional study that analyzed the raw data of the fifth Korean Working Conditions Survey (hereinafter called as 'KWCS') from the Occupational Safety and Health Research Institute (OSHRI) under the Korea Occupational Safety and Health Agency (KOSHA). The KWCS is a benchmarked survey of European Working Conditions Survey (EWCS) and Labour Force Survey, which aims to gain an overall picture of the working environment, including work patterns, employment types, occupation types, industry types, exposure to risk factors, and job security for workers aged 15 or older across the Korea. The KWCS was first conducted after being approved by Statistics Korea in 2006, followed by the second in 2010, the third in 2011, the fourth in 2014, and the fifth in 2017. The final participants of the KWCS were those workers more than 15 years old who reside in sample households, and the criteria of worker was 'people who had done paid work for more than an hour during the previous week based on the time of the survey'. The KWCS used a secondary probability proportion stratified cluster sample survey. The primary sampling unit was the survey district, and the secondary sampling unit was the household and employed member of the household.

In this study, I extracted 30,108 employees from 50,205 workers who were total participants of the 5th KWCS. After that, missing values of continuous variables used in this study, such as monthly income levels, weekly working hours, and weekly

working days, were replaced by the expectation-maximization method. And I excluded cases with missing values from categorical variables among the variables used in the study. In the end, the number of final subjects of the study were 29,171(Figure 1). The KWCS is secondary data that was released, so anyone who gets permission from KOSHA can request and download through the website of OSHRI(https://oshri.kosha.or.kr/). The study was approved by the Institutional Review Board (IRB) of Seoul National University (IRB No. E1911/003-006).

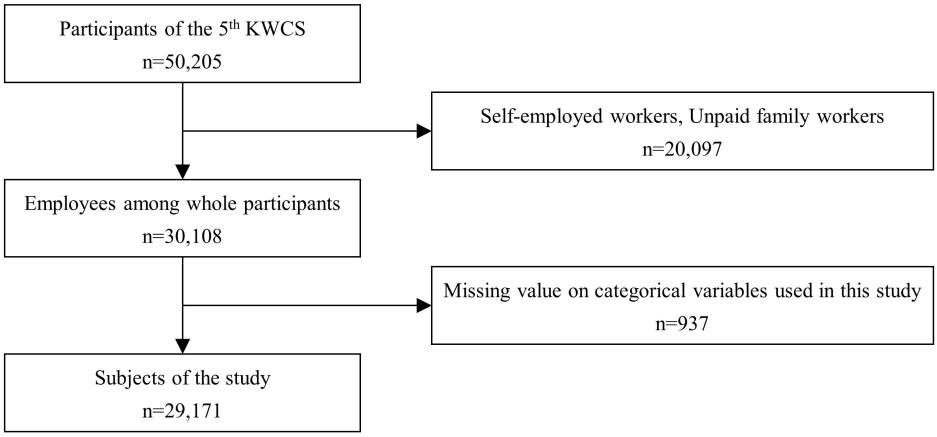


Figure 1. Study flow chart showing inclusions of subjects

2.2 Definition of variables

Exposure variables

The main exposure variables of the study are emotional labor and workplace violence. Emotional labor was defined as satisfying both the first and second conditions, or satisfying the third condition among the following three conditions. The first condition is to answer 'more than half of the entire working hours' when asked 'the amount of time spent dealing directly with people who are not coworkers, such as customers, passengers, students, and patients among the entire working hours'. The second condition is to respond 'always' or 'mostly' when asked 'whether workers should hide their emotions while working'. The third condition is to answer 'more than quarter of the entire working hours' when asked 'the amount of time spent dealing with angry customers, patients, or students'.

I defined workplace violence as cases that workers had suffered any one among 'physical violence, sexual harassment, bullying, verbal abuse, unwanted sexual interest, threat, and insulting behavior' while working. Workplace violence was divided into 'workplace violence by customers' and 'workplace violence by coworkers'.

Outcome variables

Outcome variables are WMSD that is a physical health outcome, and work-

related depression that is a mental health outcome. I defined WMSD as cases that workers had experienced any one among ‘work-related backache, work-related muscular pains in upper limbs(shoulders, neck, arms, elbows, wrists, hands), and work-related muscular pains in lower limbs(hips, legs, knees, feet)’ over the last 12 months. Work-related depression was defined as cases that workers had experienced work-related depression over the past 12 months. Depression here means subjective melancholy feelings, not depression diagnosed by doctors.

Employment types

Employment types were largely divided into direct and indirect employment, and then divided into standard and nonstandard employment. First, direct and indirect employment were measured with the question, “Did you receive wages from the company you actually work for or from dispatching company or subcontracting company?”. If the respondents received wages from dispatching or subcontracting company, they were coded as ‘indirect employment’, and the others were coded as ‘direct employment’.

The definition of standard and nonstandard employment are different in government and labor, and there has always been controversy in this regard. Therefore, the method that was used to classify employment types in this study is not an official method but an opinion of the researcher. Standard employment is not a legal term, but it is defined by Statistics Korea as ‘workers with no end date in their employment contract’. It refers to a worker who does not have a specific employment

contract or whose employment contract period is more than a year, and is in a job where he or she may continue to work in the current workplace unless there is a particular reason. Hence, I measured standard and nonstandard employment with four questions: status of workers(permanent workers, temporary workers, daily workers), contract period(no contract period, ≥1 year), whether work was short term work or not, and whether work was sustainable or unsustainable. In other paper using the 1st KWCS, standard and nonstandard employment were classified according to their status of workers, contract period, and whether work was sustainable or unsustainable(Jeon & Choi, 2011), but in this study, short term work status was added to those three questions. Workers with unlimited contract period and sustainable work, and workers with contract period of more than a year and sustainable work were coded as 'standard employment', and the others were coded as 'nonstandard employment'(Figure 2).

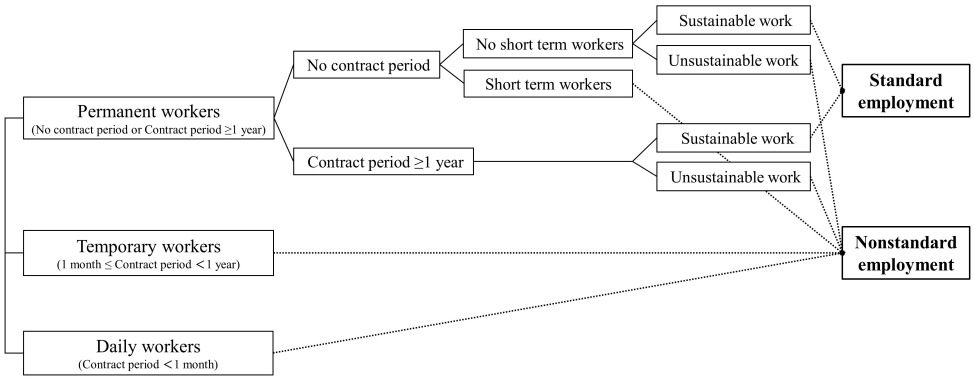


Figure 2. Definition of standard employment and nonstandard employment in the study

It can be concluded that employment types were categorized into four groups: (1) direct employment-standard employment (direct-standard, DS); (2) direct employment-nonstandard employment (direct-nonstandard, DN); (3) indirect employment-standard employment (indirect-standard, IS); (4) indirect employment-nonstandard employment (indirect-nonstandard, IN). Although 'indirect-standard' is standard employment that is employed by the dispatching or subcontracting company, it is hard to say that 'indirect-standard' is standard employment in a strict sense, in that workers of IS suffer from various discrimination such as wages and treatments compared to 'direct-standard'. In the same context, there is a view of the entire indirect employment as nonstandard employment, but in this study, indirect employment was divided into standard and nonstandard employment to identify differences in working conditions between them.

Covariates

With the exception of major exposure variables and employment types, I constructed sociodemographic and occupational variables which are expected to affect the outcome variables. Sociodemographic variables included age, education level, and monthly income level. Age was categorized into 15-20s, 30-40s, 50s, and over 60. Education level was classified into middle school graduation or below, high school graduation, and Bachelor's degree or above. Monthly income was divided into three levels(KRW): less than 1.5 million won, 1.5-3 million won, and 3 million won and more. Occupational variables included occupational categories, weekly working hours, weekly working days, size of workplace, shift work(yes, no),

providing emotional expression manual(yes, no), providing information on health and safety(yes, no), work-life balance(good, poor), job stress, and exposure to ergonomic risk factors. Occupational categories were classified into three: white collar(professional and office workers), pink collar(service and sales workers), and blue collar(manufacturing and agriculture worker). Weekly working hours were divided into less than 40 hours, 40-52 hours, and 52 hours and more. Weekly working days were divided into less than 5 days, 5 days, and 6 days and more. Size of workplace was categorized into three: small(1-9 workers), medium(10-249 workers), and large(≥250 workers). Job stress was classified into 'always·usually', 'sometimes', and 'rarely·never'. Ergonomic risk factors were measured with six ergonomic factors: 'tired or painful posture', 'lifting or moving people', 'dragging, pushing, or moving heavy objects', 'standing posture', 'sitting', 'repeated hand or arm movements'. The frequency of each factor was scored 1 to 7 points, and all six were added together. The cut points of the score were based on the tertile levels(33.3%, 66.6%). The low level of ergonomic risk factors is the 1st tertile, the middle level is the 2nd tertile, and the high level is the 3rd tertile.

2.3 Statistical analysis

The statistical analysis methods of this study are as follows. First, the variables used in the study were all categorical variables, so I conducted frequency analysis in Korean employees, and cross-tabulation analysis(chi-square test) was performed to determine whether there were differences in the relative frequencies of variables according to gender. Secondly, cross-tabulation analysis was conducted to identify differences in the relative frequencies of variables according to two exposure variables which are emotional labor and workplace violence. Also, the prevalence of two outcome variables which are WMSD and work-related depression was calculated. Thirdly, after dividing Korean employees by gender, I compared the characteristics between the four types of employment: direct-standard, direct-nonstandard, indirect-standard, and indirect-nonstandard. Fourthly, the analysis was implemented using survey logistic regression to confirm the association between exposure variables and WMSD or work-related depression. The analysis was conducted by dividing by gender and adjusting for confounding factors, such as sociodemographic and occupational variables. The results were represented by odds ratio (ORs) with 95% confidence interval. Finally, I performed survey logistic regression including interaction terms on each outcome variable and then identified whether they have significant interaction effects. This study was designed to confirm whether the effects of two exposure variables on the two outcome variables differ according to key covariates. In the logistic regression analysis, 'indirect-standard' and 'indirect-nonstandard' with small sample sizes were combined into 'indirect

employment'. Standardized weights were applied to all analyses to show the number of samples actually examined. In frequency analysis and cross-tabulation analysis, sample size(n) is the value analyzed among 29,171 subjects of this study, and percentage(%) is the value applied the weight. All statistical analyses were done by using the program R 3.6.1 and SPSS 25.0.

Chapter 3. RESULTS

3.1 General characteristics of subjects

Table 1.1 and Table 1.2 report general characteristics which are main and sociodemographic variables(Table 1.1), occupational variables(Table 1.2) of study population according to gender. 48.2% (n=14,062) of the subjects were males, and 51.8% (n=15,109) of the subjects were females. The proportion of emotional laborers was 35.0% among Korean employees who were the total subjects, 29.2% for males and 42.7% for females, so females were significantly higher. Workplace violence was not higher than emotional labor, but both males and females had more workplace by customers(male-4.2%; female-5.5%) than 'workplace violence by coworkers(male-2.8%; female-1.7%)'. In addition, females experienced more 'workplace violence by customers' than males, whereas males experienced more 'workplace violence by coworkers' than females. The prevalence of WMSD was 21.3% among Korean employees, 20.1% for males and 22.9% for females, so females were significantly higher. The prevalence of work-related depression was not significantly different between males and females, and 1.1% of Korean employees experienced it. In sociodemographic variables, there were significant differences in age, education level and monthly income by gender. When classified by age groups, almost half of males(53.5%) and females(45.9%) were the 30-40s. Females tended to have lower education level and monthly income than males.

In occupational variables, DS(73.5%) had the highest proportion of

employment types among Korean employees, followed by DN(21.2%), IN(3.6%), and IS(1.7%). DS was higher in males, and DN and IS were higher in females. White collar employees were the most among occupational categories, but white collar employees had no big difference between males and females. However, pink collar employees who are service and sales workers, were higher in females(30.3%), and blue collar employees who are manual laborers, were higher in males(41.2%). The weekly working days had little difference according to gender, but the weekly working hours showed that males work more hours than females. Almost half of females(48.6%) worked in small workplaces, while over half of males(56.6%) worked in medium workplaces. 12.5% of males responded they worked shifts, and 10.9% of females responded they worked shifts. Emotional expression manuals were provided more to females(20.6%) than males(17.2%), and information on health and safety was provided more to males(70.5%) than females(64.6%). Work-life balance was worse for males(26.2%) than for females(20.8%), and job stress was also more frequent for males(32.0%) than females(28.9%). Experience with exposure to ergonomic risk factors did not differ by gender.

Table 1.1 General characteristics of main and sociodemographic variables of the study population

Variables	Total (n=29,171)	Male (n=14,062)	Female (n=15,109)
	n (%*)	n (%*)	n (%*)
Emotional labor			
Yes	10,732 (35.0)	4,329 (29.2)	6,403 (42.7)
No	18,439 (65.0)	9,733 (70.8)	8,706 (57.3)
Workplace violence			
Yes – Customers	1,424 (4.7)	622 (4.2)	802 (5.5)
Yes – Coworkers	583 (2.3)	356 (2.8)	227 (1.7)
No	27,164 (93.0)	13,084 (93.0)	14,080 (92.8)
WMSD			
Yes	6,775 (21.3)	2,947 (20.1)	3,828 (22.9)
No	22,396 (78.7)	11,115 (79.9)	11,281 (77.1)
Work-related depression†			
Yes	357 (1.1)	179 (1.2)	178 (1.0)
No	28,814 (98.9)	13,883 (98.8)	14,931 (99.0)
Sociodemographic			
Age			
15~29	4,025 (18.9)	1,968 (15.8)	2,057 (22.9)
30~49	14,225 (50.2)	7,107 (53.5)	7,118 (45.9)
50~59	6,680 (20.0)	2,930 (20.2)	3,750 (19.8)
≥60	4,241 (10.9)	2,057 (10.4)	2,184 (11.4)
Education level			
≤Middle school	3,571 (8.4)	1,367 (6.7)	2,204 (10.5)
High school	10,190 (31.2)	4,635 (30.3)	5,555 (32.5)
≥Bachelor's degree	15,410 (60.4)	8,060 (62.9)	7,350 (57.0)
Monthly income (KRW)			
< 1,500,000	5,380 (14.3)	1,248 (6.4)	4,132 (24.8)
1,500,000 ~ 3,000,000	15,219 (50.0)	6,230 (40.4)	8,989 (60.2)
≥ 3,000,000	8,572 (36.7)	6,584 (53.2)	1,988 (15.0)

*The percentages of the results were derived by applying weight.
†Difference is not statistically significant in chi-square test.

Table 1.2 General characteristics of occupational variables of the study population

Variables	Total (n=29,171)	Male (n=14,062)	Female (n=15,109)
	n (%*)	n (%*)	n (%*)
Occupational			
Employment types			
Direct - Standard	20,251 (73.5)	10,492 (78.2)	9,759 (67.4)
Direct - Nonstandard	7,185 (21.2)	2,711 (16.7)	4,474 (27.0)
Indirect - Standard	518 (1.7)	224 (1.4)	294 (2.1)
Indirect - Nonstandard	1,217 (3.6)	635 (3.7)	582 (3.6)
Occupational category			
White collar	11,774 (48.3)	5,408 (45.7)	6,366 (51.8)
Pink collar	7,772 (20.5)	2,296 (13.1)	5,476 (30.3)
Blue collar	9,625 (31.1)	6,358 (41.2)	3,267 (18.0)
Weekly working hours			
< 40 hours	4,400 (12.2)	1,158 (6.4)	3,242 (20.0)
40~52 hours	20,648 (74.6)	10,383 (77.1)	10,265 (71.2)
≥52 hours	4,123 (13.2)	2,521 (16.5)	1,602 (8.8)
Weekly working days			
< 5 days	2,625 (6.7)	1,252 (6.2)	1,373 (7.4)
5 days	17,948 (66.6)	8,668 (66.5)	9,260 (66.6)
≥6 days	8,598 (26.7)	4,122 (27.3)	4,476 (26.0)
Size of workplace			
Small (1-9 workers)	12,864 (38.4)	5,001 (30.7)	7,863 (48.6)
Medium (10-249 workers)	13,987 (52.0)	7,438 (56.6)	6,549 (45.9)
Large (≥250 workers)	2,320 (9.6)	1,623 (12.7)	697 (5.6)
Shift work			
Yes	3,567 (11.8)	2,003 (12.5)	1,564 (10.9)
No	25,604 (88.2)	12,059 (87.5)	13,545 (89.1)
Emotional expression manual			
Yes	5,373 (18.6)	2,436 (17.2)	2,937 (20.6)
No	23,798 (81.4)	11,626 (82.8)	12,172 (79.4)
Information on health and safety			
Yes	19,559 (68.0)	9,958 (70.5)	9,601 (64.6)
No	9,612 (32.0)	4,104 (29.5)	5,508 (35.4)
Work-life balance			
Good	22,375 (76.1)	10,434 (73.8)	11,941 (79.2)
Poor	6,796 (23.9)	3,628 (26.2)	3,168 (20.8)
Job stress			
Always, Usually	8,681 (30.7)	4,356 (32.0)	4,325 (28.9)
Sometimes	14,754 (51.2)	7,224 (51.8)	7,530 (50.4)
Rarely, Never	5,736 (18.1)	2,482 (16.2)	3,254 (20.6)
Ergonomic risk factors†			
Low	9,873 (33.9)	4,718 (34.0)	5,155 (33.7)
Middle	9,170 (31.9)	4,417 (31.3)	4,753 (32.6)
High	10,128 (34.2)	4,927 (34.7)	5,201 (33.7)

*The percentages of the results were derived by applying weight.

†Difference is not statistically significant in chi-square test.

3.2 Characteristics by exposure variables

Table 2.1 reports a cross table of two exposure variables, emotional labor and workplace violence. Table 2.2 and Table 2.3 show characteristics according to emotional labor and workplace violence. Korean employees were not divided by gender in this section, instead, sociodemographic and occupational characteristics were compared in emotional laborers (EL) and non-emotional laborers (non-EL), and in employees who experienced workplace violence by customers (WV by customers), employees who experienced workplace violence by coworkers (WV by coworkers), and employees who did not experience workplace violence (non-WV).

First, in Table 2.1, chi-square test showed that the proportion of emotional labor differed according to workplace violence. In particular, 'WV by customers' was judged to have a higher proportion of EL than either 'WV by coworkers' or 'non-WV'.

In the demographic characteristics of Table 2.2, since 52.6% of EL were females, there were more females than males(47.4%). EL had lower age group than non-EL, and education level of EL was relatively higher than non-EL. When classified by monthly income, 31.2% of EL earned over 3 million won, while 39.7% of non-EL earned over 3 million won. The proportion of females(49.5%) was similar to that of males(50.5%) in 'WV by customers', whereas the proportion of males(68.3%) was higher than females(31.7%) in 'WV by coworkers'. 'WV by customers(23.0%)' and 'WV by coworkers(22.9%)' were more teenagers and 20s than non-WV(18.6%). Employees who graduated from middle school or below were

the largest in ‘WV by coworkers(10.9%)’, employees who graduated from high school were the largest in ‘WV by customers(40.4%)’, and employees who received bachelor’s degrees were the largest in non-WV(61.0%). ‘WV by customers’ had relatively low monthly incomes, and ‘WV by coworkers’ had relatively high monthly incomes.

In Table 2.3, all occupational variables differed according to emotional labor and workplace violence. The proportion of DN and IS among four employment types in EL was higher than that in non-EL. 32.7% of EL was pink collar employees, while 36.9% of non-EL was blue collar employees. In EL, more workers worked more than 52 hours and worked more than 6 days compared to non-EL. Also, EL worked in smaller workplaces than non-EL. 16.9% of EL worked shifts, and 9.0% of non-EL worked shifts. Emotional expression manuals were provided more in EL(28.3%) who control and manage their own emotions according to demands of companies compared to non-EL(13.4%). In contrast, less information on health and safety was provided in EL(65.7%) than in non-EL(69.2%). Compared to non-EL, more workers in EL had poor work-life balance and experienced more frequent job stress. In EL(40.5%), more workers were exposed to high levels of ergonomic risk factors than non-EL(30.9%).

Among the three workplace violence-related groups, DS(74.0%) had the highest proportion in non-WV, DN(22.7%) and IS(3.4%) had the highest proportion in ‘WV by customers’, and IN had(11.4%) the highest proportion in ‘WV by coworkers’. In terms of the proportion of occupational categories, white collar employees(49.4%) were the highest in non-WV, pink collar employees(40.1%) were

the highest in ‘WV by customers’, and blue collar employees(47.1%) were the highest in ‘WV by coworkers’. For workers who worked more than 52 hours a week, ‘WV by customers’ were the highest at 26.1%, followed by ‘WV by coworkers(19.7%)’ and non-WV(12.3%). Similarly, workers who worked more than 6 days a week were the highest in ‘WV by customers(38.4%)’. However, the proportions of 'working less than 40 hours a week(13.3%)' and 'working less than 5 days a week(10.8%)' were also quite high in ‘WV by customers’, thus, it can be inferred that there are various forms of work in ‘WV by customers’. ‘WV by customers(42.9%)’ worked at relatively small workplaces, while ‘WV by coworkers(11.9%)’ worked at relatively large workplaces. The proportion of shift work was much higher at 32.2% in ‘WV by customers’. Emotional expression manuals were provided the most to ‘WV by customers(38.3%)’, but 38.6% of ‘WV by customers’ and 40.3% of ‘WV by coworkers’ did not receive information on health and safety. The percentage of workers who answered that their work-life balance was poor was highest in ‘WV by customers(39.9%)’, followed by ‘WV by coworkers(35.3%)’ and non-WV(22.8%). Similarly, the percentage of workers who experienced more frequent job stress decreased in the order of ‘WV by customers(43.4%)’, ‘WV by coworkers(42.1%)’, and non-WV(29.7%). Finally, the percentages of workers exposed to high levels of ergonomic risk factors were higher in the two groups who experienced workplace violence(42.5%; 45.6%) than in non-WV(33.6%).

Table 2.1 The cross table of emotional labor and workplace violence

		Workplace Violence		
		WV by Customers (n=1,424)	**WV by Coworkers (n=583)**	**Non-WV (n=27,164)**
		n (%*)	**n (%*)**	**n (%*)**
Emotional Labor	**EL (n=10,732)**	1,135 (79.6)	177 (28.6)	9,420 (32.9)
	Non-EL (n=18,439)	289 (20.4)	406 (71.4)	17,744 (67.1)

*The percentages of the results were derived by applying weight.

Table 2.2 Characteristics of outcome and sociodemographic variables according to exposure variables

Variables	**Emotional Labor**		**Workplace Violence**		
	EL (n=10,732)	**Non-EL (n=18,439)**	**WV by Customers (n=1,424)**	**WV by Coworkers (n=583)**	**Non-WV (n=27,164)**
	n (%*)	**n (%*)**	**n (%*)**	**n (%*)**	**n (%*)**
Outcome					
WMSD		†			
Yes	2,443 (21.8)	4,332 (21.0)	589 (40.4)	279 (45.2)	5,907 (19.8)
No	8,289 (78.2)	14,107 (79.0)	835 (59.6)	304 (54.8)	21,257 (80.2)
Work-related depression					
Yes	198 (1.7)	159 (0.8)	84 (5.4)	62 (8.8)	211 (0.7)
No	10,534 (98.3)	18,280 (99.2)	1,340 (94.6)	521 (91.2)	26,953 (99.3)
Sociodemographic					
Gender					
Male	4,329 (47.4)	9,733 (61.9)	622 (50.5)	356 (68.3)	13,084 (56.8)
Female	6,403 (52.6)	8,706 (38.1)	802 (49.5)	227 (31.7)	14,080 (43.2)
Age					
15~29	1,813 (22.5)	2,212 (16.9)	271 (23.0)	100 (22.9)	3,654 (18.6)
30~49	5,420 (50.2)	8,805 (50.2)	649 (46.2)	293 (50.5)	13,283 (50.4)
50~59	2,362 (18.7)	4,318 (20.8)	300 (17.9)	109 (16.1)	6,271 (20.3)
≥60	1,137 (8.6)	3,104 (12.1)	204 (12.8)	81 (10.4)	3,956 (10.7)
Education level					
≤Middle school	834 (5.5)	2,737 (9.9)	155 (9.0)	87 (10.9)	3,329 (8.3)
High school	3,946 (32.5)	6,244 (30.5)	624 (40.4)	200 (34.4)	9,366 (30.7)
≥Bachelor's degree	5,952 (62.0)	9,458 (59.5)	645 (50.6)	296 (54.7)	14,469 (61.0)
Monthly income (KRW)					
< 1,500,000	1,971 (15.6)	3,409 (13.6)	299 (18.6)	80 (11.2)	5,001 (14.2)
1,500,000 ~ 3,000,000	5,991 (53.2)	9,228 (46.7)	813 (55.3)	326 (52.4)	14,080 (48.6)
≥ 3,000,000	2,770 (31.2)	5,802 (39.7)	312 (26.1)	177 (36.4)	8,083 (37.2)

*The percentages of the results were derived by applying weight.

†Difference is not statistically significant in chi-square test.

Table 2.3 Characteristics of occupational variables according to exposure variables

Variables	Emotional Labor		Workplace Violence		
	EL (n=10,732)	Non-EL (n=18,439)	WV by Customers (n=1,424)	WV by Coworkers (n=583)	Non-WV (n=27,164)
	n (%*)	n (%*)	n (%*)	n (%*)	n (%*)
Occupational					
Employment types					
Direct-Standard	7,455 (72.5)	12,796 (74.0)	928 (69.2)	362 (64.0)	18,961 (74.0)
Direct-Nonstandard	2,704 (22.3)	4,481 (20.5)	378 (22.7)	134 (22.4)	6,673 (21.0)
Indirect-Standard	213 (2.1)	305 (1.5)	55 (3.4)	14 (2.2)	449 (1.6)
Indirect-Nonstandard	360 (3.1)	857 (4.0)	63 (4.7)	73 (11.4)	1,081 (3.4)
Occupational category					
White collar	4,201 (46.8)	7,573 (49.1)	359 (30.6)	221 (40.5)	11,194 (49.4)
Pink collar	4,388 (32.7)	3,384 (14.0)	679 (40.1)	76 (12.4)	7,017 (19.7)
Blue collar	2,143 (20.5)	7,482 (36.9)	386 (29.3)	286 (47.1)	8,953 (30.8)
Weekly working hours					
< 40 hours	1,613 (13.3)	2,787 (11.6)	205 (13.3)	59 (8.0)	4,136 (12.3)
40~52 hours	7,314 (71.0)	13,334 (76.5)	852 (60.6)	416 (72.3)	19,380 (75.4)
≥52 hours	1,805 (15.7)	2,318 (11.8)	367 (26.1)	108 (19.7)	3,648 (12.3)
Weekly working days					
< 5 days	935 (7.4)	1,690 (6.3)	162 (10.8)	52 (7.0)	2,411 (6.5)
5 days	6,055 (60.7)	11,893 (69.7)	694 (50.8)	368 (63.3)	16,886 (67.5)
≥6 days	3,742 (31.9)	4,856 (24.0)	568 (38.4)	163 (29.7)	7,867 (26.0)
Size of workplace					
Small (1-9)	5,519 (46.5)	7,345 (34.1)	684 (42.9)	179 (27.2)	12,001 (38.5)
Medium (10-249)	4,666 (47.5)	9,321 (54.4)	636 (48.3)	341 (60.9)	13,010 (51.9)
Large (≥250)	547 (6.0)	1,773 (11.5)	104 (8.8)	63 (11.9)	2,153 (9.6)
Shift work					
Yes	1,806 (16.9)	1,761 (9.0)	418 (32.2)	68 (10.4)	3,081 (10.8)
No	8,926 (83.1)	16,678 (91.0)	1,006 (67.8)	515 (89.6)	24,083 (89.2)
Emotional expression manual					
Yes	2,947 (28.3)	2,426 (13.4)	519 (38.3)	109 (19.1)	4,745 (17.6)
No	7,785 (71.7)	16,013 (86.6)	905 (61.7)	474 (80.9)	22,419 (82.4)
Information on health and safety					
Yes	6,938 (65.7)	12,621 (69.2)	857 (61.4)	341 (59.7)	18,361 (68.5)
No	3,794 (34.3)	5,818 (30.8)	567 (38.6)	242 (40.3)	8,803 (31.5)
Work-life balance					
Good	7,898 (73.3)	14,477 (77.7)	877 (60.1)	382 (64.7)	21,116 (77.2)
Poor	2,834 (26.7)	3,962 (22.3)	547 (39.9)	201 (35.3)	6,048 (22.8)
Job stress					
Always, Usually	4,332 (40.7)	4,349 (25.3)	623 (43.4)	237 (42.1)	7,821 (29.7)
Sometimes	5,070 (47.3)	9,684 (53.3)	654 (46.6)	258 (45.3)	13,842 (51.6)
Rarely, Never	1,330 (12.0)	4,406 (21.4)	147 (10.0)	88 (12.6)	5,501 (18.7)
Ergonomic risk factors					
Low	3,083 (28.0)	6,790 (37.0)	367 (24.3)	131 (22.9)	9,375 (34.6)
Middle	3,303 (31.4)	5,867 (32.1)	469 (33.2)	181 (31.4)	8,520 (31.8)
High	4,346 (40.5)	5,782 (30.9)	588 (42.5)	271 (45.6)	9,269 (33.6)

*The percentages of the results were derived by applying weight.

3.3 Prevalence of outcome variables

Table 3.1 and Table 3.2 report the prevalence of WMSD and work-related depression according to exposure variables and covariates in Korean employees. First, in Table 3.1, 21.8% of EL experienced WMSD, but 21.0% of non-EL experienced WMSD. Thus, the difference in prevalence of WMSD according to emotional labor was insignificant. 40.4% of 'WV by customers' and 45.2% of 'WV by coworkers' experienced WMSD, and these were much higher than 19.8% of non-WV. In sociodemographic variables, 20.1% of males and 22.9% of females reported WMSD. The prevalence of WMSD was higher with older age, higher with lower education levels, and higher with lower monthly income levels. The prevalence of work-related depression in EL was 1.7%, higher than 0.8% in non-EL. 5.4% of 'WV by customers' and 8.8% of 'WV by coworkers' experienced work-related depression, higher than 0.7% of non-WV. The difference in prevalence of work-related depression by gender was small, and relatively more work-related depression was reported in the 30s to 50s. Also, the prevalence of work-related depression showed little difference according to education level and monthly income.

In occupational variables of Table 3.2, the prevalence of WMSD increased in the order of DS(19.5%), DN(22.6%), IS(35.8%), and IN(43.6%), so WMSD prevalence was considerably high for indirect employees. Similarly, the prevalence of work-related depression increased in the order of DS(1.0%), DN(1.1%), IS(2.6%), and IN(2.8%), so work-related depression prevalence was also considerably high for indirect employees. WMSD increased in the order of white collar(12.7%), pink

collar(21.8%), and blue collar(34.3%), so blue collar employees who worked in manual labor were found to had experienced WMSD the most. However, work-related depression was little different in the three occupational categories. Both WMSD and work-related depression were most experienced by workers who worked more than 52 hours a week(31.6%; 1.8%). WMSD was most common when working more than 6 days a week(28.6%), but work-related depression was little different according to the number of working days per week. What is unique is that prevalence of WMSD was high even when working less than 40 hours a week(24.1%) and less than 5 days(26.0%). The smaller the workplaces, the higher the prevalence of WMSD, while the prevalence of work-related depression was slightly higher in medium and large workplaces. For both WMSD and work-related depression, prevalence of cases that were 'shift works (27.7%; 1.9%)', 'receiving an emotional expression manual (23.8%; 2.2%)', 'not receiving information about health and safety (22.6%; 1.8%)', 'poor work-life balance (30.6%; 2.5%)', 'frequent job stress (23.1%; 2.4%)', and 'exposure to high levels of ergonomic risk factors (35.1%; 1.9%)' was higher than in the other cases of each variable.

Table 3.1 Prevalence of outcome variables according to exposure and sociodemographic variables

Variables	Work-Related Musculoskeletal Disorders		Work-Related Depression	
	WMSD (n=6,775) n (%*)	Non-WMSD (n=22,396) n (%*)	Depression (n=357) n (%*)	Non-Depression (n=28,814) n (%*)
Exposure				
Emotional labor		†		
Yes	2,443 (21.8)	8,289 (78.2)	198 (1.7)	10,534 (98.3)
No	4,332 (21.0)	14,107 (79.0)	159 (0.8)	18,280 (99.2)
Workplace violence				
Yes - Customers	589 (40.4)	835 (59.6)	84 (5.4)	1,340 (94.6)
Yes - Coworkers	279 (45.2)	304 (54.8)	62 (8.8)	521 (91.2)
No	5,907 (19.8)	21,257 (80.2)	211 (0.7)	26,953 (99.3)
Sociodemographic				
Gender				†
Male	2,947 (20.1)	11,115 (79.9)	179 (1.2)	13,883 (98.8)
Female	3,828 (22.9)	11,281 (77.1)	178 (1.0)	14,931 (99.0)
Age				
15~29	480 (11.6)	3,545 (88.4)	36 (0.8)	3,989 (99.2)
30~49	2,801 (19.2)	11,424 (80.8)	182 (1.3)	14,043 (98.7)
50~59	2,066 (29.3)	4,614 (70.7)	95 (1.4)	6,585 (98.6)
≥60	1,428 (33.4)	2,813 (66.6)	44 (0.9)	4,197 (99.1)
Education level				†
≤Middle school	1,485 (41.8)	2,086 (58.2)	41 (0.9)	3,530 (99.1)
High school	2,979 (29.3)	7,211 (70.7)	142 (1.4)	10,048 (98.6)
≥Bachelor's degree	2,311 (14.4)	13,099 (85.6)	174 (1.1)	15,236 (98.9)
Monthly income (KRW)				†
< 1,500,000	1,516 (25.7)	3,864 (74.3)	59 (1.0)	5,321 (99.0)
1,500,000 ~ 3,000,000	3,689 (22.4)	11,530 (77.6)	196 (1.2)	15,023 (98.8)
≥ 300	1,570 (18.2)	7,002 (81.8)	102 (1.2)	8,470 (98.8)

*The percentages of the results were derived by applying weight.
†Difference is not statistically significant in chi-square test.

Table 3.2 Prevalence of outcome variables according to occupational variables

Variables	Work-Related Musculoskeletal Disorders		Work-Related Depression	
	WMSD (n=6,775) n (%*)	Non-WMSD (n=22,396) n (%*)	Depression (n=357) n (%*)	Non-Depression (n=28,814) n (%*)
Occupational				
Employment types				
Direct - Standard	4,230 (19.5)	16,021 (80.5)	225 (1.0)	20,026 (99.0)
Direct - Nonstandard	1,839 (22.6)	5,346 (77.4)	90 (1.1)	7,095 (98.9)
Indirect - Standard	195 (35.8)	323 (64.2)	15 (2.6)	503 (97.4)
Indirect - Nonstandard	511 (43.6)	706 (56.4)	27 (2.8)	1,190 (97.2)
Occupational category				†
White collar	1,577 (12.7)	10,197 (87.3)	141 (1.1)	11,633 (98.9)
Pink collar	1,813 (21.8)	5,959 (78.2)	88 (1.1)	7,684 (98.9)
Blue collar	3,385 (34.3)	6,240 (65.7)	128 (1.3)	9,497 (98.7)
Weekly working hours				
< 40 hours	1,124 (24.1)	3,276 (75.9)	38 (0.8)	4,362 (99.2)
40~52 hours	4,281 (19.0)	16,367 (81.0)	245 (1.1)	20,403 (98.9)
≥52 hours	1,370 (31.6)	2,753 (68.4)	74 (1.8)	4,049 (98.2)
Weekly working days				†
< 5 days	700 (26.0)	1,925 (74.0)	35 (1.3)	2,590 (98.7)
5 days	3,521 (17.9)	14,427 (82.1)	217 (1.1)	17,731 (98.9)
≥6 days	2,554 (28.6)	6,044 (71.4)	105 (1.3)	8,493 (98.7)
Size of workplace				†
Small (1-9)	3,208 (23.4)	9,656 (76.6)	118 (0.9)	12,746 (99.1)
Medium (10-249)	3,130 (20.6)	10,857 (79.4)	207 (1.3)	13,780 (98.7)
Large (≥250)	437 (17.3)	1,883 (82.7)	32 (1.3)	2,288 (98.7)
Shift work				
Yes	979 (27.7)	2,588 (72.3)	67 (1.9)	3,500 (98.1)
No	5,796 (20.5)	19,808 (79.5)	290 (1.1)	25,314 (98.9)
Emotional expression manual				
Yes	1,334 (23.8)	4,039 (76.2)	119 (2.2)	5,254 (97.8)
No	5,441 (20.8)	18,357 (79.2)	238 (0.9)	23,560 (99.1)
Information on health and safety				
Yes	4,333 (20.7)	15,226 (79.3)	174 (0.8)	19,385 (99.2)
No	2,442 (22.6)	7,170 (77.4)	183 (1.8)	9,429 (98.2)
Work-life balance				
Good	4,564 (18.4)	17,811 (81.6)	184 (0.7)	22,191 (99.3)
Poor	2,211 (30.6)	4,585 (69.4)	173 (2.5)	6,623 (97.5)
Job stress				
Always, Usually	2,086 (23.1)	6,595 (76.9)	238 (2.4)	8,443 (97.6)
Sometimes	3,529 (21.7)	11,225 (78.3)	96 (0.7)	14,658 (99.3)
Rarely, Never	1,160 (17.3)	4,576 (82.7)	23 (0.3)	5,713 (99.7)
Ergonomic risk factors				
Low	1,106 (9.6)	8,767 (90.4)	84 (0.8)	9,789 (99.2)
Middle	1,954 (19.0)	7,216 (81.0)	81 (0.7)	9,089 (99.3)
High	3,715 (35.1)	6,413 (64.9)	192 (1.9)	9,936 (98.1)

*The percentages of the results were derived by applying weight.

†Difference is not statistically significant in chi-square test.

3.4 Comparison by employment types

Table 4.1 and Table 4.2 report and compare the characteristics between the four employment types in males, and Table 4.3 and Table 4.4 report and compare the characteristics between the four employment types in females. First, in males of Table 4.1, all exposure, outcome variables and covariates differed in their distribution according to employment types. The proportion of emotional laborers was the highest in IS(37.4%) among the four employment types, followed by DN(31.0%), DS(28.9%), and IN(24.9%). 'Workplace violence by customers' was also most experienced by IS at 9.6%, followed by IN(5.2%), DN(4.9%), and DS(3.9%). 'Workplace violence by coworkers' was most experienced by IN at 10.5%, and the other three groups had similar levels. As such, IS and IN are very different in relation to emotional labor and workplace violence, despite the same indirect employment. In both WMSD and work-related depression, prevalence decreased in the order of IN(47.1%; 4.1%), IS(29.1%; 2.6%), DN(22.6%; 1.2%), and DS(18.1%; 1.1%). In DS, more than half(59.7%) of workers were in their 30-40s, while DN had a relatively even distribution of age groups, and in both indirect employment groups, the majority(39.0%; 40.2%) of workers were over 60. The percentage of workers who graduated from middle school or below increased with DS(3.0%), DN(17.3%), IS(22.2%), and IN(32.7%). Also, the percentage of workers who earn more than 3 million won a month decreased with DS(60.3%), DN(28.9%), IS and IN(23.5%; 23.5%).

In occupational variables of Table 4.2, white collar employees were the most

common in DS(52.4%), and blue collar employees were the most common in the other three groups(DN-54.0%; IS-76.1%; IN-91.0%). In addition, the percentage of pink collar was the highest at 20.0% in DN. The majority(83.1%) of the DS worked for more than 40 hours and less than 52 hours a week, while quite large number of DN(24.2%) and IN(24.5%) worked for less than 40 hours a week. Also, 37.8% of IS worked more than 52 hours a week. The percentage of workers who work 5 days a week decreased with DS(72.0%), DN(49.1%), IS(44.6%), and IN(37.4%). More than half of DS(59.1%), IS(62.2%), and IN(53.4%) worked for medium-sized companies, while 49.2% of DN worked for small companies. 42.6% of IS responded they worked shifts, which was the highest among four employment types. Emotional expression manuals were provided to 20.0% of IS, which was relatively high, and relatively less information on health and safety was provided to workers in DN(64.7%). Workers who answered that their work-life balance was poor were the highest in IS(46.9%), followed by IN(37.6%), DN(29.7%), and DS(24.5%). Workers who always or usually experienced job stress were the highest in IS(36.1%), followed by DS(33.2%), IN(29.2%), and DN(26.4%). The proportion of workers who were exposed to high levels of ergonomic risk factors was the highest in IN(57.2%), followed by DN(43.3%), IS(39.8%), and DS(31.7%).

Table 4.1 Comparison of main and sociodemographic variables according to employment types in male

Variables		Direct Employment		Indirect Employment	
		Standard Employment (n=10,492) n (%*)	Nonstandard Employment (n=2,711) n (%*)	Standard Employment (n=224) n (%*)	Nonstandard Employment (n=635) n (%*)
Emotional labor					
	Yes	3,197 (28.9)	896 (31.0)	85 (37.4)	151 (24.9)
	No	7,295 (31.0)	1,815 (69.0)	139 (62.6)	484 (75.1)
Workplace violence					
	Yes – Customers	416 (3.9)	147 (4.9)	28 (9.6)	31 (5.2)
	Yes – Coworkers	217 (2.2)	75 (3.6)	6 (3.1)	58 (10.5)
	No	9,859 (93.8)	2,489 (91.5)	190 (87.3)	546 (84.3)
WMSD					
	Yes	1,952 (18.1)	644 (22.6)	59 (29.1)	292 (47.1)
	No	8,540 (81.9)	2,067 (77.4)	165 (70.9)	343 (52.9)
Work-related depression					
	Yes	118 (1.1)	34 (1.2)	5 (2.6)	22 (4.1)
	No	10,374 (98.9)	2,677 (98.8)	219 (97.5)	613 (95.9)
Sociodemographic					
Age					
	15~29	1,266 (13.7)	665 (27.7)	15 (13.8)	22 (8.0)
	30~49	6,121 (59.7)	800 (33.7)	66 (33.0)	120 (20.0)
	50~59	2,210 (20.4)	506 (17.6)	27 (14.2)	187 (31.8)
	≥60	895 (6.2)	740 (21.0)	116 (39.0)	306 (40.2)
Education level					
	≤Middle school	436 (3.0)	613 (17.3)	65 (22.2)	253 (32.7)
	High school	3,027 (26.0)	1,200 (44.1)	104 (47.7)	304 (52.1)
	≥Bachelor's degree	7,029 (71.0)	898 (38.6)	55 (30.1)	78 (15.1)
Monthly income (KRW)					
	< 1,500,000	293 (1.8)	777 (25.0)	36 (11.8)	142 (18.7)
	1,500,000 ~ 3,000,000	4,420 (37.9)	1,300 (46.1)	137 (64.6)	373 (57.8)
	≥ 3,000,000	5,779 (60.3)	634 (28.9)	51 (23.5)	120 (23.5)

*The percentages of the results were derived by applying weight.

Table 4.2 Comparison of occupational variables according to employment types in male

Variables	Direct Employment		Indirect Employment	
	Standard Employment (n=10,492) n (%*)	Nonstandard Employment (n=2,711) n (%*)	Standard Employment (n=224) n (%*)	Nonstandard Employment (n=635) n (%*)
Occupational				
Occupational category				
White collar	4,843 (52.4)	517 (26.0)	22 (14.4)	26 (4.6)
Pink collar	1,645 (12.2)	614 (20.0)	17 (9.5)	20 (4.4)
Blue collar	4,004 (35.4)	1,580 (54.0)	185 (76.1)	589 (91.0)
Weekly working hours				
< 40 hours	226 (1.7)	743 (24.2)	11 (4.3)	178 (24.5)
40~52 hours	8,524 (83.1)	1,423 (56.2)	122 (57.9)	314 (53.5)
≥52 hours	1,742 (15.2)	545 (19.6)	91 (37.8)	143 (22.0)
Weekly working days				
< 5 days	347 (2.3)	576 (16.9)	82 (25.8)	247 (34.3)
5 days	7,158 (72.0)	1,224 (49.1)	86 (44.6)	220 (37.4)
≥6 days	2,987 (25.7)	911 (34.0)	56 (29.6)	168 (28.3)
Size of workplace				
Small (1-9)	3,162 (26.1)	1,474 (49.2)	75 (31.9)	290 (43.7)
Medium (10-249)	5,867 (59.1)	1,108 (45.0)	138 (62.2)	325 (53.4)
Large (≥250)	1,463 (14.8)	129 (5.8)	11 (5.9)	20 (2.9)
Shift work				
Yes	1,329 (11.2)	427 (13.6)	114 (42.6)	133 (22.4)
No	9,163 (88.8)	2,284 (86.4)	110 (57.4)	502 (77.6)
Emotional expression manual				
Yes	1,919 (17.7)	391 (15.2)	47 (20.0)	79 (12.8)
No	8,573 (82.3)	2,320 (84.8)	177 (80.0)	556 (87.2)
Information on health and safety				
Yes	7,590 (71.6)	1,747 (64.7)	164 (75.2)	457 (71.8)
No	2,902 (28.4)	964 (35.3)	60 (24.8)	178 (28.2)
Work-life balance				
Good	7,976 (75.5)	1,929 (70.3)	118 (53.1)	411 (62.4)
Poor	2,516 (24.5)	782 (29.7)	106 (46.9)	224 (37.6)
Job stress				
Always, Usually	3,381 (33.2)	724 (26.4)	71 (36.1)	180 (29.2)
Sometimes	5,486 (52.3)	1,311 (49.6)	111 (48.6)	316 (51.8)
Rarely, Never	1,625 (14.5)	676 (24.0)	42 (15.3)	139 (19.0)
Ergonomic risk factors				
Low	3,794 (36.2)	743 (28.0)	66 (26.4)	115 (17.2)
Middle	3,369 (32.1)	804 (28.7)	79 (33.8)	165 (25.6)
High	3,329 (31.7)	1,164 (43.3)	79 (39.8)	355 (57.2)

*The percentages of the results were derived by applying weight.

In females, all exposure variables and covariates differed in their distribution according to employment types. In Table 4.3, the proportion of emotional laborers was the highest in IS(46.5%), followed by DS(43.3%), DN(41.8%), and IN(35.6%). However, IN of females, which had the lowest proportion of emotional laborers, was similar to IS of males(37.4%), which had the highest proportion of emotional laborers. Thus, in females, the proportions of emotional laborers of all four employment types were found to be fairly high. Conversely, the proportion of workplace violence, especially 'workplace violence by coworkers' was lower than males. 'Workplace violence by customers' was most experienced by IS at 9.2%, and 'workplace violence by coworkers' was more experienced by two indirect employment groups(IS-3.0%; IN-3.0%) than by two direct employment groups(DS-1.7%; DN-1.5%). The prevalence of WMSD increased in the order of DS(21.7%), DN(22.6%), IN(38.8%), and IS(41.8%). The prevalence of work-related depression was highest at 2.8% in IS, and the other three groups had similar levels. Workers in their 30-40s(53.2%; 33.2%) were the most in two direct employment, while workers over 60(33.9%; 51.1%) were the most in two indirect employment. The percentage of workers who graduated from middle school or below increased with DS(4.4%), DN(19.0%), IS(33.5%), and IN(49.1%). Also, the percentage of workers who earn more than 3 million won a month decreased with DS(19.7%), DN(5.9%), IS(3.6%), and IN(1.2%).

In occupational variables of Table 4.4, white collar employees were the most common in DS(63.8%), pink collar employees were the most common in DN(43.9%), and blue collar employees were most common in IS(48.5%) and

IN(59.9%). Unlike males, the proportions of pink collar employees in female indirect employees(36.5%; 32.6%) were as high as blue collar employees. The majority of DS(83.0%) and IS(74.7%) worked more than 40 hours and less than 52 hours a week, while 46.1% of DN and 56.4% of IN worked less than 40 hours a week. Similarly, the majority of DS(73.1%) and IS(65.6%) worked 5 days a week, while 20.4% of DN and 23.7% of IN worked less than 5 days a week. Almost half of DS(50.0%), IS(50.2%), and IN(50.2%) worked for medium-sized companies, and the majority of DN(62.1%) worked for small companies. 20.0% of IS responded they worked shifts, which was the highest among the four employment types. Emotional expression manuals were provided to 33.2% of IS, which was relatively high, and relatively less information on health and safety was provided to workers in DN(59.0%). Workers who answered that their work-life balance was poor were the highest in IS(26.4%), followed DS(22.0%), DN(17.9%), and IN(17.0%). Workers who always or usually experienced job stress were the highest in DS(31.0%), followed by IS(27.3%), DN(24.6%), and IN(23.6%). The proportion of workers who were exposed to high levels of ergonomic risk factors was the highest in IS(49.4%), followed by IN(47.9%), DN(36.8%), and DS(31.2%).

Table 4.3 Comparison of main and sociodemographic variables according to employment types in female

Variables		Direct Employment		Indirect Employment	
		Standard Employment (n=9,759) n (%*)	Nonstandard Employment (n=4,474) n (%*)	Standard Employment (n=294) n (%*)	Nonstandard Employment (n=582) n (%*)
Emotional labor					
	Yes	4,258 (43.3)	1,808 (41.8)	128 (46.5)	209 (35.6)
	No	5,501 (56.7)	2,666 (58.2)	166 (53.5)	373 (64.4)
Workplace violence					
	Yes – Customers	512 (5.3)	231 (5.3)	27 (9.2)	32 (7.3)
	Yes – Coworkers	145 (1.7)	59 (1.5)	8 (3.0)	15 (3.0)
	No	9,102 (93.0)	4,184 (93.2)	259 (87.8)	535 (89.7)
WMSD					
	Yes	2,278 (21.7)	1,195 (22.6)	136 (41.8)	219 (38.8)
	No	7,481 (78.3)	3,279 (77.4)	158 (58.2)	363 (61.2)
Work-related depression†					
	Yes	107 (1.0)	56 (1.0)	10 (2.8)	5 (1.0)
	No	9,652 (99.0)	4,418 (99.0)	284 (97.2)	577 (99.0)
Sociodemographic					
Age					
	15~29	1,393 (22.5)	641 (27.3)	12 (10.0)	11 (3.9)
	30~49	5,426 (53.2)	1,516 (33.2)	83 (26.2)	93 (15.9)
	50~59	2,321 (18.9)	1,144 (20.1)	109 (29.9)	176 (29.1)
	≥60	619 (5.4)	1,173 (19.4)	90 (33.9)	302 (51.1)
Education level					
	≤Middle school	578 (4.4)	1,221 (19.0)	97 (33.5)	308 (49.1)
	High school	3,296 (28.1)	1,897 (41.4)	143 (43.8)	219 (40.9)
	≥Bachelor's degree	5,885 (67.5)	1,356 (39.6)	54 (22.7)	55 (10.0)
Monthly income (KRW)					
	< 1,500,000	1,269 (11.3)	2,347 (51.8)	132 (41.2)	384 (64.9)
	1,500,000 ~ 3,000,000	6,748 (69.0)	1,903 (42.3)	152 (55.2)	186 (33.9)
	≥ 3,000,000	1,742 (19.7)	224 (5.9)	10 (3.6)	12 (1.2)

*The percentages of the results were derived by applying weight.
†Difference is not statistically significant in chi-square test.

Table 4.4 Comparison of occupational variables according to employment types in female

Variables	Direct Employment		Indirect Employment	
	Standard Employment (n=9,759) n (%*)	Nonstandard Employment (n=4,474) n (%*)	Standard Employment (n=294) n (%*)	Nonstandard Employment (n=582) n (%*)
Occupational				
Occupational category				
White collar	5,315 (63.8)	987 (30.4)	27 (15.0)	37 (7.5)
Pink collar	3,162 (24.5)	1,996 (43.9)	125 (36.5)	193 (32.6)
Blue collar	1,282 (11.7)	1,491 (25.7)	142 (48.5)	352 (59.9)
Weekly working hours				
< 40 hours	783 (7.6)	2,054 (46.1)	63 (18.2)	342 (56.4)
40~52 hours	7,856 (83.0)	1,979 (45.8)	209 (74.7)	221 (40.0)
≥52 hours	1,120 (9.4)	441 (8.1)	22 (7.1)	19 (3.6)
Weekly working days				
< 5 days	165 (1.4)	1,003 (20.4)	15 (4.3)	190 (23.7)
5 days	6,658 (73.1)	2,141 (52.7)	195 (65.6)	266 (50.9)
≥6 days	2,936 (25.5)	1,330 (26.9)	84 (30.1)	126 (25.3)
Size of workplace				
Small (1-9)	4,586 (43.4)	2,864 (62.1)	131 (43.1)	282 (46.5)
Medium (10-249)	4,632 (50.0)	1,492 (34.6)	144 (50.2)	281 (50.2)
Large (≥250)	541 (6.6)	118 (3.3)	19 (6.7)	19 (3.3)
Shift work				
Yes	901 (9.0)	554 (15.1)	59 (20.0)	50 (9.7)
No	8,858 (91.0)	3,920 (84.9)	235 (80.0)	532 (90.3)
Emotional expression manual				
Yes	2,090 (22.0)	650 (16.2)	85 (33.2)	112 (20.1)
No	7,669 (78.0)	3,824 (83.8)	209 (66.8)	470 (79.9)
Information on health and safety				
Yes	6,469 (66.9)	2,571 (59.0)	197 (69.3)	364 (60.8)
No	3,290 (33.1)	1,903 (41.0)	97 (30.7)	218 (39.2)
Work-life balance				
Good	7,649 (78.0)	3,582 (82.1)	221 (73.6)	489 (83.0)
Poor	2,110 (22.0)	892 (17.9)	73 (26.4)	93 (17.0)
Job stress				
Always, Usually	2,965 (31.0)	1,129 (24.6)	86 (27.3)	145 (23.6)
Sometimes	5,041 (51.2)	2,090 (48.4)	150 (55.3)	249 (49.2)
Rarely, Never	1,753 (17.8)	1,255 (27.0)	58 (17.4)	188 (27.2)
Ergonomic risk factors				
Low	3,651 (36.2)	1,287 (29.6)	75 (22.9)	142 (23.6)
Middle	3,077 (32.6)	1,429 (33.6)	84 (27.6)	163 (28.5)
High	3,031 (31.2)	1,758 (36.8)	135 (49.4)	277 (47.9)

*The percentages of the results were derived by applying weight.

3.5 Effects of emotional labor and workplace violence on health

3.5.1 Physical health: Work-Related Musculoskeletal Disorders

Table 5.1 reports the result of survey logistic regression regarding WMSD in males, and Table 6.1 reports the result of survey logistic regression regarding WMSD in females. First, in Table 5.1, model 1 was the result of logistic regression including two exposure variables and covariates, and model 2 was the result of adding interaction terms to model 1. The statistically significant interaction term for WMSD in males was 'emotional labor and ergonomic risk factors', which was negatively associated with WMSD. In model 1, the OR of emotional labor was 0.81 (95% CI: 0.71-0.93), but in model 2, which included an interaction term, it increased to 1.26 (95% CI: 0.94-1.68). In model 2, the OR of 'WV by customers' for WMSD was 2.27 (95% CI: 1.80-2.86), and the OR of 'WV by coworkers' for WMSD was 2.70 (95% CI: 2.04-3.57). Employment types were associated with WMSD, the OR of indirect employment was 1.45 (95% CI: 1.17-1.81) in males. White collar employees(OR: 0.55, 95% CI: 0.47-0.64) and pink collar employees(OR: 0.55, 95% CI: 0.46-0.66) had lower risks of WMSD than blue collar employees. When work-life balance was poor, WMSD increased 1.50 times (95% CI: 1.33-1.70) in males. Also, when job stress was always or usually experienced, WMSD increased 1.48 times (95% CI: 1.25-1.76) in males. The OR of high levels of ergonomic risk factors directly affecting WMSD was quite high at 4.52 (95% CI: 3.79-5.38), and was still significant despite adjusting for the interaction term. In addition, although not shown in Table 5.1, age, education level, and monthly income had significant association with

WMSD in males.

Table 5.2 details the interaction effects between ‘emotional labor and ergonomic risk factors’. At low levels of ergonomic risk factors, the risk of WMSD was higher in emotional laborers, but at middle and high levels of ergonomic risk factors, the risk of WMSD was higher in non-emotional laborers. Therefore, since the effects of emotional labor on WMSD differed according to ergonomic risk factors, it can be said that there were interaction effects between them in males.

Table 5.1 Association of emotional labor, workplace violence and covariates with WMSD in male

Variables		Male (n=14,062)	
		Model 1	**Model 2**
		Odds Ratio† (95% CI)	**Odds Ratio† (95% CI)**
Emotional labor (EL)	Yes	0.81 (0.71-0.93)**	1.26 (0.94-1.68)
	No	1.00	1.00
Workplace violence (WV)	Yes – Customers	2.30 (1.81-2.90)***	2.27 (1.80-2.86)***
	Yes – Coworkers	2.70 (2.04-3.57)***	2.70 (2.04-3.57)***
	No	1.00	1.00
Employment types	Direct – Standard (DS)	1.00	1.00
	Direct – Nonstandard (DN)	0.94 (0.81-1.09)	0.94 (0.81-1.09)
	Indirect employment (I)	1.48 (1.19-1.84)***	1.45 (1.17-1.81)***
Occupational category	White collar	0.55 (0.47-0.64)***	0.55 (0.47-0.64)***
	Pink collar	0.56 (0.46-0.67)***	0.55 (0.46-0.66)***
	Blue collar	1.00	1.00
Work-life balance	Good	1.00	1.00
	Poor	1.50 (1.33-1.70)***	1.50 (1.33-1.70)***
Job stress	Always, Usually	1.49 (1.25-1.77)***	1.48 (1.25-1.76)***
	Sometimes	1.31 (1.12-1.53)***	1.30 (1.11-1.52)**
	Rarely, Never	1.00	1.00
Ergonomic risk factors	Low	1.00	1.00
	Middle	2.04 (1.75-2.39)***	2.27 (1.89-2.73)***
	High	3.80 (3.27-4.42)***	4.52 (3.79-5.38)***
EL × Ergonomic risk factors‡	EL × Middle		0.67 (0.47-0.96)*
	EL × High		0.55 (0.40-0.76)***
McFadden's R^2		0.153	0.154
Nagelkerke's R^2		0.224	0.226

***p<.001; **p<0.01; *p<0.05; †Each model was adjusted for sociodemographic variables, occupational variables, and all other variables in the table.; ‡Interaction terms

Table 5.2 Significant interaction effects on WMSD in male

	Ergonomic risk factors		
	Low level	Middle level	High level
Emotional Labor			
No	1.00	2.27 (1.89-2.73)***	4.52 (3.79-5.38)***
Yes	1.26 (0.94-1.68)	1.92 (1.50-2.47)***	3.11 (2.54-3.81)***

***p<.001; **p<0.01; *p<0.05

In Table 6.1, model 1 was the result of logistic regression including two exposure variables and covariates, and model 2 was the result of adding interaction terms to model 1. The statistically significant interaction term for WMSD in females were ‘emotional labor and ergonomic risk factors’, which was negatively associated with WMSD, and ‘workplace violence and employment types’, which was positively associated with WMSD. In model 1, the OR of emotional labor was 0.95 (95% CI: 0.84-1.07), but in model 2, which included an interaction term, it increased to 1.23 (95% CI: 0.98-1.54). In model 2, the OR of ‘WV by customers’ for WMSD was 2.73 (95% CI: 2.14-3.47), and the OR of ‘WV by coworkers’ for WMSD was 3.46 (95% CI: 2.27-5.29). Employment types were associated with WMSD, the OR of DN was 0.75 (95% CI: 0.66-0.86) in females. White collar employees(OR: 0.52, 95% CI: 0.44-0.63) and pink collar employees(OR: 0.69, 95% CI: 0.59-0.80) had lower risks of WMSD than blue collar employees. When work-life balance was poor, WMSD increased 1.32 times (95% CI: 1.16-1.49) in females. Also, when job stress was always or usually experienced, WMSD increased 1.47 times (95% CI: 1.26-1.70) in females. The OR of high levels of ergonomic risk factors directly affecting WMSD was quite high at 4.32 (95% CI: 3.60-5.17), and was still significant despite adjusting for the interaction term. In addition, although not shown in Table 6.1, age, education level, monthly income, shift work, emotional expression manual, and information on health and safety had significant association with WMSD in females.

Table 6.2 details the interaction effects between ‘emotional labor and ergonomic risk factors’, and ‘workplace violence and employment types’. At low levels of ergonomic risk factors, the risk of WMSD was higher in emotional laborers,

but at high levels of ergonomic risk factors, the risk of WMSD was higher in non-emotional laborers. Therefore, since the effects of emotional labor on WMSD differed according to ergonomic risk factors, it can be said that there were interaction effects between them in females. The interaction effects of ‘workplace violence and employment types’ show that the risk of WMSD was quite high when indirect employment workers experienced workplace violence by coworkers. Thus, in females, there were interaction effects between them.

Table 6.1 Association of emotional labor, workplace violence and covariates with WMSD in female

Variables		Female (n=15,109)	
		Model 1	**Model 2**
		Odds Ratio† (95% CI)	**Odds Ratio† (95% CI)**
Emotional labor (EL)	Yes	0.95 (0.84-1.07)	1.23 (0.98-1.54)
	No	1.00	1.00
Workplace violence (WV)	Yes – Customers	2.63 (2.15-3.23)***	2.73 (2.14-3.47)***
	Yes – Coworkers	3.84 (2.75-5.36)***	3.46 (2.27-5.29)***
	No	1.00	1.00
Employment types	Direct – Standard (DS)	1.00	1.00
	Direct – Nonstandard (DN)	0.74 (0.65-0.84)***	0.75 (0.66-0.86)***
	Indirect employment (I)	0.92 (0.75-1.13)	0.92 (0.74-1.14)
Occupational category	White collar	0.51 (0.42-0.60)***	0.52 (0.44-0.63) ***
	Pink collar	0.67 (0.58-0.78)***	0.69 (0.59-0.80)***
	Blue collar	1.00	1.00
Work-life balance	Good	1.00	1.00
	Poor	1.32 (1.16-1.49)***	1.32 (1.16-1.49)***
Job stress	Always, Usually	1.46 (1.26-1.70)***	1.47 (1.26-1.70)***
	Sometimes	1.51 (1.32-1.73)***	1.50 (1.31-1.72)***
	Rarely, Never	1.00	1.00
Ergonomic risk factors	Low	1.00	1.00
	Middle	1.91 (1.66-2.21)***	2.02 (1.68-2.44)***
	High	3.54 (3.08-4.06)***	4.32 (3.60-5.17)***
EL × Ergonomic risk factors‡	EL × Middle		0.86 (0.64-1.14)
	EL × High		0.63 (0.48-0.83)***
WV × Employment types‡	WV by customers × DN		0.91 (0.58-1.44)
	WV by coworkers × DN		1.07 (0.49-2.33)
	WV by customers × I		0.81 (0.40-1.66)
	WV by coworkers × I		4.64 (1.30-16.58)*
McFadden's R^2		0.138	0.139
Nagelkerke's R^2		0.209	0.211

***p<.001; **p<0.01; *p<0.05; †Each model was adjusted for sociodemographic variables, occupational variables, and all other variables in the table.; ‡Interaction terms

Table 6.2 Significant interaction effects on WMSD in female

	Ergonomic risk factors		
	Low level	Middle level	High level
Emotional Labor			
No	1.00	2.02 (1.68-2.44)***	4.32 (3.60-5.17)***
Yes	1.23 (0.98-1.54)	2.13 (1.75-2.60)***	2.77 (1.44-5.32)***
	Workplace Violence		
	No	Yes - Customers	Yes - Coworkers
Employment Types			
Direct - Standard	1.00	2.73 (2.14-3.47)***	3.46 (2.267-5.29)***
Direct - Nonstandard	0.75 (0.66-0.86)***	1.86 (1.26-2.75)**	2.77 (1.44-5.32)**
Indirect employment	0.92 (0.74-1.14)	2.03 (1.06-3.90)*	14.75 (4.48-48.54)***

***p<.001; **p<0.01; *p<0.05

3.5.2 Mental health: Work-Related Depression

Table 7 reports the result of survey logistic regression regarding work-related depression in males, and Table 8.1 reports the result of survey logistic regression regarding work-related depression in females. In Table 7, model 1 was the result of logistic regression including two exposure variables and covariates, and model 2 was the result of adding interaction terms to model 1. However, there was no significant interaction effect on work-related depression in males. In Model 1, emotional labor was not associated with work-related depression in males. Two types of workplace violence were associated with work-related depression, the OR of 'WV by customers' for work-related depression was 3.69 (95% CI: 2.17-6.28), and the OR of 'WV by coworkers' for work-related depression was 8.32 (95% CI: 5.17-13.39). This suggests that workplace violence considerably increased the risks of work-related depression. Indirect employment(OR: 3.13, 95% CI: 1.68-5.81) were associated with work-related depression. Being provided emotional expression manual(OR: 1.71, 95% CI: 1.15-2.54), being provided information on health and safety(OR: 0.43, 95% CI: 0.29-0.64), poor work-life balance(OR: 2.48, 95% CI: 1.59-3.87), always or usually suffering from job stress(OR: 3.92, 95% CI: 1.88-8.19) had high risks of work-related depression in males. In addition, although not shown in Table 7, age and size of workplace had significant association with work-related depression in males.

Table 7 Association of emotional labor, workplace violence and covariates with work-related depression in male

Variables		Male (n=14,062)	
		Model 1	**Model 2**
		Odds Ratio† (95% CI)	**Odds Ratio† (95% CI)**
Emotional labor (EL)	Yes	0.98 (0.63-1.53)	0.98 (0.63-1.53)
	No	1.00	1.00
Workplace violence (WV)	Yes – Customers	3.69 (2.17-6.28)***	2.97 (1.53-5.77)**
	Yes – Coworkers	8.32 (5.17-13.39)***	7.67 (4.25-13.82)***
	No	1.00	1.00
Employment types	Direct – Standard (DS)	1.00	1.00
	Direct – Nonstandard (DN)	1.31 (0.78-2.20)	1.02 (0.51-2.05)
	Indirect employment (I)	3.13 (1.68-5.81)***	2.93 (1.26-6.82)*
Emotional expression manual	Yes	1.71 (1.15-2.54)**	1.74 (1.16-2.60)**
	No	1.00	1.00
Information on health and safety	Yes	0.43 (0.29-0.64)***	0.43 (0.29-0.64)***
	No	1.00	1.00
Work-life balance	Good	1.00	1.00
	Poor	2.48 (1.59-3.87)***	2.48 (1.59-3.87)***
Job stress	Always, Usually	3.92 (1.88-8.19)***	3.94 (1.88-8.25)***
	Sometimes	1.78 (0.84-3.75)	1.79 (0.85-3.79)
	Rarely, Never	1.00	1.00
WV × Employment types‡	WV by customers × DN		2.67 (0.80-8.89)
	WV by coworkers × DN		1.28 (0.33-4.99)
	WV by customers × I		0.99 (0.22-4.52)
	WV by coworkers × I		1.25 (0.34-4.65)
McFadden's R^2		0.181	0.183
Nagelkerke's R^2		0.191	0.193

***p<.001; **p<0.01; *p<0.05

†Each model was adjusted for sociodemographic variables, occupational variables, and all other variables in the table.

‡Interaction terms

In Table 8.1, model 1 was the result of logistic regression including two exposure variables and covariates, and model 2 was the result of adding interaction terms to model 1. The statistically significant interaction term for work-related depression in females was 'workplace violence and employment types', which was positively associated with work-related depression. In Model 2, the OR of emotional labor was 1.74 (95% CI: 1.10-2.74), so there was significant association between emotional labor and work-related depression in females. Two types of workplace violence were associated with work-related depression, the OR of 'WV by customers' for work-related depression was 3.86 (95% CI: 2.00-7.45), and the OR of 'WV by coworkers' for work-related depression was 5.27 (95% CI: 2.46-11.29). This suggests that workplace violence considerably increased the risks of work-related depression. Employment types were not associated with work-related depression. Being provided emotional expression manual(OR: 1.87, 95% CI: 1.23-2.85), being provided information on health and safety(OR: 0.54, 95% CI: 0.36-0.80), poor work-life balance(OR: 1.91, 95% CI: 1.28-2.86), always or usually suffering from job stress(OR: 7.23, 95% CI: 3.45-15.16) had high risks of work-related depression in females. In addition, although not shown in Table 8.1, age and ergonomic risk factors had significant association with work-related depression in females.

Table 8.2 details the interaction effects between 'workplace violence and employment types'. In Table 8.2, workplace violence and employment types showed significant interaction effects. This is because when workplace violence did not occur, the OR for work-related depression did not differ significantly according to employment types, however, the difference according to employment types was

significant when workplace violence occurred. In particular, the risk of work-related depression was very high when indirect employment workers experienced workplace violence by customers or coworkers.

Table 8.1 Association of emotional labor, workplace violence and covariates with work-related depression in female

Variables		Female (n=15,109)	
		Model 1	**Model 2**
		Odds Ratio† (95% CI)	**Odds Ratio† (95% CI)**
Emotional labor (EL)	Yes	1.68 (1.07-2.63)*	1.74 (1.10-2.74)*
	No	1.00	1.00
Workplace violence (WV)	Yes – Customers	5.81 (3.59-9.40)***	3.86 (2.00-7.45)***
	Yes – Coworkers	9.72 (5.32-17.77)***	5.27 (2.46-11.29)***
	No	1.00	1.00
Employment types	Direct – Standard (DS)	1.00	1.00
	Direct – Nonstandard (DN)	1.13 (0.71-1.79)	0.76 (0.44-1.32)
	Indirect employment (I)	1.27 (0.65-2.47)	0.42 (0.15-1.21)
Emotional expression manual	Yes	1.84 (1.21-2.79)**	1.87 (1.23-2.85)**
	No	1.00	1.00
Information on health and safety	Yes	0.53 (0.35-0.79)**	0.54 (0.36-0.80)**
	No	1.00	1.00
Work-life balance	Good	1.00	1.00
	Poor	1.90 (1.27-2.85)**	1.91 (1.28-2.86)**
Job stress	Always, Usually	7.31 (3.51-15.23)***	7.23 (3.45-15.16)***
	Sometimes	1.93 (0.89-4.21)	1.90 (0.87-4.17)
	Rarely, Never	1.00	1.00
WV × Employment types‡	WV by customers × DN		2.53 (0.87-7.31)
	WV by coworkers × DN		3.53 (0.95-13.06)
	WV by customers × I		6.83 (1.65-28.26)**
	WV by coworkers × I		16.70 (2.19-62.61)**
McFadden's R^2		0.208	0.216
Nagelkerke's R^2		0.217	0.226

***p<.001; **p<0.01; *p<0.05; †Each model was adjusted for sociodemographic variables, occupational variables, and all other variables in the table.; ‡Interaction terms

Table 8.2 Significant interaction effects on work-related depression in female

	Workplace Violence		
	No	Yes - Customers	Yes - Coworkers
Employment Types			
Direct - Standard	1.00	3.86 (2.00-7.45)***	5.27 (2.46-11.29)***
Direct - Nonstandard	0.76 (0.44-1.32)	7.39 (3.40-16.06)***	14.11 (4.84-41.13)***
Indirect employment	0.42 (0.15-1.21)	11.17 (4.35-28.70)***	26.19 (7.74-88.58)***

***p<.001; **p<0.01; *p<0.05

Chapter 4. DISCUSSION AND CONCLUSION

4.1 Discussion

This paper, using the 5th KWCS, studied the effects of emotional labor and workplace violence on health such as WMSD and work-related depression in Korean employees. The main results of this study are as follows.

The proportion of emotional laborers among Korean employees, who were whole subjects of the study, was 35.0%, and 29.2% for males and 42.7% for females. In another study, 41.8% of all employees were emotional laborers according to a study using the 3rd KWCS, and 36.6% of males and 39.9% of females were emotional laborers according to a study using the 4th Korean National Health and Nutrition Examination Survey(Kim, 2014; Kim & Song, 2014). In both studies, females had more emotional laborers than males, but since the definition of emotional labor was different for each study, an accurate comparison of the proportion was not possible. This study also showed the results that 4.7% of Korean employees experienced 'workplace violence by customers', and 2.3% of them experienced 'workplace violence by coworkers'. Female employees(5.5%) experienced more 'workplace violence by customers' than male employees(4.2%), while male employees(2.8%) experienced more 'workplace violence by coworkers' than female employees(1.7%). In another study using the 3rd KWCS, females(1.7%) experienced more workplace violence than males(1.1%), but workplace violence in here was defined as only physical violence, sexual harassment and bullying(Yoon et al., 2015). This study,

however, expanded the range of workplace violence, including not only the previous three workplace violence, but also verbal abuse, unwanted sexual interest, threat, and insulting behavior.

The prevalence of WMSD in this study was 21.3% among Korean employees, 20.1% in males and 22.9% in females. In another study using the 3rd KWCS, the prevalence of low back pain was 10.4% for males and 14.4% for females(Yoon et al., 2015), and in another study using the 4th KWCS, the prevalence of upper limb and lower limb pain was 21.4% for males and 28.2% for females(Lee et al., 2018). The study of Kim & Cho(2017), using the 3rd KWCS, 40.4% of males and 49.4% of females had MSD, which was unrelated to work. Several studies, including this study, report that females experienced more WMSD than males. The prevalence of work-related depression in this study was 1.1%, with little gender difference. Another study using the 1st KWCS showed different results that the prevalence of work-related depression was 3.1% in males and 4.0% in females, with gender difference(Choi et al., 2010). Another study comparing the 1st and 2nd KWCS reported the results that the prevalence in the 1st KWCS was 5.4%, but the prevalence in the 2nd KWCS was 1.1%(Kim et al., 2015), which were similar to the prevalence in this study. It is estimated that the prevalence was reduced due to changes in the items used to define work-related depression.

WMSD prevalence was not significantly different according to emotional labor, but the prevalence of work-related depression was higher in EL than in non-EL. EL had more females, higher percentage of pink collar employees, more workers who worked longer hours a week, more workers who worked in small companies,

more workers who worked shifts, and relatively poor work-life balance, compared to non-EL. This results were consistent with a study of Kim & Yoon(2017). Moreover, this study found that EL received more emotional expression manuals and less information on health and safety than non-EL, and felt job stress more often. The study of Kim & Yoon(2017) also investigated workplace violence, so WV had a higher prevalence of WMSD and work-related depression, workers who worked longer hours a week, workers who worked more shifts, and relatively poor work-life balance, compared to non-WV. The same results were obtained in this study, but this study differs in that workplace violence was divided into 'workplace violence caused by customers' and 'workplace violence caused by coworkers'. Therefore, the additional results of this study showed that the proportion of pink collar employees in 'WV by customers' was high, and the proportion of blue collar employees in 'WV by coworkers' was high. 'WV by customers' received relatively a lot of emotional expression manuals, but received less information on health and safety. Both groups who experienced workplace violence felt more frequent job stress than non-WV.

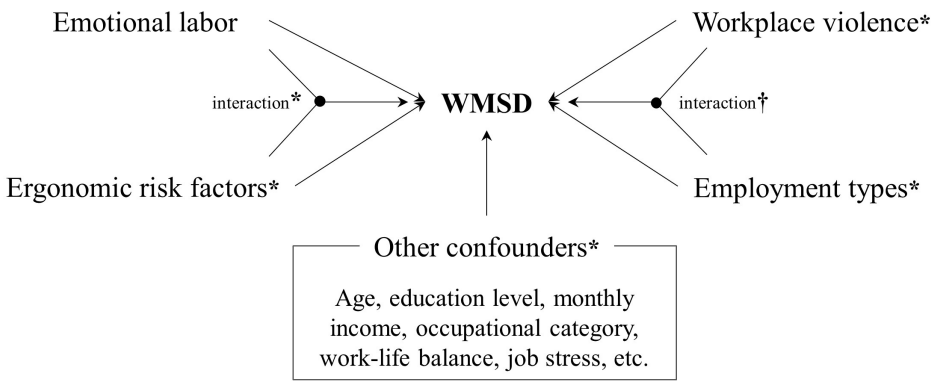
The following is the results of comparing eight groups that divided Korean employees into gender and employment types. The proportions of EL are listed in order from the largest group: female-IS(46.5%), female-DS(43.3%), female-DN(41.8%), male-IS(37.4%), female-IN(35.6%), male-DN(31.0%), male-DS(28.9%), male-IN(24.9%). The proportion of 'WV by customers' was highest in IS for both males(9.6%) and females(9.2%). The proportion of 'WV by coworkers' was highest in IN(10.5%) of males, while the proportions of 'WV by coworkers' were relatively high in IS(3.0%) and IN(3.0%) for females, which were similar to

the proportion of other three employment types in males. As a result, in terms of the proportion in employment types, IS group in both genders was a high-risk group that experienced relatively a lot of emotional labor and workplace violence caused by customers, and a high-risk group of workplace violence caused by coworkers was found to be IN, especially male-IN, for both males and females. However, since direct employment is much larger than indirect employment, an intervention program for direct employment workers is also required, targeting occupations known to be high-risk groups of emotional labor and workplace violence. A study using the 'Emotional Labor and Workplace Violence Assessment Tool' reported that among the 13 emotional labor occupations, the high-risk occupations of emotional labor were call center counselors, AS technicians and other service workers, hotel service workers, bankers, and department store·mart sales service workers. The high-risk occupations of workplace violence included AS technicians and other service workers, hotel service workers, bus·taxi·train drivers, call center counselors, flight attendants, public health and medical officials, and firefighters(Jang et al., 2014). The health of indirect employment workers was worse than that of direct employment workers, because IN had the highest prevalence of WMSD and work-related depression in males, whereas IS had the highest prevalence of them in females. A study of Min et al.(2013) using the 2nd KWCS divided employment types into 'workers at parent firm' and 'workers at subcontracting', and as a result, the prevalence of muscular pains and anxiety·depression was higher in 'workers at subcontracting' than 'workers at parent firm'. In a study of Choi et al.(2001), the results of the health survey showed that the overall health level of 'workers at parent

firm' was better than that of 'workers at subcontracting'. Most studies dividing employment types into standard and nonstandard employment have found that nonstandard workers often had poor working conditions or working environment, such as receiving less information or education about health and safety than standard workers(Ferrie et al., 2008; Goudswaard & Andries, 2002; Letourneux, 1998), and that can lead to poor health, including industrial accidents and chronic diseases(Benach et al., 2014; Amuedo-Dorantes, 2002). Indeed, in both males and females of this study, more emotional expression manuals were provided to IS than DS, which is considered to be a real standard employment, also less information on health and safety wad provided to DN than DS.

The results of survey logistic regression adjusting for sociodemographic and occupational variables showed that emotional labor was not significantly associated with WMSD, and two types of workplace violence were significantly associated with WMSD in both males and females. In particular, 'workplace violence by coworkers' especially had a higher OR for WMSD than 'workplace violence by customers'. These results were different from some studies in which emotional labor increased the risk of WMSD(Kim & Choo, 2017; Yoo et al., 2011; Kim & Yoon, 2017; Lee et al., 2015), but were similar to some studies in which workplace violence was associated with WMSD(Yoon et al., 2015; Razaee & Ghasemi, 2014; Miranda et al., 2010; Kim & Yoon, 2017; Lee et al., 2015). The variables associated with WMSD in both males and females were age, educational level, monthly income, employment types, occupational category, work-life balance, job stress, and ergonomic risk factors. Furthermore, 'emotional labor and ergonomic risk factors' had significant

interaction effects on WMSD in both genders. The interaction term of them was negatively associated with WMSD, but this is difficult to say that emotional labor offsets the effects of ergonomic risk factors on WMSD. Instead, considering the work characteristics of non-emotional laborers with high proportion of blue collar, it can be said the result is because non-emotional laborers were more likely to be exposed to ergonomic risk factors that have greater effects on WMSD. In addition, 'workplace violence and employment types' had significant interaction effects on WMSD only in females. Among employment types, indirect employment increased the effects of 'workplace violence by coworkers' on WMSD. In order to prevent WMSD in females, therefore, it is necessary to protect indirect employment workers from 'workplace violence by coworkers' also known as workplace harassment. Figure 3 is a conceptual diagram summarizing the above results.

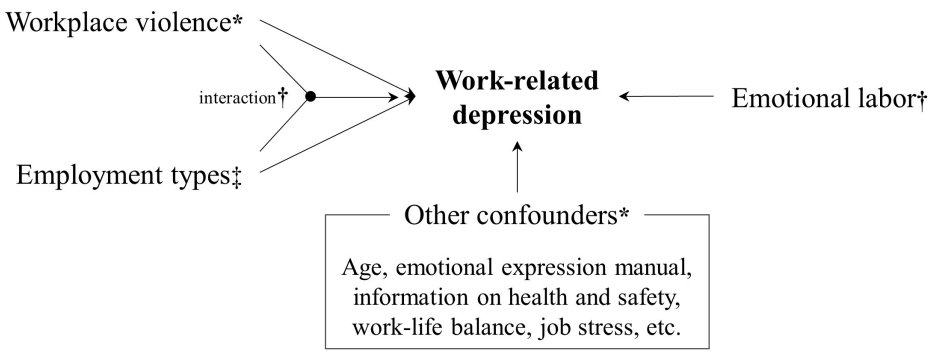


*Statistically significant in both genders; †Statistically significant only in females

Figure 3. Conceptual diagram to summarize the findings on WMSD

The results of survey logistic regression adjusting for sociodemographic and occupational variables showed that emotional labor was significantly associated with work-related depression only in females, also both workplace violence was significantly associated with work-related depression in both genders. Gender differences in the relationship between two exposure variables and work-related depression were clear. In particular, 'workplace violence by coworkers' especially had much higher OR for work-related depression than 'workplace violence by customers'. These results were similar to some studies in which emotional labor was associated with work-related depression(Kim & Choo, 2017; Noh & Na, 2015; Yoon & Kim, 2013; Kim et al., 2002; Kim & Yoon, 2017; Lee et al., 2015), and were similar to some studies in which workplace violence was associated with work-related depression(Wieclaw et al., 2005; Kim et al., 2019; Yi et al., 2018; Choi et al., 2010; Kim & Yoon, 2017; Lee et al., 2015). The variables associated with work-related depression in both genders were age, emotional expression manual, information on health and safety, work-life balance, and job stress. While information on health and safety reduced the risk of work-related depression, emotional expression manual increased the risk. In fact, current emotional expression manuals usually consist of contents that emphasize being kind to customers(Chae et al., 2018). Therefore, it can be assumed that this result was due to the fact that the emotional expression manual was not helpful to actual work and did not protect emotional workers properly. Furthermore, employment types increased the effects of workplace violence on work-related depression in females, so it can be concluded that employment types were factors that modified the effects

of workplace violence on work-related depression. Among employment types, indirect employment increased the effects of two types of workplace violence on work-related depression. In order to prevent work-related depression in females, it is necessary to protect indirect employment workers from two types of workplace violence. Figure 4 is a conceptual diagram summarizing the above results.



*Statistically significant in both genders; †Statistically significant only in females; ‡ Statistically significant only in males

Figure 4. Conceptual diagram to summarize the findings on work-related depression

The implications for public health of this study are as follows. First, it is difficult to understand the meaning of nonstandard employment, because plenty of studies classified standard and nonstandard employment as 'permanent, temporary, and daily workers' only or did not specify a standard of classification. However, this study derived the health implications from the results of the employment types by using direct and indirect employment, status of workers, contract period, whether work is short term or not, and whether work is sustainable or not. Secondly, several

studies have identified high-risk occupations of emotional labor and workplace violence, but few have identified high-risk groups among employment types classified using the above criteria. This study identified groups that experienced a lot of emotional labor and workplace violence among eight groups divided by gender and employment types, and suggested the necessity of intervention for them. Thirdly, by verifying the effects of emotional labor and workplace violence on health among Korean employees at the same time but separately, this study raised the awareness of workplace violence, which can be frequently exposed to emotional laborers, separating from emotional labor. Fourthly, this study verified associations between two exposure variables, emotional labor and workplace violence, and two outcome variables, WMSD and work-related depression. Thus, attention should be given to two types of workplace violence when developing prevention and management programs for WMSD and work-related depression. In addition, emotional labor management is also needed to prevent females' work-related depression. Fifthly, since workplace violence and employment types had significant interaction effects on WMSD and work-related depression in females, requiring a specific intervention for each employment type. In particular, workplace harassment prevention measures for indirect employment workers should be thoroughly implemented in order to prevent females' WMSD and work-related depression. Lastly, the most important implication of the study is to seek the direction for improvement of the current 'Emotional Laborers Protection Act'. In this study, the risk of work-related depression was significantly high in females when indirect employment workers experienced workplace violence by customers. In order to properly protect indirect

employment workers who are out of the law's boundary from 'workplace violence by customers', the law should be improved as follows. Article 29 of ISHA should also be applied to workplaces that use customer-facing workers who are regulated by Article 26-2 of ISHA, so that parent companies can be held accountable for the protection of indirect employment workers. Moreover, the existing emotional expression manuals are old regulations or ineffective due to excessive emphasis on kindness for customers(Joint Planning Committee for Worker's Health Rights, 2019), therefore, it should prepare manuals for responding to malicious complaints and processes for responding to customers that can actually protect emotional laborers, not existing performance-oriented and customer-oriented services.

There are some limitations to this study. The first methodological limitation is that this study was based on cross-sectional data only. Therefore, it is unable to test causal relationships between two exposure variables and two outcome variables. For this reason, it is necessary to carry out longitudinal studies to confirm relationships in order to develop specific intervention programs. In particular, verbal abuse, unwanted sexual interest, threat, and insulting behavior of workplace violence in this study were asked experiences during the past one month, not the same 12 months as the measurement period of the outcome variables, so it is more difficult to prove causal relationships. Second, there are possibilities of measurement errors because the outcome variables, WMSD and work-related depression, relied on self-reporting of individuals, not on specific measurement tools or diagnosis. Third, due to the limitation of available data, the employment type classification method used in this study was different from the classification method officially used by the government,

and this study could not consider intensity of emotional labor and workplace violence. Thus, in future studies, it is necessary to conduct studies using ‘emotional labor and workplace violence assessment tools’ to derive more accurate high-risk group of emotional labor and workplace violence. Fourth, although I proposed law improvement measures, this study had a limitation that results of increased risk of work-related depression when indirect employment workers experienced workplace violence by customers were significant only in females. Therefore, in order for the current law improvement measures proposed in this study to be convincing, specific studies of indirect employment workers including males and studies confirming the results with various health outcomes should be performed.

4.2 Conclusion

In this study, two types of workplace violence were significantly associated with health problems such as WMSD and work-related depression in both males and females, and emotional labor was significantly associated with work-related depression only in females. Based on these results, this study suggests that when developing prevention and management programs of WMSD and work-related depression, attention should be given to intervention of two types of workplace violence. In addition, emotional labor management is also needed to prevent females' work-related depression. Among eight groups that classified Korean employees by gender and employment types, the proportion of EL was high in IS for both genders. The proportion of 'WV by customers' was relatively high in IS for both genders, and the proportion of 'WV by coworkers' was relatively high in IN for both genders. Thus, indirect employment workers were found to be experiencing emotional labor and workplace violence at a significantly higher proportion than direct employment workers. Since workplace violence and employment types had significant interaction effects on WMSD and work-related depression in females, the intervention of workplace violence should be conducted in a specific way by employment types. In particular, indirect employment workers should be protected from 'workplace violence by customers' and 'workplace violence by coworkers' also known as workplace harassment in order to prevent WMSD and work-related depression. That is because female employees with indirect employment and 'workplace violence by customers' had high risk of work-related depression, and female employees with

indirect employment and ‘workplace violence by coworkers’ were at the greatest risk of suffering WMSD and work-related depression. Therefore, in order to properly protect indirect employment workers who are out of the law’s boundary from ‘workplace violence by customers’, Article 29 of ISHA should also be applied to workplaces that use customer-facing workers who are regulated by Article 26-2 of ISHA, so that parent companies can be held accountable for the protection of indirect employment workers.

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APPENDIX

※Based on the 6th Korean Standard Job Classification (occupation(n))

Table A. 10 occupations with the highest frequency in DS(n=20,251)

	Males (n=10,492)		
	EL (n=3,197)	**WV by Customers (n=416)**	**WV by Coworkers (n=217)**
1	Retail Salespersons(220)	Taxi Drivers(40)	Planning and Marketing Clerks(13)
2	General Affairs Clerks(158)	Police Officers(25)	General Affairs Clerks(13)
3	Service Salespersons via Telecommunications(153)	Guards(25)	Automobile Parts Assemblers(8)
4	Automobile Mechanics(122)	Service Salespersons via Telecommunications(24)	Production and Quality Management Clerks(7)
5	Bus Drivers(108)	Bus Drivers(24)	Machine Tool Operators(7)
6	Guards(108)	Retail Salespersons(21)	Application Software Developers(6)
7	Automobile Sales Representatives(107)	General Affairs Clerks(18)	Architects and Construction Engineers(5)
8	State, Local and Public Organization Administration Clerks(99)	Automobile Sales Representatives(16)	Personnel , Education and Training Clerks (5)
9	Taxi Drivers(96)	Door to Door Deliverers(16)	Automobile Sales Representatives(5)
10	Products and Advertising Sales Representatives(92)	Automobile Mechanics(15)	Truck and Special Truck Drivers(5)
	Females (n=9,759)		
	EL (n=4,258)	**WV by Customers (n=512)**	**WV by Coworkers (n=145)**
1	Retail Salespersons(641)	Retail Salespersons(81)	Book-keeping Clerks(31)
2	Nurses(301)	Nurses(48)	General Affairs Clerks(11)
3	Insurance Salespersons and Indirect Investment Securities Salespersons(249)	Insurance Salespersons and Indirect Investment Securities Salespersons(37)	Cleaner(6)
4	Child Care Teachers(201)	Waiters(27)	Nursing Assistants(5)
5	Waiters(154)	Customer Consultant and Monitor Services Workers(21)	Accounting Clerks(5)
6	Book-keeping Clerks(144)	Store and Fee Cashiers(21)	Service Salespersons via Telecommunications(5)
7	Elementary School Teachers(127)	Other Chefs and Cooks n.e.c.(16)	Nurses(4)
8	Store and Fee Cashiers(116)	Carers(14)	Retail Salespersons(4)
9	Nursing Assistants(111)	State, Local and Public Organization Administration Clerks(13)	Kindergarten Teachers(3)
10	General Affairs Clerks(108)	Book-keeping Clerks(13)	Stock Management Clerks(3)

Table B. 10 occupations with the highest frequency in DN(n=7,185)

	Males (n=2,711)		
	EL (n=896)	**WV by Customers (n=147)**	**WV by Coworkers (n=75)**
1	Retail Salespersons(132)	Guards(27)	Construction and Mining Elementary Workers(20)
2	Guards(84)	Waiters(19)	Construction Carpenters(5)
3	Waiters(69)	Retail Salespersons(19)	Interior Electricians(3)
4	Service Salespersons via Telecommunications(41)	Food Deliverers(8)	Plasters(3)
5	Construction and Mining Elementary Workers(24)	Parking Manager and Service Workers(7)	Food Deliverers(3)
6	Food Deliverers(24)	Entertainment Facilities Workers(5)	Guards(3)
7	General Affairs Clerks(23)	Taxi Drivers(5)	Industrial Safety and Risk Managers(2)
8	Other Chefs and Cooks n.e.c.(23)	Door to Door Deliverers(5)	Stock Management Clerks(2)
9	Petrol Pump Attendants(18)	Service Salespersons via Telecommunications(4)	General Affairs Clerks(2)
10	Parking Manager and Service Workers(18)	Other Chefs and Cooks n.e.c.(3)	General Machinery Assemblers(2)
	Females (n=4,474)		
	EL (n=1,808)	**WV by Customers (n=231)**	**WV by Coworkers (n=59)**
1	Retail Salespersons(366)	Retail Salespersons(49)	Book-keeping Clerks(7)
2	Waiters(219)	Waiters(43)	Kitchen Helpers(7)
3	Carers(103)	Carers(16)	Waiters(4)
4	Other Chefs and Cooks n.e.c.(85)	Store and Fee Cashiers(15)	Retail Salespersons(4)
5	Store and Fee Cashiers(59)	Other Chefs and Cooks n.e.c.(12)	Production Related Elementary Workers(3)
6	Korean Food Chefs and Cooks(53)	Insurance Salespersons and Indirect Investment Securities Salespersons(8)	Cleaner(3)
7	Insurance Salespersons and Indirect Investment Securities Salespersons(53)	Kitchen Helpers(6)	Stock Management Clerks(2)
8	Infant Rearing Helpers(47)	Nursing Assistants(4)	Accounting Clerks(2)
9	Liberal Arts and Language Instructors(39)	Real Estate Consultants and Estate Agents(4)	Korean Food Chefs and Cooks(2)
10	Kitchen Helpers(38)	Entertainment Facilities Workers(4)	Domestic Chores Helpers(2)

Table C. 10 occupations with the highest frequency in IS(n=518)

	Males (n=224)		
	EL (n=85)	**WV by Customers (n=28)**	**WV by Coworkers (n=6)**
1	Guards(47)	Guards(19)	Guards(4)
2	Retail Salespersons(8)	Retail Salespersons(5)	Planning and Marketing Clerks(1)
3	Electrical and Electronic Equipment Operators(3)	General Affairs Clerks(1)	Welders(1)
4	Door to Door Deliverers(3)	Other Medical and Welfare Related Service Workers(1)	-
5	Parking Manager and Service Workers(3)	Electrical and Electronic Equipment Operators(1)	-
6	Electrical and Electronic Home Appliance Fitters and Repairers(2)	Parking Manager and Service Workers(1)	-
7	Taxi Drivers(2)	-	-
8	Bus Drivers(2)	-	-
9	Cleaner(2)	-	-
10	Arts Instructors(1)	-	-
	Females (n=294)		
	EL (n=128)	**WV by Customers (n=27)**	**WV by Coworkers (n=8)**
1	Retail Salespersons(44)	Retail Salespersons(10)	Cleaner(2)
2	Cleaner(16)	Carers(4)	Carers(1)
3	Carers(15)	Cleaner(4)	Korean Food Chefs and Cooks(1)
4	Other Sales Related Elementary Workers(10)	Store and Fee Cashiers(2)	Retail Salespersons(1)
5	Customer Consultant and Monitor Services Workers(5)	Other Service Related Elementary Workers(2)	Advertising Assistants and Demonstrators(1)
6	Other Medical and Welfare Related Service Workers(4)	Child Care Teachers(1)	Chemical Products Production Machine Operators(1)
7	Store and Fee Cashiers(4)	Information, Reception Clerks and Telephonists(1)	Kitchen Helpers(1)
8	Advertising Assistants and Demonstrators(4)	Customer Consultant and Monitor Services Workers(1)	-
9	Other Service Related Elementary Workers(3)	Private Police Guards(1)	-
10	Child Care Teachers(2)	Other Guards and Security Related Workers(1)	-

Table D. 10 occupations with the highest frequency in IN(n=1,217)

	Males (n=635)		
	EL (n=151)	**WV by Customers (n=31)**	**WV by Coworkers (n=58)**
1	Guards(66)	Guards(22)	Construction and Mining Elementary Workers(26)
2	Construction and Mining Elementary Workers(14)	Plasters(2)	Plasters(8)
3	Parking Manager and Service Workers(4)	Technical Sales Representatives(1)	Construction Carpenters(4)
4	Other Service Related Elementary Workers(4)	General Affairs Clerks(1)	Concrete Reinforcing Iron Workers(3)
5	Planning and Marketing Clerks(3)	Retail Salespersons(1)	Handling Equipment Operators(2)
6	Insurance Inspectors and Clerks(2)	Machine Tool Operators(1)	Cleaner(2)
7	Other Medical and Welfare Related Service Workers(2)	Other Automobile Drivers(1)	Survey Specialists(1)
8	Retail Salespersons(2)	Construction and Mining Elementary Workers(1)	Computer Data Entry Clerks and Assistant Clerks(1)
9	Store and Fee Cashiers(2)	Parking Manager and Service Workers(1)	Information, Reception Clerks and Telephonists(1)
10	Welders(2)	-	Welders(1)
	Females (n=582)		
	EL (n=209)	**WV by Customers (n=32)**	**WV by Coworkers (n=15)**
1	Carers(65)	Carers(10)	Cleaner(4)
2	Cleaner(23)	Cleaner(8)	Carers(2)
3	Retail Salespersons(20)	Nurses(2)	Store and Fee Cashiers(1)
4	Domestic Chores Helpers(11)	Other Social Welfare Related Workers(2)	Meat Cutters and Butchers(1)
5	Infant Rearing Helpers(10)	Retail Salespersons(2)	Plasters(1)
6	Other Medical and Welfare Related Service Workers(9)	Store and Fee Cashiers(2)	Paperhangers and Glaziers(1)
7	Other Hairdressing, Wedding and Medical Assistance Service Workers(6)	Domestic Chores Helpers(2)	Construction Painters(1)
8	Advertising Assistants and Demonstrators(6)	Customer Consultant and Monitor Services Workers(1)	Rubber and Plastic Products Assemblers(1)
9	Kitchen Helpers(5)	Private Police Guards(1)	Construction and Mining Elementary Workers(1)
10	Other Social Welfare Related Workers(4)	Advertising Assistants and Demonstrators(1)	Production Related Elementary Workers(1)

Abstract in Korean

국문초록

한국 임금근로자의 고용형태에 따라 감정노동과 작업장 폭력이 건강에 미치는 영향

권수현

보건학과 보건학전공

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연구배경 및 목적: 현대 사회의 다양한 직업군이 고객응대업무를 실시하고 있고, 고객과의 접촉 기회가 늘어나면서 기업이 요구하는 감정표현 규칙에 따라 근로자의 감정이 관리 및 통제되는 감정노동이 발생하거나, 고객에 의한 폭언 및 폭력과 같은 문제가 증가하고 있다. 여러 연구를 통하여 감정노동과 작업장 폭력이 다양한 건강문제를 유발하는 것으로 알려져 있으며, 본 연구에서는 감정노동과 작업장 폭력이 건강에 미치는 영향을 신체적 건강과 정신적 건강으로 나누어 살펴보기 위해 직업성 근골격계질환(WMSD)과 업무관련 우울감을

결과변수로 선택하였다. 또한, 본 연구에서는 '감정노동자 보호법'으로 알려진 개정 산업안전보건법 제26조의2의 개선방향을 모색하기 위하여 한국 임금근로자를 성별과 고용형태로 나누어 분석하였다. 현행법의 가장 큰 한계점은 많은 감정노동자가 간접고용 근로자임에도 불구하고, 원청업체의 사업주가 자발적으로 간접고용 노동자를 고객에 의한 폭언 및 폭력으로부터 보호하려는 노력을 하지 않는 이상, 원청업체는 이들을 보호할 의무가 없다는 점이다. 따라서, 본 연구의 목적은 감정노동 및 작업장 폭력의 분포를 성별과 고용형태에 따라 비교하고, 감정노동 및 작업장 폭력과 직업성 근골격계질환 또는 업무관련 우울감과의 연관성을 확인함과 동시에, 결과변수에 대한 노출변수와 고용형태와의 상호작용 효과를 파악하는 것이다.

연구방법: 본 연구는 산업안전보건연구원으로부터 제5차 근로환경조사(2017) 원시자료를 제공받아 분석한 단면연구로서, 제5차 근로환경조사의 조사대상자 50,205명 중 임금근로자 29,171명을 연구대상자로 분석하였다. 주요 노출변수 중 감정노동은 직장동료가 아닌 사람들을 직접 상대하면서 감정을 숨기고 일을 하는 경우, 또는 화가 난 고객을 다루는 경우로 정의하였고, 작업장 폭력은 업무 수행 중에 신체적 폭력, 성희롱, 왕따/괴롭힘, 언어폭력, 원하지 않는 성적 관심, 위협, 모욕적 행동 중 하나라도 경험한 경우로 정의했으며, 고객에 의한 작업장 폭력과 동료에 의한 작업장 폭력으로 나누었다. 결과변수 중 직업성

근골격계질환은 업무상 관련이 있는 요통, 상지의 근육통, 하지의 근육통 중 하나라도 경험한 경우로 정의했고, 업무관련 우울감은 업무상 관련이 있는 우울감을 경험한 경우로 정의하였다. 고용형태는 크게 직접고용과 간접고용으로 나눈 후, 각 그룹을 종사상 지위, 계약기간 유무, 단기근로 여부, 근로지속가능 여부와 같은 4가지 문항을 이용하여 정규직과 비정규직으로 나누었다. 성별과 고용형태에 따라 변수들의 분포에 차이가 있는지 확인하기 위하여 교차분석을 진행하였고, 인구사회학적 변수와 직업관련 변수를 보정한 로지스틱 회귀분석을 실시하여 노출변수와 결과변수 사이에 연관성이 있는지 확인하였다. 또한, 상호작용항을 추가하여 노출변수가 결과변수에 미치는 영향이 고용형태에 따라 차이가 있는지 파악하였다. 모든 통계분석에는 가중치를 적용하였으며, R 3.6.1과 SPSS 25.0을 이용하였다.

연구결과: 고용형태 중에서 간접고용 근로자가 직접고용 근로자에 비해 감정노동과 고객에 의한 작업장 폭력, 동료에 의한 작업장 폭력의 비율이 더 높았으며, 열악한 근무 환경에 놓여있는 것으로 나타났다. 또한, 감정노동은 여성만이 업무관련 우울감(OR: 1.74, 95% CI: 1.10-2.74)과 정적 연관성이 있었으나, 고객에 의한 작업장 폭력은 남녀 모두 직업성 근골격계질환(남-OR: 2.27, 95% CI: 1.80-2.86; 여-OR: 2.73, 95% CI: 2.14-3.47) 및 업무관련 우울감(남-OR: 3.69, 95% CI: 2.17-6.28; 여-OR: 3.86, 95% CI: 2.00-7.45)과 정적 연관성이 있었고, 동료에 의한 작업장

폭력도 남녀 모두 직업성 근골격계질환(남-OR: 2.70, 95% CI: 2.04-3.57; 여-OR: 3.46, 95% CI: 2.27-5.29) 및 업무관련 우울감(남-OR: 8.32, 95% CI: 5.17-13.39; 여-OR: 5.27, 95% CI: 2.46-11.29)과 정적 연관성이 있었다. 남녀 모두 직업성 근골격계질환에 대해 감정노동과 인간공학적 유해인자의 상호작용 효과가 유의했는데, 비감정노동자이면서 인간공학적 유해인자에 높은 수준으로 노출될 때 직업성 근골격계질환의 위험이 높게 나타났다. 두 가지 작업장 폭력과 고용형태는 여성에서만 두 결과변수에 대해 유의한 상호작용 효과가 있었다. 특히 간접고용 근로자이면서 동료에 의한 작업장 폭력을 경험했을 때 직업성 근골격계질환 및 업무관련 우울감이 발생할 위험이 상당히 높았고, 간접고용 근로자이면서 고객에 의한 작업장 폭력을 경험했을 때 업무관련 우울감의 발생 위험이 높게 나타났다.

결론: 본 연구를 통해 작업장 폭력이 남녀 모두에서 직업성 근골격계질환, 업무관련 우울감과 연관성이 있다는 것이 확인되었으며, 감정노동은 여성에서 업무관련 우울감과 연관성이 있다는 것이 확인되었다. 따라서 향후 한국 임금근로자를 대상으로 하는 직업성 근골격계질환 또는 업무관련 우울감의 예방 및 관리 프로그램을 개발하기 위하여 두 가지 작업장 폭력을 고려할 필요가 있다. 또한, 여성 임금근로자의 업무관련 우울감을 예방하기 위하여 감정노동을 함께 관리해야 한다. 여성 임금근로자에서 작업장 폭력이 건강에 미치는

영향이 고용형태에 따라 차이가 있었으므로, 작업장 폭력의 중재를 고용형태별로 특화된 방식으로 진행할 것을 제안한다. 특히 간접고용 근로자를 '직장 내 괴롭힘'으로도 불리는 동료에 의한 작업장 폭력으로부터 보호할 필요가 있다. 본 연구의 가장 중요한 보건학적 의의는 '고객의 폭언 등으로 인한 건강장해 예방조치'를 다루고 있는 개정 산업안전보건법 제26조의2의 개선방향을 제시하는 것이다. 따라서 현행법의 사각지대에 있는 간접고용 근로자를 고객에 의한 폭언과 폭력으로부터 제대로 보호하기 위해서는 원청업체의 책임 의무를 강화하는 산업안전보건법 제29조를 고객응대근로자를 사용하는 사업장에도 적용하여 원청업체가 간접고용 근로자에 대한 보호의 책임을 질 수 있도록 해야 할 것이다.

주요어: 감정노동, 작업장 폭력, 고용형태, 직업성 근골격계질환, 업무관련 우울감, 한국인, 임금근로자

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