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보건학석사 학위논문

Effects of Emotional Labor  
and Working Environment  
on Risk of Depression  
in Service and Sales workers

서비스와 판매직 종사자의  
감정노동과 근로환경이  
우울 위험에 미치는 영향

2020년 8월

서울대학교 보건대학원

보건학과 보건학전공

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이 논문을 보건학석사 학위논문으로 제출함  
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서울대학교 대학원  
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# Abstract

**Introduction** : There is a growing interest in mental health problems caused by emotional labor. As of January 2016, the provision of rights protection provisions for emotional workers has been established and implemented, providing health and safety information(HSI), it became obligated to protect workers and provide safety training. There are studies examining the working environment factors and emotional labor factors affecting risk of depression, but studies on how they affect risk of depression through guidelines are insufficient. The service and sales workers should do emotional labor required by the company in accordance with the Emotional Displaying Rules (EDR). However, with the recent revision of Korea's Occupational Safety and Health Act, employers have an obligation to protect emotional workers by provision Health and Safety Information (HSI). The purpose of this study is to investigate the Six key factors of the psychosocial work environment of the service and sales workers, and to analyze the effects on risk of depression using the 5th Korean Working Since there is still a gap in the status of workplaces by gender in Korean society, there are also differences in working environment factors, and the analysis was conducted by dividing gender.

**Methods** : This study is a cross-sectional study that analyzed the raw data of The Fifth Korean Working Conditions Survey(2017) from the Occupational Safety and Health Research Institute. risk of depression was determined using the WHO-5 Well-Being Index. After adjusting for the covariates, including demographic and basic

working condition variables, logistic regression analyses were conducted.

**Results** : For men, the risk of depression increases when dealing with angry customers(OR: 1.66, 95% CI: 1.05 - 2.64). For women, the risk of depression increases when provided EDR(OR: 1.26, 95% CI: 1.03 - 1.53), and when hiding emotions(OR: 1.36, 95% CI: 1.15 - 1.62). Also, For women, there is a high risk of depression when there is no support from their colleagues(OR: 1.58, 95% CI: 1.30 - 1.93), and when HSI is not given(OR: 1.40, 95% CI: 1.18 - 1.72). Only the effect of variables including hiding emotions ( $p=0.04$ ) and support ( $p=0.03$ ) from colleagues on the risk of depression differed by gender.

We examined the effects of risk of depression depending on the presence of emotional labor factors and the availability of EDR or HSI. In males, when they did not have EDR, the risk of depression was increased if they deal with angry customers, compared with those who do not need to deal with angry customers(OR 1.94, 95% CI 1.14-3.30). For women, when dealing with angry customers and receiving EDR(OR: 1.73, 95% CI: 1.00 - 3.00), when they do not receive HSI while dealing with angry customers(OR: 1.66, 95% CI: 1.02 - 2.71), they increase their risk of depression. Also, when they do not receive HSI while hiding emotions(OR: 1.90, 95% CI: 1.50 - 2.40), the risk of depression increase with the additive effect. In women, the risk of depression increased more when they received EDR while hiding emotions(OR 1.80, 95% CI 1.40 - 2.31) than those who did not hide emotions and did not receive EDR. The RERI results of all these interactions were not statistically significant, so it cannot be said that there is a positive interaction.

**Conclusion** : In this study, unlike men, the risk of depression

increased significantly when women only had to hide emotions or lack support from colleagues. Previous studies have shown that women feel a greater burden on emotional work than men, negatively affecting mental health. In addition, compared to men, support from colleagues has a significant effect on quality of life for women. In order to bridge the safety divide, policies related to occupational safety and health are expected to strengthen support, such as specialized safety and health education for women and the dissemination of health management. As suggested in the results of this study, it is considered that the guidelines need to be revised, including the need to reduce the stress on labor for emotionally-laboured service workers and sales workers and to create an environment in which peer support can be exchanged. Variables that they can apply their thoughts to work and think that they are doing useful work and give fair treatment in case of conflict influence the risk of depression in both gender. To reduce the incidence of risk of depression, HSI and EDR should be revised in ways that protect workers and should be distributed more widely.

**Keyword** : Emotional demand, Emotional Display Rule, Safety and Health Information, service work, sales work, The Korean Working Conditions Survey

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# Chapter 1. Introduction

Although major depressive disorder is prevalent worldwide, studies investigating the influence of risk of depression in the workplace are scarce [1]. A World Health Organization (WHO) study of the global burden of disease reported that management of depressive disorder is one of the most important goals of the 21st century [2]. risk of depression had the third highest disease burden in 2004, and it is expected to cause the highest burden by 2030 [3]. risk of depression has a high prevalence and major impact, and the socioeconomic costs increase rapidly every year [4]. risk of depression adversely affects job performance [5]. For example, risk of depression in the workplace can affect productivity by increasing absenteeism [6], and sick leave due to mental health problems such as risk of depression has been increasing in recent years [7]. Also, when the mental health of those performing emotional work deteriorates, company productivity decreases, and excessive stress, risk of depression, anxiety, and suicidal thoughts can occur at the individual worker level [8,9]. Therefore, since the workers' health is important in the labor market, ensuring workers' health and safety and attending to their working environment are crucial.

It is necessary to examine the working environment factors that affect risk of depression among those service and sales workers jobs associated with emotional labor, which have recently attracted increased interest [10]. The focus of the industrial sector has changed

recently from manufacturing to service. Therefore, many large and small companies are allocating more people to customer service departments [11]. As the size of the service sector grows, interest in service-related health issues and emotional labor is increasing [10]. In 2017, job-related injuries in the service industry increased by 12.5% compared to 2008. Service workers had the highest score for demand for emotional regulation/emotional dissonance/risk of depression compared to non-service workers[12]. In addition, it is known that emotional labor mainly experienced by service workers has a negative effect on mental health[12]. Interpersonal service workers are required to perform emotional labor and engage in superficial acts, making them subject to more work stress than non-service workers [13]. Emotional labor has become an important concept when discussing working conditions in Korean society as the service industry expands and the number of workers involved in emotional labor increases accordingly [8]. In addition, human rights violations and acts of workplace bullying, such as mistreatment by aggressive customers and power abuse by superiors, which are inherent in Korean society, have become issues, social empathy and interest have increased. As emotional workers' mental health problems have emerged and interest in them has increased, several guidelines have been implemented. On January 7, 2016, the Seoul City Ordinance was enacted to protect emotional workers' rights. A Comprehensive Plan for Emotional Labor were established on January 1, 2016, the guide for emotional workers was published in June 2016, and an emotional labor center was

established in October 2016. When such policies are implemented, they apply to all occupational groups, including those performing emotional labor. Therefore, it is important to identify factors affecting risk of depression in service and sales workers occupational groups across all service and sales positions rather than simply considering specific occupational groups, as in previous studies.

Although risk of depression has many causes, this study aimed to investigate the association of six key elements of the psychosocial work environment with risk of depression. According to a previous study described below, several factors affect risk of depression in the workplace: lower age and a lack of social support at work [14]; high job demands [15]; long working hours, part-time work, smoking habits, lack of sleep, lack of exercise, salty eating habits, alcohol consumption, and dealing with aggressive customers [16,17]. According to the European Workplace Safety and Health Administration (EU-OSHA), six key factors associated with the economic and social work environment cause serious mental health problems. DARES (Direction de l'Animation de la Recherche, des Etudes et des Statistiques, the research arm of the French Ministry of Work and Employment) identified six key elements of the psychosocial work environment: high work demands, emotional demands, lack of autonomy, ethical conflicts, poor social relations, and an unstable working situation [18].

When dealing with customers [11], service and sales workers conduct emotional labor according to the emotional display rules

(EDR) conveyed by their company [19]. Previous empirical studies demonstrated that emotional labor has both positive and negative effects on health [20]. The exact manner in which emotional labor negatively affects mental health has not been fully investigated [11]. Emotional labor facilitates work efficiency and self-expression and can have a positive effect on workers [21]. However, due to emotional control by the company providing the emotional work [22], workers may experience emotional dissonance if they have to hide their emotions. Emotional dissonance entails discrepancies between the emotion felt by the person and that displayed [13,23]. Emotional dissonance can lower well-being and lead to health complaints [16], burnout [20], job stress, risk of depression [11,24], self-alienation [21], suicidal thoughts [25], and fatigue [26]. Therefore, job exit and increased job dissatisfaction depend not only on the fact that one is engaging in emotional labor or on the amount and frequency of emotional work performed but also on the effects of such dissonance[26].

Provision of safety and health information (HSI) by employers, which can protect service and sales workers from injury, disease, and morbidity [1,7], is crucial, but is often not actively implemented. Article 41 of the revised Occupational Safety and Health Act, called the Emotional Workers Protection Act, came into effect on October 18, 2018. Furthermore, in accordance with Article 669 of the Occupational Safety and Health Act, measures must be taken to prevent health disorders caused by occupational stress when dealing

with high physical and mental stress. However, a survey on emotional labor and harassment in the workplace in 2019, which was conducted a year after the law was implemented, found that 70% of 2,765 emotional workers said they were unprotected. Most research and intervention regarding HSI focuses on manufacturing or secondary industries [1] and rarely targets service and sales workers [27]. There is also a lack of research examining the link between HSI and mental health [27]. Therefore, it is necessary to assess whether employers protect emotional workers by providing HSI.

In Korean society, differences in the social status and stereotypes of men and women remain; therefore, elements of the working environment that affect risk of depression should be assessed separately according to gender. Women are much more likely to perform emotional labor than men, and the demand for their work is higher [28]. There is a deep-rooted stereotype that women are more suited to particular jobs than men [29]. By 2010, women's median earnings were more than 80% of men's in most countries, but in Korea, women's earnings were only 63% of men's [30]. The rate of female labor force participation is only 59%, compared with 79% for men [31]. The boards of directors of Korean listed companies are 98% male; only one of 109 companies has a female chief officer [31]. Various studies have shown that low job empowerment is associated with emotional fatigue [32] and mental illness [33]. Therefore, the impact of EDR on female workers is greater than that on male workers because it places a greater emotional burden on

women due to their low level of job control [11].

The present study used data from the Fifth Korean Working Conditions Survey (KWCS) conducted in 2017 to examine the association between the six key factors of the psychosocial work environment identified by DARES and the occurrence of risk of depression among service and sales workers. The research hypotheses investigated in this study were as follows. First, the six key factors of the psychosocial work environment are associated with risk of depression in service and sales workers. Second, the associations between these six key factors and risk of depression vary with gender. The occurrence of varies depending on emotional labor factors (hiding emotions or dealing with angry customers) and whether guideline(EDR or HSI) are provided. We need to identify factors that affect risk of depression so that we can improve work environment in the future and revise EDR and HSI

## Chapter 2. Methods

### 2.1. Data sources and participants

This study used the fifth Korean Working Conditions Survey (KWCS) data collected from respondents aged  $\geq 15$  years. The KWCS was developed based on the original questionnaire of the European Working Conditions Survey (EWCS), which was conducted in Europe in 2015; it is now available in two languages: Korean and

English. The KWCS is secondary data that were released so that anyone who gets permission from Korea Occupational Safety & Health Agency (KOSHA) can request and download the data from the Occupational Safety and Health Research Institute (OHSRI) website (<https://oshri.kosha.or.kr/>). This ongoing survey was approved by the government beginning with the first survey in 2006. In the previous study, the validity and reliability of the KWCS data were confirmed [33]. This study is an interview survey based on the Probability proportional to Size Systematic Sampling. The questionnaire is administered by an interviewer, who asks the questions and records the responses directly. For the fifth KWCS, the response rate was 0.449, the cooperation rate was 0.640, and the refusal rate was 0.253 [34]. The survey gathered data from 50,205 workers, excluding 80,440 who declined to respond or gave incomplete answers [35]. Subjects were selected for the current study according to the following inclusion criteria to provide the most suitable sample for the research: 1) paid workers; 2) answered all relevant survey questions; and 3) engage in customer service or sales operations. Those who were self-employed, employer, or not wage workers were excluded (N=20,097). Only wage workers were included. Among wage workers, subjects who were not in service or sales positions (N=21,023) and those who did not answer all questions or responded 'Unknown' (N=1,452) were also excluded. After this selection process, 7,633 subjects (2,460 men and 5,173 women) were included in the analysis. The study was approved by the Institutional Review Board

(IRB) of Seoul National University (IRB No. E1909/003-006).

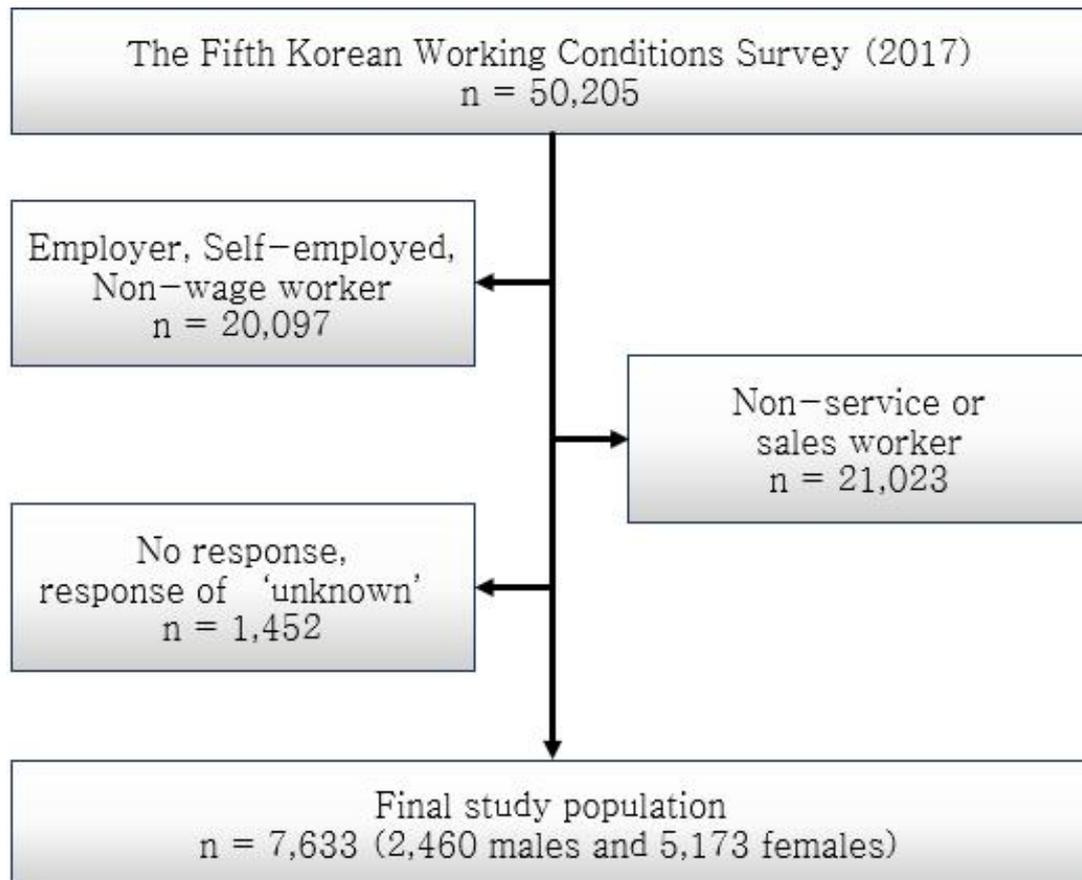


Fig 1. Schematic of the study participant selection process

## 2.2. Measures

### 2.2.1. service and sales workers Occupation

Most published studies have been conducted only with service workers or sales workers engaged in emotional labor or in specific occupations, and research on service and sales workers performing emotional service and sales jobs is lacking. Therefore, this study

selected service and sales workers, the occupational group encompassing service workers and sales workers in the Korea Standard Classification of Occupations. In response to the question, "Which of the following best describes your job?" those who responded service worker or sales worker were selected.

### **2.2.2. Six key factors of the psychosocial work environment**

DARES previously classified six key factors that affect the psychosocial work environment [18]; KWCS included questions related to these six key factors. According to the DARES report [38], the six key factors are high work demands, emotional demands, lack of autonomy, ethical conflicts, low-level social relations, and a work instability.

There are detailed elements representing each of the six key factors. High demand for work is determined by the presence of EDR, and emotional labor is determined by whether emotions are hidden and dealing with angry customers. And autonomy is about whether workers' ideas can be applied to work. Ethical conflict is also judged by whether they think what they are doing is useful. Social relations are judged by the support of the boss or colleagues, the availability of HSI, and the fair treatment of the company in case of conflict. 'Work instability' is judged according to whether a new job can be obtained after leaving the company.

### **2.2.2.1. High Work Demands**

Work demands are defined as the cognitive and physical effort that a person must make to perform his or her work in terms of quantity, speed, and personality traits [18]. Job demands are related to health impairment [15]. High work demands, which occur when the labor demands are too great [39], can adversely affect health [40].

This study judged High work demands according to availability of Emotional Display Rules (EDR). EDR comprises regulations governing behaviors that the company requires of emotional workers [28] where social interactions with customers, clients, or patients are a significant part of the job [13]. Whether participants had been told about EDR was determined by the question "Does the company have any emotional rules regarding your work?" Participants selected "Yes" or "No." Subjects who answered "yes" were those who received communications about EDR during working hours, and those who answered "no" did not. Participants who answered "Unknown" and those who failed to answer were removed.

#### **2.2.2.1.1. Emotional Display Rule(EDR)**

Emotional Display Rule(EDR) is a rule required by the company for emotional workers[27], where social interactions with customers, clients, or patients are a significant part of the job[12]. Whether the participants were required to use customer service EDR was determined by the question "In regard to your work, is there a company-mandatory service EDR on emotional expression?" The participants were to choose between "Yes" and "No." Those who answered "Yes" were considered to have customer service EDR in

their work and the others not, and if it is unknown or rejected, then it is removed.

## **2.2.2.2. Emotional Demands**

In addition to physical and mental labor, workers in the service sector manage their emotions in the process of interacting with customers to create appropriate emotions, and this is defined as emotional labor[41]. In other words, emotional labor refers to labor that must respond to customers in an emotionally appropriate manner according to company requirements[28]. When dealing with customers, workers need to hide their personal feelings, such as suppressing fear or maintaining kindness. Excessive emotional demands negatively affect mental health [42] and increase the risk of suicidal thoughts [25].

### **2.2.2.2.1. Engaging angry customer**

Both men and women deal with angry customers, and the risk of depression increases when EDR is applied [11]. Here, the study subjects were asked, "Does your work involve dealing with angry customers or patients?" Individuals who responded "always" and "almost always" were regarded as dealing with angry customers. Conversely, those who indicated that they worked with angry customers "3/4 of my working hours," "half of my working hours," "1/4 of my working hours," "almost never," or "never" were classified as not dealing with angry customers.

### **2.2.2.2. Hiding emotions**

When performing emotional work, the worker is controlled by the emotional display rules suggested by the organization; if there is a discrepancy between the worker's actual emotion and the requested emotional state, emotional dissonance can occur [28]. Hiding or suppressing emotions can cause psychological stress [43]. Indeed, hiding emotions is directly related to increased job stress and indirectly associated with risk of depression [24]. Possible answers to the question "I must hide my emotions at work" were as follows: "Always yes," "Mostly yes," "Sometimes," "Not often," "Not at all," "Not applicable," and "Unknown/No response." Responses were divided into two categories based on the degree to which emotions were hidden: hiding emotions (always yes, mostly yes) and not hiding emotions (not often, not at all, not applicable).

### **2.2.2.3. Lack of Autonomy**

Lack of autonomy may occur if people do not have the opportunity to fully demonstrate their capabilities. High demands and low decision-making autonomy have a strong impact on risk of depression[44] and are also linked to mental health problems [45]. We assessed autonomy by asking participants to respond to the statement, "I can apply my thoughts to my work." The available answers were "Always," "Mostly of the time," "Sometimes," "Not often," "Not at all," "Not applicable," and "Unknown/No response." We reclassified workers into two groups: those who felt able to apply

their thinking to their work (always, mostly of the time) and those who did not (sometimes, not often, not at all).

#### **2.2.2.4. Ethical Conflicts**

Conflicts of values refer to ethical conflicts and unnecessary work. When an individual feels that their work is useless, it creates personal stress and can also lead to health problems [46]. All participants responded to the statement, “I think I am doing something useful” as a measure of ethical conflict. The available answers were “Always,” “Usually,” “Sometimes,” “Not often,” “Not at all,” “Not applicable,” and “Unknown/No response.” Participants were classified as feeling as if their work was useful (always, usually) or not (sometimes yes, not often, not at all).

#### **2.2.2.5. Low-Level Social Relations**

Social relations at work involve coworkers, bosses, relationships outside the company, and violence within the company. Dealing with work stress and related burdens can be difficult without support from the boss and colleagues and a sense of belonging within the company [47,48]. A negative relationship between the boss and subordinates significantly affects the occurrence of risk of depression [49]. In order to judge the matters related to low-level social relations, we will look at whether workers are supported by the boss and colleagues, HSI is provided, or the company is acting fairly when conflicts arise.

### **2.2.2.5.1. Receiving support from boss**

We asked all participants to respond to the following statement about their work situation: “My boss helps and supports me.” The available answers were “Always,” “Usually,” “Sometimes,” “Not often,” “Not at all,” “Not applicable,” and “Unknown/No response.” Participants were divided into two groups: those receiving support from their boss (always, usually) and those not receiving such support (sometimes, not often, not at all).

### **2.2.2.5.2. Receiving support from colleagues**

All participants were also asked to respond to the statement “My colleagues help and support me” using the following options: “Always,” “Usually,” “Sometimes,” “Not often,” “Not at all,” “Not applicable,” and “Unknown/No response.” The respondents were then divided into those receiving support (always, usually) and those not receiving support (sometimes, usually not, not at all).

### **2.2.2.5.3. Provision of Health and Safety Information (HSI)**

In accordance with Article 31 of the Occupational Safety and Health Act, employers should regularly provide information related to safety and health, including information on accident prevention, health management, disaster cases, and preventive measures. Previous studies demonstrated that there is a high probability of injury in the

workplace when HSI is not provided, but few reports have examined the effects of such provision on mental health [27]. In response to the question, “Did you receive information regarding the health and safety risks associated with your job performance,” subjects were divided into those who were “Well-informed” and “Not informed.” If the job was associated with a risk of injury, the participant was asked whether information about the likelihood of mental and physical injury had been provided.

#### **2.2.2.5.4. Handling conflicts in a fair way**

Here, the answers to the question “Is conflict handled in a fair way?” were “Always,” “Usually,” “Sometimes,” “Not often,” “Not at all,” “Not applicable,” and “Unknown/No response.” Participants were sorted into two categories: those who thought they were being treated fairly (always, usually) and those who thought they were being treated unfairly (not often, not at all). Subjects who identified the question as not applicable or the answer as unknown/no response were removed from subsequent analysis.

#### **2.2.2.6. Work Insecurity**

Work instability refers to anxiety about the employment situation, whether related to employment status, wages, career security, or job sustainability. The fear of losing the job and a lack of career prospects can have a major impact on workers’ well-being [50,51], and job instability is highly related to risk of depression [52].

The following statement about job instability was presented: “Even if I quit or lose my job, I can easily find a job that gives me a similar wage.” The available answers were “Highly agree,” “Generally agree,” “Somewhat agree,” “Generally disagree,” “Completely disagree,” “Not applicable,” “Do not know,” and “No response.” The subjects were categorized as those who felt that they could get a new job (highly agree, generally agree, somewhat agree) and those who did not (generally disagree, completely disagree).

### **2.2.3. Risk of Depression**

Previous studies have mainly used self-reported mental health questionnaires to examine factors affecting the mental health of emotional workers. Therefore, the judgment may be inaccurate. However, the current study used the WHO-5 Well-Being Index, which is a structured questionnaire that has sufficient internal and external validity to screen for risk of depression [53,54]. The index was first introduced in its current form in 1998 as part of the DepCare project on welfare measures in primary healthcare at a WHO regional office in Europe. It evaluates respondents’ feelings for 2 weeks and consists of the following five statements: (1) I have felt cheerful and in good spirits; (2) I have felt calm and relaxed; (3) I have felt active and vigorous; (4) I woke up feeling fresh and rested; and (5) My daily life has been filled with things that interest me. The responses for each item are scored according to the following scale: (5) All of the time; (4) Most of the time; (3) More than half of

the time; (2) Less than half of the time; (1) Some of the time; and (0) At no time. The scores for all questions are added, and a total score of 13 or less indicates poor mental health and suggests the subject should be tested for risk of depression

#### **2.2.4. Key Covariates**

The following sociodemographic characteristics were evaluated: age (15 - 29, 30 - 39, 40-49, 50 - 59,  $\geq 60$  years), education (middle school or less, high school graduation, college graduation), and area of residence (big city or small city). Job status was divided into regular and temporary jobs. The average working hours per week spent in customer relations were 43 hours, and the average working hours for 5-day work weeks were 49 hours and 55 minutes. Therefore, we classified working hours as follows:  $<43$  hours, 43 - 50 hours, and  $\geq 50$  hours. In 2017, the average monthly salary of wage workers was 2.87 million won (US\$ 2,337), and the median salary was 2.1 million won (US\$ 1,710). Most study participants received wages of 1.5 - 2.5 million won, followed by  $<0.85$  million won, and 0.85 - 1.5 million won. Therefore, we classified salary as  $<1.5$  million won, 1.5 - 2.5 million won, 2.5 - 4.0 million won, and  $\geq 4.0$  million won).

### **2.3. Statistical Analysis**

Data of male and female workers were analyzed separately. The demographic characteristics related to service and sales workers,

general working conditions, and the six key factors were analyzed using descriptive statistics. We display the number of people (N) and the total proportions (%). Standardized weights were applied to proportions. Chi-square tests were conducted to confirm the incidence of risk of depression according to the service and sales workers working characteristics, basic working conditions, and the six key factors. This study used logistic regression method designed for survey data to examine the effects of Six key factors affecting the risk of depression of service and sales workers. Odds ratios and 95% confidence intervals were calculated for the six key factors (high work demands, emotional demands, lack of autonomy, ethical conflicts, poor social relations, and an unstable working situation). We analyzed by adjusting general characteristics (age, education level, city), basic working conditions (working hours per week, monthly salary, working status), and rest of the Six key factors other than the main variables. Interaction analyses were conducted to determine the effects on risk of depression of EDR, provision of HSI, requirement to hide emotions, and the expectation that one deals with angry customers. All analyses were performed by SAS ver. 9.4., with SURVEYFREQ and SURVEYLOGISTIC procedures using survey weights provided with the data.

## Chapter 3. Results

Table 1.1 Prevalence of demographics by gender in the study n(%\*).

		Total (N=7,633) n(%*)	Male (N=2,460) n(%*)	Female (N=5,173) n(%*)
<b>Demographics</b>				
Ages	1020s	1380(24.9)	678(26.87)	702(23.6)
	30s	1531(21.75)	753(29.84)	778(16.4)
	40s	1871(22.80)	539(22.53)	1332(22.98)
	50s	2058(21.77)	342(15.32)	1716(26.03)
	60+	793(8.79)	148(5.45)	645(10.99)
city	Big	3884(49.17)	1256(49.13)	2628(49.2)
	Small	3749(50.83)	1204(50.87)	2545(50.80)
Edu	<Mid	525(5.32)	80(2.79)	445(7.00)
	High	3753(44.90)	906(35.35)	2847(51.21)
	>College	3355(49.77)	1474(61.86)	1881(41.79)
<b>Working Conditions</b>				
Time	<43h	3714(49.86)	985(40.63)	2729(55.96)
	43-50h	1542(19.00)	507(20.30)	1035(18.14)
	>50h	2377(31.14)	968(39.07)	1409(25.90)

Salary **	<150	1708(22.05)	289(9.91)	1419(30.06)
	150-250	3352(40.51)	727(28.44)	2625(48.49)
	250-400	1697(24.54)	968(40.64)	729(13.91)
	>400	876(12.89)	476(21.00)	400(7.54)
Status	Regular	5774(74.85)	2028(82.59)	3746(69.75)
	Temp	1859(25.15)	432(17.41)	1427(30.25)

\* The percentage is the column percentage for each variable. A survey weight was applied to the percentage. \*\* The salary is expressed in Korean won, and is 10,000 units, Korean money 1,228 won is equivalent to 1 dollar in the United States (as of June 2020).

In the study, Table 1.1 shows the general characteristics and working conditions of service and sales workers by gender. Males in their 30s (29.84%) are the highest among the age groups. Women in their fifties accounted for the largest distribution (26.03%). In both men (50.87%) and women(50.80%), the proportion of small towns is greater. Males had the largest distribution of college graduates(61.86%), and females had the highest distribution of high school graduates(51.21%). Both men(40.63%) and women(55.96%) have a large distribution in those who work within 43 hours. However, the distribution of men working less than 43 hours and men working over 50 hours(39.07%) is similar. The distribution of males (40.64%) was the highest when they received wages of 2.5 to 4 million won, and females (48.49%) when they received wages of 1.5 to 2.5 million

won. Those who responded that both men(82.59%) and women(69.75%) were regular status workers accounted for a high distribution. The percentage is the column percentage for each variables. The salary is expressed in Korean won, and is 10,000 units, Korean money 1,228 won is equivalent to 1 dollar in the United States (as of June 2020).

**Table 1.2. Prevalence of Six key factors by gender in the study n(%\*).**

			Total	Male	Female
			(N=7,633)	(N=2,460)	(N=5,173)
			n(%*)	n(%*)	n(%*)
Six key factors of the psychosocial work environment					
1 High demands	EDR	No	5680(73.61)	1843(73.78)	3837(73.49)
		Yes	1953(26.39)	617(26.22)	1336(26.51)
2 Emotional Demands	Hide	No	3707(49.13)	1134(53.07)	2573(49.42)
		Yes	3926(50.87)	1326(46.93)	2600(50.58)
	Angry	No	7199(94.43)	2344(95.07)	4855(94.02)
		Yes	434(5.57)	116(4.93)	318(5.98)
3 Autonomy	Think	No	3837(49.61)	1181(47.12)	2656(51.26)
		Yes	3796(50.39)	1279(52.88)	2517(48.74)
4 Ethical conflict	Useful	No	3626(47.05)	1143(45.84)	2483(47.85)
		Yes	4007(52.95)	1317(54.16)	2690(52.15)
5 Social relations& protection	Boss	No	3043(39.43)	935(37.84)	2108(40.47)
		Yes	4590(60.57)	1525(62.16)	3065(59.53)
	Colleagues	No	2758(35.28)	865(34.00)	1893(36.13)
		Yes	4875(64.72)	1595(66.00)	3280(63.87)

HSI	No	2966(38.25)	942(37.82)	2024(38.54)	
	Yes	4667(61.75)	1518(62.18)	3149(61.46)	
Fair	No	3474(44.51)	1081(43.5)	2393(45.17)	
	Yes	4159(55.49)	1379(56.5)	2780(54.83)	
6 Job instability	New job	No	2280(30.13)	795(33.94)	1485(27.62)

\*The percentage is the column percentage for each variable. A survey weight was applied to the percentage.

Table 1.2. show the Six key factors of the psychosocial work environment of service and sales workers by gender. Males (73.78%) and females (73.49%) showed higher distribution when they were not provided than those who received EDR. A highest response distribution was found when men(53.07%) did not hide emotions and women hide emotions(50.58%). The distribution without dealing with angry customers had the highest distribution for both men(95.07%) and women(94.02%). In the case of men, the proportion of respondents who said that they could apply their thoughts to the work accounted for a large distribution(52.88%). In the case of women, the proportion that responded that thoughts could not be applied to work accounted for more distribution(51.26%). The distribution of male (54.16%) and female (52.15%) both doing useful work was high. There is a high distribution of both men(62.16%) and women(59.53%) with the support of the company's boss. In addition, there is a high distribution of both men(66.00%) and women(63.87%) with support from colleagues. The distribution of safety information from the company was higher in both men(62.18%) and

women(61.46%). The distribution was high in the case of responding to fair treatment in conflict in both men(56.50%) and women(54.83%). Both men (66.06%) and women (72.38%) who responded that they could easily find a new job even if they quit doing what they are working now accounted for the highest distribution

**Table 2.1. Prevalence of risk of depression by characteristics of men in the study n(%\*).**

		Male (N=2,460)		
		Total	risk of depression	No risk of depression
<b>Demographics</b>				
Ages	1020s	678(26.87)	129(19.75)	549(80.25)
	30s	753(29.84)	197(27.91)	556(72.09)
	40s	539(22.53)	134(26.31)	405(73.69)
	50s	342(15.32)	83(23.43)	259(76.57)
	60+	148(5.45)	44(33.87)	104(66.13)
city	Big	1256(49.13)	271(23.7)	985(76.3)
	Small	1204(50.87)	316(26.25)	888(73.75)
Edu	<Mid	80(2.79)	22(28.85)	58(71.15)
	High	906(35.35)	236(27.65)	670(72.35)
	>College	1474(61.86)	329(23.31)	1145(76.69)
<b>Working Conditions</b>				
Time	<43h	985(40.63)	195(21.07)	790(78.93)
	43-50h	507(20.3)	121(22.9)	386(77.1)
	>50h	968(39.07)	271(30.17)	697(69.83)
Salary**	<150	289(9.91)	52(17.32)	237(82.68)

	150-250	727(28.44)	181(25.18)	546(74.82)
	250-400	968(40.64)	240(26.58)	728(73.42)
	>400	476(21)	114(25.31)	362(74.69)
Status	Regular	2028(82.59)	479(24.69)	1549(75.31)
	Temp	432(17.41)	108(26.43)	324(73.57)

\* The percentage is the column percentage for each variable. A survey weight was applied to the percentage. \*\* The salary is expressed in Korean won, and is 10,000 units, Korean money 1,228 won is equivalent to 1 dollar in the United States (as of June 2020).

**Table 2.2. Prevalence of risk of depression by characteristics of women in the study n(%\*).**

		Female (N=5,173)		
		Total	risk of depression	No risk of depression
Demographics				
Ages	1020s	702(23.6)	127(17.12)	575(82.88)
	30s	778(16.4)	182(23.84)	596(76.16)
	40s	1332(22.98)	354(24.74)	978(75.26)
	50s	1716(26.03)	496(30.10)	1220(69.88)
	60+	645(10.99)	211(30.12)	434(82.88)
city	Big	2628(49.2)	671(25.45)	1957(74.55)
	Small	2545(50.8)	699(24.12)	1846(75.88)
Edu	<Mid	445(7)	165(33.12)	280(66.88)
	High	2847(51.21)	774(26.11)	2073(73.89)
	>College	1881(41.79)	431(21.75)	1450(78.25)
Working Time	Conditions			
	<43h	2729(55.96)	721(24.94)	2008(75.06)

	43-50h	1035(18.14)	253(23.41)	782(76.59)
	>50h	1409(25.9)	396(25.39)	1013(74.61)
Salary**	<150	1419(30.06)	381(25.13)	1038(74.87)
	150-250	2625(48.49)	700(25.19)	1925(74.81)
	250-400	729(13.91)	170(21.93)	559(78.07)
	>400	400(7.54)	119(26)	281(74)
Status	Regular	3746(69.75)	947(23.4)	2799(76.6)
	Temp	1427(30.25)	423(27.96)	1004(72.04)

\* The percentage is the column percentage for each variable. A survey weight was applied to the percentage. \*\* The salary is expressed in Korean won, and is 10,000 units, Korean money 1,228 won is equivalent to 1 dollar in the United States (as of June 2020).

**Table 2.3. Prevalence of risk of depression by Six key factors of men in the study n(%\*).**

		Male (N=2,460)			
			Total	Dep	Non Dep
Six key factors of the psychosocial work environment					
1	EDR	No	1843(73.78)	442(25.98)	1401(74.02)
		Yes	617(26.22)	145(22.23)	472(77.77)
2	Hide	No	1326(46.93)	328(25.60)	998(74.40)
		Yes	1134(53.07)	259(24.31)	875(75.69)
	Angry	No	2344(95.07)	554(24.58)	1790(75.42)
		Yes	116(4.93)	33(33.00)	83(67.00)
3	Think	No	1181(47.12)	355(30.73)	826(69.27)
		Yes	1279(52.88)	232(19.89)	1047(80.11)
4	Useful	No	1143(45.84)	360(32.92)	783(67.08)
		Yes	1317(54.16)	227(18.29)	1090(81.71)

5	Boss	No	935(37.84)	297(30.99)	638(69.01)
		Yes	1525(62.16)	290(21.35)	1235(78.65)
	Colleagues	No	865(34)	273(31.59)	592(68.41)
		Yes	1595(66)	314(21.6)	1281(78.4)
	Inform	No	942(37.82)	260(29.48)	682(70.52)
		Yes	1518(62.18)	327(22.27)	1191(77.73)
	Fair	No	1081(43.5)	348(33.37)	733(66.63)
		Yes	1379(56.5)	239(18.55)	1140(81.45)
<hr/>					
6	New job	No	795(33.94)	222(26.22)	573(73.78)
		Yes	1665(66.06)	365(24.37)	1300(75.63)

\* The percentage is the column percentage for each variable. A survey weight was applied to the percentage.

Table 2.1. and Table 2.2. show the prevalence of risk of depression according to the characteristics of the service and sales workers for male and female. The age group with the highest prevalence was over 60 for both men(33.87%) and women(30.12%). In men, the risk of depression was high in people living in small and medium-sized cities (26.25%), and in women, the risk of depression was high in large cities (25.45%). Both men(28.85%) and women(33.12%) have the highest prevalence of middle school graduates. In men (30.17%) and in women (25.39%), the risk of depression was higher when working over 50 hours. In the case of men, the distribution of depressive incidence was high in those receiving wages of 2.5-4 million won (26.58%), and in women, the distribution of risk of depression was high in those receiving wages of 1.5-2.5 million won. Males (26.43%) and females (27.96%) had a higher risk of depression in temporary

jobs.

**Table 2.4. Prevalence of risk of depression by Six key factors of women in the study n(%\*).**

		Female (N=5,173)			
			Total	Dep	Non Dep
Six key factors of the psychosocial work environment					
1	EDR	No	3837(73.49)	1003(24.28)	2834(75.72)
		Yes	1336(26.51)	367(26.16)	969(73.84)
2	Hide	No	2600(50.58)	706(24.01)	1894(75.99)
		Yes	2573(49.42)	664(25.53)	1909(74.47)
3	Angry	No	4855(94.02)	1286(24.57)	3569(75.43)
		Yes	318(5.98)	84(28.04)	234(71.96)
	Think	No	2656(51.26)	923(31.97)	1733(68.03)
		Yes	2517(48.74)	447(17.21)	2070(82.79)
4	Useful	No	2483(47.85)	865(32.43)	1618(67.57)
		Yes	2690(52.15)	505(17.76)	2185(82.24)
5	Boss	No	2108(40.47)	743(32.43)	1365(67.57)
		Yes	3065(59.53)	627(19.57)	2438(80.43)
	Colleagues	No	1893(36.13)	687(34.82)	1206(65.18)
		Yes	3280(63.87)	683(19.1)	2597(80.9)
	Inform	No	2024(38.54)	674(30.75)	1350(69.25)
		Yes	3149(61.46)	696(21.03)	2453(78.97)
	Fair	No	2393(45.17)	832(32.28)	1561(67.72)
		Yes	2780(54.83)	538(18.59)	2242(81.41)
6	New job	No	1485(27.62)	451(27.35)	1034(72.65)
		Yes	3688(72.38)	919(23.79)	2769(76.21)

\* The percentage is the column percentage for each variable. A survey weight was applied to the percentage.

Table 2.3 and Table 2.4 show the prevalence of risk of depression according to the Six key factors of the service and sales workers

occupation group for male and female. The prevalence of risk of depression was higher when men were given EDR(25.98%) than when men were not provided(22.23%). The prevalence of risk of depression was higher when women were given EDR(26.16%) than when women were not provided(24.28%). Males (25.60%) showed a high distribution of risk of depression when they did not hide emotions, and females (25.53%) showed a high distribution of risk of depression when hiding emotions. When dealing with angry customers in both men (33.00%) and women (28.04%), the risk of depression was high. The prevalence was high when both men(30.73%) and women(31.97%) were unable to apply their ideas to work. Both men (32.92%) and women (32.43%) had a high risk of depression when they thought they were not useful. Both men (30.99%) and women (32.43%) had a high risk of depression when they were not supported by their boss. Also, both men (31.59%) and women (34.82%) had a high risk of depression when they were not supported by their colleagues. Both males (29.48%) and females (30.75%) had a high risk of depression when they were not provided with HSI. Both men (26.22%) and women (27.35%) had a high risk of depression in those who responded that they would not be able to find new jobs after leaving the company.

**Table 3.1. Differences between men and women in the effects of the Six key factors on the risk of derpression.**

Six Key Factors variables			Odds Ratio***			
			(95% Confidence Interval)			
			Male(N=2,460)		Female(N=5,173)	
1 High demands	EDR	Yes vs No	1.01	0.76-1.34	1.26†	1.03-1.53
2	Hide	Yes vs No	1	0.78-1.28	1.36‡	1.15-1.62
Emotional demands	Angry	Yes vs No	1.66†	1.05-2.64	1.22	0.86-1.73
3	Think	No vs Yes	1.34†	1.02-1.76	1.62‡	1.34-1.96
4 Ethical conflict	Useful	No vs Yes	1.67‡	1.27-2.21	1.56‡	1.29-1.87
5 Social relations & protection	Boss	No vs Yes	1.06	0.80-1.40	1.14	0.94-1.40
	Col	No vs Yes	1.14	0.85-1.51	1.58‡	1.30-1.93
	HSI	No vs Yes	1.21	0.94-1.57	1.40‡	1.18-1.66
6 Job instability	Fair	No vs Yes	1.75‡	1.35-2.28	1.44‡	1.20-1.72
	NewJob	No vs Yes	1.11	0.87-1.43	1.19	0.99-1.43

\* Odds ratios from the logistic regression analysis of the main variable were adjusted for demographic variables (age, residential area, education level), basic working environment (employment status, working hours, wages), and 9 variables from the Six key factors in the table. † p <0.05, ‡ p <0.01 for differences among the levels of each variable. \*\*All p-values show the significance level of the gender difference of 6 key factors affecting the occurrence of risk of depression. The 'Col' element included in the fifth key elements, 'social relations & protection', means to check whether support from colleagues exists.

As shown in Table 3.1, after adjusting demographic variables such as age, residential area, education level, employment status, working hours and salary, and 9 variables from the Six key factors in the table. We looked at that association between Six key factors and risk of depression was examined through logistic regression analysis. When they do not think they are doing something useful (OR: 1.67, 95% CI: 1.27 - 2.21 for men; OR: 1.56, 95% CI: 1.29 - 1.87 for women), and when they think that a conflict is not being handled fairly (OR: 1.75, 95% CI: 1.35 - 2.28 for men; OR: 1.44, 95% CI: 1.20 - 1.72 for women), their risk of depression has increased significantly in both men and women. Unlike women, men affect the occurrence of risk of depression when dealing with angry customers (OR: 1.66, 95% CI: 1.05 - 2.64). Unlike men, women increase the risk of depression when provided with a EDR (OR: 1.26, 95% CI: 1.03 - 1.53), and increase the risk of depression when hiding emotions (OR: 1.36, 95% CI: 1.15 - 1.62). Also, unlike men, women have a higher risk of depression when there is no support from their colleagues (OR: 1.58, 95% CI: 1.30 - 1.93), and risk of depression increases if HSI are not given (OR: 1.40, 95% CI: 1.18 - 1.72). Only the effect of variables including hiding emotions ( $p=0.04$ ) and support ( $p=0.03$ ) from colleagues on the risk of depression differed by gender.

**Table 3.2. Six key factors Associate with risk of depression for Male Adjusting demographic variables and basic working condition variables.**

Odds Ratio (95% Confidence Intervals)				
Six Factors	Key variables		Male(N=2,460)	
High Demands	EDR	Yes vs No	0.84	0.64-1.11
Emotional Demands	Hide Angry	Yes vs No	0.89	0.70-1.12
Autonomy	Think	No vs Yes	1.51	0.94-2.42
Ethical Conflict	Useful	No vs Yes	1.86 <sup>†</sup>	1.47-2.36
Social Relations & Protection	Boss Colleagues	No vs Yes	1.22	0.93-1.59
	HSI	No vs Yes	1.28	0.97-1.69
	Fair	No vs Yes	1.27	0.98-1.64
Job Instability	New Job	No vs Yes	1.88 <sup>†</sup>	1.46-2.42
			1.10	0.86-1.40

<sup>†</sup> p <0.05, <sup>‡</sup> p <0.01 \* Odds ratios were adjusted for age, residence area, education level, employment status, working hours, and salary.

In Tables 3.2 and 3.3, only the demographic variables and basic working environment factors are corrected to examine the association with risk of depression. The risk of depression increases when both men and women fail to apply their ideas to work. (OR: 1.86, 95% CI: 1.47 - 2.36 for men, OR: 2.33, 95% CI: 1.96 - 2.76 for women). The risk of depression increased when both men and women answered that they were not playing a useful role(OR: 2.17, 95% CI: 1.71 - 2.77 for men, OR: 2.26, 95% CI: 1.91 - 2.66 for women).

Table 3.3. Six key factors Associate with risk of depression for Female Adjusting demographic variables and basic working condition variables.

Odds Ratio (95% Confidence Intervals)				
Six Key Factors	variables		Female(N=5,173)	
High Demands	EDR	Yes vs No	1.14	0.95-1.38
E m o t i o n a l Demands	Hide	Yes vs No	1.11	0.95-1.31
	Angry	Yes vs No	1.18	0.85-1.64
Autonomy	Think	No vs Yes	2.33 <sup>†</sup>	1.96-2.76
Ethical Conflict	Useful	No vs Yes	2.26 <sup>†</sup>	1.91-2.66
	Boss	No vs Yes	1.28 <sup>†</sup>	1.05-1.55
	Colleagues	No vs Yes	1.71 <sup>†</sup>	1.41-2.08
Protection	HSI	No vs Yes	1.45 <sup>†</sup>	1.22-1.71
	Fair	No vs Yes	1.63 <sup>†</sup>	1.36-1.95
Job Instability	New Job	No vs Yes	1.15	0.96-1.37

<sup>†</sup> p <0.05, <sup>‡</sup> p <0.01 \* Odds ratios were adjusted for age, residence area, education level, employment status, working hours, and salary.

In addition, the risk of depression increased in both men and women if they were not treated fairly in the event of conflict(OR: 1.88, 95% CI: 1.46 - 2.42 for men, OR: 1.63, 95% CI: 1.36 - 1.95 for women). Unlike men, the risk of depression increases only for women, when there is no support from the boss(OR: 1.28, 95% CI: 1.05 - 1.55), without support from colleagues(OR: 1.71, 95% CI: 1.41 - 2.08), and when safety information is not provided(OR: 1.45, 95% CI: 1.22 - 1.71).

**Table 3.4. Six key factors Associate with risk of depression for Male Adjusting Six key factors other than the variables of interest in the table.**

Odds Ratio (95% Confidence Intervals)				
Six Key Factors	Variables		Male(N=2,460)	
High Demands	EDR	Yes vs No	0.99	0.75-1.31
Emotional	Hide	Yes vs No	1.02	0.80-1.31
Demands	Angry	Yes vs No	1.70 <sup>†</sup>	1.07-2.70
Autonomy	Think	No vs Yes	1.27	0.97-1.66
Ethical Conflict	Useful	No vs Yes	1.71 <sup>†</sup>	1.30-2.24
Social Relations	Boss	No vs Yes	1.06	0.80-1.41
	Colleagues	No vs Yes	1.09	0.83-1.43
& Protection	HSI	No vs Yes	1.24	0.97-1.59
	Fair	No vs Yes	1.78 <sup>†</sup>	1.38-2.30
Job Instability	New Job	No vs Yes	1.17	0.92-1.50

<sup>†</sup> p <0.05, <sup>‡</sup> p <0.01 \* Odds ratios were adjusted for Six key factors other than the variables of interest in the table.

**Table 3.5. Six key factors Associate with risk of depression for Female Adjusting Six key factors other than the variables of interest in the table.**

Odds Ratio (95% Confidence Intervals)				
Six Key Factors	Variables		Female(N=5,173)	
High Demands	EDR	Yes vs No	1.25 <sup>†</sup>	1.03-1.52
Emotional	Hide	Yes vs No	1.32 <sup>†</sup>	1.12-1.57
Demands	Angry	Yes vs No	1.22	0.87-1.70
Autonomy	Think	No vs Yes	1.58 <sup>†</sup>	1.31-1.90

Ethical Conflict	Useful	No vs Yes	1.54 <sup>†</sup>	1.28-1.85
Social Relations & Protection	Boss	No vs Yes	1.14	0.94-1.38
	Colleagues	No vs Yes	1.55 <sup>†</sup>	1.27-1.88
	HSI	No vs Yes	1.40 <sup>†</sup>	1.18-1.66
	Fair	No vs Yes	1.45 <sup>†</sup>	1.21-1.73
Job Instability	New Job	No vs Yes	1.29 <sup>†</sup>	1.08-1.54

<sup>†</sup> p <0.05, <sup>‡</sup> p <0.01 \* Odds ratios were adjusted for Six key factors other than the variables of interest in the table.

Tables 3.4 and 3.5 showed the association with risk of depression after adjusting Six key factors other than the variables of interest in the table. In both men and women, the risk of depression increased when they thought they were not doing their useful work(OR: 1.71, 95% CI: 1.30 - 2.24 for men, OR: 1.54, 95% CI: 1.28 - 1.85 for women). and when they were not treated fairly in case of conflict(OR: 1.78, 95% CI: 1.38 - 2.30 for men, OR: 1.78, 95% CI: 1.21 - 1.73 for women). And unlike women, the risk of depression increases when dealing with angry customers(OR: 1.70, 95% CI: 1.07 - 2.70)only from men. Unlike men, only women, when provided with a EDR(OR: 1.25, 95% CI: 1.03 - 1.52), increases the risk of depression when hiding emotions(OR: 1.32, 95% CI: 1.12 - 1.57), when they are unable to apply their thoughts to work(OR: 1.58, 95% CI: 1.31 - 1.90), when they are not supported by colleagues(OR: 1.55, 95% CI: 1.27 - 1.88), or when HSI is not provided(OR: 1.40, 95% CI: 1.21 - 1.73). Also, risk of depression increases when they think they will not be able to find a new job after leaving the company(OR: 1.29, 95% CI: 1.08 - 1.54).

Table 4.1. The interaction effects of risk of depression depending on the presence of hiding emotion, dealing with angry customers, and the availability of EDR or HSI for Male

		Odds Ratio* (95% Confidence Interval)					
		Male(N=2,460)					
		EDR			HSI		
		Present	Absent	RERI	Not provided	Provided	RERI
Emotional Demands	Hide	1.1	0.88	-0.13 (-.33,.07)	1.21	0.99	.24 (-.37,.84)
	Not Hide	0.73	1		1.2	1	
	Angry	1.14	1.94 <sup>†</sup>	1.13 (-.66,2.93)	1.93	1.74	1.43 (-1.19,4.06)
	Not Angry	1.05	1		1.22	1	

<sup>†</sup> p <0.05, <sup>‡</sup> p <0.01 \* Odds ratios were adjusted for age, residence area, education level, employment status, working hours, Salary, and Six key factors other than the variables of interest in the table.

Among the Six key factors, we examined how it affects the occurrence of risk of depression depending on whether it is emotionally demanded and whether the company provides EDR or HSI.

In the case of men, Men have a higher risk of depression when dealing with angry customers(OR = 1.94) than with angry customers when EDR is present. However, the results through RERI showed that there was no significant positive interaction effect (RERI = 1.13(95% CI : -0.66, 2.93). In the case of men, there is no significant

risk of depression in all cases except the interaction result according to whether the EDR is provided and the angry customer.

**Table 4.2. The interaction effects of risk of depression depending on the presence of hiding emotion, dealing with angry customers, and the availability of EDR or HSI for Female**

		Odds Ratio* (95% Confidence Interval)					
		Female(N=2,460)					
		EDR			HSI		
		Present	Absent	RERI	Not provided	Provided	RERI
Emotional Demand	Hide	1.80‡	1.24†	.41	1.9‡	1.46‡	1.83
	Not Hide	0.99	1	(-.28,1.10)	1.51‡	1	(.11,3.55)
	Angry	1.73†	1.13	.46	1.66†	1.26	1.02
	Not Angry	1.24†	1	(-.76,1.67)	1.41‡	1	(-.25,2.29)

† p <0.05, ‡ p <0.01 \* Odds ratios were adjusted for age, residence area, education level, employment status, working hours, Salary, and Six key factors other than the variables of interest in the table.

Compared to women who do not receive EDR and do not hide emotions, the risk of depression increases most when they hide their emotions(OR = 1.24). And, while hiding emotions, the risk of depression is higher when EDR is present(OR = 1.80). However, RERI results show no significant positive interaction (RERI = 0.41, 95% CI : -0.28, 1.10). Compared to women who do not receive EDR

and do not deal with angry customers, the risk of depression increases most when a EDR is given and even meets angry customers(OR = 1.73). Although they did not deal with angry customers, even if only a EDR is given, the risk of depression increases(OR = 1.24). However, RERI results show no significant positive interaction (RERI = 0.46, 95% CI : 0.76, 1.67). For women, when they are given HSI and don't hide emotions, hiding emotions increases their risk of depression(OR = 1.46). In addition, the risk of depression increases when a HSI is not provided, compared to a women who are given the HSI and do not hide emotions(OR = 1.51). The risk of depression increases most when HSI are not provided and emotions need to be hidden(OR = 1.90). However, RERI results show no significant positive interaction (RERI = 1.83, 95% CI : 0.11, 3.55). In the case of women, the risk of depression increases if they are not provided with HSI regardless of whether they are dealing with angry customers, compared to the case where HSI are provided and they do not deal with angry customers. They don't deal with angry customers, but if they don't receive HSI, they're at a higher risk of depression(OR = 1.41). The risk of depression is higher when dealing with angry customers without being provided with HSI(OR = 1.66). RERI results show no significant positive interaction (RERI = 1.02, 95% CI : -0.25, 2.29).

## Chapter 4. Discussion

### 4.1 Discussion

Prevalence of risk of depression according to demographic characteristics, distribution of working conditions, and the six key factors separated by gender. Women in the Korean working environment have a lower social status and less job control than men, and there is also an extreme wage gap between men and women in Korea. Unlike males, many female respondents said that they had to hide their feelings and could not apply their thoughts to their work. Both male and female respondents who were not told of EDR showed a high frequency of risk of depression. Unlike men, women who knew of EDR had a higher prevalence of risk of depression. The effects of the six key factors on the occurrence of risk of depression in males and females after adjusting for demographic variables (age, residential area, education level) and basic working conditions (employment status, working hours, wages). Among men, dealing with angry customers was significantly associated with increased risk of depression. Women who received EDR, who had to hide their feelings, and when they responded that they could not apply their thoughts at work, did not receive colleagues' support, and did not receive HSI, had a higher risk of depression. risk of depression increased in both sexes when they thought they weren't being treated fairly when they didn't do useful

work at work or when a conflict occurred. The interaction analysis examining differences in the occurrence of risk of depression according to emotional labor factors and whether guidelines were provided. In men, there was no significant interaction with EDR, but interaction analysis confirmed that the risk of depression increased when dealing with angry customers and knowing of EDR. No other interactions were significant. In women, all interactions tended to be similar to those reported in previous studies. Dealing with angry customers, being aware of EDR, hiding emotions, and not receiving HSI had additive effects on increasing the risk of depression.

Employers should be aware of the factors causing risk of depression in both men and women. In addition, workplace improvement and guidance should be actively involved to protect workers. Also, the current study revealed that when considering the factors that affect risk of depression in men and women, it is important that EDR and HSI be managed differently according to gender. This is consistent with previous studies demonstrating that women in the Korean working environment have a lower social status than men[30,31]. When dealing with angry customers, the company should provide step-by-step measures to both men and women, without unconditionally compelling the worker to suppress feelings or apologize to the customer. Also, consistent with the revised occupational safety and health law, workers should not be treated unfairly when conflict arises. In particular, the company should not force emotional regulation on women who are sensitive

about having to hide their emotions. In addition, HSI should be communicated more actively than is currently the case. Systems and working conditions should also be improved to provide mental health care support and a supportive environment among colleagues [55]. By revising EDR and providing HSI, many companies can further protect workers' safety and health [56].

There are some limitations to this study. First, it was based on cross-sectional data; therefore, the causal relationship between the six key factors and risk of depression could not be examined. However, previous longitudinal studies demonstrated that adverse psychosocial working conditions, such as the variables assessed in the current study, exacerbate risk of depression [57]. Second, the factors used to judge the working environment were subjective. Therefore, some limitations such as recall bias may be present. The variables of interest were those questioning the worker's perception of whether a working condition was important. Hence, the structured WHO-5 Well-Being Index was used. Third, because this study used data from 2017, it is not possible to know the effect on risk of depression of the amendment to the 2018 Occupational Safety and Health Act. However, even before 2018, there were laws for emotional workers, and EDR and HSI were required. This means that looking at the effects of policy efforts on emotional workers before the revision of the law still allows for the examination of service and sales workers. Despite these limitations, one of the strengths of this study is that we investigated the association of six key factors with risk of

depression in a nationally representative Korean sample. The data are suitable for analysis because KWCS included a variety of factors affecting industrial accidents. Also, because KWCS is conducted every 3 years, the 6th KWCS could be used to examine the mental health effects of the revised Occupational Safety and Health Act on service and sales workers.

## 4.2 Conclusion

In this study, the effects of the six key factors of the psychosocial work environment on risk of depression in service and sales workers in Korea were examined according to gender using the KWCS. For men, the risk of depression increased when dealing with angry customers. For women, the risk of depression increased when they receive EDR, needed to hide their emotions, can't apply their ideas to work, and don't think they're doing something useful. In addition, when there was no support from colleagues, no HSI was provided, they were not being dealt with fairly in conflict situations by company, the risk of depression increased. Only the effect of various including hiding emotions and support from colleagues on the risk of depression differed by gender. In men, the risk of depression was highest when EDR was provided and the worker had to deal with angry customers; no other interaction analysis showed significant results. For women, the risk of depression increased when they had to hide their emotions, dealt with angry customers, knew of

EDR, and did not receive HSI. To reduce the incidence of risk of depression, HSI and EDR should be revised in ways that protect workers and should be distributed more widely. This study should be used as a basis to improve the occupational environment and its effects on the mental health of service and sales workers.

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## Appendix

**Table 5. Prevalence of 6 Key Factors by jobs in the study (%).**

	Variables	blue	service	sales	white	P*
1 High demands	Not EDR	84.91	74.59	72.23	82.43	<.01
	EDR	15.09	<u>25.41</u>	<u>27.77</u>	17.57	
2 Emotional demands	Not Hide	65.13	52	48.41	57.21	<.01
	Hide	34.87	<u>48</u>	<u>51.59</u>	42.79	
	Not Angry	98.15	94.09	94.77	96.35	<.01
	Angry	1.85	<u>5.91</u>	<u>5.23</u>	3.65	
3 Autonomy	Not Think	<u>53.89</u>	49.81	49.83	40.76	<.01
	Think	46.11	50.19	50.17	59.24	
4 Ethical conflict	Not Useful	48.94	45.82	<u>49.29</u>	33.45	<.01
	Useful	51.06	54.18	50.71	66.55	
5 Social relations & protection	Not Boss	<u>41.45</u>	38.61	<u>41.11</u>	30.47	<.01
	Boss	58.55	61.39	58.89	69.53	
	Not Col	35.02	33.36	<u>38.54</u>	25.87	<.01
	Col	64.98	66.64	61.46	74.13	
	Not HSI	26.19	34.45	<u>44.61</u>	29.98	<.01
	HSI	73.81	65.55	55.39	70.02	
	Unfair	46.41	43.15	<u>47.14</u>	36.98	<.01
	Fair	53.59	56.85	52.86	63.02	
6 Job instability	Not new job	<u>38.62</u>	31.44	26.97	<u>38.76</u>	<.01
	New job	61.38	68.56	73.03	61.24	

\* *P* means *P*-Values which were from chi-squared tests. The 'Col' element included in the fifth key elements, 'social relations & protection', means to check whether support from colleagues exists.

## 요약(국문초록)

# 서비스와 판매직 종사자의 감정노동과 근로환경이 우울 위험에 미치는 영향

전해령

보건학과 보건학전공

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**배경** : 감정 노동으로 인한 정신 건강 문제에 관심이 높아지고 있다. 2016년 1월, 감정노동 종사자의 권리보호 조항이 신설되고 시행된 이후부터 고용주는 안전 보건 정보 (HSI : Health and Safety Information) 를 종사자들에게 제공하며 안전을 보장하고 건강을 보호해줘야 하는 의무를 가지게 되었다. 우울 위험 발생에 영향을 주는 근로 환경 요인과 감정 노동 요인을 조사하는 연구가 존재하긴 하지만, 회사가 요구하는 감정 노동 요구 규범(EDR : Emotional Display Rule)이나 HSI와 같은 지침 제공의 배포수준을 파악하거나 우울 위험 발생과의 연관성을 함께 살펴보는 연구는 많지 않다. 또한, 서비스직이나 판매직, 혹은 콜센터 직원과 같은 특정 직업군만을 대상으로 하는 연구가 대부분인데, 정책을 시행할 때는 감정노동을 하는 모든 직업군을 대상으로 하기 때문에, 본 연구의 대상을 서비스직과 판매직으로 포괄하여 선정하였다. 본 연구의

가설은 다음 세 가지다. 첫째, 핑크칼라 직업군의 직장 내 심리위험요소인 Six key factors와 우울증간에 연관성이 존재한다. 둘째, Six key factors와 우울증간의 연관성에는 성별의 차이가 존재한다. 셋째, 감정노동요소와 감정노동지침여부에 따른 우울증 발생간의 연관성에는 차이가 존재한다.

**연구방법** : 본 연구는 산업안전보건연구원 안전보건정책연구실로부터 제 5차 근로환경조사(2017) 원자료를 제공받아 분석을 한 단면연구다. 종속변수인 우울 위험 발생은 구조화된 설문지인 WHO-5 웰빙 지수(WHO-5 Well-being Index)를 사용하여 판단하였다. 6차원의 직장 내 심리적 위험요소인 Six key factors(높은 근로강도, 감정노동요소, 자율권 부족, 윤리적 충돌, 저급한 사회적 관계, 고용불안정성) 분포를 살펴보고 요소여부에 따른 우울 위험 발생률을 카이제곱분석을 통해 제시하였다. 인구학적변수와 기본적인 근로환경요소, 그리고 관심 있는 Six key factors외의 심리적 위험요소들은 공변량으로 설정하여 보정되었다. 표준화 가중치를 적용하여 PROC SURVEYLOGISTIC 분석을 수행하였고 오즈비와 95% 신뢰구간을 제시하였다. 또한 Six key factors 중에서 감정노동요소인 감정 숨김 여부, 화난 고객 상대 여부와, 감정노동 관련 지침인 감정노동요구 규범, 안전정보제공 여부에 따른 우울증과의 연관성을 살펴보기 위해 상호작용분석을 시행하였다.

**연구 결과** : 남성의 경우, 화난 고객을 상대할 때 우울위험 발생이 증가한다(또는 1.66, 95 % CI : 1.05 - 2.64). 여성의 경우, EDR (OR : 1.26, 95 % CI : 1.03 - 1.53)을 제공받고 감정을 숨길 때 (OR : 1.36, 95 % CI : 1.15 - 1.62) 우울 위험 발생이 증가한다. 또한, 여성의 경우, 동료의 지지가 없는 경우 (OR : 1.58, 95 % CI : 1.30 - 1.93)와 HSI가 제공되지 않은 경우 (OR : 1.40, 95 % CI : 1.18 - 1.72) 우울증의 위험이 높게 나타났다. 6 key factors 중에 감정 숨김 여부( $P = 0.04$ )와 동료의 지지여부

( $P = 0.03$ ) 변수들만 우울 위험 발생에 미치는 영향에서 남녀에 따른 차이가 통계적으로 유의하게 나타났다. 본 연구에서는 감정 노동 요소의 존재여부와 EDR 또는 HSI의 제공여부에 따른 우울 위험 발생과의 연관성을 살펴보았다. 남성의 경우 화난 고객을 상대하지 않고 EDR을 제공받지 않는 경우에 비해 화난고객을 상대할 때 우울위험 발생이 증가하였다(OR : 1.94, 95 % CI : 1.14 - 3.30). 여성의 경우 화난 고객을 상대하고 EDR (OR : 1.73, 95 % CI : 1.00 - 3.00)을 제공받을 때, 화난 고객을 상대할 때 HSI을 제공받지 못하는 경우 (OR : 1.66, 95 % CI : 1.02 - 2.71), 우울증 발생 위험이 증가하였다. 또한 감정을 숨기고 HSI을 받지 못하면 (OR : 1.90, 95 % CI : 1.50 - 2.40), 우울증의 위험이 증가하였다. 감정을 숨기지 않고 EDR을 제공받지 않는 경우에 비해, 감정을 숨기는 경우 우울위험이 증가하였다(OR 1.24, 95% CI 1.01 - 1.51). 또한 감정을 숨기면서 EDR까지 제공받게 되면 그렇지 않는 경우에 비해 우울위험이 증가한다(OR 1.80, 95% CI 1.40 - 2.31). 하지만 모든 상호작용의 RERI분석 결과 통계적으로 유의한 결과가 없었기 때문에 양의 상호작용이 존재한다고는 말할 수 없다.

**결론 :** 본 연구에서는 남성과 달리, 여성에게서만 감정을 숨겨야 하거나 동료의 지지가 없을 때 우울위험이 유의하게 증가하는 것으로 나타났다. 여성은 남성보다 감정노동에 대한 부담을 더 크게 느껴 정신건강에 부정적인 영향을 끼친다는 선행 연구결과가 존재한다. 또한 남성에 비해 여성은 동료의 지지가 삶의 질에 큰 영향을 끼치기도 한다. 산업안전보건 관련 정책은 안전격차(Safety divide) 해소를 위해, 여성을 위한 특화된 안전보건 교육, 건강관리기법 보급 등 지원강화가 이루어질 예정이라고 한다. 본 연구 결과에서 제시한 것처럼, 감정노동을 하는 서비스직, 판매직 여성노동자에 대한 감정 숨김 노동에 대한 강요를 줄이고 동료의 지

지를 주고받을 수 있는 환경을 조성해야한다는 내용을 포함한 지침 개정이 필요할 것으로 사료된다. 업무에 본인의 생각을 적용할 수 있고 본인이 유용한 업무를 한다는 생각을 갖게 하며, 갈등 발생 시 공정한 대우를 해주는 것은 남녀 공통적으로 우울위험에 영향을 미치는 변수였다. 따라서 HSI 개정시, 본 내용이 추가되어 안전한 근로환경이 조성될 수 있도록 시행된다면 서비스직과 판매직 종사자의 우울 위험 발생 예방에 도움이 될 수 있을 것이라 생각된다.

**주요어 :** 감정노동, 감정노동규범, 안전정보 제공, 서비스직, 판매직, 근로환경조사

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