

ORIGINAL ARTICLE

Organizational response to workplace violence, and its association with depressive symptoms: A nationwide survey of 1966 Korean EMS providers

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Funding information

The founding for this study was provided by National Human Rights Commission of the Republic of Korea, Ministry of Education of the Republic of Korea, and the National Research Foundation of Korea. The funding source had no role in the design, practice or analysis of this study.

Abstract

Objectives: This study investigated whether organizational responses modified the associations between experiencing violence and depressive symptoms among emergency workers.

Methods: A nationwide survey of 1966 Korean emergency medical service (EMS) providers was analyzed. Experience of workplace violence (ie, physical violence, verbal abuse) was classified into four groups based on the victims' reporting and organizational responses: (i) "Not experienced," (ii) "Experienced, not reported," (iii) "Experienced, reported, responded by organization," and (iv) "Experienced, reported, not responded by organization." Depressive symptoms were assessed by 11-item version of the Centers for Epidemiologic Studies Depression Scale.

Results: Compared to "Not experienced" group, physical violence was significantly associated with depressive symptoms among EMS providers responding "Experienced, not reported" (PR: 1.67, 95% CI: 1.37, 2.03) and "Experienced, reported, not responded by organization" (PR: 2.58, 95% CI: 1.75, 3.82), after adjusting for confounders. No significant difference was detected for workers responding "Experienced, reported, responded by organization" group (PR: 1.45, 95% CI: 0.87, 2.41). Similar trends were observed in the analysis with verbal abuse.

Conclusions: Our findings suggest that organizational responses could play a critical role in mitigating depressive symptoms among EMS providers who experience violence at work.

KEYWORDS

depressive symptoms, organizational response, South Korea, workplace violence

1 | INTRODUCTION

Emergency medical service (EMS) providers are first responders for public health and safety. In providing first aid,

and stabilizing patients in emergency situations, such as assaults and disasters, EMS providers are often vulnerable to violence from several sources, including their patients.¹ A study in Canada found that 26% of paramedics were exposed

to physical assault and 67% were exposed to verbal abuse over the prior 12 months.² Similar findings have been reported in both Australia³ and the United States.⁴ Because EMS providers commonly experience workplace violence, it is imperative to understand the consequences of these experiences, and to explore possible avenues for mitigating the negative consequences.

Documented consequences associated with experiences of workplace violence among workers in emergency departments include adverse mental health states, such as anger, fear, and burnout.⁵ In Pakistan, emergency department workers who experienced verbal and physical violence exhibited negative mental health outcomes like feelings of avoidance and futility.⁶ Similarly, workers in pre-hospital emergency care in Spain who had been subjected to physical and verbal violence from patients showed higher levels of anxiety, emotional exhaustion, and burnout than non-exposed workers.⁷ Moreover, experience of workplace violence is associated with fear of future violence and can predict impaired psychological well-being.⁸ The adverse mental health consequences found in these studies indicate that depressive symptoms could be important consequences of experiencing workplace violence.

Importantly, there is some evidence that supportive response from employee's organization can modify the association between workplace violence and mental health problems.⁹ Much attention has been paid to emotional support from supervisors, which has been shown to buffer adverse consequences from workplace violence.¹⁰ However, more attention is needed to understand other buffers of adverse consequences to workplace violence. One suggested response for organizations employing emergency department workers is to have policies and practices supporting active investigation of violence and cooperation with police to take action for the violence.¹¹

In South Korea (hereafter, Korea), all EMS providers are public officers belonging to National Fire Agency. With trained experience of emergency medical technician or nurse, they provide consultation, first aid, and transportation to emergency patients under a situation of disease, childbirth, or injury due to accidents or disasters.^{12,13} Because of those job characteristics, Korean EMS Providers are more likely to have frequent contact with civilians, compared to other workers in National Fire Agency including firefighters and rescue staff. In 2014, 131 cases of workplace violence have been reported among 8134 Korean EMS providers, which increased to 199 cases in 2016.¹⁴ However, to date, no study has focused on how experiences of workplace violence was related to depressive symptoms among EMS providers in Korea, and whether these associations differ by victims' reporting and organizational response. Organizational response could be important for preventing reoccurrence of violence toward EMS providers given that these workers bear additional

burdens due to unpredictable nature of their work. Therefore, we analyzed nationwide data from EMS providers in Korea to answer the following questions:

1. Is there an association between the experience of workplace violence and depressive symptoms among EMS providers in Korea?
2. Does the association differ by whether or not the worker's organization actively responds to victims of workplace violence?

2 | SUBJECTS AND METHODS

2.1 | Study population

In 2015, we conducted a nationwide, web-based survey, which was funded by National Human Rights Commission of the Republic of Korea, to investigate work environment, health status, and human rights conditions among Korean EMS providers. Because all of the Korean EMS providers are public officer, a survey link was emailed to all Korean EMS providers ($n = 8134$) through the official internal network. Data were collected from August to October 2015. Informed consent was obtained from all individual participants included in the study after providing respondents with explanation of research purpose in the first page of survey link and asking about their willingness to participate. About 31% ($n = 2518$) of EMS providers completed the survey. After removing data with missing values for experience of depressive symptoms ($n = 334$), workplace violence ($n = 10$), or any covariates ($n = 208$), the sample size was 1966. This study was approved by the Institutional Review Board of Korea University (1040548-KU-IRB-15-110-A-1).

2.2 | Measures

Experience of workplace violence and organizational response was measured by using two questions: (i) "Over the past 12 months, have you ever experienced physical violence from a citizen (eg, patients, family, and bystanders) while on duty?" and (ii) "Over the past 3 months, have you ever experienced verbal abuse from a citizen while on duty?" Respondents could answer "yes" or "no." Those who answered "yes" were provided following question, "How did you cope with that abuse/violence?" Respondents could answer: (i) did not report to organization; (ii) reported it, but did not receive organizational-level response; or (iii) reported it and received organizational-level response.

Based on responses to the questions, EMS providers were classified into four groups: (i) "Not experienced," which

means they did not experience workplace violence; (ii) “Experienced, not reported,” indicating they experienced violence but did not report the violence to their organization; (iii) “Experienced, reported, not responded by organization,” indicating that victims reported the violence experience to their organization but there was no action from the organization; and (iv) “Experienced, reported, responded by organization,” indicating that workers reported the violence experience to their organization and there was action from the organization.

Depressive symptoms during the preceding week were assessed by using the 11-item short form of the Centers for Epidemiologic Studies Depression Scale (hereafter, CES-D), which is comparable to the original version.¹⁵ Respondents could answer from 0 (“rarely”) to 3 (“most”) for each of 11 questions. Summed scores ranged from 0 to 33. Following established procedures, respondents with score of 9 or more were defined as having depressive symptoms.¹⁶ Further, Korean version of CES-D 11 has been used in several previous studies measuring depressive symptoms in Korean population including Korean Welfare Panel Study which is a nationally representative dataset of Korean general population.¹⁷⁻¹⁹

We selected six variables (age, gender, rank at work, tenure as EMS provider, service area, and perceived staffing adequacy) as potential confounders. Age was coded into 5 categories (20-29, 30-34, 35-39, 40-44, and 45 years or more). Women are more likely to be targets of violence, and may be more likely to report depressive symptoms; however, it is unclear if women disproportionately experience workplace violence or depressive symptoms.²⁰ We classified all respondents as male or female. Job rank and tenure connote experience, and experienced EMS workers may be more skilled in de-escalation and other techniques used to stop violent individuals.²⁰ Accordingly, job rank was classified into four categories (sobang-sa, sobang-gyo, sobang-jang, sobang-wi). Tenure was grouped into three categories (1-3, 4-7, and 8 years or more). In Korea, because each regional local government area has their own budgets for safety and health of EMS providers, there could be different prevalence of workplace violence or depressive symptoms according to the service area. Therefore, EMS providers’ service area was selected as potential confounder and classified into four categories: Seoul, metropolitan city (ie, Busan, Daegu, Incheon, Gwangju, Daejeon, and Ulsan), province (ie, Gyeonggi-do, Gangwon-do, Chungcheongbuk-do, Chungcheongnam-do, Jeollabuk-do, Jeollanam-do, Gyeongsangbuk-do, Gyeongsangnam-do, and Jeju), and others (ie, Sejong and Changwon). Perceived staffing adequacy was assessed by asking whether the current staffing level is sufficient for duty, and categorized into two groups: sufficient (very sufficient, sufficient) and insufficient (very insufficient, insufficient, moderate).

2.3 | Data analysis

For comparing prevalence of depressive symptoms, physical violence, and verbal abuse across different groups, chi-square test was used. A Poisson regression model with robust error variance was applied to examine whether experience of workplace physical violence and verbal abuse were related to depressive symptoms after controlling for potential confounders. Given the high prevalence of depressive symptoms among study population (>10%), applying the rare disease assumption, odds ratios from logistic regression model would overestimate prevalence ratios in cross-sectional study.²¹ All covariates were included as categorical variables in the multivariable analyses. Results were presented as prevalence ratios (PRs) with 95% confidence intervals (CIs). All analyses were performed with STATA/SE version 13 (Stata Corp., College Station, TX).

3 | RESULTS

Table 1 shows the distribution of the study population and the prevalence of depressive symptoms, physical violence, and verbal abuse by each covariate. Overall, 21.5% (n = 422) reported depressive symptoms. Prevalence of depressive symptoms was higher among female EMS providers who were aged 45 or more (28.6%), sobang-wi (30.0%), had a tenure of 8 or more years (23.6%), worked in Seoul (26.6%), or perceived current staffing level as insufficient (22.2%). Experience of physical violence during the past 12 months was more prevalent among male EMS providers (20.3%) who were 30-34 years old (24.0%), sobang-gyo (22.0%), had a tenure of 4-7 years (21.9%), worked in Seoul (34.9%), or perceived current staffing level as insufficient (21.0%). Experience of verbal abuse during the past 3 months appeared to be more common among female EMS providers (71.0%) who 30-34 years old (66.4%), sobang-gyo (66.0%), had a tenure of 4-7 years (65.6%), worked in Seoul (67.0%), or perceived current staffing level as insufficient (63.0%).

The overall prevalence of workplace violence and distribution of organizational response to violence are displayed in Figure 1, describing how many victims of violence reported their experience and how many reporting employees received responses from their organization. Over the preceding 12 months, 20.0% (n = 394) of EMS providers experienced physical violence, and 20.6% (n = 81) of these respondents reported the experience to their organization. Among those who reported violence, 54.3% (n = 44) received an organizational response. 61.2% (n = 1,203) of EMS providers experienced verbal abuse over the preceding 3 months. However, only 6.6% (n = 79) of those respondents reported their experience to their organization. Among those who reported, 26.6% (n = 21) received an organizational response.

TABLE 1 Distribution of study population, depressive symptoms, physical violence, and verbal abuse by key covariates among EMS providers in South Korea (N = 1,966)

Characteristic	Distribution	Depressive symptoms over the past week		Physical violence over the past 12 mo		Verbal abuse over the past 3 mo	
	N (%)	N (%)	<i>P</i> -value ^a	N (%)	<i>P</i> -value ^a	N (%)	<i>P</i> -value ^a
Overall	1966 (100.0)	422 (21.5)		394 (20.0)		1203 (61.2)	
Gender			0.017		0.421		<0.001
Male	1697 (86.3)	349 (20.6)		345 (20.3)		1012 (59.6)	
Female	269 (13.7)	73 (27.1)		49 (18.2)		191 (71.0)	
Age (y)			0.016		0.055		<0.001
20-29	280 (14.2)	56 (20.0)		50 (17.9)		159 (56.8)	
30-34	550 (28.0)	119 (21.6)		132 (24.0)		365 (66.4)	
35-39	565 (28.7)	107 (18.9)		110 (19.5)		364 (64.4)	
40-44	267 (13.6)	53 (19.9)		53 (19.9)		152 (56.9)	
45 or more	304 (15.5)	87 (28.6)		49 (16.1)		163 (53.6)	
Job rank			0.029		0.308		0.004
Sobang-sa	795 (40.4)	176 (22.1)		160 (20.1)		478 (60.1)	
Sobang-gyo	626 (31.8)	114 (18.2)		138 (22.0)		413 (66.0)	
Sobang-jang	445 (22.6)	102 (22.9)		79 (17.8)		263 (59.1)	
Sobang-wi	100 (5.1)	30 (30.0)		17 (17.0)		49 (49.0)	
Tenure (y)			0.292		0.104		<0.001
1-3	666 (33.9)	138 (20.7)		116 (17.4)		356 (53.5)	
4-7	672 (34.2)	136 (20.2)		147 (21.9)		441 (65.6)	
8 or more	628 (31.9)	148 (23.6)		131 (20.9)		406 (64.7)	
Service area			0.478		<0.001		0.046
Seoul	109 (5.5)	29 (26.6)		38 (34.9)		73 (67.0)	
Metropolitan city	483 (24.4)	102 (21.3)		108 (22.5)		314 (65.4)	
Province	1318 (67.0)	281 (21.3)		239 (18.1)		778 (59.0)	
Others	59 (3.0)	10 (17.0)		9 (15.3)		38 (64.4)	
Perceived staffing adequacy			0.020		0.004		<0.001
Sufficient	226 (11.5)	35 (15.3)		29 (12.8)		107 (47.4)	
Insufficient	1740 (88.5)	387 (22.2)		365 (21.0)		1096 (63.0)	

^a*P*-value of the chi-square test comparing prevalence of depressive symptoms, physical violence, verbal abuse across different groups.

EMS providers' experiences of physical violence and verbal abuse were significantly associated with depressive symptoms even after adjusting for key confounders (Table 2). Generally, those who experienced physical violence had 1.73 times higher risk (95% CI 1.45, 2.06) of reporting depressive symptoms in the past week compared to those who did not experience physical violence. Also, compared to EMS providers who did not experience physical violence on the job, a significant association between physical violence and depressive symptoms was observed among respondents in "Experienced, not reported" (PR: 1.67, 95% CI: 1.37, 2.03) and "Experienced, reported, not responded by organization" (PR: 2.58, 95% CI: 1.75, 3.82) groups, but not for respondents

in the "Experienced, reported, responded by organization" group (PR: 1.45, 95% CI: 0.87, 2.41).

Experiencing work-related verbal abuse was associated with 1.66 times higher risk (95% CI 1.36, 2.02) of depressive symptoms, compared to those who did not experience verbal abuse (Table 2). In comparison to EMS providers who did not experience work-related verbal abuse, a significant association between verbal abuse and depressive symptoms was found among respondents in "Experienced, not reported" (PR: 1.59, 95% CI: 1.30, 1.94), and "Experienced, reported, not responded by organization" (PR: 3.07, 95% CI: 2.21, 4.27), but not for "Experienced, reported, responded by organization" (PR: 1.93, 95% CI: 0.94, 3.98) groups.

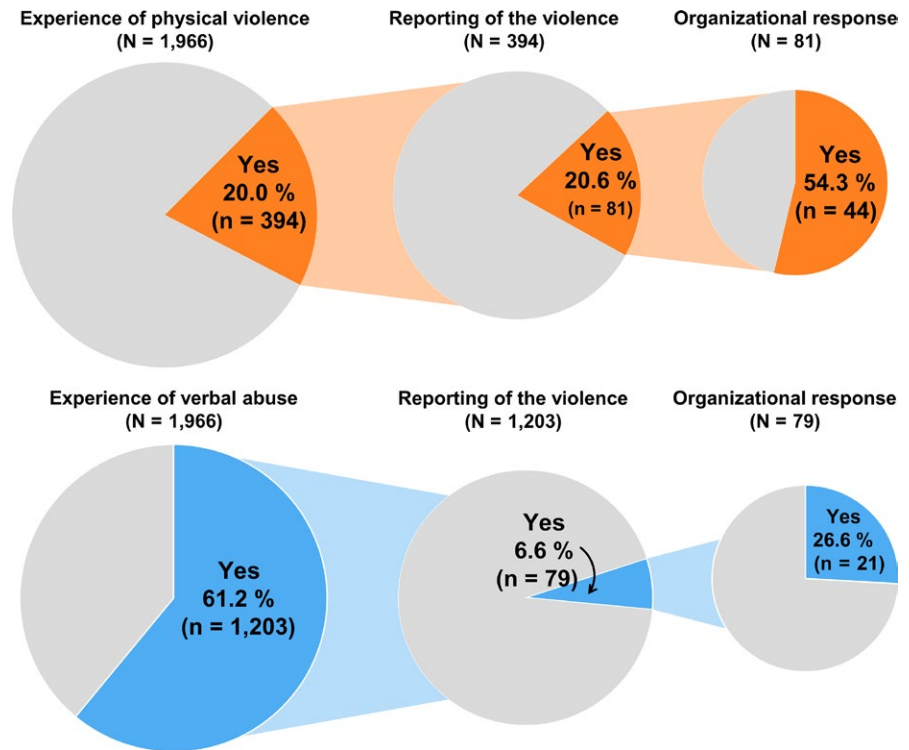


FIGURE 1 Experience, reporting, and organizational response for physical violence and verbal abuse among Korean EMS providers (N = 1,966)

4 | DISCUSSION

This study found that approximately 20% of EMS providers in South Korea experienced physical violence while on duty in the past 12 months, and 61% experienced verbal abuse in the preceding 3 months. The frequent exposure of EMS providers to violence is concerning, considering that their critical roles in assessing, treating, and preserving life of citizens in emergency situations. Studies indicate that experiencing work-related violence has negative consequence for the job performance and productivity of EMS workers.²²⁻²⁴ Furthermore, healthcare workers' behavior can be altered by aggression from patients and their relatives, and the resulting reduced communication level and less time spent with patients and their relatives can negatively affect patient outcomes.²⁵

Our findings suggest that EMS providers who experienced violence while on duty were more likely to report depressive symptoms after adjusting for potential confounders including tenure as EMS providers and service area. These results are consistent with prior studies of other healthcare workers.^{26,27} For example, Korean medical residents who experienced physical violence, verbal abuse, and sexual harassment showed higher risk of depressive symptoms than those who did not experience violence.²⁸ Similarly, experience of workplace violence by patients and their families was associated with depressive symptoms among healthcare workers in China²⁹ and Brazil.³⁰

We also found that EMS providers who experienced workplace violence but did not report to their organizations

had a higher prevalence of depressive symptoms than those who did not experience workplace violence. Previous studies interpreted this reaction in several ways. First, EMS providers may prefer not to report their experience of violence because they consider workplace violence as “part of the job” or as their failure to manage the situation.³¹ Second, victims may perceive that their organization would avoid responding to workplace violence,³² and that the reporting of violence would not change anything.³³⁻³⁵ These barriers could result in not reporting their experience of violence to the organization.^{20,36} Also, lack of dedicated staff responsible for responding to workplace violence could be another explanation, considering the fact that most of violence incidents against EMS providers were investigated by the police, although there should be a judicial police officer in each fire department.¹⁴

Notably, we found that organizational response may play a critical role in the association between workplace violence and depressive symptoms among the victims. A statistically significant association was observed only among the victims who did not get organizational response whereas statistically not significant association was observed among the victims who received organizational response for their report. The reason of reporting workplace violence might be asking for care and protection.³⁷ If organization did not response to victims' reporting of violence, EMS providers may think they did not get the protection they deserve and feel additional stress from the denial. In other words, lack of protection for victims of workplace violence could act as double-burden

TABLE 2 The role of organizational response in the association between workplace violence and depressive symptoms among EMS providers in South Korea (N = 1,966)

Workplace violence	Distribution	Prevalence of depressive symptoms	Adjusted ^a	
	N (%)	N (%)	PR	95% CI
Physical violence				
No	1572 (80.0)	295 (18.8)	1	Referent
Yes	394 (20.0)	127 (32.2)	1.73 ^{***}	1.45, 2.06
Stratified by organizational responses				
Not experienced physical violence	1572 (80.0)	295 (18.8)	1	Referent
Experienced, not reported	313 (15.9)	98 (31.3)	1.67 ^{***}	1.37, 2.03
Experienced, reported, not responded by organization	37 (1.9)	17 (46.0)	2.58 ^{***}	1.75, 3.82
Experienced, reported, responded by organization	44 (2.2)	12(27.3)	1.45	0.87, 2.41
Verbal abuse				
No	763 (38.8)	117 (15.3)	1	Referent
Yes	1203 (61.2)	305 (25.4)	1.66 ^{***}	1.36, 2.02
Stratified by organizational responses				
Not experienced verbal abuse	763 (38.8)	117 (15.3)	1	Referent
Experienced, not reported	1124 (57.2)	273 (24.3)	1.59 ^{***}	1.30, 1.94
Experienced, reported, not responded by organization	58 (3.0)	26 (44.8)	3.07 ^{***}	2.21, 4.27
Experienced, reported, responded by organization	21 (1.1)	6 (28.6)	1.93	0.94, 3.98

^aAdjusted for age, gender, job rank, tenure, service area, and perceived staffing adequacy.

^{***} $P < 0.001$.

of stress and lead to higher risk of depressive symptoms. However, few empirical studies were available to interpret our results. Future studies need to investigate the role of organizational response in stress response among victims of workplace violence.

This study has several limitations. First, due to the cross-sectional design of the study, we could not provide information about temporal order between workplace violence and depressive symptoms. Thus, we could not rule out the possibility of reverse causation. For example, EMS providers with depressive symptoms would have been more likely to have more sensitive perception about conflict situation and reported it as a violent event. Further, episode of depressive symptoms could make EMS providers perceive their organization's response as insufficient. Therefore, future studies using longitudinal design are needed to identify causal inference between workplace violence and depressive symptoms, which can control for unmeasured potential confounders including baseline mental health conditions. Second, because self-reported measurement was used for organizational response and detailed accounts of organizational response were not measured, what would

be executed as official reaction to violence toward EMS providers remains unexplained. Punishing the perpetrator, mental health consultation, and work schedule modification could be possible examples of organizational response for Korean EMS providers who experienced workplace violence.^{12,38,39} According to Korean Ministry of Public Safety and Security, since 2010 all ambulances in South Korea have been equipped with closed-circuit television to prevent and collect legal evidence of violence toward EMS providers.⁴⁰ Further, to reduce the additional burden of visiting the police station to seek a legal investigation, a special judicial police system was installed to enable independent legal action against perpetrators of violence toward EMS providers.¹¹ Future studies are necessary to investigate the actual process of how organizations officially respond to violent events at the workplace. Third, measuring workplace violence based on self-report might lead to recall bias such that EMS providers with current episode of depressive symptoms might be more likely to remember their violent experience during reference period. There also could be selection bias, regarding that there was 14% of missing data at depressive symptoms and experience of workplace violence

among those who completed survey. For example, respondents with depressive symptoms or severe experience of abuse might avoid the topic by not responding the question, which could lead to underestimation of association between workplace violence and depressive symptoms.

Nevertheless, several strengths of this study should be noted. First, to our knowledge, this is first report of an association between workplace violence and depressive symptoms among EMS providers in South Korea, and the role of organizational response in these associations. Second, we analyzed a nationwide dataset for EMS providers in Korea, which included approximately 31% of total EMS providers in Korea. Although random sampling was not performed, this is the largest dataset available to investigate health influence of workplace violence among Korean EMS providers. Additionally, when we checked representativeness of study population by comparing the distribution of gender, job rank, and service area with available administrative dataset, survey participants were found to be representative in terms of gender and job rank (Appendix 1).

This study, using a nationwide dataset for the Korean EMS provider population, showed that workplace physical violence was associated with depressive symptoms after controlling for confounders. These associations were modified by organizational response, in which EMS providers who did not receive active organizational response to reporting of workplace violence had the highest prevalence of depressive symptoms. The finding implies that organizational-level support should be provided to victimized-EMS providers to mitigate influence of workplace violence on mental health problem.

ACKNOWLEDGMENTS

This study was supported by the National Human Rights Commission of the Republic of Korea. This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2018S1A5B6075594).

DISCLOSURE

Approval of the research protocol: N/A. *Informed consent:* Informed consent was obtained from the respondents prior to the study participation. *Registry and the registration no. of the study/trial:* This study was approved by the Institutional Review Board of Korea University (1040548-KU-IRB-15-110-A-1). *Animal studies:* N/A.

CONFLICT OF INTEREST

All the authors declare no Conflict of Interests for this article.

AUTHOR CONTRIBUTIONS

Ji-Hwan Kim conceptualized the study, performed statistical analysis for the study, and led the writing of the manuscript. Nayeong Lee and Ja Young Kim participated in data collection and writing of the manuscript. Soo Jin Kim participated in data collection. Cassandra Okechukwu contributed critical revision for manuscript. Seung-Sup Kim conceptualized the study and led the wiring of the manuscript.

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How to cite this article: Kim J-H, Lee N, Kim JY, Kim SJ, Okechukwu C, Kim S-S. Organizational response to workplace violence, and its association with depressive symptoms: A nationwide survey of 1966 Korean EMS providers. *J Occup Health.* 2019;61:101–109. <https://doi.org/10.1002/1348-9585.12025>

APPENDIX 1

DISTRIBUTION OF ADMINISTRATIVE DATASET AND STUDY POPULATION BY GENDER, JOB RANK, AND SERVICE AREA AMONG EMS PROVIDERS IN SOUTH KOREA

Characteristic	Administrative dataset (n = 8,134)		Study population (n = 1,966)		P-value
	N	%	N	%	
Gender					0.479
Male	7070	86.9	1697	86.3	
Female	1064	13.1	269	13.7	
Job rank					0.029
Sobang-sa	3264	40.1	795	40.4	
Sobang-gyo	2386	29.3	626	31.8	
Sobang-jang	2083	25.6	445	22.6	
Sobang-wi	401	4.9	100	5.1	
Service area					<0.001
Seoul	1211	14.9	109	5.5	
Busan	330	4.1	39	2.0	
Daegu	336	4.1	32	1.6	
Incheon	355	4.4	45	2.3	
Gwangju	193	2.4	156	7.9	
Daejun	194	2.4	103	5.2	
Ulsan	150	1.8	105	5.3	
Sejong	29	0.4	20	1.0	
Changwon	166	2.0	39	2.0	
Gyeonggi-do	1227	15.1	517	26.3	
Gangwon-do	564	6.9	160	8.1	
Chungcheongbuk-do	378	4.6	29	1.5	
Chungcheongnam-do	430	5.3	139	7.1	
Jeollabuk-do	474	5.8	199	10.1	
Jeollanam-do	547	6.7	39	2.0	
Gyeongsangbuk-do	715	8.8	60	3.1	
Gyeongsangnam-do	690	8.5	112	5.7	
Jeju	145	1.8	63	3.2	

P-value of the Chi-square test comparing distribution of gender, job rank, and service area across different dataset.