The Relation between Worker Protection System in the Interpersonal Service and Workplace Violence as Well as Workers' Depression

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Abstract

Background: We aimed to confirm the effect of interpersonal service worker protection system on workplace violence and depression and to determine the relationship among the protection system, workplace violence, and depression.

Methods: Self-reporting survey was conducted for approximately a month beginning on 2 March 2020, among members selected using the convenience sampling method from seven labor unions in South Korea to which interpersonal service workers belonged. The questionnaire consisted of questions regarding the subjects' general characteristics, worker protection system, workplace violence, and depression. Overall, 1,541 workers participated in this study.

Results: The basic model was used to test the relationship between the protection system and depression, with a mediating effect of workplace violence. Three of the hypothesized paths were significant ($P<.001$), but the basic model did not fit the data. In the revised model, the direct path from the protection system to depression was deleted. Path coefficient of the direct effect of the protection system on violence was -0.05, the direct effect of the violence on depression was 0.77, and the indirect effect of the protection system on depression was -0.04. The fit of this model was acceptable.

Conclusion: Organizational interventions have an indirect effect on reducing depression by preventing workplace violence; however, there was no direct effect on reducing the depression of the workers. These results justify the need to invest in strengthening workplace protection systems for the interpersonal service workers.

Keywords: Interpersonal service; Worker; Protection system; Violence; Depression

Introduction

According to International Labor Organization 2019 data, the number of workers in the service industry accounted for approximately 56% of all workers, and it has been steadily increasing from

43% in 1991 (1). Recent growth of the service industry and increased demand of the consumers has led to a continuous increase of interpersonal service, including face-to-face, non-face-to-face, and home visits.

Interpersonal service workers are likely to experience violence during the process of selling products or providing services while serving clients, patients, passengers, etc. 55.8% of workers experienced violence by clients among hotel and casino workers (2), and the verbal violence experience rate of nurses was 70% or higher (3). This workplace violence has negative effects on workers' mental (depression, anxiety, etc.), physical (headache, dizziness, gastrointestinal disorder, sleep disorder, muscle pain, etc.), emotional (anger, nervous, fear, etc.), psychological (guilt, self-resentment, loss of confidence, etc.), and social health (social isolation, disturbed family life, etc.) (4).

As social issue about workplace violence on interpersonal service workers is growing, social demand for protection has increased. Accordingly, in Oct 2018, the government newly established a mandatory provision for employers regarding health protection for the interpersonal service workers under the Occupational Safety and Health Act. The new provision includes pre- and post-violence protection measures for interpersonal service workers, including training for workers on dealing with violence as well as providing rest and other advantages to workers who have experienced violence by clients. The intention of the act was to increase the effectiveness of protection by imposing fines on employers when they fail to comply with the obligation. However, interpersonal service worker protection measures are not properly adhered to in the workplace (5). Now it has been about 2 years since its legalization; hence, it is necessary to check its actual effects on the workers. This research was performed to evaluate whether the interpersonal service worker protection system is effective in reducing workplace violence and protecting the health of workers. In this research, the researchers specifically focused on depression among the workers. Depression is an important issue that many companies are investing in since it increases absence from work and lowers achievement, resulting in a significant loss for the company (6).

The goal of this research was to study the effect of the interpersonal service worker protection system on workplace violence and workers' health and confirm the relationship among the protection system, workplace violence, and depression.

Methods

Research design

This research was based on a cross-sectional design that analyzed self-reporting surveys from selected interpersonal service workers in South Korea to understand the effect of the interpersonal service worker protection system on workplace violence and depression. We selected the workers using the convenience sampling method.

Research subject and method of data collection

Research subjects were workers providing services to customers such as sales, business, and electric appliance repair service, call center staff, and medical and social welfare facility workers who understood the purpose and intention of this research and provided written consents for participation.

Data collection was done for 28 d from Mar 2, 2020 to Mar 30, 2020 upon approval of the Institutional Review Board from the Institutional Ethical Board of C University (MC21QISI0022).

After explaining the research purpose and intention and receiving consent from the managers of seven labor unions to which the interpersonal service workers belonged, the survey forms were distributed to and collected from the members through the managers. About 10% of all union members, or 1,550, responded to the survey. Among them, survey data from 1,541 respondents excluding incomplete responses were used for this analysis.

Research tool

To confirm the general characteristics of the research subjects, sex, age, position, educational level, working years, wage, and working hours were investigated. According to the Labor Standards Act, domestic statutory working hours are 40 h per week, and if overtime is required, it cannot exceed 52 h per week. Taking into account this regulation, working hours are classified as follows: less than 40 h, 40 h, 41−52 h, and more than 53 h.

According to Korean Occupational Safety and Health Act, the interpersonal service worker protection system was divided into precautionary and post measures. Precautionary measure refers to strategies that foster a culture of prevention of workplace violence and increase the level of worker response to violence. For example, right to suspend the work, extra day-off for the emotional labor, operation of worker participation system, in-company communication channels, control system of troubled customers, operating healing program for stress-relieving, etc. Post measures are strategies to minimize the health problems of victims of violence, such as regular consultation by professional counselors, prohibition of disadvantages for workers in conflict with clients, and support for complaints, accusations, and claims against client violence. In this study, to understand the protection systems for interpersonal service workers, we investigated whether protection systems, such as compensation for emotional labor, right to suspend the work, worker participation system, securing communication channels, installation of an ombudsman, and control system for troubled customers, and installation of dedicated staff for violence prevention, were introduced in the company. A number of protection systems introduced by the companies were utilized in this analysis.

In order to determine workplace violence, experience regarding the types of violence suffered from clients (physical violence, verbal violence, sexual harassment, threat or intimidation, undesired sexual interest, and insulting behavior) during the last 1 year was investigated. For analysis, we used the total number of types of experienced violence.

The depression level of the subjects was measured using the Korean version of Patient Health Questionnaire-9 (PHQ-9). PHQ-9 is a diagnostic tool to evaluate depressive disorder (Major Depressive Disorder; MDD), which was developed based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (7). It consists of nine questions, and the total score ranges between 0 and 27. In line with previous research (8), it was determined as a depressive disorder if the score was ≥5, and the depression score was used for the path analysis. The reliability of the questions in this study was high (Cronbach's alpha = .87).

Data analysis

Path analysis was conducted to analyze the direct and indirect effects of the interpersonal service worker protection system on workplace violence and depression. The relationships among the variables were assumed based on previous researches. In the path analysis, the maximum likelihood function was used to estimate the parameters, and the suitability of the models was measured using CFI (Comparative Fit Index), TLI (Tucker-Lewis index), RMSEA (Root Mean Squared Error of Approximation), and SRMR (Square Root of Mean Residual). Generally, it was judged to be suitable when CFI and TLI were >0.9, RMSEA <0.08, and SRMR <0.05 (9).

From the normality verification results for protection system, workplace violence, and depression using skewness and kurtosis, the skewness absolute value was <3 and kurtosis absolute value was <10, confirming normal distribution (10). In addition, the result of review confirming the existence of multiple collinearity among the variables showed that the Variance Inflation Factor was <10, suggesting that there was no multicollinearity. Path analysis was conducted using SPSS AMOS 26 analysis program to investigate the relationship among the protection system, workplace violence, and depression.

Results

General characteristics of the research subjects

The general characteristics of research subjects are given in Table 1. 64.0% of the subjects were female, the average age was 39.9 yr (S.D. 9.71), and the staff level of the workers was dominant at 89.8%. More than half were university graduates, and the average number of working years was 9.1 yr (S.D. 6.73). The average monthly wage of the subjects was 2.622 million KRW (Korean Won) (S.D. 82.48), and the average weekly working time was 45.6 h (S.D. 7.91).

Table 1: General characteristics of the subjects (N=1,541)

Category		n (%) or mean±S.D.
Sex	Male	555 (36.0)
	Female	986 (64.0)
Age	29 or less	263 (17.1)
	30~39-year-old	490 (31.8)
	40~49-year-old	500 (32.4)
	50 or higher	288 (18.7)
	mean±S.D	39.9±9.71
Position	Staff	1,384 (89.8)
	Manager	157 (10.2)
Educational level	Middle school graduate or less	9 (0.6)
	High school graduate	686 (44.5)
	University graduate	816 (53.0)
	Graduation school or higher	30 (1.9)
Working years	Less than 1 year	52 (3.4)
	1~5 yr	487 (31.6)
	5~10 yr	385 (25.0)
	10~15 yr	287 (18.6)
	15~20 yr	199 (12.9)
	20 yr or more	131 (8.5)
	mean±S.D	9.1±6.73
Monthly average wage	Less than 2 million Korean Won	229 (14.9)
	2~3 million Korean Won	785 (50.9)
	3~4 million Korean Won	414 (26.9)
	4 million Korean Won or more	113 (7.3)
	mean±S.D	262.2±82.48
Weekly average working hours	Less than 40 h	69 (4.5)
	40 h	558 (36.2)
	41~52 h	736 (47.8)
	53 h or more	178 (11.6)
	mean±S.D	45.6±7.91

Research subjects' experiences of the protection system, workplace violence, and depression

The protection system, workplace violence, and depression experienced by the subjects are furnished in Table 2. The research subjects are found to have benefited from an average of 2.6 types (S.D. 3.77) of the protection system. The most experienced protection system was the extra pay for the emotional labor (30.6%), followed by extra day-off for the emotional labor (26.2%), the right to suspend the work (21.0%), and operation

of worker participation system (20.5%). 78.2% of the workers experienced workplace violence during the last 1 year, and the most common type of violation was verbal violence (73.3%). The subjects responded that they experienced insulting behaviors (60.3%), threat or intimidation (45.2%), sexual harassment (27.3%), undesired

sexual interest (20.6%), and physical violence (15.2%). Among the six types, the research subjects experienced an average of 2.4 (S.D 1.82) types of workplace violence. Furthermore, 31.3% of the workers showed symptoms of depression, and the average depression score was 7.7 (S.D. 5.61).

Table 2: Worker protection system, workplace violence, depression

Variables	n (%) or mean ± S.D.
Protection system	
Extra pay for the emotional labor	472 (30.6)
Extra day-off for the emotional labor	404 (26.2)
Right to suspend the work	324 (21.0)
Operation of worker participation system	316 (20.5)
In-company communication channels	265 (17.2)
Treatment and consulting support for the health damage by client violence	242 (15.7)
Installation of an ombudsman	233 (15.1)
Written policy of health protection for client service workers	220 (14.3)
Improvement of working conditions by rest installing facilities, welfare facilities, etc.	215 (14.0)
Control system of troubled customers	200 (13.0)
Operating healing program for stress-relieving	188 (12.2)
Arrangement of dedicated department and manpower for client service workers protection	167 (10.8)
Inspection on the actual condition of emotional labor	166 (10.8)
Prohibition of disadvantages for workers in conflict with clients	153 (9.9)
Support for complaints, accusations, and claims against client violence	119 (7.7)
Prohibition of disadvantages for workers when materials necessary for complaints and prosecutions are requested	119 (7.7)
Regular consultation by professional counselors	112 (7.3)
Compilation of a budget for client service workers protection	89 (5.8)
Average number of Introduced protection system	2.6±3.77
Experience rate by violence type	
Physical violence	235 (15.2)
Verbal violence	1,129 (73.3)
Sexual harassement	421 (27.3)
Threat or intimidation	697 (45.2)
Undesired sexual interest	317 (20.6)
Insulting behavior	929 (60.3)
General violence experience*	1,205 (78.2)
Average number of experienced violence	2.4 ± 1.82
Depression	
Yes	482 (31.3)
No	1,059 (68.7)
Average depression score	7.7 ± 5.61

*Who had experienced violence of at least one type during the past 1year
SD: standard deviation

Effect of protection system on workplace violence and depression

First, based on the previous literature, the basic research model was composed on the hypothesis that the protection system has a direct effect on both workplace violence and depression and that the protection system has an indirect effect on depression via workplace violence (Fig. 1). Since, sex, age, working years, and working hours of the research subjects could affect workplace violence and depression (11,12), path analysis was conducted after adjusting these variables. This model had an incremental fit index of CFI=0.00 and TLI=-388.98 and absolute fit index of RMSEA=3.45 and SRMR=0.00, demonstrating that it was not appropriate to explain the data (Table 3).

In the revised model, the direct path from the protection system to depression was deleted (Fig.1). The fit of the revised model was CFI=0.99 and TLI=0.81 and absolute fit index was RMSEA=0.08 and SRMR=0.00, showing that it was at an acceptable level (Table 3). The path coefficient of the revised model was -0.05 for the direct effect of the protection system on violence (P<.01), 0.77 (P<.001) for the direct effect of violence on depression, and -0.04 (P<.01) for the indirect effect of the protection system on depression (Table 4). In other words, if the protection system increased by 1, the experienced violence type decreased by 0.05. If the experienced violence type increased by 1, the depression score increased by 0.77. If the protection system increased by 1, the depression score was reduced by 0.04 after decreasing the workplace violence.
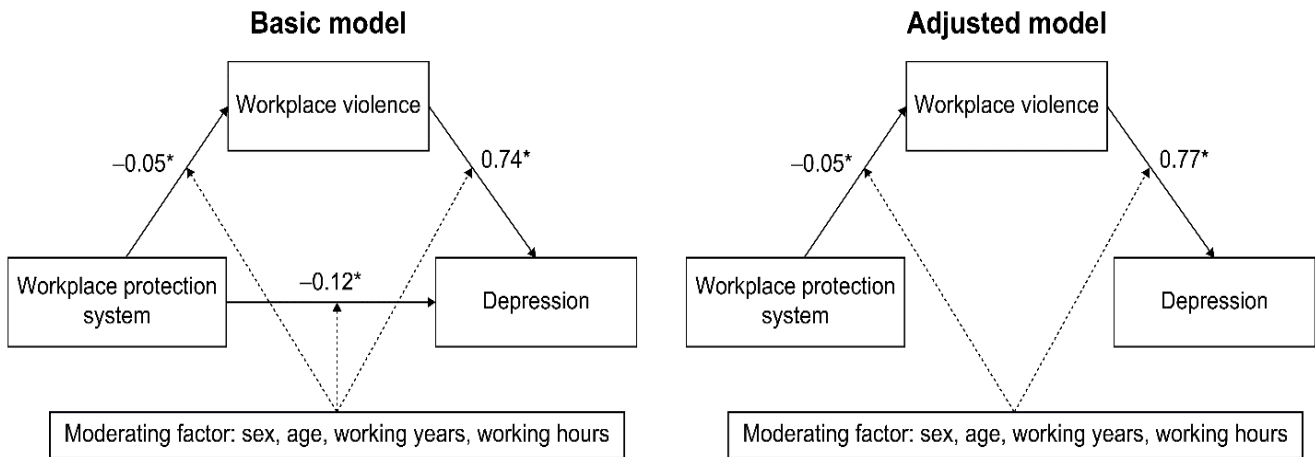

Fig. 1: Basic and revised model *P<.001

Table 3: Model fit

Category	χ²	CFI	TLI	RMSEA	SRMR
Basic model	36741.33	0.00	-388.98	3.45	0.00
Revised model	9.9	0.99	0.81	0.08	0.00

Table 4: Path coefficients between protection system, workplace violence and health

Path	Basic model				Revised model			
	Estimate	S.E.	C.R.	P	Estimate	S.E.	C.R.	P
Protection system →Violence	-0.05	0.01	-7.14	<.001	-0.05	0.01	-4.06	<.001
Violence→ Depression	0.74	0.03	29.09	<.001	0.77	0.08	10.16	<.001
Protection system→ Depression	-0.12	0.01	-16.26	<.001				

Note: a Non-standardized path coefficient.

Discussion

The main results confirmed in this research are as follows. First, the interpersonal service worker protection system was found to reduce workplace violence. The violence prevention program such as violence prevention education and violence response team decreased the frequency of violence (13-15). Violence prevention program seems to reduce violence by promoting workers' awareness of and coping skills of dangerous situations and raising customers' awareness of violence prevention (14-16). Conversely, education and training can improve workers' knowledge and self-efficacy in the short term but do not directly affect workplace violence (17,18). Moreover, very few evidence has been reported regarding pre-event and event phase's organizational intervention to prevent and reduce workplace violence (19). A well-designed research, such as RCT, is required for improving the evidence base for organizational intervention, such as workplace protection systems.

Second, the violence of clients was found to aggravate the depression of interpersonal service workers. Similar to the result of this study, many previous studies have suggested that depression is one of the results of workplace violence (4,20). Interpersonal service workers make every effort for their clients and organizations, but experiencing violent situations, such as accusations or abuse, can lead to the development of serious psychological imbalances and negative emotions

(21). However, the effect of workplace violence on depression varies depending on the measured period and sex. Men experienced a longer period of depression due to workplace violence when compared to women (22).

The third main result of this result is that the protection system does not directly reduce the depression of workers but indirectly decreases depression by reducing violence. Our results complement the existing knowledge regarding worker protection systems being negatively correlated to workers' depression (23) by demonstrating that workplace violence has a complete mediating effect in the negative correlation between the worker protection system and depression. According to the ecological model, workplace violence is a result of personal, organizational, and social factors, and the results of workplace violence appear at these three levels (24). Therefore, it is necessary to approach the intervention for workplace violence and its result at the personal, organizational, and social levels. According to a previous research, depression management for interpersonal service workers was more effective when personal interventions such as consulting and education were used rather than using organizational and social interventions such as redesigning jobs and creating a workplace culture (25). In the meta-analysis research, which analyzed 19 studies from five Asian countries including Korea (26), personal interventions such as exercise (27), yoga (28), and relaxation and mindfulness exercise (29) reduced workers' depression,

but organizational intervention was not effective. However, there is also a result that the organizational intervention is more effective than personal intervention in managing work-related stress by increasing the participation of workers to promote internal change within a company (30). The protection policy that was investigated in this research was mostly organizational interventions, such as introducing a right to suspend the work, an ombudsman, and a worker participation system. The organizational and social interventions for workers' healthcare could take a longer time to show effect than personal intervention. This investigation was conducted less than 2 years after legalization of the organizational intervention for interpersonal service workers; hence, it could be difficult to clarify the relationship between organizational intervention and reduction of workers' depression.

The limitations of this research are as follows: First, this research is based on a cross-sectional design. The temporal relationship among the protection system, workplace violence, and depression is unclear. That is, it is hard to confirm a causality. Second, the number of subjects involved in this research was only 0.02% of the total interpersonal service workers in Korea. Therefore, it is hard to claim that the sample is representative. Thus, it is difficult to generalize the results of this research. Third, in this research, workplace violence was measured based on the number of types of violence that workers experienced. However, it could be more appropriate to use frequency of violence instead of types of violence to measure properly the level of workplace violence.

Despite these limitations, this research has profound implications. First, this rare study demonstrates the effect of the obligations of the employers on the interpersonal service workers' health protection after it was legalized in Korea in Oct 2018. Second, this research contributes to expanding the current knowledge by proving that the organizational intervention for violence prevention, such as fostering workplace culture and encouraging workers' participation, helps in re-

ducing workplace violence. It is not directly linked to alleviating workers' depression. To investigate the relationship between the protection system and the decreased depression of workers, a study design that considers sufficient time for the effectiveness of the organizational intervention to be exercised is required.

Conclusion

The workplace protection system for interpersonal service workers directly affects the prevention of workplace violence and indirectly relieves workers' depression. Therefore, occupational health professionals should recognize that workplace protection systems are indeed effective in protecting workers' health and preventing workplace violence and should thereby advise employers to fulfill their legal obligations.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interest.

References

1. The World Bank (2021). Employment in services (modeled ILO estimate). Available from: https://data.worldbank.org/indicator/SL.SRV.EMPL.ZS
2. Byun CB, Jung-Choi K, Cho Y, Paek D (2009). Depressive symptoms of workplace violence exposed subjects in Korea. *Korean J Occup En-*

viron Med, 21: 314-23.

3. Chang HE, Park MY, Jang H, Ahn S, Yoon HJ (2019). Relationships among demands at work, aggression, and verbal abuse among registered nurses in South Korea. *Nurs Outlook*, 67: 567-77.

4. Kahsay WG, Negarandeh R, Nayeri ND, Hasanpour M (2020). Sexual harassment against female nurses: A systematic review. *BMC Nurs*, 19: 1-2.

5. Kim SW (2019). A Study on the context of introduction, interpretation, and revision of the Article 26-2 of the Occupational Safety and Health Act - for the settlement and advancement of general regulation for protection of emotional labor workers. *Public Interest and Human Rights*, 19: 121-61. [Korean]

6. Bond GR, Lerner D, Drake RE, Reidy C, Choi J (2019). Work-focused interventions for depression: final report. U.S. Department of Health and Human Services. Available from: https://aspe.hhs.gov/basic-report/work-focused-interventions-depression-final-report

7. Spitzer RL, Kroenke K, Williams JB, Patient Health Questionnaire Primary Care Study Group, Patient Health Questionnaire Primary Care Study Group (1999). Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *JAMA*, 282: 1737-44.

8. Williams JR, Hirsch ES, Anderson K, et al. (2012). A comparison of nine scales to detect depression in Parkinson disease: which scale to use? *Neurology*, 78: 998-1006.

9. Hair JF, Black WC, Babin BJ, Anderson RE (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson Education, Upper Saddle River, NJ, 664-72.

10. Kline RB (2015). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press, New York, NY, 74-7.

11. Lee HE, Kim HR, Park JS (2014). Work-related risk factors for workplace violence among Korean Employees. *J Occup Health*, 56: 12-20.

12. Park M, Cho SH, Hong HJ (2015). Prevalence and perpetrators of workplace violence by nursing unit and the relationship between violence and the perceived work environment. *J Nurs Scholarsh*, 47: 87-95.

13. Dilman Y (2015). Code green for workplace violence: EB72. *Crit Care Nurse*, 35: e34-e35.

14. Guay S, Goncalves J, Boyer R (2016). Evaluation of an education and training program to prevent and manage patients' violence in a mental health setting: a pretest-posttest intervention study. *Healthcare*, 4: 49.

15. Fernandes CMB, Raboud JM, Christenson JM, et al. (2002). The effect of an education program on violence in the emergency department. *Ann Emerg Med*, 39: 47–55.

16. Arnetz JE, Arnetz BB (2000). Implementation and evaluation of a practical intervention programme for dealing with violence towards health care workers. *J Adv Nurs*, 31: 668-80.

17. Geoffrion S, Hills DJ, Ross HM, et al. (2020). Education and training for preventing and minimizing workplace aggression directed toward healthcare workers. *Cochrane Database Syst Rev*, 4: CD012662.

18. Yang YJ, Kim JH (2020). Effects of hospital-based violence-prevention and coping programs on nurses' violence experience, violence responses, self-efficacy, and organizational commitment. *J Korean Acad Nurs Adm*, 26: 550-62.

19. Spelten E, Thomas B, O'Meara PF, Maguire BJ, FitzGerald D, Begg SJ (2020). Organisational interventions for preventing and minimising aggression directed towards healthcare workers by patients and patient advocates. *Cochrane Database Syst Rev*, 4: CD012662.

20. Hanson GC, Perrin NA, Moss H, Laharnar N, Glass N (2015). Workplace violence against homecare workers and its relationship with workers health outcomes: a cross-sectional study. *BMC Public Health*, 15: 1-3.

21. Tang FC, Li RH, Huang SL (2016). The association between job-related psychosocial factors and prolonged fatigue among industrial employees in Taiwan. *PLoS One*, 11: e0150429.

22. Einarsen S, Nielsen MB (2015). Workplace bullying as an antecedent of mental health problems: a five-year prospective and representative study. *Int Arch Occup Environ Health*, 88: 131-42.

23. Hur YJ, Kim HY, Lee SM (2019). The relationship between workplace violence, depression, burnout, subjective health status, job and life satisfaction of physical therapists in South Korea. *Phys Ther Rehabil Sci*, 8: 234-41.

Available at: http://ijph.tums.ac.ir

24. Johnson SL (2011). An ecological model of workplace bullying: A guide for intervention and research. *Nurs Forum*, 46: 55-63.
25. Jung MH. Effect of a workplace-based management program for emotional labor workers among sales workers [PhD thesis]. Graduate School of Public Health, the Catholic University of Korea, South Korea; 2015.
26. Lau RW, Mak WH (2017). Effectiveness of workplace interventions for depression in Asia: A meta-analysis. *Sage Open*, 7: 2158244017710293.
27. Ikenouchi-Sugita A, Yoshimura R, Sugita K, Hori H, Yamada K, Sakaue M, et al. (2013). The effects of a walking intervention on depressive feelings and social adaptation in healthy workers. *JUOEH*, 35: 1-8.
28. Song Y, Lindquist R (2015). Effects of mindfulness-based stress reduction on depression, anxiety, stress and mindfulness in Korean nursing students. *Nurse Educ Today*, 35: 86-90.
29. Tsang HW, Cheung WM, Chan AHL, Fung KM, Leung AY, Au DWH (2015). A pilot evaluation on a stress management programme using a combined approach of cognitive behavioural therapy (CBT) and complementary and alternative medicine (CAM) for elementary school teachers. *Stress Health*, 31: 35-43.
30. Richardson KM, Rothstein HR (2008). Effects of occupational stress management intervention programs: a meta-analysis. *J Occup Health Psychol*, 13: 69.