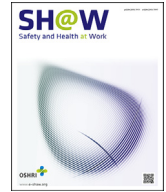




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Case Report

The Mental Health and Occupational Characteristic of Horse Stable Hand Workers in Korea

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ABSTRACT

The horse stable hand workers are one of the most important occupations in horse-racing industry. However, suicide problem of the horse stable hand workers in Korea has raised the necessity of new study on how these workers experience mental health problems such as occupational stress and depression in organizational situation. Therefore, this study investigated the occupational stress and depression level of the horse stable hand workers and identified the structural relationship in the horse-racing industry through a detailed interview. A total of 207 horse stable hand workers participated in this study, and occupational stress and depression level were surveyed using the Korean Occupational Stress Scale (KOSS) and Korean version of the Center for Epidemiologic Studies-Depression Scale (CES-D). The results of this study showed that the occupational stress level of horse stable hand workers was higher than the median of Korean population. The significant difference in occupational stress among the detail job grade was also identified. In addition, 34% of the horse stable hand workers showed high risk of depression, and job demand, organizational system, and inappropriate compensation as the subfactors of occupational stress were showed to mainly affect depression. Although there are some limitations according to the field survey, this study also has significant meaning in that it identifies the relationship between the occupational characteristics of the horse stable hand workers and the mental health. It will be necessary to study the diverse organizational situation and individual mental health for new occupations.

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1. Introduction

Workers in many organizations are exposed to the risk of mental health problems. They are exposed to not only highly intensive stress but also chronic stress, which may cause repetitive psychological or physical symptoms [1]. Relating to such mental health problems of many workers, it is notable that some horse stable hand workers of a horse-racing track in Korea committed suicide one after another in 2017 (Naver news in Korea, 09.26.2017).

These suicide incidents drew much public attention because it was totally a different job area unlike manufacturing, constructions, services that had been already known to be common occupation area, or intensively stressful occupation areas such as soldiers, firefighters, police officers, etc. In addition, it was also difficult to search the existing research related to how these workers have been released to the stressful organizational situation by their

organizational structure containing the individual level of occupational stress in horse-racing industry.

According to the advance research, soldiers are known to be under most intensive occupational stress, facing more mental health problems than others. Nearly 30% are suffering from psychiatric problems due to the posttraumatic stress from war, and many research works have reported higher suicide rate among soldiers [2].

Workers handling emergency situations, including emergency medical workers or firefighters, are also reported to be frequently exposed to intensive stress, with more than 80% of harm rate from natural disasters or man-made disasters [3]. Rothberg and Wright [4] also conducted research on the relation between occupational stress and mental health problems of police officers by subdividing the level of stress experience (e.g., suppressing the violent, injury, death, etc.) and observing on what level of stress experience do

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Table 1
Demographics of participants

Characteristics		Frequency
Total		207 (100.0%)
Gender	Male	207 (100.0%)
	Female	0 (0.0%)
Age	Under 20s	4 (100.0%)
	20s	80 (80.8%)
	30s	78 (66.7%)
	40s	36 (42.4%)
	50s	8 (19.0%)
Marriage	Single	118 (76.6%)
	Married	87 (45.8%)

they show mental health problems. In fact, Phelps et al [5] mentioned that the more one is exposed to stress incidents, the more he/she tends to show mental health problems.

Representative occupations in the Korean horse-racing industry are horse trainers, jockeys, and horse stable hand workers, among others, and the Korean Racing Authority (KRA) is in charge of supervising and managing these occupations. Horse stable hand workers play a significant role in this industry in that they are engaged in a wide range of horse-racing business from caring the racing horses, such as training, feeding, cleaning the stable, health check, bathing, health management, and hoof management, to preparing the horse for racing, including registration of race entry, supporting of blood collection for drug test, weight and equipment check, as well as escorting horses to the paddock for viewing the audience and further to the race track.

The job grade of horse stable hand workers in Korea is subdivided into senior assistant horse trainer, junior assistant horse trainer, assistant trainer apprentice, and general horse workers based on one's experience, and one may eventually be promoted to a horse trainer after taking a series of training courses and tests to be in charge of overall management and supervision of horses. Out of total horse trainers in the KRA Seoul, an average of 50% have the experience of horse stable hand workers in their career path (World of Jobs, Navercast).

Reviewing the advance research, it was not easy to find studies on the workers directly involved in the management of horses, such as horse stable hand workers. In fact, although there have been many studies on the horse itself or on the relationship between human and horses, including a research work on the perception of horses' action and emotions [6] as well as on the stress management of horses [7], little academic attention have been paid to the safety and health aspect of the workers in the horse-racing industry. The recent incidents related to the Korean horse stable hand workers, however, brought about the reason to study on the matters such as the affect of these workers' occupational stress on their mental health, e.g., depression, as well as on how the dynamics of the horse-racing industry affects the mental health of the related workers.

Against this backdrop, this research, taking a case report format, measured the level of occupational stress and depression of the horse stable hand workers in the race track of the recent suicide incident while understanding the structure of Korean horse-racing industry via a detailed interview, aiming at finding the correlation between the two.

2. Methods

2.1. Participants

This study was conducted on 207 horse stable hand workers in the horse-racing track located in one region of the Republic of

Korea. All participants were male, with age demographics ranging from 20s and under (84 persons), 30s (78 persons), 40s (36 persons), to 50s and over (8 persons). In terms of marital status, 118 participants were married, while the rest 87 were not married. More detailed demographic information of the participants is shown in Table 1.

2.2. Materials

This study used the Korean Occupational Stress Scale (KOSS) and Korean version of the Center for Epidemiologic Studies-Depression Scale (CES-D). The KOSS consists of 43 questionnaires measuring the subfactors of physical work environment, job demand, job autonomy, relationship conflict, job insecurity, organizational system, inappropriate compensation, and organizational culture [8], with a higher score meaning higher occupational stress [9]. Cronbach's α of this study was .939.

Korean CES-D is a scale aimed at measuring the level of depression of workers, composed of a total of 20 questionnaires [10]. The subfactors are depressive emotion, positive emotion, sense of relationship failure, and physical weakness, with a higher score meaning more severe depression. A score of 16 and above can be determined as probable depression, with a score of 25 and above as definite depression [11]. Cronbach's α of this study was .944.

2.3. Procedure

A survey was carried out in August 2017 during the special inspection by the Korean government for the purpose of understanding the level of occupational stress and depression of horse stable hand workers. The survey sheets were handed out to the stable hand workers of each horse stable accompanied by an official from their labor union. The participants were asked to complete the sheets during their break, and the researchers collected the survey sheets in person. Also, an interview with horse stable hand workers and horse trainers was carried out.

2.4. Analysis

To understand the level of overall occupational stress of horse stable hand workers, scores of each subfactor of the KOSS were converted as follows and compared with that of the Korean worker median. One-way analysis of variance was applied to analyze the difference in the level of occupational stress and depression (dependent variables) by job grade of horse stable hand workers (senior assistant horse trainer, junior assistant horse trainer, assistant trainer apprentice, general horse manager) as independent variables, and the result was verified separately using Scheffe's post test. In addition, a regression analysis was carried out to understand and find out which subfactors of the KOSS have major impact on the depression level of horse stable hand workers. SPSS, version 20.0 by IBM, was used for all analysis.

Score conversion by subfactor = (Sum of scores of each subfactor – Number of questionnaires) \times 100/(Max. possible sum of scores of each subfactor – Number of questionnaires)

3. Results

3.1. Comparison with median value of Korean occupational stress

Comparing the converted scores of KOSS result of horse stable hand workers with the Korean median (Table 2), scores in the physical working environment (66.7), job demand (54.2), job insecurity (61.1), and organizational system (57.1) appeared to be higher than the Korean median.

Table 2

The comparison of job stress median between horse stable hand workers and Koreans

N = 207	Physical work environment	Job demand	Job autonomy	Relationship conflict	Job insecurity	Organizational system	Inappropriate compensation	Organization culture
Mean of score conversion	66.02	53.54	52.04	37.88	61.67	54.81	52.60	41.98
SD	17.77	16.80	12.99	15.19	16.73	18.64	18.37	18.57
Median	66.7	54.2	53.3	33.3	61.1	57.1	55.6	41.7
Median for Koreans	44.5	50.1	53.4	33.4	50.1	52.4	66.7	41.7

3.2. Level of occupational stress and depression by job grade of horse stable hand workers

Analysis on the occupational stress level by job grade of horse stable hand workers (Table 3) showed that physical working environment ($F = 4.214$) and job autonomy ($F = 6.896$) have the statistically significant differences. As a result of Scheffe's post test, senior assistant horse trainer showed

relatively higher occupational stress in the physical working environment subfactor, while general horse workers, etc. showed a higher level of occupational stress in the job autonomy subfactor.

Other subcategories, however, such as relationship conflict, job insecurity, organizational system, inappropriate compensation, and organizational culture, did not show significant differences in the level of depression by job grade.

Table 3

The result of one-way ANOVA by job grade

Subfactors	Job grade	N	Mean	SD	F	Scheffe's post test
Job stress (physical work environment)	Senior assistant horse trainer (a)	27	3.20	.44	4.214**	(a) > (d)
	Junior assistant horse trainer (b)	60	3.07	.51		
	Assistant trainer apprentice (c)	22	3.07	.53		
	General horse worker (d)	97	2.86	.54		
	Total	206	2.99	.53		
Job stress (job demand)	Senior assistant horse trainer	27	2.76	.40	1.204	
	Junior assistant horse trainer	60	2.64	.46		
	Assistant trainer apprentice	22	2.54	.54		
	General horse worker	97	2.58	.51		
	Total	206	2.61	.49		
Job stress (job autonomy)	Senior assistant horse trainer	27	2.40	.31	6.896***	(a) < (d) (b) < (d)
	Junior assistant horse trainer	60	2.47	.38		
	Assistant trainer apprentice	22	2.50	.36		
	General horse worker	97	2.69	.37		
	Total	206	2.56	.38		
Job stress (relationship conflict)	Senior assistant horse trainer	27	2.18	.32	.092	
	Junior assistant horse trainer	60	2.14	.44		
	Assistant trainer apprentice	22	2.17	.45		
	General horse worker	97	2.14	.47		
	Total	206	2.14	.44		
Job stress (job insecurity)	Senior assistant horse trainer	27	2.83	.42	.327	
	Junior assistant horse trainer	60	2.87	.52		
	Assistant trainer apprentice	22	2.75	.51		
	General horse worker	97	2.85	.50		
	Total	206	2.85	.50		
Job stress (organizational system)	Senior assistant horse trainer	27	2.58	.37	.439	
	Junior assistant horse trainer	60	2.71	.61		
	Assistant trainer apprentice	22	2.59	.44		
	General horse worker	97	2.65	.57		
	Total	206	2.65	.55		
Job stress (inappropriate compensation)	Senior assistant horse trainer	27	2.54	.51	.598	
	Junior assistant horse trainer	60	2.60	.56		
	Assistant trainer apprentice	22	2.46	.49		
	General horse worker	97	2.62	.53		
	Total	206	2.58	.53		
Job stress (organizational culture)	Senior assistant horse trainer	27	2.25	.41	.451	
	Junior assistant horse trainer	60	2.30	.67		
	Assistant trainer apprentice	22	2.14	.49		
	General horse worker	97	2.29	.54		
	Total	206	2.27	.56		
Job stress (total)	Senior assistant horse trainer	27	2.60	.27	.267	
	Junior assistant horse trainer	60	2.61	.39		
	Assistant trainer apprentice	22	2.53	.37		
	General horse worker	97	2.60	.38		
	Total	206	2.59	.37		
Depression (total)	Senior assistant horse trainer	27	1.01	.47	.692	
	Junior assistant horse trainer	59	0.96	.61		
	Assistant trainer apprentice	22	0.82	.59		
	General horse worker	97	1.00	.51		
	Total	205	0.97	.54		

** $p < .01$, *** $p < .000$.

ANOVA, analysis of variance.

Table 4
Regression between job stress and depression

Model		Unstandardized coefficients		Standardized coefficients	t	p	R	R ²	F
		B	Std. Error	β					
1	Constant	−1.156	.252		−4.580	.000	.702	.492	23.892***
	Physical work environment	.038	.068	.037	.569	.570			
	Job demand	.295	.085	.266	3.457	.001			
	Job autonomy	−.130	.079	−.092	−1.630	.105			
	Relationship conflict	.122	.077	.100	1.573	.117			
	Job insecurity	.047	.074	.043	.637	.525			
	Organizational system	.196	.097	.197	2.027	.044			
	Inappropriate compensation	.215	.085	.213	2.520	.013			
	Organizational culture	.046	.066	.048	.700	.485			

** $p < .01$, *** $p < .000$.

3.3. Regression analysis of occupational stress and depression

At first, 34% of the horse stable hand workers participated in the survey were categorized as high risk under CES-D test. Regression analysis based on the level of stress as dependent variables and the subfactors of the KOSS as independent variables showed a statistically significant result ($F = 23.892$), with $R^2 = .492$ or 49.2% (Table 4). The Durbin–Watson statistics showing the correlation among the residuals was 2.165, and the variance inflation factor showed 1.225–3.679, which is an appropriate level. Among the KOSS subfactors applied, job demand ($p < .001$), organizational system ($p < .044$), and inappropriate compensation ($p < .013$) appeared to have significant effect on the level of depression of horse stable hand workers.

4. Discussion

In response to the recent suicide incidents of Korean horse stable hand workers, which drew much social attention, this study looked into the level of occupational stress the horse stable hand workers are exposed to so as to find out the correlation between occupational stress and mental health, such as depression. The result of this study can be summarized as follows.

First, the horse stable hand workers showed higher median values of occupational stress than those of Korean median in the subfactors of physical working environment, job demand, job insecurity, and organizational system. In addition, in terms of occupational stress level by job grade, physical working environment and job autonomy appeared to have significant differences.

Second, job demand, organizational system, and inappropriate compensation appeared to have major influence on the depression level of horse stable hand workers.

Interview with the horse stable hand workers carried out during this study suggested a few structural problems that may supposedly be the causes behind such results. First, with respect to the physical working environment subfactor, which evaluates factors such as air pollution, job-related danger, physical burden, etc., the workplace environment of horse stable hand workers is in generally less desirable and pertains danger, as their job duties include cleaning up feces in the stables and collecting horse urine for a urine test after the race.

With respect to the job demand subfactor, which evaluates the time pressure, increase in workload, sense of responsibilities, etc., the horse stable hand workers are under intensive time pressure and sense of responsibility, in that they must carry out basic training of horses based on their racing schedule, normally from 5:00 AM to 10:00 AM, and that some of their work tasks may have influence on the race result, such as escorting the horses to the paddock for viewing and further to the start line, as well as holding the bridle until the last minute of the start of the race. In addition, it

appeared that the lower the job grade is, the higher the level of job autonomy gets.

In terms of the job insecurity subfactor, some relevant structural limitations were detected, in that 77.7% of the participants were under an employment contract with less than 2-year employment condition and 92.2% were under temporary employment.

As for the organizational system subfactor, which evaluates the organizational support, inside conflict, promotion potential, reasonable communication, etc., participants responded that many factors affecting their promotion and career development are determined by horse trainers and the KRA, which gives the ground to consider that such an organizational system may have impact on their occupational stress.

In particular, the job demand (.266) appeared to be most influential to the level of depression, followed by organizational system (.197) and inappropriate compensation (.213). It should also be considered that the horse stable hand workers have higher risk of intensive stress, as has been suggested by the advance research previously mentioned [2,3,5], in that their job performance can have impact on major race results.

This study also has some limitations. First, the survey aiming at evaluating the occupational stress and depression of horse stable hand workers was not carried out in a usual setting. That is, the survey was carried out during the special inspection of government after the occurrence of some incidents of public attention, and therefore, the possibility of leniency error [12] should not be neglected, meaning the participants may have had exaggerated recognition of their situation than usual. To minimize such error, these surveys need to be conducted regularly on an organizational level as part of their occupational stress prevention activities.

Second, this study compared the occupational stress of horse stable hand workers with the median occupational stress of Koreans but could not go as far as measuring, comparing and evaluating the level of occupational stress of other job categories within the horse-racing industry, such as KRA employees, horse trainers, and jockeys. It should also be looked into further that the senior assistant horse trainers perceived the same physical environment more negatively than other job graders. Such limitations derive from the methodological limitations of not having other job categories of the horse-racing industry as the control group. Additional research work needs to follow to understand the overall mental health of workers in the horse-racing industry.

While this study is meaningful in that it has looked into the occupational nature of horse stable hand workers and their mental health, to make the study result more productive, academic thoughts need to be given to how to prevent occupational stress of horse stable hand workers and manage those already suffering from mental health problems. In fact, considering the fact that early detection and treatment are the most effective prevention of severe mental health issues [13], more academic research is required on how to support

people by system to have them voluntarily seek treatment, as well as on the determinants that encourage organizations and individuals to make treatment efforts [14].

In addition, to prevent another suicide incident similar to that of the horse stable hand workers, more efforts at both individual and organizational level are required to reach out to the workers under a different job category and individual uniqueness and manage their occupational stress and mental health.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.shaw.2019.07.004>.

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