

A PRELIMINARY STUDY ON THE EFFECT OF HEALTH & SAFETY EDUCATION FOR FARMERS' BEHAVIOUR & LIFESTYLE

¹Lee, Kyung-Suk • ¹Kwon, JuYoun • ¹Kim, Hyo-Cher • ¹Chae, Hye-Seon • ²Lee, Soo-Jin

¹Department of Agricultural Engineering, National Academy of Agricultural Science, Suwon, South Korea

²Department of Occupational and Environmental Medicine, College of Medicine, Hanyang University, Seoul, South Korea

I INTRODUCTION

Agriculture is classified into the three major dangerous industries with mining and construction industries. The agricultural population is aging and female workers have increased. In addition, agricultural labor is open year-round. So the occupational diseases of agricultural workers and the risk of farming-related accidents have increased. However, it was hard to grasp the current situation and we did not get the groundwork of the improvement of the issues. 'Act on the Special Measures for Public Health and Medical Services in Agricultural and Fishing Villages, etc.' & 'Special Act on Improvement of Public Health and Welfare for Agricultural and Fishing Village Residents' were enacted in March, 2004. After that, a project called 'Safety model for farm work' has been conducted for grasping the current situation of the occupational diseases and the risk of accident.

Objectives: The aim of this study was to investigate the safety management and the disaster of farm work and assess the effect of systematic intervention.

II METHODOLOGY

'Safety model for farm work' was examined in a longitudinal study in Korean farmers and the time lag was three years. The questionnaire composed 'General lifestyle', 'NIOSH criteria', 'Health Survey Short Form-12(SF-12)', and 'Farmer's syndrome'. The health status of farmers and the changes of farm work-related health variables were investigated.

General lifestyle: Health can be maintained through healthy lifestyle and the change of lifestyle can lead to healthy life in the long run. The contents of the questionnaire for the lifestyle were the regular exercise, smoking, passive smoking, the drinking rate, and domestic labor hours.

Musculoskeletal symptoms: The prevalence rate of musculoskeletal symptoms in 2006 was compared with one in 2008 by the NIOSH criteria.

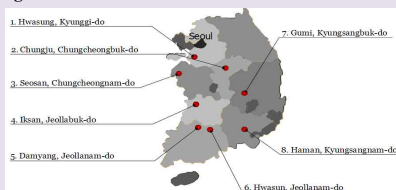
- Level 1: the symptoms last for more than a week or once a month in a year & the symptoms of above 'mild'.
- Level 2: applied to level 1 & the symptoms of above 'moderate'.
- Level 3: applied to level 1 & the symptoms of above 'severe pain'.
- Level 4: applied to level 1 & the symptoms of above 'very severe'.

Farmer's syndrome: The items about the farmer's syndrome composed 'shoulder stiffness, low back pain, paresthesia of hand or foot, nocturnal urination, dyspnea, sleeplessness, dizziness, and gastric fullness'. The frequency of the symptoms in 2006 was compared with one in 2008. The responses('always', 'occasionally', and 'never') of each item converted into '2, 1, and 0' for the comparison respectively.

Fitness level: "Health Survey Short Form-36(SF-36)" in 2006 and "Health Survey Short Form-12(SF-12)" in 2008 which were self-administered forms were used. Therefore, it was hard to be compared directly between the result in 2006 and one in 2008. Although the items of SF-12 belonged to SF-36, the number of scales of SF-36 and SF-12 was different and the highest score converted into 100. 12 items were compared in proportion to SF-12. The items of fitness level(SF-12) composed general health, physical function, the limitation of physical role, the limitation of emotional role, social function, ache, vigor, mental health, total fitness level.

The current study was conducted for farmers living in the eight regions of the 1st class of 'Safety model for farm work'(Figure 1). Survey data of 298 participants was analyzed, using scores on the questionnaire including the NIOSH criteria and "Health survey short form-12(SF-12)" at baseline (in 2006) and at 3-year follow-up. The health status of farmers and the changes of farm work-related health variables were investigated.

Subject of this study: 298 subjects(144 males and 154 females) living in 9 regions of 'Safety model for farm work' in 2006 and 2008 participated in the survey. The average age of subjects were 63.7(±10.3)years old in 2008.



III RESULTS & DISCUSSION

The number of men was 144(48.3%) and the number of women was 154(51.7%). The rate of people in fifties was over 90%(Table 1). Seosan, Chungcheongnam-do showed the highest numbers of attendances as 77 persons(25.8%) and Haman, Kyungsangnam-do had the second highest number of attendances as 64 persons(21.5%)(Table 2).

Age group	Sex		Total
	Male	Female	
30-39	3 (2.1)	0 (0.0)	3 (1.0)
40-49	10 (6.9)	14 (9.1)	24 (8.1)
50-59	34 (24.6)	38 (27.4)	72 (24.2)
60-69	49 (34.0)	51 (33.1)	100 (33.6)
70-79	42 (29.2)	45 (29.2)	87 (29.2)
80-89	6 (4.2)	6 (3.9)	12 (25.0)
Total	144 (100.0)	154 (100.0)	298 (100.0)

Region	Respondent
Hwasung, Kyunggi-do	32 (10.7)
Chungju, Chungcheongbuk-do	13 (4.4)
Seosan, Chungcheongnam-do	77 (25.8)
Iksan, Jeollabuk-do	25 (8.4)
Damyang, Jeollanam-do	22 (7.4)
Hwasun, Jeollanam-do	20 (6.7)
Gumi, Kyungsangbuk-do	45 (15.1)
Haman, Kyungsangnam-do	64 (21.5)
Total	298 (100.0)

Regular exercise	2006		2008	
	unit	person(%)	unit	person(%)
No	231	(77.5)	182	(61.1)
Yes	66	(21.8)	116	(38.9)
Total	298	(100.0)	298	(100.0)

Smoking status	2006		2008	
	unit	person(%)	unit	person(%)
Non-smoking	50	(16.8)	53	(17.8)
Smoking	64	(21.5)	49	(16.4)
Non-response	2	(0.7)	14	(4.7)
Total	298	(100.0)	298	(100.0)

General lifestyle: The rate of taking exercise increased from 2006 (21.8%) toward 2008 (38.9%). The number of smoking people was 64 persons (21.5%) in 2006 and the number of smoking people decreased to 49 persons (16.4%). The number of people quitting smoke was 50 (16.8%) in 2006 and 53 (17.8%) in 2008 (Tables 3 & 4).

The number of passive smoking people was 89 persons(29.9%) in 2006 and decreased to 76 persons(25.5%) in 2008(Tables 5&6). The number of nondrinking people were 121(40.6%) in 2006 and increased to 146(49.0%) in 2008 (Table 7). The number of people answered 'working for more than 3 hours' was 86(28.9%) in 2006 but 63(21.1%) in 2008 (Table 8). The units are person(%).

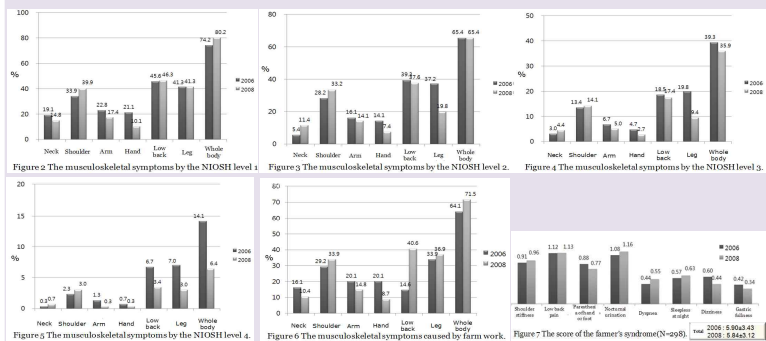
Passive smoking	2006		2008	
	unit	person(%)	unit	person(%)
No	170	(57.0)	193	(64.8)
Yes	89	(29.9)	76	(25.5)
Non-response	39	(13.1)	29	(9.7)
Total	298	(100.0)	298	(100.0)

The frequency of passive smoking	2006		2008	
	unit	person(%)	unit	person(%)
Never	22	(23.9)	25	(26.6)
1-2 times per week	17	(18.5)	25	(26.6)
3-5 times per week	11	(12.0)	15	(16.0)
Almost everyday	42	(45.7)	29	(30.9)
Total	92	(100.0)	94	(100.0)

Nondrinking	2006		2008	
	unit	person(%)	unit	person(%)
Yes(nondrinking)	121	(40.6)	146	(49.0)
No(drinking)	176	(59.1)	146	(49.0)
Non-response	1	(0.3)	6	(2.0)
Total	298	(100.0)	298	(100.0)

Domestic labor hours	2006		2008	
	unit	person(%)	unit	person(%)
Hardly work	63	(21.1)	67	(22.5)
Less than 1 hour	39	(13.1)	58	(19.5)
Less than 1-2 hours	59	(19.8)	54	(18.1)
Less than 2-3 hours	35	(11.7)	53	(17.8)
More than 3 hours	86	(28.9)	63	(21.1)
Non-response	16	(5.4)	3	(1.0)
Total	298	(100.0)	298	(100.0)

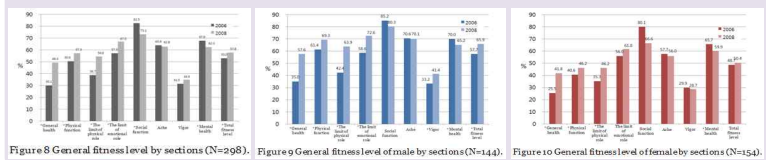
Musculoskeletal symptoms & Farmer's syndrome: Musculoskeletal symptoms of the neck, arm and hand decreased but symptoms of other parts increased in 2008 by NIOSH level1. Musculoskeletal symptoms of the neck and shoulder increased but symptoms of other parts decreased in 2008 by NIOSH levels 2, 3 & 4(Figures 2, 3, 4 & 5). The relation between the musculoskeletal symptoms & farm work is shown in Figure 6 & Table 9. The severe degrees of symptoms were averaged and compared (Table 10 & Figure 7).



Symptom	2006				2008			
	Never (0)	Occasionally (1)	Always (2)	Non-response	Never (0)	Occasionally (1)	Always (2)	Non-response
Shoulder stiffness	98(32.9)	125(41.9)	71(23.8)	4(1.3)	77(25.8)	154(51.7)	63(21.1)	4(1.3)
Low back pain	68(22.8)	122(40.9)	104(34.9)	4(1.3)	58(19.5)	146(49.0)	93(31.2)	1(0.3)
Paresthesia of hand or foot	93(31.2)	138(46.3)	58(19.3)	9(3.0)	109(36.6)	143(48.0)	39(13.1)	7(2.3)
Nocturnal urination	83(27.9)	104(34.9)	109(36.6)	2(0.7)	63(21.1)	106(35.6)	112(37.6)	3(1.0)
Dyspnea	183(61.4)	83(27.9)	97(32.6)	4(1.3)	199(66.4)	106(35.6)	29(9.7)	10(3.4)
Sleeplessness	165(54.0)	97(32.6)	36(12.1)	4(1.3)	154(51.7)	87(29.2)	48(16.1)	9(3.0)
Dizziness	147(49.3)	117(39.3)	29(9.7)	5(1.7)	179(60.1)	94(31.3)	16(5.4)	9(3.0)
Gastric fullness	188(63.1)	86(28.9)	19(6.4)	5(1.7)	201(67.4)	78(26.2)	10(3.4)	9(3.0)
The score of farm's syndrome	5.90±3.43				5.84±3.12			

The farmer's syndrome	2006		2008	
	unit	person(%)	unit	person(%)
Never	56	(18.8)	41	(13.8)
Suspected	108	(36.2)	131	(44.0)
The farmer's syndrome	121	(40.6)	118	(39.6)
Non-response	13	(4.4)	8	(2.7)
Total	298	(100.0)	298	(100.0)

Fitness level: General fitness levels of male and female are shown in Figs 8, 9 & 10.



IV CONCLUSIONS

The results showed that their lifestyle, symptoms of musculoskeletal conditions, the farmer's syndrome, and the fitness level had been changed over three years. The lifestyle such as the regular exercise and the drinking rate was positively altered and the farmer's syndrome was decreased. However, the symptoms of musculoskeletal disease had inconsistent results depending on the body parts. It would be indicated that the preliminary result was utilized for improving the questionnaire as well as a means of the intervention to make the effective prevention of farmers' injuries. However, it may be hard to assess the effect of intervention through this survey data of 298 participants from the 1st class of 'Safety model for farm work' although it made a contribution to producing a questionnaire composed of selected items for the 2nd class of 'Safety model of farm work'.

V REFERENCES

Kumagai T. Disease attacking farming women. Yomiri Daily Newspaper, November 17, 1943.
 National Institute for Occupational Safety and Health: Musculoskeletal disorders and workplace factors-A critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back. 2edn. Center for Disease Control and Preventive, NIOSH, 1997c
 Ware JE, Kosinski M, Keller SD. How to Score the SF-12 Physical and Mental Health Summary Scales. 2 edn. Boston: The Health Institute, New England Medical Center; 1995.
Presenting author: leeks81@korea.kr