

# 자동차산업 근로자의 직무스트레스와 근골격계질환 자각증상과의 연관성

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## A Study on the Relationship between Job Stress and Subjective Symptoms Associated with Musculoskeletal Disorders of the Workers at Automobile Manufacturing Industry

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MSDs(Musculoskeletal Disorders) and Job Stress have been recognized as one of major problems in industry these days according to the results of most industrial health/safety studies. Specifically, MSDs have been growing problems in Korea as well as in US and European countries with higher incidence rate every year.

This study tries to understand characteristics of job stress and association between MSDs and job stress for the workers at automobile manufacturing industry. This study also tries to understand the differences in terms of job stress between white collar and blue collar workers.

The results showed that there was definite association between symptoms of MSDs and some of major job stress

factors. However, there were big differences in terms of associations between two groups(white collar and blue collar workers). The first group(white collar workers) showed more associations between symptoms of MSDs and some of major job stress factors than that of the second group(blue collar workers) although symptom rate of the second group was higher than that of the first group. It could be concluded that symptoms of the first group had more effects from job stress while symptoms of the second group had more effects from typical job risk factors based on the results of the study.

**Key Words** : job stress, MSDs,  
automobile manufacturing industry

## I . 서론

/ (Cumulative  
Trauma Disorders: CTDs) (Low Back Injury)

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( , , , , )  
(Job satisfaction), (Physical environment),  
(Role conflict & ambiguity), (Job future ambiguity), (Task control), (Lack of alternative opportunity), (Social support), (Job requirement), (Self - respect), (General health) 10가

## II . 연구 대상 및 연구 방법

2004 8 2004 12

5 A

### 2. 근골격계질환 증상조사표

2

(Stratified

cluster random sampling; , 2003)  
280 , 170 , 450  
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2003). 2004 6 ( , , )

가  
224 , 144 , 368  
가

( ) , , / , / / 가 , , /

### 1. NIOSH 직무 스트레스 조사표(NIOSH JSQ: NIOSH General Job Stress Questionnaire; 한국어판)

### 3. 통계분석

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SPSSWIN 10.0

가,

(NIOSH:

### 4. 설문지의 신뢰도

National Institute for Occupational Safety and Health)

( , )

NIOSH JSQ

( , 2001)

Table 1

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30%, 33%, 34%  
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98%

### III. 연구 결과

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- ( , )

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가 75% .  
1 27%, 1 ~ 5  
36%  
10 ~ 15 26%, 15 30%  
40 ~ 50  
88%  
40 ~ 50 51%  
50 ~ 60 32%

### 2. 업무형태에 따른 직무스트레스의 특성

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#### 1. 연구 대상자의 일반적 특성

Table 2 A

20 ~ 40  
80% , 30 가  
t - test (Table 3).

Table 1. Reliabilities by types of job stress

Types of job stress	White collar	Blue collar
Job satisfaction	0.8784	0.8076
Physical environment	0.6437	0.7285
Role conflict & ambiguity	0.0925	0.4128
Job future ambiguity	0.7077	0.7354
Task control	0.8585	0.8813
Lack of alternative opportunities	0.8117	0.8353
Social support	0.8585	0.8801
Job requirement	0.8724	0.9065
Self-respect	0.7475	0.7923
General health	0.8549	0.8780

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가 (Table 4).

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**Table 2. Demographic information of the subjects**

N(%)

		White collar	Blue collar	Total
Age	20~30	47(32)	25(11)	72(20)
	30~40	70(48)	73(33)	143(39)
	40~50	21(15)	117(52)	138(37)
	50<	6(5)	9(4)	15(4)
School	middle school	6(3)	2(1)	8(2)
	high school	43(30)	207(92)	250(69)
	college	47(33)	14(6)	61(16)
	graduate school	48(34)	1(1)	49(13)
Types of employment	full time	139(97)	220(98)	359(96)
	part time	3(2)	4(3)	7(3)
	others	2(1)	-	2(1)
Types of daily working hours	8 hours	131(91)	52(33)	183(50)
	12 hours	3(2)	168(75)	171(46)
	others	10(7)	4(2)	14(4)
Types of total working years	1>	38(27)	10(5)	48(13)
	1~5	52(36)	48(21)	100(27)
	5~10	26(18)	40(18)	66(18)
	10~15	28(19)	126(56)	154(42)
Types of weekly working hours	40>	2(2)	13(6)	15(4)
	40~50	129(88)	115(51)	244(66)
	50~60	12(9)	73(32)	85(23)
	60<	1(1)	23(11)	24(7)

**Table 3. Descriptive statistics for job stress for two groups**

mean±S.D

Job stressors	White collar	Blue collar	p-value
Job satisfaction	11.08 ± 3.6	12.31 ± 3.04	0.001
Physical environment	8.33 ± 1.81	7.64 ± 1.97	0.001
Job future ambiguity	11.54 ± 3.23	9.66 ± 3.29	0.000
Job control	20.83 ± 5.73	18.27 ± 7.78	0.001
Lack of alternative opportunity	12.44 ± 4.50	12.13 ± 2.84	0.411
Social support	40.03 ± 10.31	37.37 ± 13.28	0.042
Job requirement	21.08 ± 5.31	17.90 ± 6.44	0.000
Self-respect	18.86 ± 3.28	17.06 ± 4.11	0.00
General health	12.08 ± 4.42	11.94 ± 4.92	0.780

(Factor analysis)

analysis)

(principal components  
varimax rotation

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Table 5 Table 6

(0.820)

**Table 4. Differences of job stress by types of employment**

Types of employment		Full time	Part time	Others	Average	p-value
Job satisfaction	White collar	11.05	10.53	16.00	11.06	0.058
	Blue collar	12.30	12.33	-	12.30	
Physical environment	White collar	8.29	8.71	8.00	8.24	0.099
	Blue collar	7.66	6.67	-	7.65	
Job future ambiguity	White collar	11.54	11.29	14.00	11.55	0.934
	Blue collar	9.69	9.00	-	9.68	
Job control	White collar	21.03	19.18	24.50	20.86	0.102
	Blue collar	18.23	22.67	-	18.29	
Social support	White collar	39.65	43.06	37.00	40.01	0.622
	Blue collar	37.28	45.67	-	37.39	
Job requirement	White collar	21.47	18.00	24.50	21.10	0.033
	Blue collar	17.88	19.67	-	17.90	
Self-respect	White collar	19.01	17.88	18.50	18.87	0.040
	Blue collar	17.05	18.33	-	17.07	

**Table 5. Factor analysis of job stress (white collar)**

Types of Job stress	Factors	
	Job stress	Self efficacy
Job future ambiguity	.755	.137
Job satisfaction	-.677	.157
Physical environment	.636	-.270
Job control	.636	.135
Social support	.472	.288
Self-respect	.225	.783
Job requirement	-.149	.610

**Table 6. Factor analysis of job stress (blue collar)**

Types of job stress	Factors	
	Job stress	Self efficacy
Social support	.820	
Job future ambiguity	.715	.192
Job satisfaction	-.692	-.175
Physical environment	.646	
Job requirement	-.306	.759
Self-respect	.291	.682
Job control	.509	.553

(0.715)

(Table 7),

가 ,

23.6%

19.6%

(Table 5).

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> 38.89% 17.85%

56.74%

Table 6

2 0.755 -0.677

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> 30.74% 16.91%

47.75%

#### 4. 직무스트레스 요인들과 각 신체부위별 증상호소율과의 연관성

(Table 8, 9).

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(Table 8).

(Table 9).

#### IV. 고찰

#### 3. 직무스트레스와 근골격계증상과의 연관성

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Table 7. Results of symptom survey for MSDs(musculoskeletal disorders)

N(%)

Body parts	Symptoms	White collar	Blue collar
Neck	yes	34(23.6)	44(19.6)
	no	110(76.4)	180(80.4)
Shoulder	yes	39(27.1)	83(37.1)
	no	105(72.9)	141(62.9)
Arm/Elbow	yes	8(5.6)	45(20.1)
	no	136(94.4)	179(79.9)
Hand/Wrist/ Finger	yes	22(15.3)	59(26.3)
	no	122(84.7)	165(73.7)
Trunk	yes	20(13.9)	53(23.7)
	no	124(86.1)	171(76.63)
Leg/Feet	yes	30(20.8)	57(25.4)
	no	114(79.2)	167(74.6)

Table 8. Significant job stress factors for each body parts associated with MSDs (white collar)

Types of Job Stress	B	S.E.	Wald
Job satisfaction	.064	.082	.607
Physical environment	.226	.179	1.593
Job future ambiguity	-.109	.100	1.181
Task control	-.081	.051	2.556
Lack of alternative opportunities	-.002	.073	.001
Social support	-.021	.031	.469
Job requirement	.027	.062	.187
Self-respect	-1.047	.414	.011
General health	.174	.058	9.089
Job satisfaction	.252	.082	9.454
Physical environment	.005	.168	.001
Job future ambiguity	.002	.103	.001
Task control	-.070	.048	2.075
Lack of alternative opportunities	-.062	.095	.423
Social support	-.012	.031	.159
Job requirement	.065	.059	1.217
Self-respect	.404	.419	.928
General health	.175	.058	9.178
Job satisfaction	.451	.315	2.040
Physical environment	-.644	.508	1.605
Job future ambiguity	.015	.290	.003
Task control	.243	.172	1.986
Lack of alternative opportunities	.301	.140	4.615
Social support	.134	.134	1.002
Job requirement	-.386	.297	1.691
Self-respect	-.707	.827	.731
General health	.692	.246	7.876
Job satisfaction	-.004	.098	.001
Physical environment	-.096	.206	.220
Job future ambiguity	.235	.120	3.855
Task control	-.228	.065	12.179
Lack of alternative opportunities	.047	.067	.498
Social support	.008	.045	.029
Job requirement	-.104	.071	2.129
Self-respect	.315	.466	.457
General health	.197	.073	7.248
Job satisfaction	.117	.103	1.287
Physical environment	-.177	.216	.671 00840.2505 -1.0182 TD-0.0001 T
Job future ambiguity	-.172	.126	
Task control	-.063	.065	
Lack of alternative opportunities	.076	.054	
Social support	.079	.050	
Job requirement	.014	.076	
Self-respect	-.424	.468	
General health	.188	.072	
Job satisfaction	.231	.085	
Physical environment	-.105	.175	
Job future ambiguity	-.039	.105	
Task control	-.064	.051	
Lack of alternative opportunities	.027	.051	
Social support	.026	.036	
Job requirement	.041	.062	
Self-respect	.035	.425	
General health	.132	.058	



Table 9. Significant job stress factors for each body parts associated with MSDs (blue collar)

	Types of Job Stress	B	S.E.	Wald	p-value
Neck	Job satisfaction	-14.621	3862.112	.000	.997
	Physical environment	15.355	38985.626	.000	1.000
	Job future ambiguity	8.427	7274.763	.000	.999
	Task control	.849	637.875	.000	.999
	Lack of alternative opportunities	38.109	6124.137	.000	.995
	Social support	5.991	2103.921	.000	.998
	Job requirement	-.360	1218.146	.000	1.000
	Self-respect	-18.534	4955.078	.000	.997
	General health	-3.073	3074.083	.000	1.000
Shoulder	Job satisfaction	1.412	.746	3.579	.058
	Physical environment	-.225	.809	.078	.781
	Job future ambiguity	.528	.418	1.595	.207
	Task control	.207	.100	4.268	.039
	Lack of alternative opportunities	1.492	1.026	2.115	.146
	Social support	.462	.297	2.419	.120
	Job requirement	.137	.211	.423	.515
	Self-respect	-.181	.359	.253	.615
	General health	.129	.208	.385	.535
Arm/Elbow	Job satisfaction	-3.227	7777.112	.000	1.000
	Physical environment	1.737	6811.187	.000	1.000
	Job future ambiguity	8.938	7973.034	.000	.999
	Task control	-3.637	1948.272	.000	.999
	Lack of alternative opportunities	4.823	8511.955	.000	1.000
	Social support	-1.199	1186.028	.000	.999
	Job requirement	.406	1577.159	.000	1.000
	Self-respect	5.033	6033.671	.000	1.000
	General health	-.586	1706.400	.000	1.000
Hand/Wrist/ Finger	Job satisfaction	-.284	.479	.353	.552
	Physical environment	-.919	.746	1.519	.218
	Job future ambiguity	.541	.641	.713	.398
	Task control	.090	.057	2.518	.113
	Lack of alternative opportunities	.449	.670	.449	.503
	Social support	-.102	.137	.554	.457
	Job requirement	-.339	.388	.764	.382
	Self-respect	-.857	.922	.864	.353
	General health	.023	.369	.004	.951
Trunk	Job satisfaction	54.129	2565.356	.000	.983
	Physical environment	97.757	5911.909	.000	.987
	Job future ambiguity	113.501	5312.336	.000	.983
	Task control	5.563	864.589	.000	.995
	Lack of alternative opportunities	278.718	28193.537	.000	.992
	Social support	-14.595	661.512	.000	.982
	Job requirement	-48.225	2678.995	.000	.986
	Self-respect	2.562	3085.989	.000	1.000
	General health	-8.633	1194.227	.000	.994
Leg/Feet	Job satisfaction	-23.872	3189.340	.000	.994
	Physical environment	33.589	5478.113	.000	.995
	Job future ambiguity	10.447	1475.006	.000	.994
	Task control	-2.813	1194.548	.000	.998
	Lack of alternative opportunities	51.506	4668.610	.000	.991
	Social support	11.898	974.079	.000	.990
	Job requirement	-2.299	1278.809	.000	.999
	Self-respect	-2.579	1121.479	.000	.998
	General health	-6.881	918.591	.000	.994

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