The relationship between sickness absence and work ability index in Korean male automobile parts assembly workers

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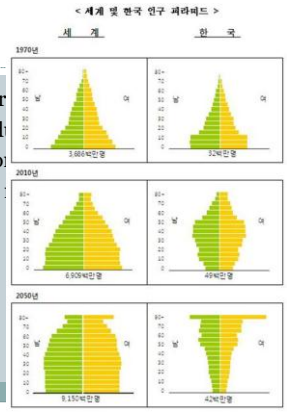

- Korea : Ver ociety
- Severe redu
- > Reductio
- > Increase rs

Background 2.

- Work Ability Index(WAI) : questionnaire assessing perceived work ability
- Predictor of work disability among aging employee(Tuomi K et al, 1997)

WAI related studies

- Reliability and validity of WAI
- Actual work ability and WAI
- WAI and work-related or individual factors
- WAI and psychosocial factors
- WAI and SA : Kujala V et al, 2006; Alavinia et al, 2009

Background 3.

- Sickness absence(SA) : an important occupational problem in Korea
- In 2010, 56.7 million working day lost in Korea

-> Estimates of indirect costs : 12 billion $(Ministry of Employment and Labor, 2010, Korea)

- But, actual working day lost may be greater!
- SA related study is very lack and related factors is not known in Korea

Study purpose

- The relationship between WAI and SA in Korea
- Influence of other work-related factors and individual factors on SA

Subjects and Methods

Study

- This study was conducted as a part of Risk Factors Survey for MSDs
- Risk Factors Survey for MSDs

: start from 2004

: every 3years

: regally enforced in all workplace(except construction, agriculture)

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Study subject

Baseline(2007)
307 participants in the entire 379 subjects

↓

After 3years(2010)
10 subjects loss

↓

Finally 299 subjects
: >40years
: male

Study methods

- Baseline questionnaire
- Individual factors : age, smoking, alcohol drink, exercise, BMI,
- Work-related factors : tenure, working time
- Job stress : Korean Occupational Stress Scale(KOSS)
- Ergonomic factors : ANSI Z-365
- Work intensity scale(Kang DM, 2003)
- Musculoskeletal symptoms : NIOSH symptom criteria + symptom severity
- WAI

WAI

Items	Range of scores(points)
Current work ability compared with lifetime best	0-10
Work ability in relation to the demands of the job	2-10
Number of current diseases diagnosed by a physician	1-7
Estimated work impairment due to diseases	1-6
Sick leave during the past 12 months	1-5
Personal prognosis of work ability 2 years from now	1, 4 or 7
Mental resources	1-4
TOTAL SCORE	7-49

⇒ 4 categories : low, moderate, good, excelent

Low ability　　Good ability

Korean Occupational Stress Scale(KOSS)

- Developed by KOSHA
- Physical environment
- Job demand
- Job control
- Job insecurity
- Interpersonal conflict
- Organizational system
- Lack of reward
- Occupational climate

Work intensity scale

- Developed by Dongmug Kang in Korea(2003)
- Absolute work intensity : working hours, resting time, extra working time etc
- Relative work intensity : work velocity, manpower, workload etc
- Labor flexibility : outsourcing, irregular workers, presence of incentives

Sickness absence periods

- For 3 years(2007. july -2010. June)
- From Company attendance records
- Long-term sickness absence : more than 27 days

Statistical analysis

- Univariate and multiple logistic regression(SAS v9.1)
- Mutiple logistic regression I = individual variables
- Mutiple logistic regression II = individual + work-related variable

Study result

Characteristics of subjects

Item		N(%)	Proportion of longterm SA workers N(%)
Tenure	<20years	35(11.7)	16(5.4)
	20years<	264(88.3)	98(32.8)
Working hours/wk	<48hours	122(40.8)	49(16.4)
	48hours<	177(59.2)	65(21.7)
Smoking	Current smoker	118(39.5)	58(19.4)
	Nonsmoker	181(60.5)	56(18.7)
Alcohol drink	Current drinker	222(74.3)	85(28.4)
	Nondrinker	77(25.7)	29(9.7)
Exercise	Regular	95(31.8)	31(10.4)
	none	204(68,2)	83(27.8)
BMI	<23	121(40.5)	45(15.1)
	23.1<	176(59.5)	69(23.1)

ITEM			N(%)	Proportion of longterm SA workers N(%)
WAI	Poor ability		242(81%)	101(33.8)
	Good ability		57(19%)	13(4.4)
Job stress	Physical environment	low	99(33.1)	43(14.4)
		high	200(66.9)	71(23.8)
	Job demand	low	226(75.6)	91(30.4)
		high	73(24.4)	23(7.7)
	Job control	low	128(42.8)	52(17.4)
		high	171(57.2)	62(20.7)
	Job insecurity	low	264(88.3)	101(33.8)
		high	35(11.7)	13(4.4)
	Interpersonal conflict	low	29(9.7)	11(3.7)
		high	270(90.3)	103(34.5)
	Organization system	low	143(47.8)	56(18.7)
		high	156(52.2)	58(19.4)
	Lack of reward	low	293(97.9)	110(36.8)
		high	6(2.1)	4(1.3)
	Occupational climate	low	250(83.6)	98(83.6)
		high	49(16.4)	49(16.4)
	Total job stress	low	197(65.9)	79(26.4)
		high	102(34.1)	35(22.7)

ITEM			N(%)	Proportion of longterm SA workers N(%)
ANSI-Z-365	Safe task		135(48.9)	45(16.3)
	Task exceeding risk criteria		73(26.5)	29(10.5)
	Task exceeding high risk criteria		68(24.6)	29(10.5)
Work intensity	Absolute intensity	low	99(33.1)	43(14.4)
		high	200(66.9)	71(23.8)
	Relative intensity	low	125(41.8)	91(30.4)
		high	174(58.2)	52(17.4)
	Flexibility	low	149(49.8)	49(16.4)
		high	150(50.2)	65(21.7)
	Total work intensity score	low	112(37.5)	43(14.8)
		high	187(62.5)	71(23.8)
Musculoskeletal symptom	Mild symptom	no	151(50.5)	50(16.7)
		presence	148(49.5)	64(21.4)
	Moderate symptom	no	222(74.3)	76(25.4)
		presence	77(25.7)	38(12.7)
	Severe symptom	no	278(93.0)	100(33.4)
		presence	21(7.0)	14(4.7)

Logistic regression results

Item		Crude OR	95% CI	Adj OR1	95% CI	Adj OR2	95% CI
Tenure	<20years	1.00		1.00		1.00	
	20years<	0.70	0.34-1.43	0.91	0.43-2.27	0.77	0.31-1.97
Working hours/wk	<48hours	1.00		1.00		1.00	
	48hours<	0.87	0.54-1.39	0.98	0.60-1.67	1.01	0.57-1.78
Smoking	Nonsmoker	1.00		1.00		1.00	
	Current smoker	1.92	1.19-3.09	1.95	1.20-3.17	2.21	1.28-3.82
Alcohol drink	Nondrinker	1.00		1.00		1.00	
	Current drinker	0.97	0.57-1.66	0.96	0.56-1.66	0.84	0.44-1.59
Exercise	Regular	1.00		1.00		1.00	
	None	0.76	0.42-1.18	0.68	0.40-1.16	0.64	0.36-1.15
BMI	<23	1.00		1.00		1.00	
	23.1<	1.07	0.66-1.72	1.01	0.61-1.64	0.97	0.55-1.71

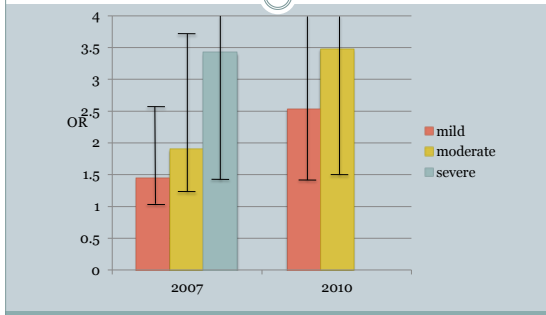
Adj OR1 : individual factors were adjusted

Adj OR2 : individual factors and work-related factors were adjusted

Item			Crude OR	95% CI	Adj OR1	95% CI	Adj OR2	95% CI
WAI	Good ability		1.00		1.00		1.00	
	poor ability		2.28	1.17-4.47	2.45	1.22-4.89	2.70	1.24-5.83
Job stress	Physical environment	low	1.00		1.00		1.00	
		high	0.72	0.44-1.17	0.60	0.36-1.01	0.58	0.30-1.13
	Job demand	low	1.00		1.00		1.00	
		high	0.68	0.39-1.20	0.66	0.37-1.17	0.77	0.37-1.59
	Job control	low	1.00		1.00		1.00	
		high	0.83	0.52-1.33	0.82	0.50-1.34	0.66	0.35-1.27
	Job insecurity	low	1.00		1.00		1.00	
		high	0.95	0.46-1.98	0.97	0.46-2.05	0.91	0.38-2.21
	Interpersonal conflict	low	1.00		1.00		1.00	
		high	1.01	0.46-2.22	0.99	0.44-2.25	1.12	0.44-2.84
	Organizational system	low	1,00		1.00		1.00	
		high	0.92	0.58-1.47	0.92	0.57-1.48	0.83	0.46-1.51
	Lack of reward	low	1.00		1.00		1.00	
		high	3.33	0.60-18.46	2.99	0.52-17.33	2.42	0.27-21.70
	Occupational climate	low	1.00		1.00		1.00	
		high	0.75	0.39-1.43	0.75	0.39-1.46	0.61	0.28-1.34
	Total job stress	low	1.00		1.00		1.00	
		high	0.78	0.47-1.28	0.77	0.46-1.29	1.13	0.55-2.32

ITEM			Crude OR	95% CI	Adj OR1	95% CI	Adj OR2	95% CI
ANSI-Z-365	Safe task		1.00		1.00		1.00	
	Task exceeding risk criteria		1.32	0.73-2.38	1.37	0.74-2.52	1.41	0.74-2.69
	Task exceeding high risk criteria		1.48	0.82-2.71	1.49	0.80-2.79	1.47	0.74-2.94
Work intensity	Absolute intensity	low	1.00		1.00		1.00	
		high	0.81	0.49-1.33	0.84	0.50-1.38	0.88	0.47-1.66
	Relative intensity	low	1.00		1.00		1.00	
		high	0.78	0.49-1.25	0.73	0.45-1.19	0.67	0.34-1.34
	Flexibility	low	1.00		1.00		1.00	
		high	1.56	0.99-2.50	1.64	1.01-2.68	1.54	0.89-2.98
	Total score	low	1.00		1.00		1.00	
		high	0.98	0.61-1.59	1.02	0.62-1.67	1.19	0.49-2.87
Musculoskeletal symptom	Mild symptom	no	1.00		1.00		1.00	
		presence	1.54	0.96-2.46	1.55	0.96-2.52	1.45	0.83-2.51
	Moderate symptom	no	1.00		1.00		1.00	
		presence	1.87	1.11-3.17	1.94	1.13-3.35	1.90	1.01-3.60
	Severe symptom	no	1.00		1.00		1.00	
		presence	3.56	1.39-9.11	3.71	1.41-9.75	3.41	1.16-10.02

Poor ability and MS symptoms



Discussion

Sickness absence and related factors

- Musculoskeletal symptoms(Andersen et al, 2011; Murtezani et al, 2010;
- Psychosocial factors(Rugulies et al, 2010; Hjarsbech et al, 2010; Munch-Hansen et al, 2008)
- Gender difference(Sorlin et al, 2011; Labriola et al, 2011;
- Socioeconomic and employment(Lu X et al, 2010; Lund et al, 2008)
- Obesity or BMI, Life style(Harvey et al, 2010; Kyrolainen et al, 2008; Laaksonen et al, 2007)
- Work ability(Alavinia et al, 2009; Love et al, 2012; Reiso et al, 2003)
- Physical activity(Lahti et al, 2009; Laaksonen et al, 2009; Bernaards et al, 2007)

Smoking and sickness absence

- Decreasing smoking and relative weight is likely to provide important gains in work ability and reduce sickness absence. (Laaksonen et al, health-related behaviours and sickness absence from work, Occup Environ Med, 2009;66:840-7)
- Smoking was found to increase the annual number of days of absence by 10.7 compared with never smoking. Controlling for risk factors at work, and thereby accounting for some of the selection of smokers into riskier jobs, reduced the effect to 9.7 days, corresponding to 38% of all annual absences due to sickness. (Lundborg P. Tob control, 2007;16:114-8)

WAI and Sickness absence

- 2 studies(Kujala V et al, 2006; Alavinia et al, 2009) was shown positive results
- Our study also showed that WAI was associated with sickness absence
- WAI as predictor of sickness absence
- WAI and musculoskeletal symptoms and sickness absence

Limitation

- The number of subjects
- Limited to men
- Long follow up periods

Thank you for your attention