

= Abstract =

Skin diseases among male workers in painting department

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Painting is risky work to occupational skin disease. This research was carried out to investigate the prevalence of occupational skin disease in painting department of a shipyard company in June 1996. Dermatological examination, self-administered questionnaire survey, compositional analysis of solvents used in painting and cleaning were conducted. Exposed group(n=379) was selected randomly in painting department and control group(n=151) was selected in those who had not exposed to paints or solvents. Exposed group was divided into two groups by substance to contact ; painters contact to paints and organic solvents and workers contact to cleaners mainly composed of organic solvents. The prevalence of contact dermatitis(11.9%) is significantly elevated compared with control group(2.6%), and age adjusted odds ratio(OR) is 4.95 (95% confidence interval [CI] : 1.75-14.03). The prevalence of Tinea pedis, the most common skin disease, in exposure group is 48.0%, and its age-adjusted odds ratio(OR) is significantly elevated compared with control group (OR:3.17, 95% CI:2.06-4.88). Pompholyx is also significantly elevated in prevalence(11.9%) and age-adjusted OR(OR:6.69, 95% CI:2.05-21.87). There were no difference in the prevalence of contact dermatitis, Tinea pedis, and pompholyx by use of protector, work type, and duration of employment in painting department. In exposure group, 71.1% suffer from contact dermatitis improved in vacation or holiday and 68.9% of them had lesion in exposed area, it suggest that contact dermatitis in exposed group is related to their work. In conclusion, workers in painting department have high risks of contact dermatitis, Tinea pedis, and pompholyx. A health policy should be provided to prevent skin disease among painting department.

Key words : painter, organic solvent, contact dermatitis, pompholyx, Tinea pedis

Ramazzini Celsus, Agricola , 17
De Morbis Artificium()
(Montgomery Casper, 1945).

40-50% 가 (Wang, 1978).
25 (, 1996).
1995

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1947 Pirilä가
200 / 100,000 /
(Jost Ruppin, 1992).
(Valsecchi 1992),
가 가 (antifouling)
가 (Raffle , 1994) 가
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SPSS Version 7.0

chi-square test
logistic regression

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379 235 144
40.2 39.6 가 41.2
39.7
40 가 가 30 , 20 , 50 가
11.1 가
(1).

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77.6%가 , 95.5%가, 82.1%
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Table 1. General characteristics of control and exposed group in this study

Contents	C o n t r o l	Painting group (Exposed group)		
	group(n=151)	Painters (n=235)	Cleaners (n=144)	Total(n=379)
Age				
- 29	23 (15.2)	34 (15.4)	12 (8.3)	46 (12.1)
30 -39	39 (25.8)	80 (34.0)	40 (27.8)	120 (31.7)
40 -49	73 (48.3)	98 (41.7)	76 (52.8)	174 (45.9)
50 -	16 (10.6)	23 (9.8)	16 (11.1)	39 (10.3)
mean \pm SD	39.6 \pm 8.2	39.7 \pm 8.1	41.2 \pm 7.6	40.2 \pm 8.0
Education				
elementary school	8 (5.3)	30 (12.8)	35 (24.3)	65 (13.0)
middle school	82 (54.3)	122 (51.9)	78 (54.2)	200 (52.8)
High school	61 (40.4)	83 (35.3)	31 (21.5)	114 (30.1)
Duration of painting or cleaning work				
- 5	-	30 (12.8)	19 (13.2)	49 (12.9)
6 - 15	-	169 (71.9)	108 (75.0)	277 (73.1)
16 -	-	36 (15.3)	17 (11.8)	53 (14.0)
mean \pm SD		11.2 \pm 4.8	10.9 \pm 4.7	11.1 \pm 4.8

() : per 100 workers

Table 2. Use of protector in painting group

Content	Painters(n=235)	Cleaners(n=144)	Total(n=379)
Mask use			
(2) always	169 (86.8)	125 (86.8)	294 (77.6)
(1) sometimes	65 (27.7)	13 (9.0)	78 (20.6)
(0) no	1 (0.4)	6 (4.2)	7 (1.8)
mean \pm S.D.	1.71 \pm 0.46	1.83 \pm 0.48	1.75 \pm 0.47
Glove use			
(2) always	230 (97.9)	132 (91.7)	362 (95.5)
(1) sometimes	4 (1.7)	9 (6.3)	13 (3.4)
(0) no	1 (0.4)	3 (2.1)	4 (1.1)
mean \pm S.D.	1.97 \pm 0.18	1.89 \pm 0.37	1.94 \pm 0.27
Protecting garment			
(2) always	185 (78.7)	126 (87.5)	311 (82.1)
(1) sometimes	37 (15.7)	12 (8.3)	49 (12.9)
(0) no	13 (5.5)	6 (4.2)	19 (5.0)
mean \pm S.D.	1.73 \pm 0.86	1.83 \pm 0.47	1.77 \pm 0.53

() : per 100 workers

3.

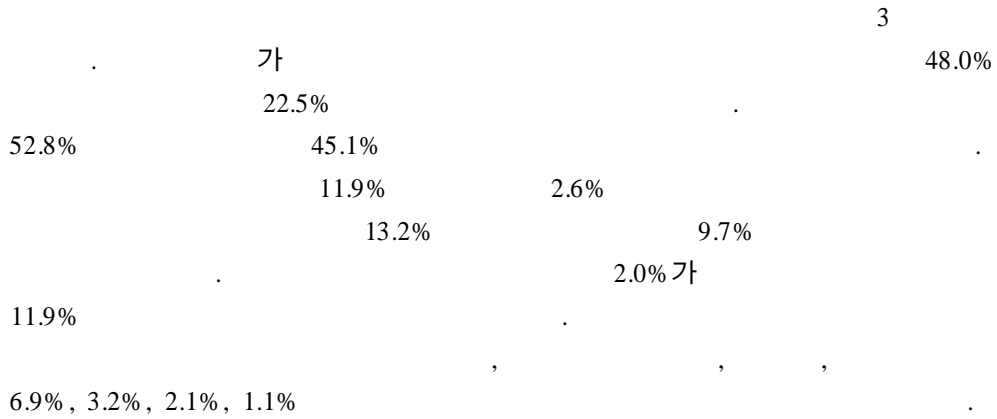


Table 3. Skin disease between painting group and control group

Skin diseases	C o n t r o l group(n=151)	Painting group (Exposed group)		
		Painters (n=235)	Cleaners (n=144)	Total(n=379)
Tinea pedis	34 (22.5)	106 (45.1)	76 (52.8)	182 (48.0)*
contact dermatitis	4 (2.6)	31 (13.2)	14 (9.7)	45 (11.9)*
pompholyx	3 (2.0)	25 (10.6)	20 (13.9)	45 (11.9)*
irritation dermatitis	9 (6.0)	16 (6.8)	10 (6.9)	26 (6.9)
unclassified eczema	3 (2.0)	7 (3.0)	5 (3.5)	12 (3.2)
folliculitis	6 (4.0)	4 (1.7)	4 (2.8)	8 (2.1)
urticaria	3 (2.0)	4 (1.7)	0 (0.0)	4 (1.1)

() : per 100 workers

* : P<0.05 compared between exposed group and control group by chi-square test

4.

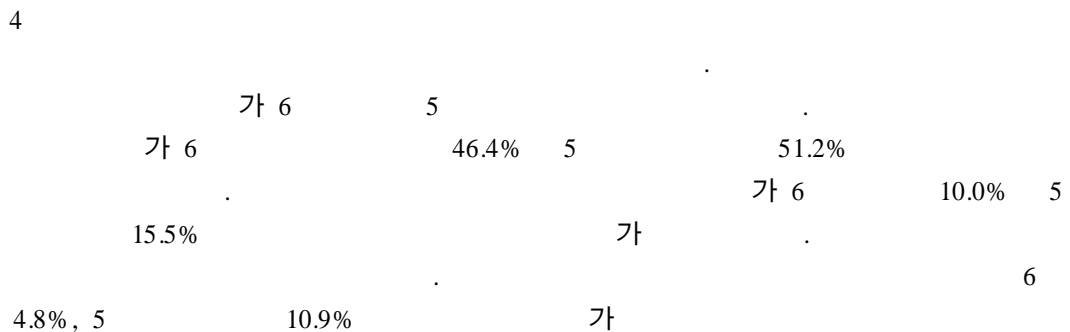


Table 4. Skin diseases in exposed group by duration of painting department

Skin diseases	Painting group (Exposed group)		
	Protector use 5 (n=129)	Protector use =6 (n=250)	Total(n=379)
Tinea pedis	66 (51.2)	116 (46.4)	182 (48.0)
contact dermatitis	20 (15.5)	25 (10.0)	45 (11.9)
pompholyx	14 (10.9)	31 (12.4)	45 (11.9)
irritation dermatitis*	14 (10.9)	12 (4.8)	26 (6.9)
unclassified eczema	6 (4.7)	6 (2.4)	12 (3.2)
folliculitis	2 (1.6)	6 (2.4)	8 (2.1)
urticaria	1 (0.8)	3 (1.2)	4 (1.1)

() : per 100 workers

* : p<0.05 compared between two groups by chi-square test

Protector use 5 : group that use protector more frequently

Protector use =6 : group that use protector less frequently

5.

52.8% 가
50.6%, 42.9%, 41.7%
16.7% 가
12.9%
12.0%, 9.7%
13.9% 가

Table 5. Skin disease in exposed group by work type

Skin diseases	C o n t r o l group(n=151)	Painting group (Exposed group)				Total(n=379)
		Spray(n=108)	Touch up(n=42)	Mixing(n=85)	Cleaning(n=144)	
Tinea pedis	34 (22.5)	45 (41.7)	18 (42.9)	43 (50.6)	76 (52.8)	182 (48.0)*
contact dermatitis	4 (2.6)	13 (12.0)	7 (16.7)	11 (12.9)	14 (9.7)	45 (11.9)*
pompholyx	3 (2.0)	11 (10.2)	4 (9.5)	10 (10.8)	20 (13.9)	45 (11.9)*
irritation dermatitis	9 (6.0)	7 (6.5)	1 (2.4)	8 (9.4)	10 (6.9)	26 (6.9)
unclassified eczema	3 (2.0)	3 (2.8)	1 (2.4)	3 (3.5)	5 (3.5)	12 (3.2)
folliculitis	6 (4.0)	3 (2.8)	0 (0.0)	1 (1.2)	4 (2.8)	8 (2.1)
urticaria	3 (2.0)	1 (0.9)	0 (0.0)	3 (3.5)	0 (0.0)	4 (1.1)

() : per 100 workers

* : p<0.05 compared between two groups by chi-square test

6.

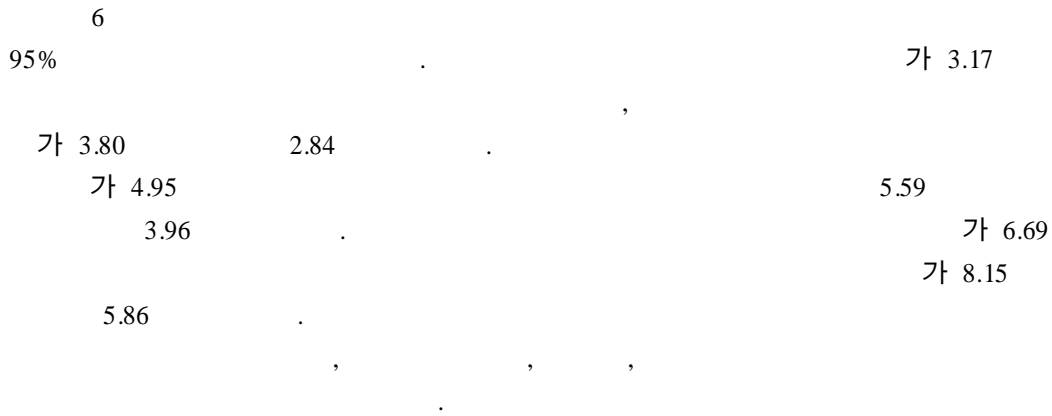


Table 6. Age adjusted odds ratio of skin diseases compared with control group by logistic regression.

Skin diseases	Painting group (Exposed group)		
	Painters (n=235)	Cleaners (n=144)	Total(n=379)
Tinea pedis	2.84(1.79- 4.49)	3.80(2.30- 6.29)	3.17(2.06- 4.88)
contact dermatitis	5.59(1.93- 16.16)	3.96(1.27- 12.34)	4.95(1.75- 14.03)
pompholyx	5.86(1.74- 19.76)	8.15(2.36- 28.11)	6.69(2.05- 21.87)
irritation dermatitis	1.15(0.50- 2.68)	1.16(0.46- 2.95)	1.16(0.53- 2.53)
unclassified eczema	1.52(0.39- 5.95)	1.75(0.41- 7.48)	1.60(0.45- 5.77)
folliculitis	0.41(0.11- 1.50)	0.75(0.21- 2.75)	0.53(0.18- 1.57)
urticaria	0.86(0.19- 3.90)	0.00(0.00- 8.79 × 10 ¹⁵)	0.52(0.11- 2.35)

Reference group : control group(n=151)

7.

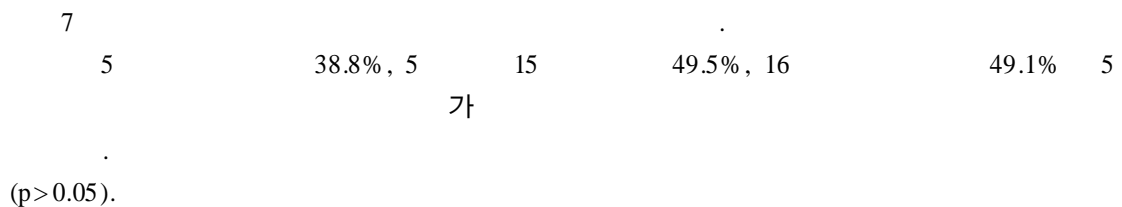


Table 7. Prevalence of work related skin disease by duration of employment in exposure group

Skin diseases	Duration of employment(year)		
	<5 (n=49)	5- 15 (n=277)	>15 (n=53)
Tinea pedis	38 (38.8)	137 (49.5)	26 (49.1)
contact dermatitis	5 (10.2)	36 (13.0)	4 (7.5)
pompholyx	3 (6.1)	38 (13.7)	4 (7.5)
irritation dermatitis	2 (4.1)	21 (7.6)	3 (5.7)
unclassified eczema	1 (2.0)	10 (3.6)	1 (1.9)
folliculitis	2 (4.1)	4 (1.4)	2 (3.8)
urticaria	0 (0.0)	4 (1.4)	0 (0.0)

() : per 100 workers

8.

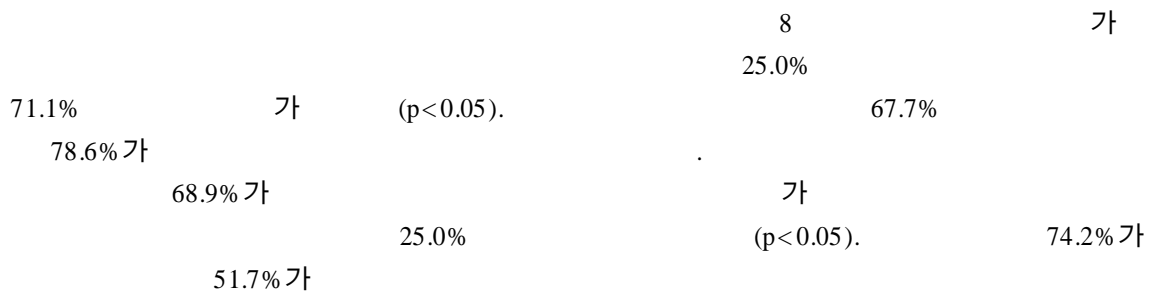


Table 8. Clinical feature of contact dermatitis

	C o n t r o l		Painting group	
	group(n=4)	Painters (n=31)	Cleaners (n=14)	Total(n=45)
Does symptom improve in vacation or holiday?				
yes	1 (25.0)	21 (67.7)	11 (78.6)	32 (71.1)
no	35 (75.0)	10 (32.3)	3 (21.4)	13 (28.9)
Is skin lesion in exposed area?				
yes	1 (25.0)	23 (74.2)	8 (51.7)	31 (68.9)
no	3 (75.0)	8 (25.8)	6 (42.9)	12 (31.1)

() : per 100 workers

가 (Zenz, 1994). 80%가 (Zenz, 1994). 가 (LaDou, 1997). (sensitizer) 20% 가 (Zenz, 1994). 가 (Film - former), 80-90%가 가 71.1%, 가

1994).

(9)

가

11.9% Meding Swanbeck (1990)

1

11.2%, Högerg Wahlberg (1980)가
3.9%, Pirilä가
(1993)

10.1%

6.5%

18.1%

가

가

가

가

2.6% Meding Swanbeck (1987)

2-5%

, 1994), Boer (1988) 가

(가
(1993)

가

(dermatophytes)

30-70% (Rippon, 1988) 10% (Fitzpatrick , 1987)

5.3% (, 1988)

38.7% (

1972), 39.3% (1982),
70.0% (1984), 59.4% (1992),
78.8% (1992)
48.0%

3.18

가 가 가

가

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(McOsker

Beck, 1967),

가

(Grove , 1981),

(Newhouse, 1964)

가

Table 9. Composition of solvents in thinners, hardeners, and paints

Composition of solvents	
Buthyl acetate	Methylisobutylketone
1-Butanol	Propyl bezene
2-Butanol	Styrene
2-Ethoxy ethyl acetate	1,2,3-Trimethylbenzene
Ethyl acetate	1,2,4-Trimethylbenzene
Ethyl benzene	1,3,5-Trimethylbenzene
2-Ethoxy ethanol	Toluene
Ethyl toluene	m-Xylene
Isobutyl alcohol	o-Xylene
Isopropyl alcohol	p-Xylene
Methyl ethyl ketone	1-methoxy-2-propanol

가 가 , 가
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379 ,

151 ,

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48.0%

가 3.17
11.9%

가 4.95, 6.69 , , ,

가

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, 68.9%가

71.1%가
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가

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- , , . 1992;
30(3): 340-346
- , , , .
1992;30(1):62-67
- , . 가 1984;26:177-187
- . 1995 , 1996, 88-89
- , , , , , .
1982;25(6):552-560
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1993;12:363-377
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