

# Betel quid induced contact dermatitis among betel quid assemblers

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# Study background

- Betel quid chewing is a very common habit in Taiwan.
- Betel quid became a major industrial crop in Taiwan since 1990.
- The planted area of betel quid located in Nantou, Chiayi and Pingtung, up to 50,554 hectares.

(農委會,2010)

(農委會,2012)

# Ingredient of betel quid

Ingredient	Outcome
Arecoline	Sweating, drooling, heart rate ↑ ,Asthma (Malinengo et al. 1988)
<b>Piper betle L. leaves</b>	Antioxidant, immunity ↑ , cell damage ↓ , lipid peroxidation ↓ , cell mutation ↑ (Manoj PR et al 2011)
<b>P. betle L. inflorescence</b>	Contain safrole
Lime	Hypercalcinosis, milk-alkali syndrome (WuKD1996;HungKYetal1996) (YiangCTetal2000)

# Diseases of Betel quid

System	Outcome
Oral	submucous fibrosis, leukoplakia, oral lichen planus, and angular cheilitis
Metabolic system	Hypercalcaemia, milk-alkali syndrome, Kidney damage (Lin 2002)
Nervous system	Extrapyramidal syndrome, Parkinson disease, neurotoxicity (Nelson and Heischouer 1999)
Genitourinary system	Urine ↑ , stillborn, abortion, prematurity (Chakrabarti 1978)
Immune system	IgG ↑ , circulating immune complex ↑ (Gupta 1985; Saranath 1985)
Cardiovascular system	Heart rate ↑ , arrhythmia (Wytt 1996; Farnsworth 1973; Nelson and Heischouer 1999; Winstock et al 2000)
Digestive system	Gastrointestinal motility ↑ , Defecation ↑ (陳, 2000)
Respiratory system	Respiratory spasms, respiratory arrest, asthma (Kyingi 1991)
Skin system	Pigmentation, redness, blisters (楊, 1997)



# Study background

- Nearly 70,000 retail stands selling betel quid and 20,000 registered betel quid assemblers in the country.
- Because of the low skill requirements, the <sup>(Wang B.J., 2008)</sup> actual number of betel quid assemblers is considerably greater.

(Chang S. J.,1992; Yang Y. H.,2001)

# Contact dermatitis

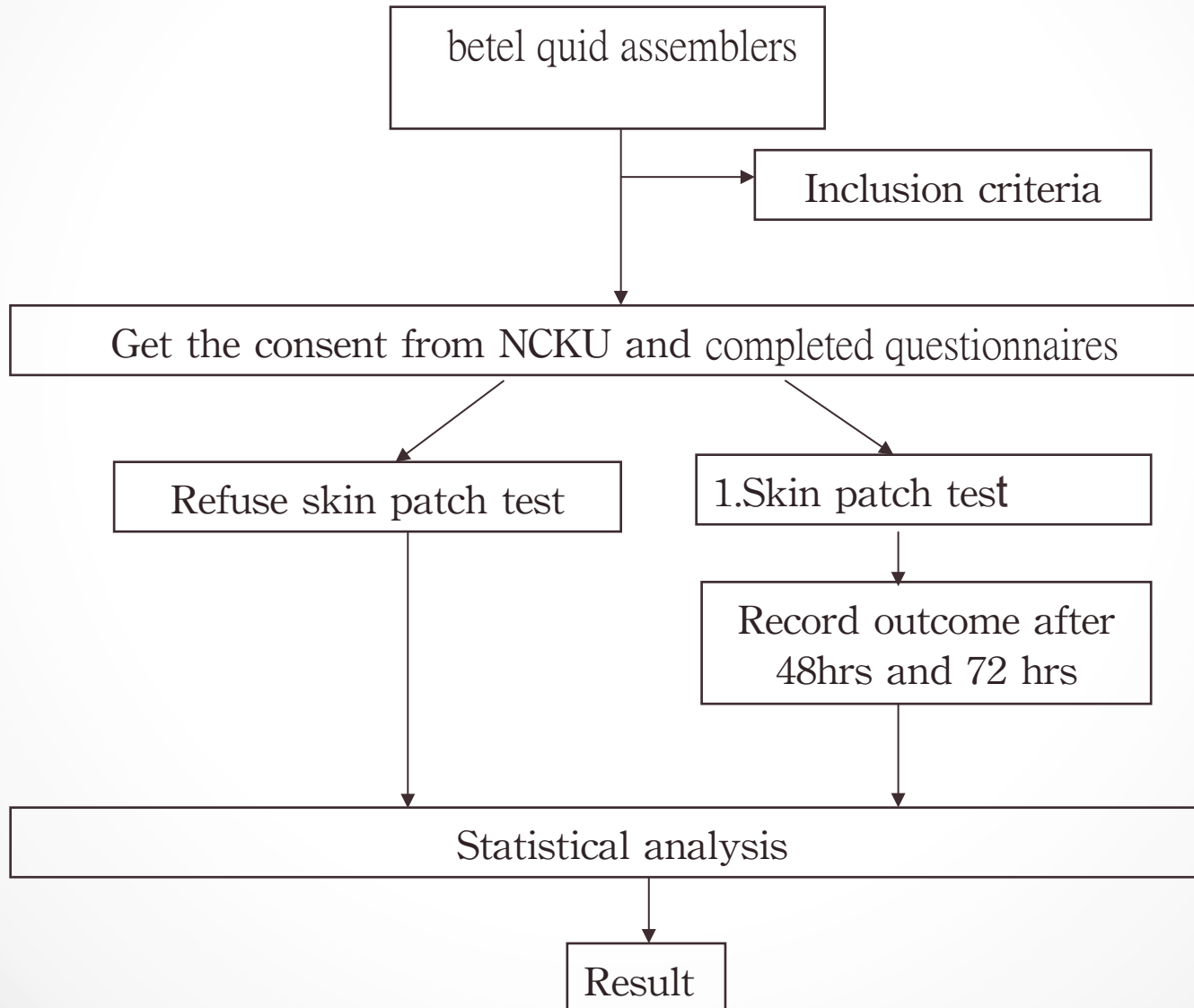
- Contact dermatitis caused by external agents, which can be divided into 2 type
  - Irritant contact dermatitis (ICD)
  - Allergic contact dermatitis (ACD)
- Acute phase and Chronic phase

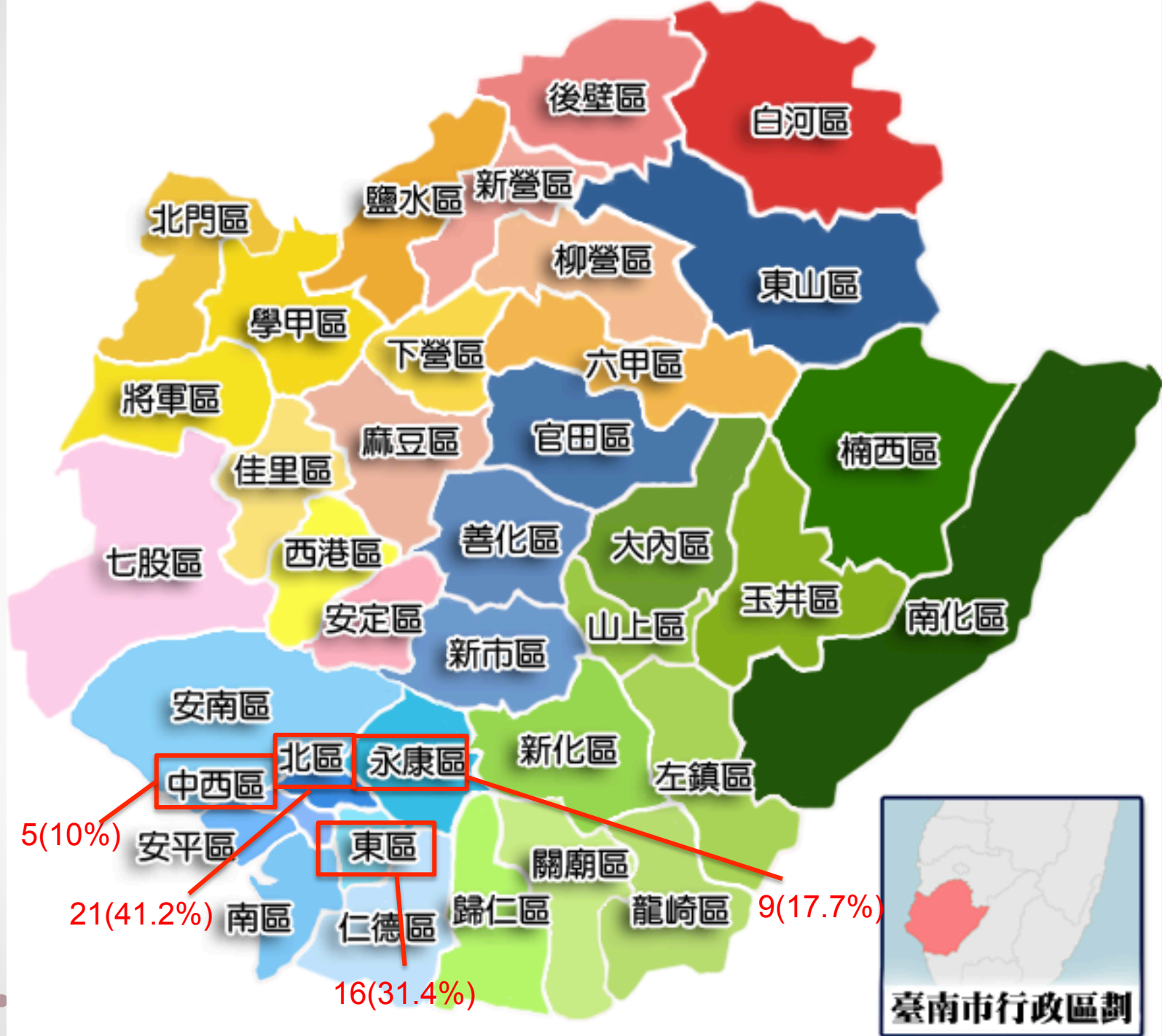


# Objective

- To assess the **prevalence** of contact dermatitis among betel quid assemblers.
- To diagnose occupational **contact** dermatitis and **identify possible allergens** by apply skin patch tests.

# Materials and Methods







# Site visit



# Site visit





# Statistical analysis

- Chi-square test
- Logistic regression



# Response Rate

Fig. 1 Response rate of questionnaire and skin patch test.

	Accept	Reject	total
Questionnaire	51 (64.6%)	28 (35.4%)	79
Skin patch test	0	79	79

Fig. 2. The correlation between sociodemographic data and contact dermatitis.

	No contact dermatitis (N=35)	Contact dermatitis (N=16)	p-value	OR (95% C.I)
Sex			0.62	
Male	3 (8.6%)	1 (6.2%)		1.0
Female	32(91.4%)	15 (93.8%)		1.40(0.13-14.67)
Age ( year )			0.47	
<40 years old	28 (80.0%)	12 (75.0%)		1.0
≥40 years old	7 (20.0%)	4 (25.0%)		1.33 (0.32-5.41)
Education			0.82	
Junior high	4 (11.4%)	1 (6.3%)		1.0
High school	30 (85.7%)	15 (93.7%)		2.08 (0.20-19.5)
College	1 (2.9%)	0(0.0%)		
Wear gloves during working			0.03*	
No	4 (11.4%)	6 (37.5%)		1.0
Yes	31 (88.6%)	10 (62.5%)		0.21 (0.05-0.91)

	No contact dermatitis (N=35)	Contact dermatitis (N=16)	p-value	OR (95% C.I)
Drinking			0.89	
No	19(54.3%)	9(56.25%)		1.0
Yes	16(45.7%)	7 (43.75%)		0.92 (0.28-3.03)
Betel nut chewing			0.49	
No	31 (88.6%)	15(93.75%)		1.0
Yes	4(11.4%)	1 (6.25%)		0.51 (0.05-5.03)
Smoke			0.65	
No	22(62.9%)	9(56.2%)		1.0
Yes	13(37.1%)	7(43.8%)		0.76(0.23-2.52)

\*P<0.05

\*\* P<0.01

\*\*\*P<0.001

Fig. 3. The correlation between working type and contact dermatitis.

	No contact dermatitis (N=35)	Contact dermatitis (N=16)	p-value	OR (95% C.I)
清洗檳榔			0.51	
No	6 (17.1%)	2 (12.5%)		1.0
Yes	29(82.9%)	14 (87.5%)		1.44(0.25-8.11)
去除檳榔蒂			0.41	
No	7(20.0%)	2(12.5%)		1.0
Yes	28(80.0%)	14(87.5%)		1.75(0.32-9.55)
清洗檳榔葉			0.07	
No	7(20.0%)	7(43.8%)		1.0
Yes	28(80.0%)	9(56.3%)		0.32(0.08-1.16)
清洗薯葉			0.61	
No	7(20.0%)	3(18.8%)		1.0
Yes	28(80.0%)	13(81.3%)		1.08(0.24-4.87)

\*P<0.05

\*\* P<0.01

\*\*\*P<0.001

	No contact dermatitis (N=35)	Contact dermatitis (N=16)	p-value	OR (95% C.I)
切開檳榔			0.62	
No	3 (8.6%)	1 (6.3%)		1.0
Yes	32(91.4%)	15(93.7%)		1.40 (0.13-14.66)
塗白灰			0.21	
No	6(17.1%)	5(31.3%)		1.0
Yes	29(82.9%)	11(68.7%)		0.45(0.11-1.80)
塗紅灰			0.18	
No	5(14.3%)	0(0.0%)		1.0
Yes	30(85.7%)	16(100%)		
將檳榔塞至荖葉			0.29	
No	7(20.0%)	5(31.3%)		1.0
Yes	28(80.0%)	11(68.7%)		0.55(0.14-2.10)

	No contact dermatitis (N=35)	Contact dermatitis (N=16)	p-value	OR (95% C.I)
切開茗葉			0.61	
No	5 (14.3%)	2 (12.5%)		1.0
Yes	30(85.7%)	14 (87.5%)		1.16(0.20-6.76)
將茗葉塞入			0.62	
No	3(8.6%)	1(6.3%)		1.0
Yes	32(91.4%)	15(93.7%)		1.40(0.13-14.66)

\*P<0.05

\*\* P<0.01

\*\*\*P<0.001

# Conclusion

- the beetle quid assemblers had higher risk of work-related contact dermatitis than most people, but the possible allergens were not clear. It is necessary to collect more cases for examine the association between contact dermatitis and betel quid assemblers.



Q&A