

**Table 1.4. Surveys on the prevalence of areca nut use in Taiwan**

Reference	Study population	Chewing type	Chewing Category	Prevalence	Comments
<i>Children and Youths</i>					
Tsai <i>et al.</i> (2002) 2001–2002	895 non-aboriginal (446 boys; 449 girls) and 564 aboriginal junior high school students (282 boys; 282 girls) from 16 out of 23 junior high schools in eastern Taiwan districts	Betel quid	<i>Non-aboriginal</i> Have tried Currently use <i>Aboriginal</i> Have tried Currently use	16.4 (22.3 M, 10.8 F) 2.2 (3.2 M, 1.1 F) 32.7 (33.6 M, 31.9 F) 9.7 (10.4 M, 9.1F)	Non-aboriginal and aboriginal students lived predominantly in separate districts. As many as 17.4% of non-aboriginal and 47.1% of aboriginal families grow areca nut at home .in eastern Taiwan
Wang <i>et al.</i> (2003a)	10 288 adolescent students (4971 boys, 5317 girls, 71.4% response rate) in a national survey in the first three grades (ages 16-18 years) in all types of high schools during 2001-02.	Betel quid	<i>Current use</i> Villages Towns Cities Northern Central Southern Eastern <i>Ex-use</i> Villages Towns Cities Northern Central Southern Eastern	3.9 (6.6 M, 1.5F) 7.6 4.3 0.8 3.6 3.7 4.3 4.1 5.7 (9.6 M, 2.0 F) 11.0 4.9 2.2 5.9 4.3 7.1 5.3	Increasing prevalence associated with less urbanised areas and aboriginal areas (e.g., eastern Taiwan)
Wang <i>et al.</i> (2004)	10 288 adolescent students (4971 boys; 5317 girls, 71.4% response rate) in a national survey in the first three grades (ages 16-18 years) in all types of high schools during 2001-02.	Betel quid	<b>Ever chewers</b> <i>Type of school</i> Agricultural Medical Tech Manufacturing Commercial General <i>Father</i> Nonchewer Ex-chewer Current Chewer <b>Current chewers</b> <i>Type of school</i> Agricultural Manufacturing General	20.6 M, 4.7 F 20.4 M, 4.9 F 19.0 M, 2.9 F 10.7 M, 3.7 F 10.3 M, 1.4 F  2.7 6.4 21.8  5.4 5.2 1.8	81.8% of ex-chewers and 87.6% of current chewers did not realize that betel nut chewing could cause physiological addiction.  Many ex-chewers continued smoking or drinking.

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Wu <i>et al.</i> (2007)	Urban and Rural fourth grade students (943 boys; 877 girls) in from Taipei City and Hsinchu County, northern Taiwan followed up through Grades 5 and 6 during 2001-03.	Betel quid	Grade 4 in 2001 Grade 5 in 2002 Grade 6 in 2003	Ever Daily 0.99 0.11 0.38 0.05 0.00 'Ever' means at all during that year	Smoking and alcohol drinking, also investigated were much higher than betel quid chewing.
Huang <i>et al.</i> (2009)	1585 third and fourth graders (85% response rate) in five elementary schools in the mountainous regions and in eight city schools in Tao-Yuan county in northern Taiwan in 2004.	Betel quid	<i>Ever chewers</i> Mountain City	22.2 5.3	A study of school level contextual factors for risk taking behaviour. Having tried drinking, cigarette smoking or chewing was related to betel quid chewing. All these behaviors were higher in the mountain schools (with higher aboriginal population) and in schools with higher percentages of indigenous students.
Yen <i>et al.</i> (2009)	1665 rural adoles-cent students (819 boys; 846 girls) of mean age 14.4 yrs (80.1% response rate) from 6 junior high schools in the mountains and 3 in the plains of south-ern Taiwan in 2003	Betel quid	<i>Number of risk factors for chewing</i> 0 1 2 3 4 5	<i>Ever chewed, by risk factor:</i> 0.7 10.4 29.9 29.5 24.1 5.4	Subjects who were indigenous, had smoked cigarettes, had poor academic performance, perceived frequent family conflict, and were male were more likely to chew

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<i>Adults</i>					
Lin <i>et al.</i> (2004)	7574 military conscripts (all males), 63.9% aged 20-22 years, on Taiwan's offshore islands in 2001	Betel quid	<i>Chewers</i> Before service During service % chewers want to quit <i>Urged chewer to quit before service:</i> Parents Friends Medical staff <i>Urged chewer to quit after joining service:</i> Superiors Medical staff Colleagues	<i>Men</i> 20.3 13.8 46.3 56.2 45.5 40.1 39.6 37.0 37.2	Recruits are supposed to be actively discouraged from chewing by unit supervisors. The main reason cited by most for continuing to chew betel-nut was difficulty in quitting the habit, while the second most cited reason was stress alleviation.
Tung <i>et al.</i> (2004)	14 816 men enrolled in a disease screening program (98.1% response rate) in Keelung, northern Taiwan during 1999-2001	Betel quid	<i>Chewers</i> Current Former <b>Current</b> <i>By age (yrs)</i> <40 40-49 50-59 60-69 ≥ 70 <b>Former</b> <i>By age (yrs)</i> <40 40-49 50-59 60-69 ≥ 70	<i>Men</i> 7.8 6.6 14.7 11.3 8.1 3.5 0.7 12.2 9.8 6.4 3.0 0.9	Type 2 diabetes and hyperglycemia, studied in relation to betel quid chewing, were found related  P< 0.0001 for Chi square test
Chang <i>et al.</i> (2005)	764 diabetics (387 men; 377 women) aged ≥40 years in the National Health Interview Survey, 2001	Betel quid	Chewers	13.2	A study of diabetics

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Wen <i>et al.</i> (2005b)	8985 men aged $\geq 12$ or 7961 men $\geq 18$ yrs in the 2001 National Health Interview Survey.	Betel quid	<i>Chewing</i>			
			Current ( $\geq 12$ yrs)	13.0 M		
			Current ( $\geq 18$ yrs)	14.4 M, 1.5 F		
			Ex chewers	4.5 M, 0.2 F		
			Middle Sch.	26.5 M		
			High School	18.9 M		
			College	5.4 M		
			Blue collar	27.3 M		
			White collar	12.7 M		
			Service	17.8 M		
			Smokers	27.5 M		
			Non smokers	2.5 M		
			Taipei Metro	9.3 M		
Other areas	10.7-24.0 M					
Aborigines	41.1 M; 25.3 F					
Chu <i>et al.</i> (2006)	7931 military conscripts (all males) based in southern and eastern Taiwan in 2001.	Betel quid	Current chewers (=Ever chewers)	19.8 M	A subject was considered a current betel-nut chewer if he had chewed $\geq 1$ betel-nut during the past 30 days, had chewed $\geq 1$ betel-nut/week and had chewed $>50$ betel-nuts in his lifetime before or during military service	
			<i>Aggregation</i>	Odds ratio		
			Smoke only	1.0		
			Chew and smoke	40.4		
			Drink and smoke	3.4		
Lai <i>et al.</i> (2006)	326 men who were professional drivers	Lao-hwa and betel quid	Different forms	<i>Current chewers</i>	A study of betel quid chewing chewing. In lao-hwa, betel inflorescence and flavouring are included in the quid in place of betel leaf	
			Lao-hwa quid only	18.7 M		
			Alternating quids	39.6 M		
			Betel quid only	41.7 M		
Lin <i>et al.</i> (2006)	7326 adults (3824 men; 3320 women) (response rate 80.3%) aged $\geq 18$ years residing in 50 communities in 2003-04.	Betel quid	<i>Ever Chewers</i>	46.1 (53.2 M, 37.9 F)	A study of betel quid chewing behaviour and cessation in Taiwan aborigines area. Chewing found largely associated with cigarette smoking and alcohol drinking.	
			Aborigines (A)	49.7		
			Mixed A	43.1		
			Non A	15.7		
			$\geq 45$ yrs	48.0		
			$< 45$ yrs	44.4		
			Alcohol yes	66.9		
			Nondrinkers	22.3		
			Smokers	66.8		
			Nonsmokers	32.0		

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Yen <i>et al.</i> (2009)	19 839 men, > 30 000 women participating in the Keelung screening program in 2001-03.	Betel quid	<i>Chewers</i> Current Ever	7.2 M 15.1 M, 0.8 F	A study of metabolic syndrome in men: higher in chewers (p<0.0001)
Lan <i>et al.</i> (2007)	6503 out of 6511 men in the Survey of Health and Living Status of the Near Elderly and Elderly in Taiwan (4049 men ≥ 60 years in 1989 and 2462 men 50-66 years in 1996).	Betel quid	Ever chewers	13.9 M	Slightly higher mortality among chewers: adjusted Hazard ratio=1.19 (p=0.007) after mean follow-up of 9.5 years
Wu <i>et al.</i> (2007)	3913 military conscripts (all males) in 2001.	Betel quid	Current chewers	20.0 M	A subject was considered a current betel-nut chewer if he had chewed ≥1 betel-nut during the past 30 days, had chewed ≥1 betel-nut/week and had chewed >50 betel-nuts in his lifetime before or during military service
Chang <i>et al.</i> (2008)	6854 participants (2788 men; 4066 women) > 30 years in a disease screening programme in two cities of Taoyuan County in northern Taiwan during 2004-05.	Betel quid	Ever chewers Current chewers	2.2 1.8	A study of risk factors for chronic disease, by ethnic group. Lower prevalence in people of mainland origin.
Yap <i>et al.</i> (2008)	5922 men and 5747 women nationwide aged ≥ 18 yrs in a nationwide study. The household registry of 2001 was used as the sampling frame.	Betel quid	<i>Current chewers</i> By gender Age (35-49 M) Age (≥65 F) Junior High Sch Technical Job Aborigines Smoker Alcohol drinker	20.9 M, 1.2 F 23.9 M ..... ..... 2.3 F 32.1 M, 1.1 F 29.8 M, 1.5 F 54.3 M, 33.8 F 37.1 M, 14.8 F 51.7 M, 21.0 F	A study of risk factors for chewing and cessation.  Highest values according to risk factors of gender, age, education, occupation, ethnicity and lifestyle habits are shown.

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Chou <i>et al.</i> (2009)	901 new mothers aged 16 to 47 years (all aboriginal women, 93.8% response rate; 63.3% primiparas) from 11 hospitals in southern and eastern Taiwan.	Betel quid	Maternal chewers	34.7 F	A study of betel quid chewing in relation to nausea and vomiting in pregnancy
Lin <i>et al.</i> (2009)	1049 men aged $\geq 40$ years in Taichung city in 2004.	Betel quid	Current Former	7.0 M 10.5 M	A study of obesity