

Table 1.3. Surveys on the prevalence of areca nut use across the world

Reference	Country	Study population	Chewing type	Chewing Category	Prevalence (%)	Comments
<i>Children and Youths</i>						
Chaturvedi <i>et al.</i> (2002)	India	986 rural students (boys and girls) in Madhya Pradesh aged 10-15 years in 2001	Gutka	Current	46 (after intervention with cancer education and ban on sale near schools)	Oral lesions documented: leukoplakia in 32, erythroplakia in 6 and submucous fibrosis in 18.
Kaur & Singh (2002)	India	100 rural students in grades 6 th to 10 th standards (boys and girls)	Gutka	Current Daily <i>No. of packets consumed daily</i> 1 2 3 4 % users wanted to quit	66 19 % 16.7 (n=11) 59.1 (n=39) 19.7 (n=13) 4.5 (n=3) 70	Youth found susceptible to peer pressure and advertising. Gutka available at roadside stands, tea stalls, cigarette shops, grocery stores and bookshops. Conveniently priced at Re. 1, within easy reach of children
Gajalakshmi <i>et al.</i> (2004)	India	4820 students in 8 th -10 th grades in Tamil Nadu, in a GYTS survey.	Betel quid Gutka/pan masala	Current use Current use	Boys 0.8 (±0.4) Girls 0.8 (±0.4) Boys 1.0 (±0.4) Girls 0.6 (±0.3)	Current use was defined as at least once in 30 day preceding the survey
Nichter <i>et al.</i> (2004)	India	1587 male college students aged 16-23 years of age in 11 colleges Karnataka in 1998	Gutka	Ever tried Experimental Occasional Daily Quit (Ex-user) Unknown use	18.3 M (n=290) 6.2 M (n=98) 4.7 M (n=75) 1.4 M (n=23) 5.0 M (n=79) 0.9 M (n=15)	A tobacco use survey. Experimental use was defined as 1–5 uses in a lifetime. Some cigarette smokers used gutka where smoking was not allowed or when trying to quit smoking.
Kapil <i>et al.</i> (2005a)	India	2387 urban students 10-18 years of age from all middle and secondary schools in Delhi in 2003	Betel quid Tobacco	Chewing Use	10.2 (10.9 M, 7.9 F) 1.9 (2.1 M, 1.1 F)	Many children were consuming betel quid with tobacco and some with pan masala

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Sinha and Gupta, (2005)	India	4542 students (73% boys; 86.6% response rate) in grades 8-10 and aged mostly 13-15 years in the GYTS in Uttar Pradesh in 2002	Gutka	Current users	9.9	Current use was on one or more days during the past 30 days Some children reported seeing billboards with gutka ads.
Dongre <i>et al.</i> (2008)	India	385 rural adolescents (183 boys; 202 girls) aged 15-19 years in Wardha, Maharashtra in 2008; only 2% illiterate.	Kharra	Users	26.2 (54.1 M, 1.0 F)	Reported use in the last 30 days and beliefs. Prevalence calculated for this table by the working group.
			Gutka	Users	17.1 (31.7 M, 4.0 F)	
			Any tobacco	Users	39 (68.3 M, 12.4 F)	
Paudel (2003)	Nepal	2032 urban students (96% response rate) in grades 8, 9 and 10; age range 10-20 years (51.7% between 13 to 15 years) surveyed in Pokhara City in 2003	Pan masala and gutka	Ever users	41.2 (51.4 M, 30.3 F)	A tobacco use survey, for a thesis for the MPH degree. Most students expressed that they were not aware that pan masala or gutka were tobacco products or could harm them, though this information was not collected systematically.
			Surti/khaini	Ever users	3.0	
			Cigarettes/bidis	Ever smokers	14.7	
			Any tobacco	Current users	13.2	
Shah <i>et al.</i> , (2002) In Monogr. Vol 85	Pakistan	160 school children (109 boys, 51 girls) aged 4-16 years on Baba Island, Karachi.	Areca nut	Daily use	74	All areca nut was of the sweetened variety. More users were male.
			Betel quid	Daily use	35	
Rozi & Akhtar (2007)	Pakistan	772 boys in 6th to 10th grades (aged 10-16 years) in 33 schools three areas of Karachi in 2003	Paan, Areca nut, smokeless tobacco	Paan w/o tobacco Areca nut alone Smokeless tobacco (gutka, snuff, niswar)	<i>Current users</i> 12.6 M (n=97) 47.2 M (n=364) 16.1 M (n=124)	A smokeless tobacco use survey. Boys spending Rs 500 monthly on areca nut and gutka on average.

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Oakley <i>et al.</i> (2005)	Northern Mariana Islands	309 students (153 males; 156 females) aged 14-18 years in 3 schools in Salpan, Northern Mariana Is., year not given	Areca nut	All	63.4 (Range 52.5-85.9)	An areca nut use survey. Children were Chamorro (41%), Carolinian (16%), Filipino (14%), Palauan (9%)
Jayakody <i>et al.</i> (2006)	U.K.	2687 students aged 11-14 years in grades 7 and 9 in 28 schools in East London in 2001	Paan (generally said to be with tobacco)	Ever use Occasional use Frequent use	14.1 4.1 1.5	A drug use survey in a very ethnically mixed area. Occasional use is < weekly; Frequent use is weekly or more often
				Ever Tried Once		
				<i>Year 7</i>		
				Total	11.8 M, 11.0 F	
				Bangladeshi	32.2 M, 40.7 F	
				Pakistani	14.6 M, 17.9 F	
				Asian Indian	15.3 M, 15.1 F	
				Non-Asian	1.8 M, 0.5 F	
				<i>Year 9</i>		
				Total	18.6 M, 15.8 F	
				Bangladeshi	49.5 M, 48.9 F	
				Pakistani	15.4 M, 12.4 F	
				Asian Indian	19.3 M, 12.0 F	
				Non-Asian	1.1 M, 2.1 F	

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Kaduri <i>et al</i> (2008)	Tanzania	1010 urban students (512 boys and 498 girls) in primary and secondary schools (mean age ≈14 yrs) of Dar Es Salaam (99.1 response rate); 5.4% of Indian origin, probably 2007.	Smokeless tobacco Gutka	Ever use Ever use	3.65 0.3 (3 students = 2 gutka and 1 Lucky)	A study of smoke-less tobacco prevalence. Most of the experiment-ters (59%) knew the products via advertisements from Internet sources, radio, televisions or magazines.
<i>Adults</i>						
Eswar (2002)	Bangladesh	780 villagers orally screened (men and women from 65 villages) in 2001-02.	Tobacco areca nut and lime with or without betel leaf	Current use	40	An oral health screening study. Poorly reported, but indicative of high betel quid usage
Chaudhry <i>et al.</i> (2001)	India	Karnataka residents (17,773 males; 16,438 females) aged ≥10 years; Uttar Pradesh residents (18510 males; 11360 females) aged ≥10 years. Two districts in each state in 2001	Pan with tobacco Gutka* Plain Pan Masala	<i>Current use</i> Karnataka Uttar Pradesh Uttar Pradesh Uttar Pradesh	14.2 (26.9 M, 0.6 F) 2.0 (2.3 M, 1.4 F) 10.2 M, 1.4 F 0.4 M, --- F	A World Health Organization Sentinel Survey of tobacco use. ----- Calculations by Chaudhry K for Sushma & Sharang (2005)

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Sinha <i>et al.</i> (2003)	India	School personnel in 224 schools having grades 8-10, in eight northeastern states, in 2001	Betel Quid	<i>Current use</i>		
				Arunachal P.	70.8 M, 73.6 F	A Global School Personnel Survey. Over 50% of current smokeless tobacco users reported using betel quid in six states.
				Assam	75.5 M, 36.3 F	
				Manipur	54.7 M, 60.3 F	
				Meghalay	80.0 M, 23.8 F	
				Mizoram	20.2 M, 25.1 F	
				Nagaland	65.9 M, 80.1 F	
			Sikkim	4.1 M, 48.8 F		
			Tripura	57.3 M, 33.8 F		
			Gutka	Arunachal P.	4.7 M, --- F	
				Assam	7.8 M, 12.7 F	
				Manipur	24.1 M, 2.6 F	
				Meghalay	7.5 M, 2.1 F	
				Mizoram	20.8 M, 34.5 F	
Nagaland	7.6 M, 10.5 F					
Sikkim	44.8 M, 4.7 F					
Tripura	20.6 M, 24.1 F					
Anwar <i>et al.</i> (2005)	India	124 consecutive dental out-patients (103 men; 21 women) in Chitrakoot village, Madhya Pradesh, near border with Uttar Pradesh in 2003	Gutka	Current use	46.0 (50.5 M, 23.8 F)	Of the 57 gutka users, all cited other family members using it; 36 also chewed paan with tobacco and 20 smoked cigarettes; many drank alcohol.

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Gajalakshmi <i>et al.</i> (2007)	India	500 816 adults aged ≥35 yrs residents (264 848 men, 253 968 women) of the city of Chennai, interviewed during 1998-2001.	Betel quid	<i>Current Chewers</i>		Baseline of a cohort study	
					<i>Men</i>		
				With tobacco	34–54 yrs 4.0		
					55–74 yrs 6.2		
					≥75 yrs 7.1		
				W/out tobacco	34–54 yrs 1.4		
					55–74 yrs 1.8		
					≥75 yrs 1.5		
				Total	34–54 yrs 5.4		
					55–74 yrs 8.0		
	≥75 yrs 8.6						
	<i>Women</i>						
With tobacco	34–54 yrs 5.0						
	55–74 yrs 12.6						
	≥75 yrs 13.5						
W/out tobacco	34–54 yrs 2.5						
	55–74 yrs 4.1						
	≥75 yrs 3.6						
Total	34–54 yrs 7.5						
	55–74 yrs 16.7						
	≥75 yrs 17.1						
Rajan <i>et al.</i> (2007)	India	500 residents (259 males; 241 females) aged > 15 years of two villages in Sriperambudur Taluk, Tamil Nadu, year not given.	Areca nut products	<i>Daily chewers</i>	19.8 (25.5 M, 13.7 F)	No association with education. Gutka was the most common form for chewers aged 15-25; unprocessed areca nut for users >55 yrs. Reasons for use studied.	
				Gutka	9.4		
				Areca nut	5.4		
				Others	5.0		

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Mazahir <i>et al.</i> (2006)	Pakistan	386 residents (193 males; 193 females) of Bilal, a squatter settlement in Karachi. 90 subjects were adolescents (10-18 years), the rest (296), adults (≥ 18 years), year not stated.	Paan Chaalialia Gutka	<i>Daily use</i>	12.4 M, 1.0 F	Industrially prepared Mixtures of areca nut, lime, catechin containing substance, sandalwood fragrance with tobacco (gutka) or without tobacco (chaalia). In this study, chaalia is an industrially prepared mixture of areca nut etc.
					19.7 M, 22.3 F	
					13.5 M, 0.5 F	
			Paan	Adolescents	5.9	
				Adults	7.2	
				Chaalialia	Adolescents	
			Gutka	Adults	14.4	
				Adolescent	9.8	
				Adults	6.1	
			Paan	Sindhi	6.0	
				Punjabi	7.2	
				Pathan	1.8	
			Chaalialia	Mohajir	20.2	
				Sindhi	25.4	
Punjabi	17.4					
Gutka	Pathan	21.2				
	Mohajir	30.0				
	Sindhi	6.0				
Gutka	Punjabi	6.6				
	Pathan	4.4				
	Mohajir	17.5				
Nisar <i>et al.</i> (2007)	Pakistan	157 adults (100 males; 57 females) aged ≥ 18 yrs, one adult in every second house-hold in a semi-urban community in Karachi in 2005	Pan with tobacco	Chewers	46.2	A tobacco use survey

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Tanwir <i>et al.</i> (2008)	Pakistan	994 urban residents (510 males; 484 females) aged 30-50 years in a low income part of Karachi (P & T colony)	Betel quid (Paan) and betel nut (Chaaliala)	Paan chewing	32 (34 M, 31 F)	A study on oral habits including oral hygiene, oral health and attitudes. In this study, chaalia is just areca nut.
				Betel nut alone	28 (18 M, 37 F)	
Tovosia <i>et al.</i> (2007)	Solomon Islands	315 residents in 2005	Betel quid	Ever chewers (at least weekly)	76.8 (83.0 M, 68.4 F)	Betel quid use was closely associated with smoking (OR= 4.0), but prevalence of smoking was lower (53.0%) Quids per day were also shown
Núñez-de la Mora <i>et al.</i> (2007)	U.K.	143 women of Bangladeshi origin, aged 18-39 years in London	Betel nut (as paan or supari)	<i>Chewers</i>		Differences not statistically significant. Small sample and narrow age range. Apart from pressure from family and friends, several women said they started using betel quid to prevent nausea associated with pregnancy.
				Adult migrant	25 F	
				Child migrant	35 F	
		Second generation	33 F			
				% Chewers who used tobacco in the quid	49 F	
Changrani <i>et al.</i> (2006)	USA	42 Indian-Gujarati (54% male) and 96 Bangladeshi (58% male) immigrants in New York; 96% response rate.	Paan	<i>Bangladeshi</i>		All 'use' refers to regular use.
				Ever use	35 (32 M, 40 F)	
				Current use	25	
				<i>Indian-Guj.</i>		
				Ever use	45 (61 M, 26 F)	
				Current	2	
		<i>Bangladeshi</i>				
		Ever use	9 (88 M, 22 F)			
		Current use	6			
		Gutka				
			<i>Indian-Guj.</i>			
			Ever use	31 (100 M, 0 F)		
			Current use	24		

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Chatrchaiwi-watana (2007)	Thailand	4955 adults (1484 men, 3471 women) aged 30-89 in randomly selected villages of six districts of Khon Kaen province were screened in two surveys in 1990-91 and 1992-94.	Betel quid	Chewers	17	Oral examination was done on all adults to study tooth loss. The adjusted odds ratio for tooth loss in betel chewers was 1.7 (1.2-2.3) and smokers 1.4 (1.1-1.7)
	China (PRC)	Studies carried out in Hunan province, in Xiangtan and in Changsha areas.	Betel quid	Chewers	64.5-82.7	From a review of Chinese literature