

## 3.2

### Prevalence of Tobacco Use

Surveys conducted with the objective of providing the prevalence of tobacco use are rare in India. Population-based surveys conducted in limited areas to study risk factors for various diseases and mortality have reported information on tobacco use. Additionally, three major national surveys have collected limited tobacco use information. This section presents the prevalence and trends of tobacco use from some of these studies, mostly on populations 15 years of age and above.

#### Local studies

The most detailed tobacco use information comes from large local surveys (5000–200,000 respondents). Cross-sectional surveys on heart disease in local communities have mainly collected smoking information (1000–2000 respondents), as have surveys on lung diseases (300–15,000 respondents). Studies on lifestyle-related factors and drug abuse also report on smoking and sometimes on all forms of tobacco use ( $n=100-25,000$ ). The age groups covered by the various types of studies are diverse and since tobacco use varies greatly with age, comparison is problematic.

In Delhi, a city with a diverse population, two large sample surveys were conducted, one in 1985–1986 and the other in 1992, intended to be representative of the city. In the first, with 14,770 persons in the age group of 25–64 years, smoking prevalence among men was 45% and among women it was 7%.<sup>16</sup> In the second (10,312 persons, 10 years of age and above), 27.7% of males and 2.7% of females were smokers.<sup>17</sup> The lower prevalence reported from the second

survey could be in part due to the inclusion of children in the survey. In the rural part of Delhi, in a small study conducted in the 1960s, 63.5% of males aged 25 years and above were smokers.<sup>18</sup>

Data collected in small surveys in Uttar Pradesh show a high tobacco use, smoking being more popular than chewing. In the Sentinel Survey of individuals 10 years and above in rural Uttar Pradesh (Allahabad, Bijnor and Mainpuri districts), 51% of males were tobacco users (28.2% smokers and 24.5% smokeless users), while 9.2% of females used tobacco, mainly in smokeless forms. In the urban areas of the same districts, 45% of males were tobacco users (24% smoked; 22.5% used smokeless tobacco), and 8.2% of females were users, again, mainly in smokeless forms. Smoking in these three districts consisted mainly of *beedi* smoking, especially in rural areas.<sup>19</sup> In an earlier study in Mainpuri district, 82% of men and 21% of women were tobacco users, mostly in the smoking form or combined smoking and smokeless forms.<sup>5</sup>

Several rural areas studied in central and north India appear to have high rates of tobacco usage. In a survey in rural Nagaur, Rajasthan, 51% of males and 5% of females were tobacco users among 3148 respondents 21 years of age and above.<sup>20</sup> In urban Jaipur, in three successive studies about 39% of men and 17% of women 20 years and above were tobacco users.<sup>21–23</sup> In Ballabgarh, Haryana, among men 87.6% were tobacco users and among women 52.9% (55 years and above).<sup>24</sup>

Low rates in Punjab contrast with the high rates in other areas of north India. In rural Amritsar, Ferozepur and Gurdaspur districts, among 3600 persons 15 years and above, 19.3% of males and 4% of females were tobacco users.<sup>25</sup>

In two large house-to-house surveys of over 10,000 persons in rural Bihar conducted during 1966–1969, about 80% of the men 15 years and above were tobacco users. Among villagers in Singhbhum district, 64% of the men smoked and in Darbhanga district, 50% men smoked. In

Darbhanga, about half the male smokers also chewed, while in Singhbhum, less than a third of smokers also chewed, demonstrating that combined use was common. For women, chewing was more common in Singhbhum and smoking in Darbhanga.<sup>26,27</sup> Thus, Bihar has been shown to have a high prevalence of tobacco use.

In a recent survey of 12,000 individuals aged 18 years and above in urban Kolkata, smoking among men was 38% and chewing 36%. Women users were nearly exclusively chewers (19%).<sup>28</sup>

In the Sentinel Survey in three districts of Karnataka of persons 10 years of age and above, 49.2% of males and 16.4% of females in the rural areas were tobacco users. In the urban areas, 32.7% of males and 8.5% of females were tobacco users. In both urban and rural areas, about two-thirds of male users smoked, while most female users chewed tobacco.<sup>19</sup> In another study in Kolar district, 30.9% of males were tobacco users with nearly equal prevalence of smoking and chewing. Some 38.5% of females reported chewing tobacco.<sup>29</sup>

Among rural inhabitants 15 years of age and above in Ernakulam district, Kerala during 1966–1969, 81% of males and 39% of females used tobacco in some form.<sup>26,27</sup> Smoking by itself was practised by 45% of males (15+ years); additionally, 22% both smoked and chewed, and 14% chewed only. Women's tobacco use was essentially confined to chewing (38%). Another survey in Ernakulam in 1971 showed very similar results.<sup>30</sup> In the 1990s, in rural Thiruvananthapuram (Trivandrum) district, about half the men aged 35 years and above were smokers.<sup>31</sup> In urban Thiruvananthapuram, 43.9% and 55.8% of men smoked in two adjacent areas, while 26.4% and 26.8% practised smokeless use.<sup>32</sup> The emerging picture from Kerala is one of high levels of tobacco use, where at least three-fourths of men use tobacco in some form: about half the men smoke and about one-fourth use smokeless tobacco; and among women, a third to one-fifth chew *paan* (betel quid) while smoking is almost negligible among them.

A recent survey in South Arcot district, Tamil Nadu, among men aged 35–69 years, found that nearly 47% had ever been smokers. During the same period, a survey in urban Chennai found that 38% men were ever-smokers.<sup>33</sup>

In two large surveys in Bhavnagar, Gujarat, conducted in the late 1960s<sup>26,27</sup> and late 1990s,<sup>34</sup> overall tobacco use prevalence among men aged 15 years and above was around 70% in both surveys (71% and 67.6%). Smoking by men, however, appeared to have significantly decreased over the years (56% to 35%) and smokeless tobacco use to have increased (9% to 27%), while mixed use remained nearly the same (6% and 4.8%). In women, where smoking remained negligible, smokeless use may have decreased slightly (15% to 12%). *Mawa* chewing was found to have become highly popular among young men (15–35 years).

In a large survey conducted in rural Pune district in Maharashtra in the late 1960s, total tobacco use was 62% among men and 49% among women aged 15 years and above.<sup>7</sup> Most tobacco use consisted of smokeless forms. Similarly, in the city of Mumbai, a survey of residents 35 years and older from the middle and lower socioeconomic classes found 69% of men and nearly 58% of women using tobacco, and smokeless tobacco use predominated.<sup>35</sup> Some 24% of men smoked, while smoking was negligible among women.

### Occupational group studies

Occupational groups studied for tobacco use have included skilled and unskilled industrial workers, policemen, educational personnel, doctors, and white-collar workers/professionals, as shown in Table 3.1. The larger studies are described here.

In a survey of 57,518 industrial workers in Ahmedabad, Gujarat aged 35 years and above (95% men), 35.6% smoked exclusively, 22.1% smoked and chewed *paan/supari* and 27.1% practised tobacco use in other ways (chewing tobacco with or without lime paste, chewing *paan/supari* or

**Table 3.1** Tobacco use prevalence data from urban occupational group studies

Urban workers	n	Age (years)	Smoking (%)		Chewing (%)	
			M	F	M	F
<b>Industrial workers<sup>50</sup></b>						
Ludhiana: Machine tool factory and woollen hosiery mill	473	17–64	50.2	–	NR	–
Ahmedabad: Textile workers (mainly) <sup>36</sup> 1967–1971	57,518	≥35	35.6 22.1 smk+ chew	–	27.1	–
<b>Policemen<sup>51</sup></b>						
Bombay (in 1969)	3674	≥26	26.9 11.6 smk+ chew	–	47.0	–
<b>Media personnel<sup>52</sup></b>						
Patna: Press employees	300	NR	10 27 smk+ chew	–	52	–
<b>Educational personnel</b>						
Chandigarh: Teachers <sup>53</sup>	347 M 295 F	30–64	19.3 0.0	–	NR	–
Hooghly District, West Bengal: Teachers <sup>54</sup>	257		Any tobacco 73.9	Any tobacco 13.9	NR	–
Aligarh: University staff and research scholars <sup>55</sup>	2159 M 280 F	NR	33.3	–	20.6	30.4
Lucknow: University teachers <sup>56</sup>	471 M 102 F	NR	21.4 –	–	NR	NR
<b>Professionals and college students<sup>57</sup></b>						
Siliguri			Sex not stated			
Professionals	588	NR		53.0	NR	
College students	600	18–25		48.8	NR	
<b>Doctors<sup>39</sup></b>						
Chandigarh	218	NR	31.6 current 23.3 former	–	NR	–
All-India meeting <sup>40</sup>	120 102 M 18 F	NR	10 current 9 occasional 14 former	0.0	8	8
All-India meeting <sup>41</sup>	256 221 M 35 F	26–70	2.3	0.0	NR	NR

NR: not reported; smk: smoking; chew: chewing; M: male; F: female

inhaling snuff). Smoking included *beedi*, cigarette, cigar, *hookah*, *chillum* and pipe.<sup>36</sup>

In the Global School Personnel Survey (GSPS), carried out in 2000 in Bihar, 77.6% of the 502 male school personnel interviewed and 77% of the female personnel interviewed said they were tobacco users. The break-up by type of tobacco use was smoking: 47.4% of men (cigarette

smoking: 40.5%) and 31.0% of women (cigarette smoking: 26.9%). Some 58.7% of men and 53.4% of women said they used smokeless products.<sup>37</sup>

The GSPS was also conducted in eight north-eastern states of India during January–March 2001 (Table 3.2). The prevalence of *beedi* smoking varied from 10% to 40% among school personnel in this region. In four of the states,

**Table 3.2** Prevalence of current tobacco use among school personnel in eight northeastern states: Global School Personnel Survey (GSPS), India<sup>38</sup>

State	Total <i>n</i>	Men		Women	
		Smoking (%)	Smokeless (%)	Smoking (%)	Smokeless (%)
Assam	782	55.3	44.4	33.8	50.5
Arunachal Pradesh	533	45.2	47.9	34.4	49.0
Manipur	395	79.5	75.0	61.4	75.8
Meghalaya	447	69.6	51.3	31.6	56.6
Mizoram	307	75.3	79.2	76.2	87.2
Nagaland	426	55.1	49.8	18.1	32.5
Sikkim	342	52.5	54.2	39.7	73.6
Tripura	562	56.6	55.5	9.2	24.5

Note: Usages were not mutually exclusive and values include daily and occasional users.

Source: Sinha *et al.* 2003<sup>38</sup>

cigarette smoking predominated, while in four other states, *beedi* smoking predominated. Other forms of smoking were also found in the region, like *kamchung* (a small pipe) smoking in 6 states and *hookah* smoking as well as marijuana smoking with tobacco.<sup>38</sup>

During a survey conducted in 1986–1987 among 218 doctors in three institutions in Chandigarh, 31.6% were current smokers and 9.6% ex-smokers.<sup>39</sup>

Results of two surveys of professional meetings of doctors from different parts of India showed that about 2% and 10% were current smokers among the male doctors, while none of the women smoked. In the study with the higher proportion of smokers, about 8% of men as well as women chewed *paan* with tobacco.<sup>40,41</sup>

Studies of medical students have shown that the prevalence of smoking (in all studies) and intensity of smoking progressively increased with the number of years in medical college.<sup>42</sup> Knowledge of the harmful components of cigarettes and *beedis*, and of the health effects beyond bronchitis and lung cancer was poor, even among the final-year students.<sup>43,44</sup>

### Regional differences in specific tobacco practices

Very few studies have reported on specific types of tobacco use. *Beedi* smoking was common in

### Box 3.1 Education and tobacco use

A high prevalence of tobacco use among school personnel in the states of Bihar and the Northeast, teachers in Hooghly district and doctors in Chandigarh, demonstrates that education alone is no guarantee of a low prevalence of tobacco use. The prevailing social environment has its own influence.

six rural areas surveyed during 1966–1969 (Andhra Pradesh, Bihar [two areas], Kerala and Gujarat) and in 1974 (Goa).<sup>4</sup> About 60% of men smoked *beedis* in Ernakulam, Kerala; Singbhum, Bihar and in Goa. However, only 12% of men smoked *beedis* in Srikakulam, Andhra Pradesh where 57% of men smoked *chuttas*. In Bhavnagar, Gujarat 11% of men smoked clay pipes (*hookli*). In all six areas, only a small fraction of men smoked cigarettes (up to 6% in Ernakulam and 5% in Goa), the *hookah* or *chillum*.<sup>5</sup> Chewing was not very prevalent among men in these areas except in Darbhanga, where 44% of men chewed tobacco with lime, and in Kerala, where 33% of men chewed *paan* with tobacco.<sup>2,26</sup>

In rural and urban surveys in Maharashtra, smokeless tobacco use consisted of the application of *mishri* (especially among women) and the chewing of tobacco, mainly in *paan*.<sup>8,35</sup>

### Trends with age and time

Tobacco use increases with increasing age. In

the Sentinel Survey, tobacco use prevalence crossed the 50% level among men in the age group of 35–39 years in Karnataka, but in Uttar Pradesh, where the overall prevalence was higher, it crossed that level in the age group of 25–29 years. Among women in Karnataka and Uttar Pradesh, the highest prevalence was reached in the age group of 70 years and above, at levels of 27.6% and 42.6%, respectively, suggesting that in areas with a high prevalence of tobacco use, initiation may occur at an early age.<sup>19</sup>

Types of tobacco use also change with time in succeeding generations. House-to-house surveys conducted in random samples of villages in five districts of Andhra Pradesh, Bihar (2 districts), Gujarat and Kerala during 1966–1969 among 50,915 villagers aged 15 years and above indicated that smoking was becoming more popular among the male youth of those areas because the average age of men who smoked was lower than the average age of men in the entire area's study population. In all five areas, the average age of women smokers was higher than that of the women in the entire study population, indicating that smoking was becoming less popular among younger women in all the areas. On the basis of similar age considerations, chewing appeared to be becoming less popular among both men and women in Ernakulam and Darbhanga, and among women in Bhavnagar.<sup>2</sup> Thus, tobacco use patterns change with time.

Traditional forms of tobacco chewing such as in *paan* now appear to be mainly an indulgence of the older generation; the younger generation is taking up newer forms of tobacco use such as *gutka*, tobacco toothpaste and cigarette smoking.<sup>45</sup> In a survey of 1200 college students,

most tobacco users used multiple tobacco products as well as alcohol.<sup>46</sup>

## National surveys

Efforts to understand the tobacco use scenario in India by patching together prevalence data collected in various localities in different age groups highlight the utility of national survey data.

The National Household Survey of Drug and Alcohol Abuse in India (NHSDAA), conducted in 2002 among males, covered over 40,000 individuals aged 12–60 years in nearly 20,000 households in 25 states.<sup>47</sup> The overall prevalence of current tobacco use from the NHSDAA was 55.8%.

Table 3.3 gives the age-wise break-up of the NHSDAA data, showing an increase in tobacco use with age, levelling off after 50 years of age. This confirms the trend with age shown in the Sentinel Survey and local surveys.

In India, the National Sample Survey Organization (NSSO) has been conducting yearly surveys since 1950–1951.<sup>48</sup> Tobacco use is part of the consumer behaviour component of the National Sample Survey (NSS), conducted every five years. Another nationwide survey, the National Family Health Survey (NFHS), in its second round (1998–1999), collected information on tobacco use. It found that tobacco use among men was 46.5% and 13.8% among women aged 15 years and above in 1998–1999.<sup>49</sup>

While the two surveys have similar sampling methods, it should be kept in mind that in the NSS, the male head of the household responded

**Table 3.3** Tobacco use by age category, NHSDAA, 2004<sup>47</sup>

	12–18 years	19–30 years	31–40 years	41–50 years	51–60 years
Sample ( <i>n</i> )	8587	13216	7805	5920	5168
Tobacco users ( <i>n</i> )	1860	7026	5186	4193	3638
Prevalence	55.8	54.9	67.6	72.0	71.5

Source: Srivastava *et al.* 2004

**Table 3.4** Available national data for India on tobacco use prevalence among adults, for 1995–1996 and 1998–1999<sup>49</sup>

Survey	Strata	National Sample Survey, 52nd Round, 1995–1996	National Family Health Survey-2, 1998–1999
Age group		15+ years	15+ years
No. surveyed	Urban+ Rural	396,546	315,597
Regular tobacco users	M (%)	51.3	46.5
	F (%)	10.3	13.8
Regular smokers	M (%)	35.3	29.3
	F (%)	2.6	2.4
	All (%)	19.2	NR
Regular smokeless users	M (%)	24.0	28.1
	F (%)	8.6	12.0
	All (%)	16.4	NR

NR: not reported; M: male; F: female

Note: Confidence intervals were not available for any national survey data

Source: Rani *et al.* 2003

for all members, while in the NFHS, the female head of the household responded for all members, an important difference in methodology. Prevalence rates of tobacco use were calculated from both the recent NSS 52nd Round and NFHS-2 for the population aged 15 years and above to permit comparison<sup>49</sup> and are presented here (Table 3.4).

The surrogate respondent may underreport tobacco use by younger individuals and the opposite sex either due to ignorance or fear of social disapproval. Thus, in the NFHS where the respondents were mainly females, the

prevalence of smoking among men was reported to be lower than the NSS (29.3% vs 35.3%) where most respondents were males, and the prevalence of smokeless tobacco use among women higher (12% vs 8.6%). Part of the differences may be due to time trends as the surveys were 3–4 years apart. A time trend of overall decreasing tobacco use and a specific increase in smokeless tobacco use is in consonance with the trends in tobacco consumption indicated by the NSS from 1987 (see Chapter 2).

### Geographic variation

State and regional differences suggested in local studies have generally been confirmed by the national studies, with some exceptions. For example, the NHSDAA found the highest prevalence of tobacco use in South Bihar (94.7%), followed by Uttar Pradesh (87.3%) and high rates in the northeastern states, similar to findings in local surveys and in the GSPS. The lowest rate was found in Kerala (20.6%), which is in contrast to the findings of other recent local studies.

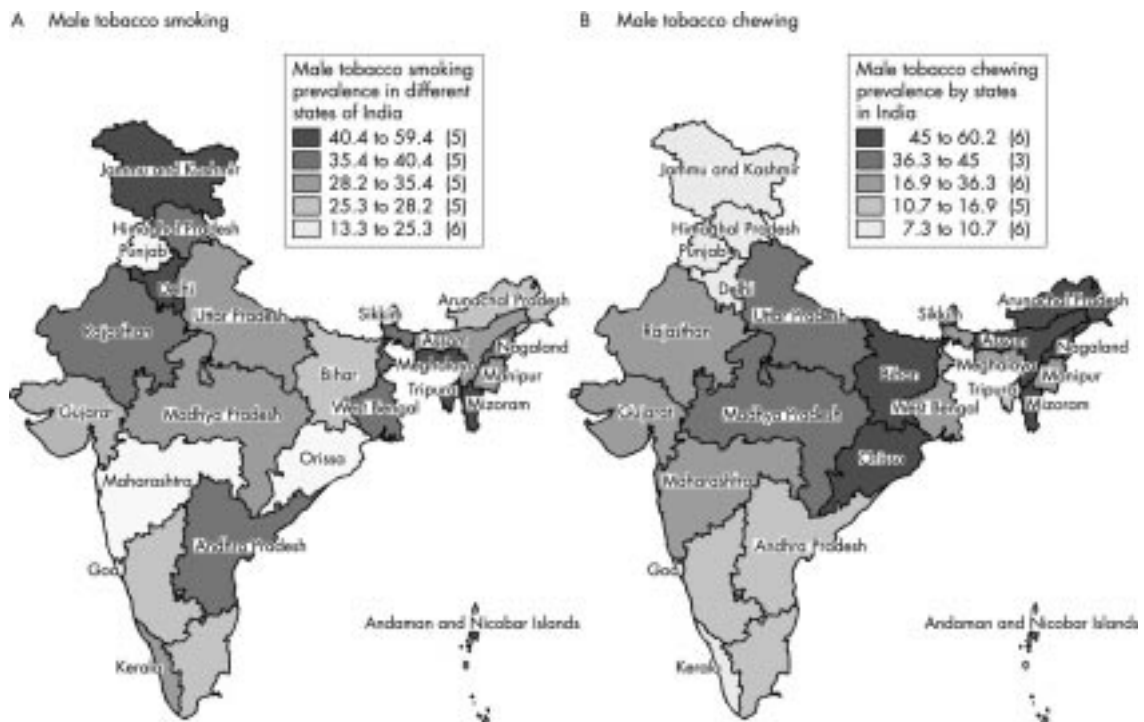
State-wise prevalence using the data of the NFHS-2 are shown in Table 3.5 and for men, graphically displayed in maps (Fig. 3.1). Overall tobacco use increases towards the centre of the country, the north and east. Smoking has an increasing gradient towards the north, northwest, northeast and in the two states of Andhra Pradesh and Kerala.

**Table 3.5** State-level prevalence of tobacco smoking and chewing in India by sex (age 15 years and above)<sup>49</sup>

Region/state	Smoking				Chewing			
	Men		Women		Men		Women	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>North</b>						11.5–14.9		
New Delhi	23.9	22.0–25.9	1.8	1.4–2.2	13.1	6.7–9.8	2.5	1.9–3.2
Haryana	40.4	37.7–43.1	3.5	2.8–4.3	8.1	6.7–9.1	0.9	0.6–1.3
Himachal Pradesh	38.6	36.6–40.6	2.4	1.8–3.1	7.8	5.8–9.1	0.5	0.3–0.8
Jammu and Kashmir	44.3	42.0–46.6	8.3	7.1–9.7	7.3	8.0–10.8	0.9	0.6–1.3
Punjab	13.9	12.2–15.8	0.3	0.2–0.5	9.3	17.7–20.4	0.2	0.1–0.4
Rajasthan	37.8	35.7–39.9	4.1	3.2–5.2	19.0	38.7–42.0	3.8	2.9–4.9
<b>Central</b>								
Madhya Pradesh	29.4	27.6–31.1	0.9	0.6–1.2	40.3	34.6–38.0	14.4	12.7–16.2
Uttar Pradesh	33.8	32.5–35.2	3.0	2.6–3.5	36.3	50.1–53.5	10.9	10.1–11.8
<b>East</b>								
Bihar	26.3	24.8–27.9	6.2	5.5–7.0	51.8	46.7–51.4	6.7	6.0–7.6
Orissa	25.2	23.2–27.2	0.9	0.7–1.2	49.0	20.9–25.6	34.3	31.9–36.9
West Bengal	39.4	37.4–41.5	2.5	2.0–3.2	23.2	44.7–51.0	15.1	13.5–17.0
<b>North-East</b>								
Assam	31.5	28.4–34.9	2.6	2.0–3.4	47.8	47.9–55.3	24.3	22.1–26.6
Arunachal Pradesh	25.6	23.1–28.2	5.6	4.2–7.3	51.6	31.1–37.3	33.1	29.6–36.7
Manipur	35.0	32.0–38.1	12.0	10.0–14.2	34.1	13.8–20.5	19.2	15.5–23.5
Meghalaya	55.2	50.6–59.7	6.7	4.2–10.6	16.9	56.5–63.8	27.6	23.8–31.7
Mizoram	59.4	57.0–61.8	22.0	19.6–24.6	60.2	41.3–48.8	60.7	57.2–64.0
Nagaland	38.0	34.3–41.8	2.4	1.3–4.5	45.0	36.5–42.7	16.5	13.7–19.7
Sikkim	19.4	17.1–22.0	8.2	6.9–9.7	39.5	8.9–13.1	18.6	16.2–21.2
Tripura	48.5	44.9–52.2	9.7	6.7–13.9	10.8	6.0–9.9	5.2	3.3–8.1
<b>West</b>								
Goa	17.8	16.1–19.6	2.0	1.2–3.2	7.7	22.8–26.4	8.0	6.3–10.2
Gujarat	25.3	23.5–27.2	1.4	1.0–1.8	24.6	32.3–36.0	8.0	7.0–9.2
Maharashtra	13.3	12.1–14.6	0.2	0.1–0.4	34.1	9.4–12.0	18.0	16.1–20.0
<b>South</b>								
Andhra Pradesh	35.4	33.4–37.5	4.2	3.5–4.9	10.7	12.1–15.6	9.9	–
Karnataka	25.7	24.1–27.4	0.3	0.2–0.4	13.8	12.7–15.7	14.1	12.7–15.7
Kerala	28.2	26.5–30.0	0.4	0.3–0.7	9.4	9.1–11.2	10.1	9.1–11.2
Tamil Nadu	27.0	25.4–28.8	0.3	0.2–0.6	12.9	9.3–12.2	10.7	9.3–12.2

CI: confidence interval

Source: Rani *et al.* 2003



**Fig. 3.1** Prevalence of tobacco smoking and tobacco chewing among men aged 15 years and above in different states of India (bracketed numbers denote the number of states)

Source: Rani *et al.* 2003<sup>49</sup>

### 3.2 PREVALENCE OF TOBACCO USE

#### KEY MESSAGES

- About 45 surveys conducted since the 1960s in urban and rural areas are available, covering different age groups, but only a handful were large enough to be representative of the area studied.
- According to the National Sample Survey 52nd Round and National Family Health Survey-2, male tobacco use prevalence was 51.3% in 1995–1996 and 46.5% in 1998–1999. The prevalence of tobacco use among females was 10.3% and 13.8%, respectively.
- Geographic area is a determinant of the type of tobacco use and prevalence of usage; overall tobacco use increases towards the centre, the north and the east. Chewing tobacco use also follows this pattern. Smoking has an increasing gradient towards the north, northwest, northeast and in the two states of Andhra Pradesh and Kerala.
- The National Household Survey of Drug and Alcohol Abuse conducted in 25 states (excluding Jammu and Kashmir) in 2002 reports that 55.8% of males 12–60 years of age currently use tobacco.
- Tobacco use prevalence among males is higher compared to females and among older age groups compared to the younger age groups.