

Tobacco use among adults in Cambodia: evidence for a tobacco epidemic among women

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Objective To identify the demographic characteristics of current tobacco users in Cambodia, particularly women, and to explore the reasons for current tobacco use in demographic subgroups of the Cambodian population.

Methods We used a stratified three-stage cluster sample of 13 988 adults aged 18 years and older from all provinces in 2005–2006. Participants completed an interviewer-administered survey that contained items on all forms of tobacco use and on health and lifestyle variables. Multivariable regression analysis was performed to identify demographic predictors of tobacco use.

Findings Cigarette smoking occurred among 48.0% of men and 3.6% of women. We estimated that 560 482 women (95% confidence interval, CI: 504 783 to 616 180) currently chewed tobacco (typically as a component of betel quid) and that the prevalence more than doubles with each decade of adulthood up to the point that about half of all older women chew tobacco. Both men and women cited the influence of older relatives as their primary reason for starting to use tobacco. About one out of five rural women who used chewing tobacco started their habit for relief from morning sickness. The highest prevalence of chewing tobacco among women was seen among midwives (67.9%) and traditional healers (47.2%). High rates (66.8%) of cigarette and pipe tobacco use occurred among ethnic minorities who represent hill tribes found throughout south-east Asia.

Conclusion The tobacco epidemic in Cambodia extends far beyond cigarette smoking in men. Tobacco control that focuses only on cigarettes will not address the health burden from smokeless tobacco use in women that may be an integral part of cultural, familial, and traditional medicine practices.

Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

National prevalence data on adult tobacco use in south-east Asia (Indonesia, Malaysia, the Philippines, Thailand and Viet Nam) indicate that cigarette smoking is common among men (39–75%) but not women (3–18%).¹ This gender-specific pattern of cigarette consumption is also seen in other parts of Asia such as China and India.¹

WHO has outlined the stages of a global tobacco epidemic that occurs after the introduction of tobacco into the economy. The first stage is a 50-year period when cigarette smoking increases to more than 50% among men. During the second stage that occurs over the next 50 years, smoking decreases among men but increases among women.^{2,3} The model for this later stage is based on trends in Europe and North America, where cigarette smoking increased among women after changes in social norms as a result of industrialization.⁴ This paradigm has been used to classify south-east Asia as being in the second stage of a tobacco epidemic, characterized by the increase in tobacco use among women.³

In analyses of the stage of the tobacco epidemic in south-east Asia, it is important to consider that the staging paradigm focuses on cigarette smoking and does not consider the contribution to gender-related trends of other forms of tobacco, such as smokeless tobacco and pipe tobacco.

Moreover, the WHO Framework Convention on Tobacco Control (FCTC) Treaty tends to call for measures focused on curbing the purchase and consumption of commercial cigarettes, such as price and tax measures, regulation of tobacco content, and restrictions on package and product labelling and advertising.⁵ It remains to be seen whether the successful restriction of commercial cigarette consumption transfers the foci of addictive behaviour to other tobacco products, such as smokeless tobacco, hand-rolled cigarettes and pipes.

In Cambodia, published reports on adult cigarette consumption from economic surveys⁶ during 1999 and 2003 and a Demographic and Health Survey among women completed in 2000⁷ confirm the trend seen in other parts of south-east Asia: cigarette smoking was highly prevalent among men (> 50%) but not women (3%). Until 2005, accurate prevalence data on all forms of tobacco use in a complete nationwide sample were not available.

During 2005–2006 we completed the largest nationwide survey of adult tobacco use ever conducted in Cambodia ($n = 13\,988$) during the Tobacco Control Leadership Training (TCLT) programme – a collaborative effort of the Fogarty International Center, National Institutes of Health (Bethesda, MD, United States of America), Loma Linda University (Loma Linda, CA, USA), the National Institute of Statistics

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(Ministry of Planning, Phnom Penh, Cambodia)⁸. In preparation for this national prevalence survey, we conducted validity and reliability studies of the survey items and pictograms of commercial and hand rolled cigarettes, chewing tobacco and pipe tobacco that were used by survey interviewers. Our aims in the present study were (i) to identify the demographic characteristics of current tobacco users in Cambodia, especially women, and (ii) to examine the reasons for current tobacco use in demographic subgroups of the smoking population. The implications of the findings for the design of prevention programmes and tobacco control policies will be discussed.

Methods

Study population

For the TCLT survey we assembled a nationwide, representative sample of 13 988 adults aged 18 years and older. We conducted a stratified three-stage cluster sampling of the population using the 1998 Cambodia General Population Census as a sampling frame. Specifically, we stratified the country into 17 sampling domains consisting of 12 individual provinces and five groups of similar provinces. Within each domain, we then randomly selected 26 villages (we use the term “village” to represent a rural village or urban area of similarly small size) by circular systematic sampling, with the probability of inclusion of the village proportionate to its size. Each village was further subdivided into “enumeration areas,” i.e. blocks of about 110 households that were created during cartographic research for the 1998 census. For each village, one enumeration area was randomly selected for surveying. We used circular systematic sampling with a random start point to randomly select 11 households from urban areas and 15 households from rural areas.

Survey teams consisted of 4 or 5 interviewers and enumerators from the National Institute of Statistics (Ministry of Planning, Phnom Penh, Cambodia) who worked in each of the 17 census-derived regions described above. A total of 92 people were trained by the National Institute of Statistics and one of the report authors (PNS) in the pretesting and administration of the survey. In addition to conducting the

interviews, survey teams updated the household enumeration and the map of the sampling units that was obtained during the 1998 census.

The survey teams visited all private households including single-member households. The survey did not cover institutional households such as military barracks, prisons and hospitals, or the residents of temples (monks). In each household, all adults aged 18 years and older were asked to participate in the study, and less than 3% declined.

The final sample consisted of 13 988 adults. This large sample provided excellent statistical power (> 90%) to estimate prevalences as low as 5% to within about 1% sampling error in separate analyses of women and men.

Written informed consent was obtained from each subject and the protocols for the national survey and substudies (i.e. salivary cotinine validation) were approved by the Institutional Review Board of Loma Linda University and the National Ethics Committee on Health (Ministry of Health) in Cambodia. An incentive of about US\$ 0.50 was provided to each participant.

Questionnaire

Survey items were designed with three sources of input: focus groups conducted on tobacco and health issues in rural and urban centres, graduate-level training in survey research of Ministry of Health personnel to select and modify items from tobacco-use surveys in other countries,⁸ and consultation with local nongovernmental organizations that had conducted provincial surveys on tobacco use. The final survey was conducted in the local language (Khmer) and the written survey items were translated and back-translated to verify content, criteria and semantic equivalence by bilingual and monolingual experts who used the methods described by Flaherty et al.⁹

The national prevalence survey administered in 2005–2006 included items on demographics, tobacco use (commercial cigarettes, hand-rolled cigarettes, chewing tobacco and pipe tobacco), age at the start of tobacco use, reasons for starting to smoke, knowledge and attitudes about tobacco, smoking cessation, anthropometric data, diet, current health, women's health and media exposure. The items

about tobacco use were in the form of interviewer-administered items adapted from WHO surveys and other national prevalence surveys that measured the intensity and duration of tobacco use, as well as interviewer-administered pictograms of commercial and local tobacco products. The pictograms were designed on the basis of the findings of qualitative research (focus groups, key informants) involving rural and urban tobacco users in Cambodia.

Validity and reliability studies

For the validity substudy we randomly sampled 201 adults aged 21 to 84 years from a rural province. They completed the TCLT survey and provided saliva samples for cotinine testing with the NicAlert test (Nymox Pharmaceutical Corporation, Hasbrouck Heights, NJ, USA). For the reliability study we randomly sampled 30 adults from 10 provinces who had completed the national prevalence survey. We re-interviewed these participants 2 to 3 weeks later with the same survey administered by a different interviewer.

The survey items and pictograms showed excellent validity when compared with salivary cotinine levels: sensitivity, 86% (95% confidence interval, CI: 78.9–93.1); specificity, 94% (95% CI: 87.6–98.4); positive predictive value, 93% (95% CI: 89.7–98.7). Reliability analysis showed excellent retest results for current smoking ($\kappa = 0.93$) and the pictograms of 37 commercial cigarette brands ($\kappa = 1$), hand-rolled cigarettes ($\kappa = 0.80$), chewing tobacco ($\kappa = 0.86$) and pipes ($\kappa = 1$).

Statistical analysis

Data analysis for this study needed to account for the stratified, multistage cluster sampling protocol described above. The 95% CIs for prevalence, means and odds ratios (ORs) for tobacco use and health variables were calculated with a Taylor series linearized method. This allowed the computation of between-cluster variance estimators that accounted for the intracluster correlation among subjects within the same village. Point estimates for prevalence, means and ORs were further adjusted by sample weights to account for different sampling fractions within each of the 17 domains described above. ORs were derived from logistic regression models where

tobacco use was the dependent variable and the independent variables had to do with demographic characteristics, anthropometric data, diet and baseline health status. Interaction terms in these models were tested with a log likelihood ratio test. These statistical analyses were performed with SUDAAN software release 9.0 (RTI International, Research Triangle Park, NC, USA).

Results

The demographic characteristics of our sample of 13 988 adults from all provinces of Cambodia are shown in Table 1. The population was predominantly of Khmer ethnicity (95.1%) and Buddhist (95.7%). Most of the sample had completed 12 years of education or less (97.6%), earned less than US\$ 2 per day (86.7%) and engaged in farming (55%) or labour (8.6%) as their primary economic activity.

Fig. 1 shows that the prevalence of current tobacco use was 49.0% among men and 20.5% among women. The figure also shows the prevalence of current use of specific forms of tobacco (cigarettes, chewing tobacco, pipe tobacco) by women and men. A small proportion (0.3% of men; 0.4% of women) of participants were mixed users who chewed tobacco and smoked cigarettes.

Among current tobacco users, the median age at initiation was 18.2 years (interquartile range, IQR: 15.6–21.1) among men and 29.0 years (IQR: 19.5–39.1) among women. Sample weights were used to estimate that there are 1 924 112 adults (95% CI: 1 799 228–2 048 996) who currently use tobacco in Cambodia. The two largest subgroups by gender and form of tobacco were 1 222 831 men (95% CI: 1 138 823–1 306 839) who smoked cigarettes and 560 482 women (95% CI: 504 783–616 180) who chewed tobacco. Cigarette smoking and tobacco chewing.

In Table 2 and Table 3 (available at: <http://www.who.int/bulletin/volumes/87/12/08-058917/en/index.html>) we show how tobacco use varied by age, gender and other demographic variables. Men primarily smoked cigarettes, and after the age of 25 years the prevalence of smoking doubled to more than 50% (Table 2). Women primarily chewed tobacco, and after the age of 25

Table 1. Mean age and selected demographic variables in a sample of adults included in nationwide survey of tobacco use, Cambodia, 2005–2006

	All (n = 13 988) % (95% CI)	Women (n = 7 858) % (95% CI)	Men (n = 6 130) % (95% CI)
Age in years	39.0 (38.5–39.4)	39.2 (38.8–39.6)	38.6 (38.0–39.2)
Ethnicity			
Khmer	95.1 (92.7–96.8)	95.1 (92.8–96.6)	95.1 (92.6–96.8)
Cham	3.1 (1.7–5.5)	3.3 (1.8–5.9)	2.9 (1.6–5.1)
Local tribe ^a	0.6 (0.3–1.3)	0.6 (0.3–1.2)	0.7 (0.3–1.4)
Other ^b	1.2 (0.7–1.9)	1.0 (0.6–1.7)	1.4 (0.8–2.3)
Religion			
Buddhist	95.7 (93.4–97.3)	95.7 (93.6–97.2)	95.7 (93.2–97.3)
Muslim	3.2 (1.8–5.6)	3.3 (1.8–6.0)	3.0 (1.7–5.2)
Christian	0.4 (0.2–0.7)	0.3 (0.1–0.7)	0.4 (0.2–0.9)
Other ^c	0.7 (0.5–1.0)	0.6 (0.4–1.0)	0.8 (0.5–1.1)
Marital status			
Never married	17.8 (16.1–19.5)	16.3 (14.4–18.4)	19.6 (17.8–21.6)
Currently married	72.4 (70.7–74.1)	68.6 (66.4–70.7)	77.4 (75.4–79.2)
Divorced or separated	2.2 (1.8–2.5)	3.5 (3.0–4.1)	0.4 (0.3–0.6)
Widowed	7.0 (5.9–8.1)	10.9 (9.4–12.6)	1.9 (1.4–2.5)
Years of education			
0–6	74.3 (70.7–77.5)	81.5 (78.4–84.2)	65.0 (60.6–69.0)
7–12	23.3 (20.2–26.6)	17.0 (14.4–19.9)	31.4 (27.6–35.5)
13–15	1.4 (1.0–2.0)	0.9 (0.5–1.6)	2.0 (1.4–2.9)
> 15	1.1 (0.7–1.7)	0.6 (0.4–1.1)	1.7 (1.1–2.5)
Income per day in US\$			
< 1	74.1 (72.0–76.1)	85.1 (83.1–87.0)	59.8 (57.1–62.5)
1–2	12.6 (11.6–13.6)	6.9 (6.0–8.0)	19.8 (18.1–21.7)
2–3	5.7 (4.6–7.1)	3.3 (2.4–4.7)	8.7 (7.2–10.5)
> 3	7.6 (6.6–8.8)	4.6 (3.4–6.0)	11.6 (10.0–13.6)
Occupation			
None	16.8 (14.4–19.5)	22.2 (19.3–25.4)	9.7 (7.6–12.4)
Professional	1.1 (0.8–1.5)	0.4 (0.2–0.7)	2.0 (1.5–2.7)
Physician	0.4 (0.2–0.7)	0.2 (0.1–0.5)	0.6 (0.4–1.1)
Other health professional ^d	0.2 (0.1–0.3)	0.2 (0.1–0.3)	0.3 (0.1–0.6)
Technical	2.3 (1.6–3.2)	1.8 (0.9–3.2)	2.9 (2.3–3.7)
Clerical	0.8 (0.5–1.1)	0.3 (0.2–0.5)	0.5 (0.3–0.8)
Service	0.3 (0.2–0.5)	0.2 (0.1–0.4)	0.5 (0.3–0.8)
Fireman or police	0.7 (0.4–1.1)	0.0 (0.0–0.1)	1.5 (0.9–2.5)
Sales	10.7 (9.0–12.7)	14.5 (12.2–17.2)	5.8 (4.4–7.5)
Tobacco farming or preparation	0.3 (0.1–1.6)	0.3 (0.1–1.3)	0.3 (0.1–2.1)
Farming (agriculture or livestock)	55.5 (50.1–60.9)	57.5 (51.7–63.2)	54.0 (48.6–59.3)
Labour	8.6 (7.0–10.4)	3.7 (2.7–5.2)	14.8 (12.0–18.0)
Trades or crafts	1.9 (1.5–2.4)	2.2 (1.6–3.0)	1.6 (1.1–2.1)
Armed forces	0.5 (0.3–0.8)	0.0 (0.0–0.1)	1.1 (0.7–1.8)

CI, confidence interval.

^a Indigenous hill tribes found throughout south-east Asia.

^b Chinese, Lao, Thai, Vietnamese, other.

^c Local or tribal religions (e.g. animism).

^d Medical assistant, nursing assistant, nurse/midwife, traditional healer.

years the prevalence of this habit more than doubled with each passing decade. As a result 43.4% of all older women (> 48 years) and almost half of all rural women (48.0%) chewed tobacco at the time of the survey (Table 3).

Among men, cigarette smokers tended to be older, rural-dwelling, married and less educated (Table 2). More than half of the men who earned < US\$ 2 per day at the time of the survey smoked cigarettes. Cigarette smoking was highly prevalent (> 50%) among men engaged in tobacco farming or preparation, other farming, or the armed forces as their primary economic activity.

Women who chewed tobacco at the time of the survey tended to be lower-income, older, rural-dwelling, widowed, divorced or separated and less educated (Table 3). Among rural women, chewing tobacco was most common among midwives (67.9%), traditional healers (47.2%) and those working in tobacco farming or preparation (28.6%) as their primary economic activity.

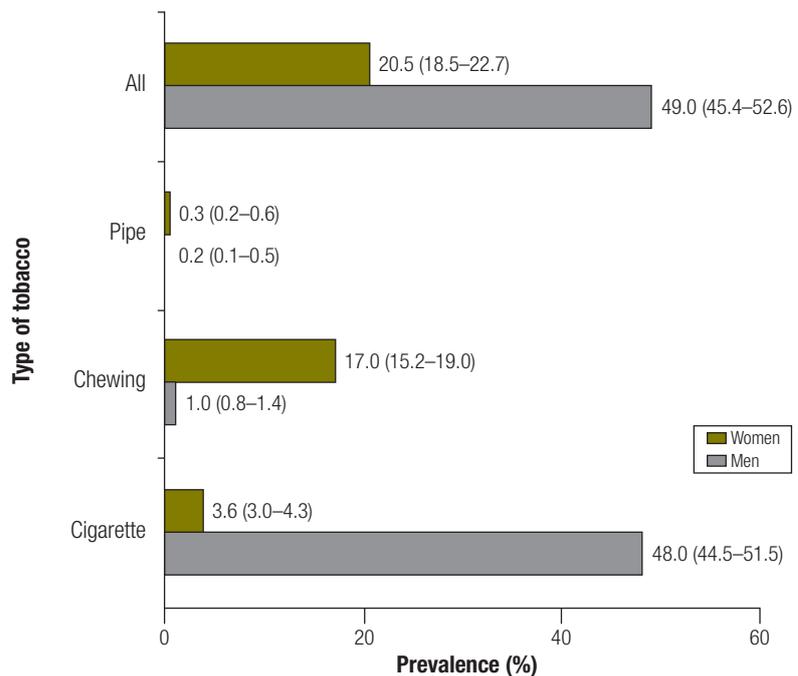
Pipe tobacco use

We found that pipe tobacco was used primarily among local tribes (12.2% of men, 30.9% of women), other ethnic minorities (10.3% of men, 12.5% of women) or religious minorities (30.1% of men, 48.6% of women). On further analysis by province we found that pipe tobacco was only used in three provinces (Mondol Kiri, Rotanak Kiri, Stung Reng) on the border with the Lao People's Democratic Republic.

Multivariable model

Among all adults, the odds of using tobacco more than doubled during each decade after the age of 25 years – an effect that was particularly evident for tobacco chewing among women (OR: 5.7, 15.8–51.5) for ages 26–36 years, 37–48 years and > 48 years). Because of the high prevalence of pipe tobacco use among ethnic or religious minorities, the odds of using tobacco were particularly high among these minorities (OR: 1.6 for men, 16.2 for women), local tribes (OR: 4.2 for men, 3.7 for women) and “other adults” who were mostly immigrants (OR: 5.0 for men, 1.5 for women) (Table 4). Also, those

Fig. 1. Use of tobacco,^a by gender, in nationwide sample of 13 988 adults (aged ≥ 18 years) from urban and rural regions, Cambodia, 2005–2006



^a Percentage and 95% confidence intervals.

who were married, divorced, separated or widowed were at least twice as likely to use tobacco, whereas those who had completed at least 12 years of education or who earned > US\$ 3 per day were one half to one third as likely to use tobacco as participants in the reference category.

Men who engaged in tobacco farming (OR: 4.6), other farming (OR: 2.5) or labour (OR: 2.0) were more likely to be smoking cigarettes at the time of the survey. Among women, those who were midwives (OR: 5.1) or involved in tobacco farming or preparation (OR: 2.0) were more likely to be chewing tobacco at the time of the survey.

Reasons for tobacco use

We examined the reasons for starting and continuing (Table 5 and Table 6, available at: <http://www.who.int/bulletin/volumes/87/12/08-058917/en/index.html>) to use tobacco among the 5081 current tobacco users. Men gave as the most common reasons for starting to smoke (primarily cigarettes) the influence of older relatives (26.1%), the wish to reduce appetite (13.3%) and the desire to meet new people (12.8%). The

most common reasons given by women for starting to use tobacco (primarily to chew it) were the influence of older relatives (31.9%), the need to alleviate morning sickness during pregnancy (17.0%) and the wish to experiment (13.9%). The perception that tobacco use would alleviate morning sickness was more prevalent among rural women (17.8%) than urban women (7.5%). The main reasons given for continuing to use tobacco resembled the reasons given for starting to use it, but in addition, 10% to 20% of rural men believed that cigarette smoke repelled mosquitoes and provided warmth during agricultural work in the monsoon season. As shown in Table 5 and Table 6, more than 70% of the adults who smoked pipe tobacco cited wanting to reduce appetite as their reason for starting and continuing to consume tobacco of this type.

Discussion

Our findings from Cambodia confirm regional trends in south-east Asia suggesting that cigarette smoking occurs in half of all men, virtually no young women and about 3% to 6% of middle-aged and older women.¹

Table 4. Results of multivariable regression (including all variables listed) relating current tobacco use to selected demographic variables in a nationwide sample of 13 988 adults, Cambodia, 2005–2006

	All tobacco OR (95% CI)		Cigarettes OR (95% CI)		Chewing tobacco OR (95% CI)
	Men	Women	Men	Women	Women only
Age in years					
18–25	1.0	1.0	1.0	1.0	1.0
26–36	2.3 (1.7–3.1)	4.2 (2.8–6.3)	2.3 (1.7–3.0)	2.6 (1.4–5.0)	5.7 (3.4–9.7)
37–48	3.3 (2.6–4.2)	10.1 (6.6–15.3)	3.2 (2.5–4.0)	3.6 (1.9–6.9)	15.8 (9.1–27.3)
> 48	4.0 (3.0–5.3)	30.8 (19.7–48.3)	3.6 (2.7–4.8)	4.5 (2.2–9.2)	51.5 (29.8–88.9)
Ethnicity					
Khmer	1.0	1.0	1.0	1.0	1.0
Cham	1.8 (0.4–8.1)	1.3 (0.3–5.4)	1.7 (0.4–7.4)	8.5 (0.6–119.6)	0.7 (0.2–2.4)
Local tribe ^a	4.2 (1.7–10.3)	3.7 (2.0–7.1)	5.9 (1.7–20.5)	9.0 (4.5–17.9)	0.9 (0.3–3.2)
Other ^b	5.0 (2.1–12.0)	1.5 (0.7–3.2)	4.2 (1.8–9.7)	8.8 (4.4–17.4)	0.1 (0.04–0.3)
Religion					
Buddhist	1.0	1.0	1.0	1.0	1.0
Muslim	1.0 (0.2–4.2)	1.6 (0.4–6.2)	1.0 (0.3–4.3)	0.2 (0.01–2.2)	3.2 (0.9–10.9)
Christian	0.6 (0.2–1.7)	0.4 (0.4–1.6)	0.7 (0.2–2.0)	0.4 (0.1–1.6)	0.9 (0.2–4.1)
Other ^c	1.6 (0.5–5.2)	16.2 (5.1–51.4)	0.2 (0.04–1.0)	1.3 (0.5–3.1)	0.1 (0.01–0.9)
Marital status					
Never married	1.0	1.0	1.0	1.0	1.0
Currently married	3.3 (2.3–4.7)	1.5 (1.0–2.2)	3.3 (2.3–4.7)	1.6 (0.7–3.9)	1.4 (1.0–2.1)
Divorced or separated	5.4 (2.1–13.9)	2.1 (1.3–3.6)	4.8 (1.9–11.8)	3.4 (1.2–9.3)	1.8 (1.1–2.9)
Widowed	2.9 (1.4–5.8)	3.3 (2.1–5.2)	2.3 (1.2–4.6)	2.1 (0.9–5.0)	3.0 (1.8–4.7)
Years of education					
0–6	1.0	1.0	1.0	1.0	1.0
7–12	0.5 (0.4–0.6)	0.2 (0.2–0.4)	0.5 (0.4–0.7)	0.4 (0.2–1.0)	0.2 (0.1–0.4)
13–15	0.4 (0.2–0.7)	ND	0.4 (0.2–0.7)	ND	ND
> 15	0.3 (0.1–1.7)	ND	0.4 (0.1–1.9)	ND	ND
Income per day in US\$					
< 1	1.0	1.0	1.0	1.0	1.0
1–2	0.9 (0.7–1.1)	1.0 (0.7–1.5)	0.9 (0.7–1.1)	2.0 (1.3–3.0)	0.9 (0.6–1.4)
> 2–3	0.6 (0.5–0.9)	0.5 (0.3–1.0)	0.6 (0.5–0.8)	0.5 (0.2–1.2)	0.6 (0.3–1.0)
> 3	0.4 (0.3–0.6)	0.5 (0.3–0.8)	0.4 (0.3–0.6)	1.1 (0.3–3.7)	0.4 (0.2–0.7)
Occupation					
No occupation	1.0	1.0	1.0	1.0	1.0
Professional (non-health)	1.0 (0.4–2.5)	0.1 (0.02–1.3)	1.1 (0.5–2.6)	0.6 (0.1–4.5)	ND
Physician	0.5 (0.4–1.9)	NA	0.6 (0.2–2.0)	NA	NA
Midwife	NA	3.8 (0.3–56.0)	NA	ND	5.1 (0.4–72.0)
Medical or nurse assistant	1.5 (0.2–10.3)	ND	1.5 (0.2–10.1)	ND	ND
Traditional healer	ND	2.1 (0.4–10.6)	ND	ND	ND
Technical	1.3 (0.6–2.92)	0.6 (0.2–2.0)	1.3 (0.6–2.9)	0.6 (0.1–4.3)	0.6 (0.2–2.5)
Clerical	0.7 (0.2–2.0)	ND	0.6 (0.2–1.8)	ND	ND
Service	0.7 (0.2–3.0)	0.9 (0.2–5.0)	0.7 (0.2–3.2)	2.7 (0.3–28.9)	0.43 (0.1–2.5)
Fireman or police	0.9 (0.3–2.3)	1.3 (0.2–7.7)	0.9 (0.3–2.3)	3.0 (0.4–23.2)	ND
Sales	1.3 (0.8–2.2)	0.4 (0.3–0.6)	1.3 (0.8–2.2)	0.4 (0.2–0.8)	0.5 (0.3–0.7)
Tobacco farming or preparation	6.4 (3.8–11.0)	2.4 (1.5–3.8)	4.6 (2.7–7.9)	2.5 (1.2–5.3)	2.0 (1.1–3.7)
Farming (agriculture or livestock)	2.5 (1.6–4.1)	1.8 (1.4–2.3)	2.5 (1.5–4.0)	1.4 (0.9–2.3)	1.8 (1.4–2.3)
Labour	1.9 (1.2–3.2)	1.1 (0.6–2.1)	2.0 (1.2–3.3)	1.6 (0.6–4.0)	0.8 (0.4–1.8)
Trades or crafts	1.8 (0.3–3.4)	0.7 (0.4–1.4)	1.8 (0.9–3.5)	0.7 (0.20–2.5)	0.8 (0.4–1.5)
Armed forces	1.8 (0.7–5.0)	ND	1.9 (0.7–5.1)	ND	ND

CI, confidence interval; NA, not applicable; ND, not determined.

^a Indigenous hill tribes found throughout south-east Asia.^b Chinese, Lao, Thai, Vietnamese, other.^c Local or tribal religions (e.g. animism).

An epidemic among women

Among Cambodian women we found an important trend towards increasing tobacco use. After the age of 18 years, the prevalence of tobacco chewing more than doubles during each decade of life up to the point that after the age of 50 years, about half of all rural women chewed tobacco at the time of the survey (Table 3). The use of a large nationwide sample lends precision to our estimate that of the 1.9 million adults who currently use tobacco in Cambodia, 560 000 are women who chew tobacco.

These data are not consistent with tobacco epidemic models²⁻⁴ that predict the emergence of a high prevalence of tobacco use among Cambodian women *after* industrialization and a demographic shift towards more cigarette-smoking. Rather, we found that if cigarette smoking does emerge as a major form of tobacco use among Cambodian women, the habit will either be added to or replace an already widespread habit of chewing tobacco during adulthood.

Why start?

It is important to note that the habit includes a centuries-old practice of chewing the tobacco leaf in combination with a betel nut (*Areca catechu*) and a betel leaf wrapping.^{10,11} The resulting “betel quid” is a mixture of these substances that remains in contact with the oral mucosa for an extended period. Arecoline, one of the active ingredients of the betel nut, is an alkaloid similar to nicotine in its effects on the central nervous system.^{12,13} It is a known agonist of muscarinic acetylcholine receptors involved in parasympathetic responses such as papillary and bronchial constriction.¹⁴ The betel quid mixture of tobacco-derived and areca-derived alkaloid and phenolic compounds is known to exhibit psychoactive and addictive properties due to its effects on the sympathetic and parasympathetic nervous systems. These effects include increased body temperature, increased pulse rate, increased mental alertness, improved concentration, reduced appetite and mood elevation.^{14,15} Additionally, the betel nut (with or without tobacco) is known throughout Asia for its medicinal effects as a stimulant, a digestive aid, an antiseptic, a deworming

agent and an analgesic for headaches, arthritis and joint pain.^{16,17}

We found that Cambodian women, particularly those in rural areas, tended to start and continue chewing tobacco because of the influence of older relatives and to alleviate morning sickness and reduce appetite. These data suggest three reasons for the use of chewing tobacco and betel nut among Cambodian women: (i) as an addictive stimulant, (ii) as part of a female rite of passage into adulthood and reproductive age, and (iii) as a remedy to relieve pregnancy-related symptoms.

It is particularly alarming that among rural Cambodian women (Table 5), about 1 out of 5 cigarette smokers and tobacco chewers started their habit in response to pregnancy-related symptoms. In addition to the wide-ranging effects of fetal tobacco syndrome, emerging data suggest that the use of the areca nut among pregnant mothers results in increased infant mortality.^{18,19} The specific effects (synergistic or otherwise) of various combinations of betel nut and tobacco exposure during pregnancy on neonates and infants merit further study.

The increased use of chewing tobacco among older Cambodian women may be part of a regional trend in south-east Asia. Among Indonesian women the prevalence of chewing tobacco increases from about 4% at age 25–29 years to more than 50% after the age of 60 years.²⁰ In samples of rural women in Malaysia the prevalence of tobacco chewing was about 55–77%.^{21,22} In other parts of Asia and the Pacific region (Bangladesh, India, Palau, Province of Taiwan in China), similar trends in tobacco chewing are seen.²³

Programme design

When considering the design of tobacco prevention programmes that target Cambodian women who are pregnant or of reproductive age, it is important to note that the use of chewing tobacco appears to be strongly influenced by beliefs passed on by older relatives. In a small focus group of 10 Cambodian women who chewed tobacco and betel nut, the behaviour was identified as a “rite of passage from girlhood into womanhood”.¹⁶ Also noteworthy is the extremely high prevalence of tobacco use (47–68%) by rural women who were midwives or

traditional healers. Further research is needed on whether these village health workers actively promote the medicinal use of betel nut or tobacco.

Taken together, our findings point to the possibility that generations of young Cambodian women are adopting a tobacco habit during their reproductive and prenatal years under the direct or indirect influence of an older generation of relatives and midwives. For tobacco control programmes this poses the immediate challenge of “educating” rural women against long-held cultural, familial and traditional medical beliefs. Tobacco control programmes to decrease tobacco use in pregnant women may also need to include health education for their older relatives and health-care providers.

Use among men

Among Cambodian men, tobacco use doubled in prevalence after the age of 25 years, and the odds of smoking at the time of the survey were four-fold higher among the oldest men. Cigarettes were heavily favoured by male tobacco users, and our findings clearly indicate that most of the cigarette smokers were rural men who earned less than US\$ 2 per day and worked in farming. This trend indicates that implementation of FCTC price and tax measures could potentially curb use of the more expensive commercial cigarette brands.⁵ Cambodia ratified the FCTC in 2004 but has yet to develop a national plan for implementation.

Use among ethnic minorities

We found that the use of pipe tobacco (i.e. water pipes) occurred entirely among ethnic and religious minorities living in Mondol Kiri, Rotanak Kiri and Stung Reng provinces on the border between Cambodia and the Lao People's Democratic Republic. These minorities are indigenous, mountain-dwelling peoples of the region who, unlike the Khmer-Buddhist majority, practice animism and are ethnically related to tribes that live in communities with as many as 90 000 inhabitants in the Lao People's Democratic Republic, Thailand and Viet Nam. Our data indicate a contrast with the Khmer Buddhist majority in their use of pipe tobacco, their higher rates of cigarette smoking and their frequent (> 70%) use of smoking to reduce appetite.

Tobacco control policy

Our findings indicate that the tobacco epidemic in Cambodia extends far beyond the use of cigarettes among men. Specifically, we found that about 560 000 Cambodian women started chewing tobacco in the third decade of life and that pipe tobacco use was widespread among women and men in the minority groups (i.e. hill tribes) of Cambodia, which are also found throughout south-east Asia.

These data indicate that implementation of FCTC policies in Cambodia with a focus primarily on commercially available cigarettes will not affect a large proportion of tobacco users: those who

chew tobacco (typically with betel nut) or smoke pipe tobacco. The impact of the recent tobacco control measures proposed by WHO may also be limited because banning non-commercial sources of betel nut and chewing tobacco in rural areas cannot be directly enforced through taxation or warning labels.²⁴ Moreover, cessation strategies need to take into account the addictive properties of both arecoline and nicotine in the betel quid.

A more comprehensive national policy would require gender- and ethnic-specific tobacco control measures that target generations of women through programmes focused on pre-

vention, cessation and education about the harms of chewing tobacco. Such programmes must take into account the use of chewing tobacco and pipe tobacco in rural areas as part of cultural, familial and traditional medicine practices. ■

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Résumé

Tabagisme chez les adultes au Cambodge : preuves d'une épidémie de tabagisme chez les femmes

Objectif Identifier les caractéristiques démographiques des consommateurs actuels de tabac au Cambodge, notamment des femmes, puis étudier les raisons du tabagisme actuel parmi des sous-groupes démographiques de la population cambodgienne.

Méthodes Nous avons réuni par sondage stratifié à trois degrés un échantillon de 13 988 adultes de 18 ans et plus, provenant de l'ensemble des provinces cambodgiennes, sur la période 2005-2006. Les participants ont répondu à une enquête administrée par un enquêteur, comprenant des volets sur toutes les formes de tabagisme et sur des variables d'ordre sanitaire ou relevant du mode de vie. Une analyse par régression multivariée a été réalisée pour identifier les facteurs de prédiction démographiques du tabagisme.

Résultats La proportion de fumeurs de cigarettes était de 48,0 % chez les hommes et de 3,6 % chez les femmes. Nous avons estimé que 560 482 femmes (intervalle de confiance à 95 %, IC : 504 783 - 616 180) mâchaient actuellement du tabac (habituellement comme composant d'une chique de bétel) et que la prévalence de cette forme de tabagisme faisait plus que doubler avec chaque décennie vécue à l'âge adulte jusqu'à atteindre un

stade où près de la moitié des femmes plus âgées chiquent. Les femmes, comme les hommes, ont cité l'influence de membre de la famille plus âgés comme raison principale de leur entrée dans le tabagisme. Parmi les consommatrices rurales de tabac à mâcher, une sur cinq avait pris cette habitude pour soulager les nausées matinales de la grossesse. C'est parmi les accoucheuses (67,9 %) et les guérisseuses traditionnelles (47,2 %) qu'on a relevé la plus forte prévalence de la consommation de tabac à mâcher. La proportion de fumeurs de cigarettes ou de pipe (66,8 %) était très élevée parmi les minorités ethniques constituées par les tribus des collines, présentes dans toute l'Asie du Sud-est.

Conclusion L'épidémie de tabagisme qui touche le Cambodge va au-delà de la consommation de cigarettes par les hommes. Les efforts de lutte contre le tabagisme axés uniquement sur les cigarettes négligeront la charge sanitaire due à la consommation de tabac non fumé chez les femmes, habitude qui pourrait faire partie des pratiques culturelles, familiales et héritées de la médecine traditionnelle.

Resumen

Consumo de tabaco entre los adultos en Camboya: evidencia de una epidemia de tabaquismo entre las mujeres

Objetivo Determinar las características demográficas de los actuales consumidores de tabaco en Camboya, en particular de las mujeres, y analizar las razones del consumo de tabaco en la actualidad en subgrupos demográficos de la población camboyana.

Métodos Utilizamos una muestra estratificada por conglomerados en tres etapas de 13 988 adultos de 18 o más años de todas las provincias que abarcó el periodo 2005-2006. Los participantes respondieron a una encuesta que se les administró en la que figuraban ítems sobre todas las modalidades de consumo de tabaco y sobre variables relacionadas con la salud y el modo de vida. Se realizó un análisis de regresión multivariable para identificar los factores demográficos predictivos del consumo de tabaco.

Resultados Fumaban cigarrillos el 48,0% de los hombres y el 3,6% de las mujeres. Estimamos que por entonces 560 482 mujeres (intervalo de confianza [IC] del 95%: 504 783 - 616 180) mascaban tabaco (normalmente como componente de la nuez de bétel) y que la prevalencia de consumo se duplica con creces con cada década de vida adulta, hasta el punto de que aproximadamente la mitad de las mujeres de edad mascan tabaco. Tanto los hombres como las mujeres citaron la influencia de otros familiares mayores como la razón principal para empezar a consumir tabaco. Alrededor de una de cada cinco mujeres de zonas rurales que consumían tabaco de mascar adquirieron el hábito para mitigar las náuseas del embarazo. La mayor prevalencia de consumo de tabaco de mascar entre las mujeres fue la observada entre las parteras (67,9%) y las curanderas

tradicionales (47,2%). Se detectaron tasas elevadas (66,8%) de consumo de cigarrillos y de tabaco de pipa entre minorías étnicas representativas de las numerosas tribus de zonas montañosas que hay por todo el sureste de Asia.

Conclusión La epidemia de tabaquismo que afecta a Camboya está lejos de limitarse al consumo de cigarrillos entre los hombres.

Las actividades de control del tabaco que se centren únicamente en los cigarrillos no abordarán la carga sanitaria que se deriva de unas formas de consumo de tabaco sin humo en la población femenina muy importantes como parte de las prácticas culturales, familiares y de la medicina tradicional.

ملخص

تعاطي التبغ بين البالغين في كمبوديا: بيّنات على انتشار وباء التبغ بين النساء

يصل إلى حد أن نحو نصف النساء المسنّات يمضغن التبغ. وذكر كل من النساء والرجال تأثير الأقارب المسنين كسبب أولي لشروعهم في تعاطي التبغ. وبدأت واحدة من كل خمس نساء ريفيات ممن يمضغن التبغ هذه العادة للتخلص من غثيان الصباح المصاحب للحمل. وكان أعلى انتشار لمضغ النساء للتبغ يحدث بين القابات (67.9%) والمعالجات الشعبيات (47.2%). أما أعلى معدلات تدخين السجائر والغيليون (66.8%) فكانت بين الأقليات العرقية التي تمثل القبائل التي تعيش على التلال المنتشرة في جنوب شرق آسيا. **الاستنتاج:** يتخطى وباء التبغ في كمبوديا ما هو أبعد من تدخين السجائر بين الرجال. وسيؤدي تركيز المكافحة على تدخين السجائر فقط إلى إهمال مواجهة العبء الصحي الناجم عن تعاطي النساء للتبغ بدون تدخين، والذي يمكن أن يكون جزءاً من العادات الثقافية، والأسرية، ومن ممارسات الطب الشعبي.

الغرض: تحديد السمات الديموغرافية للمتعاطين للتبغ حالياً في كمبوديا، ولاسيما بين النساء، واستقصاء الأسباب الحالية لتعاطي التبغ بين الفئات الديموغرافية الفرعية من السكان الكمبوديين. **الطريقة:** استخدم الباحثون عينة طبقية من ثلاث مراحل تكونت من 13988 بالغاً في عمر 18 سنة أو أكبر من جميع المناطق في عامي 2005-2006. وأكمل المشاركون مسحاً أجري عبر مقابلة تضمنت بنوداً تتعلق بجميع أشكال تعاطي التبغ والمتغيرات الخاصة بالصحة ومط الحياة. وأجري تحليل تحوّل متعدد المتغيرات لتحديد المؤشرات الديموغرافية لتعاطي التبغ. **الموجودات:** تدخين السجائر يحدث بين 48.0% من الرجال و 3.6% من النساء. ويقدر الباحثون أن 560482 امرأة (إذ تتراوح فاصلة الثقة 95% بين 504783 و 616180) تمضغن التبغ (كمكوّن من مضغة نبات التنبول) وأن معدل الانتشار يزداد أكثر من الضعف كل عشر سنوات في مرحلة البلوغ حتى

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Table 2. Current use of tobacco (all forms, cigarettes and chewing tobacco) in population subgroups of a nationwide sample of 6130 men (5406 rural, 724 urban), Cambodia, 2005–2006

	All tobacco			Cigarettes			Chewing tobacco		
	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)
Age in years									
18–25	22.8 (19.7–26.1)	16.5 (10.4–25.3)	23.9 (20.4–27.8)	22.5 (19.5–25.9)	16.5 (10.4–25.3)	23.6 (20.2–27.5)	0.1 (0.0–0.5)	ND	0.2 (0.0–0.6)
26–36	49.5 (43.9–55.2)	43.7 (29.6–58.9)	50.3 (43.9–56.7)	49.1 (43.5–54.7)	43.7 (29.6–58.9)	49.8 (43.5–56.2)	0.3 (0.1–0.9)	ND	0.4 (0.1–1.0)
37–48	61.1 (56.3–65.6)	47.0 (37.5–56.7)	64.5 (58.6–69.9)	60.1 (55.4–64.6)	47.0 (37.5–56.7)	63.3 (57.5–68.6)	1.0 (0.6–1.8)	ND	1.3 (0.7–2.2)
> 48	66.1 (61.6–70.3)	43.7 (33.4–54.5)	71.3 (66.5–75.7)	63.7 (59.4–67.8)	42.5 (32.4–53.3)	68.6 (64.1–72.9)	2.7 (1.9–3.9)	1.5 (0.6–4.1)	3.0 (2.1–4.3)
Ethnicity									
Khmer	47.8 (44.2–51.5)	36.3 (31–41.9)	50.2 (45.5–54.8)	47.1 (43.5–50.6)	36 (30.7–41.6)	49.3 (44.8–53.8)	1.0 (0.8–1.4)	0.4 (0.2–1.2)	1.1 (0.8–1.5)
Cham	65.1 (55.5–73.6)	60.9 (35–81.9)	65.2 (55.3–74)	64.5 (54.7–73.2)	60.9 (35–81.9)	64.6 (54.5–73.6)	1.4 (0.4–5.0)	ND	1.2 (0.9–1.6)
Local tribe ^a	84.6 (70.3–92.7)	ND	84.5 (70.2–92.7)	72.3 (55.5–84.6)	ND	72.3 (55.3–84.6)	ND	ND	ND
Other ^b	77.1 (65.2–85.8)	80.4 (55.3–93.2)	75.5 (62.4–85.1)	66.8 (51.5–79.2)	80.4 (55.3–93.2)	60.2 (43.6–74.7)	ND	ND	ND
Religion									
Buddhist	48.1 (44.5–51.8)	37.0 (31.7–42.5)	50.4 (45.8–55)	47.4 (43.8–50.9)	36.6 (31.4–42.2)	49.5 (45–54.1)	1.0 (0.8–1.4)	0.4 (0.2–1.2)	1.1 (0.8–1.6)
Muslim	63.9 (54.6–72.2)	69.9 (42.3–88.1)	63.6 (53.8–72.3)	63.3 (53.8–71.9)	69.9 (42.3–88.1)	63 (53–71.9)	1.4 (0.4–4.8)	ND	1.4 (0.4–5)
Christian	60.3 (37.5–79.3)	92.8 (50.9–99.4)	52.7 (31.2–73.3)	60.3 (37.5–79.3)	92.8 (50.9–99.4)	52.7 (31.2–73.3)	ND	ND	ND
Other ^c	88.9 (79.2–94.3)	80.7 (78.8–82.4)	89.5 (78.9–95.1)	58.7 (40.7–74.7)	80.7 (78.8–82.4)	56.9 (38.2–73.9)	ND	ND	ND
Marital status									
Never married	14.6 (11.5–18.4)	11.4 (4.9–24.3)	15.4 (11.9–19.7)	14.3 (11.2–18.1)	11.4 (4.9–24.3)	15.1 (11.6–19.3)	0.2 (0.1–0.9)	ND	0.3 (0.1–1.1)
Currently married	57.1 (53.7–60.4)	45.1 (39.1–51.2)	59.2 (55–63.3)	56.1 (52.7–59.4)	44.6 (38.7–50.8)	58.1 (54.1–62.1)	1.1 (0.8–1.5)	0.6 (0.2–1.6)	1.1 (0.8–1.6)
Divorced or separated	69.3 (50–83.6)	58 (11.4–93.7)	71.3 (51.6–85.3)	66 (46.8–81.1)	58 (11.4–93.7)	67.4 (47.6–82.5)	6.4 (1.6–22.2)	ND	7.6 (1.9–25.6)
Widowed	63.2 (47–76.9)	22.8 (4.3–66.1)	71.1 (58.6–81.1)	55.9 (40.8–70.1)	22.8 (4.3–66.1)	62.4 (49.4–73.9)	6.7 (2.9–14.8)	ND	8.1 (3.6–17.2)
Years of education									
0–6	59.7 (57–62.3)	47.3 (40.1–54.5)	61.4 (58.6–64.2)	58.3 (55.7–60.8)	46.9 (39.9–54)	59.9 (57.1–62.5)	1.5 (1.1–2.0)	0.6 (0.2–1.8)	1.6 (1.2–2.2)
7–12	30.5 (25.3–36.1)	32.0 (21.4–45.0)	30.1 (24.3–36.6)	30.3 (25.2–35.9)	31.7 (21–44.7)	29.9 (24.2–36.4)	0.2 (0.1–0.6)	0.4 (0.1–2.6)	0.1 (0.0–0.6)
13–15	17.6 (12.3–24.7)	14.7 (8.6–24.1)	21.1 (12.6–33.2)	17.6 (12.3–24.7)	14.7 (8.6–24.1)	21.1 (12.6–33.2)	ND	ND	ND
> 15	14.5 (3–48.6)	24.0 (4.8–66.6)	2.8 (0.3–20.5)	14.5 (3–48.6)	24.0 (4.8–66.6)	2.8 (0.3–20.5)	ND	ND	ND
Income per day in US\$									
< 1	49.7 (46.3–53)	35.6 (28.1–43.8)	52.1 (48.2–56)	48.5 (45.2–51.9)	35.1 (27.7–43.3)	50.8 (47–54.7)	1.1 (0.7–1.5)	0.7 (0.2–2.1)	1.1 (0.8–1.6)
1–2	54.3 (49.6–58.8)	45.7 (37.2–54.4)	55.9 (50.4–61.3)	53.5 (49–58)	45.7 (37.2–54.4)	55.1 (49.7–60.3)	1.0 (0.5–1.7)	0	1.1 (0.6–2.1)
> 2–3	48.4 (40.1–56.7)	53.2 (31.1–74.1)	47.3 (38.7–56)	47.1 (39–55.3)	52.4 (30.1–73.8)	45.9 (37.7–54.4)	1.7 (0.8–3.5)	0.8 (0.1–5.8)	1.9 (0.8–4.2)
> 3	37 (29.3–45.4)	26.7 (14.6–43.8)	40.4 (30.6–51)	36.5 (28.9–44.8)	26.7 (14.6–43.8)	39.7 (30.1–50.3)	0.5 (0.2–1.6)	0	0.7 (0.2–2.2)

(Table 2, cont.)

	All tobacco			Cigarettes			Chewing tobacco		
	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)
Occupation^d									
None	28.6 (21.3–37.2)	11.2 (5.8–20.6)	35.6 (25–47.8)	27.4 (20.3–35.8)	11.2 (5.8–20.6)	33.9 (23.9–45.7)	1.6 (0.7–3.5)	0.6 (0.1–4.4)	2 (0.8–4.7)
Professional (non-health)	33.2 (21.4–47.6)	32 (11.3–63.5)	34.1 (23.5–46.5)	33.2 (21.4–47.6)	32 (11.3–63.5)	34.1 (23.5–46.5)	ND	ND	ND
Physician	17.5 (7.1–36.9)	6.2 (0.9–32.8)	30.8 (12–59.3)	17.5 (7.1–36.9)	6.2 (0.9–32.8)	30.8 (12–59.3)	ND	ND	ND
Medical assistant	34 (7.9–75.6)	ND	42.8 (8.5–85.8)	34 (7.9–75.6)	ND	42.8 (8.5–85.8)	ND	ND	ND
Traditional healer	ND	ND	ND	ND	ND	ND	ND	ND	ND
Technical	34.1 (23.5–46.7)	31.2 (13.4–57)	36 (24.5–49.3)	33.7 (23.1–46.2)	31.2 (13.4–57)	35.2 (23.9–48.5)	0.5 (0.1–3.4)	ND	0.8 (0.1–5.4)
Clerical	19.4 (8.2–39.6)	24.2 (7.1–57.2)	17.2 (5.5–42.7)	17.5 (7–37.2)	24.2 (7.1–57.2)	14.3 (4.2–38.7)	2 (0.3–3.4)	ND	2.9 (0.4–0)
Service	22.4 (8.6–47)	0.0	26.8 (10.1–54.3)	22.4 (8.6–47)	0.0	26.8 (10.1–54.3)	ND	ND	ND
Fireman or police	26.5 (12.4–47.9)	39.8 (19.9–63.7)	19.8 (6.8–45.5)	26.5 (12.4–47.9)	39.8 (19.9–63.7)	19.8 (6.8–45.5)	ND	ND	ND
Sales	33.6 (23.4–45.7)	40.7 (26.7–56.3)	28.4 (16.9–43.7)	33 (22.8–45.1)	39.7 (25.6–55.8)	28.1 (16.7–43.3)	0.4 (0.1–2.9)	1 (0.1–6.6)	ND
Tobacco farming or preparation	71.4 (65.3–76.8)	ND	71.4 (65.3–76.8)	64.3 (56.8–71.1)	ND	64.3 (56.8–71.1)	7.1 (5.8–8.7)	ND	7.1 (5.8–8.7)
Farming or livestock	57.7 (55.6–59.8)	54 (43.9–63.8)	57.9 (55.7–60)	56.4 (54.4–58.5)	53.1 (43.3–62.6)	56.6 (54.5–58.7)	1.3 (0.9–1.7)	1 (0.2–3.7)	1.3 (0.9–1.7)
Labour	47.2 (41.5–53)	46.2 (39.6–53)	47.6 (39.9–55.4)	46.9 (41.2–52.7)	46.2 (39.6–53)	47.1 (39.5–54.9)	0.4 (0.1–1.1)	0.0	0.5 (0.2–1.6)
Trades or crafts	42 (25.1–61.1)	27.7 (9.9–57.2)	43.9 (25–64.9)	42 (25.1–61.1)	27.7 (9.9–57.2)	43.9 (25–64.9)	ND	ND	ND
Armed forces	51.3 (30–72.1)	65.1 (35.6–86.3)	33.2 (15.4–57.5)	51.3 (30–72.1)	65.1 (35.6–86.3)	33.2 (15.4–57.5)	ND	ND	ND

CI, confidence interval; ND, not determined.

^a Indigenous hill tribes found throughout south-east Asia.

^b Chinese, Lao, Thai, Vietnamese, other.

^c Local or tribal religions (e.g. animism).

^d Midwife category had no subjects among men.

Table 3. Current use of tobacco (all forms, cigarettes and chewing tobacco) in population subgroups of a nationwide sample of 7858 women (6919 rural, 939 urban), Cambodia, 2005–2006

	All tobacco			Cigarettes			Chewing tobacco		
	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)
Age in years									
18–25	2.4 (1.7–3.4)	1.2 (0.2–6.1)	2.6 (1.8–3.8)	1.0 (0.6–1.9)	1.2 (0.2–6.1)	1 (0.5–1.9)	1.0 (0.6–1.7)	ND	1.2 (0.7–2)
26–36	9.9 (8–12.1)	4.8 (2–11)	11 (8.9–13.6)	3.2 (2.2–4.5)	4.1 (1.6–10.4)	2.9 (2–4.3)	6.4 (5–8.2)	0.7 (0.1–3)	7.7 (6.1–9.8)
37–48	20.9 (18.1–24)	8 (4.6–13.6)	23.6 (20.3–27.1)	4.5 (3.5–5.7)	2.7 (1.2–5.9)	4.8 (3.7–6.3)	16.7 (14.2–19.4)	5.3 (2.5–10.8)	19 (16.1–22.2)
> 48	48.4 (44–52.8)	24.7 (19.3–30.9)	53 (47.7–58.2)	5.8 (4.6–7.2)	5.8 (3.2–10.5)	5.8 (4.5–7.3)	43.4 (39.2–47.7)	19.2 (13.8–26.1)	48.0 (43.0–53.1)
Ethnicity									
Khmer	19.8 (17.7–22)	8.9 (6.8–11.7)	22.2 (19.7–24.9)	3.3 (2.7–4)	3 (1.8–5)	3.3 (2.7–4.2)	16.9 (15–18.9)	6 (4.5–7.9)	19.3 (17–21.7)
Cham	30.2 (25.4–35.6)	40.9 (21.6–63.4)	29.8 (24.8–35.3)	4.5 (2.5–7.9)	19.3 (4.5–54.8)	3.9 (2.1–7.2)	27 (21.9–32.8)	21.6 (5.8–55.1)	27.2 (22–33.1)
Local tribe ^a	66.9 (50.9–79.8)	ND	66.8 (50.8–79.7)	27 (17.5–39.2)	ND	27.1 (17.6–39.3)	9 (2.6–27.2)	ND	8.8 (2.4–27.5)
Other ^b	31.6 (17.2–50.7)	15.7 (4.5–42.4)	39.3 (19.5–63.5)	17.4 (9.2–30.4)	15.7 (4.5–42.4)	18.2 (8.4–35)	1.7 (0.7–4.4)	ND	2.6 (1–6.2)
Religion									
Buddhist	19.9 (17.8–22.1)	9 (6.9–11.7)	22.2 (19.7–24.9)	3.4 (2.8–4.2)	3.2 (2–5.2)	3.5 (2.8–4.3)	16.8 (15–18.8)	5.9 (4.4–7.8)	19.2 (16.9–21.7)
Muslim	29.7 (24.9–35)	37.8 (21–58)	29.4 (24.5–34.9)	4.1 (2.3–7.1)	6.9 (1.4–28)	3.9 (2.2–7.1)	26.9 (21.9–32.7)	30.8 (10.7–62.5)	26.8 (21.6–32.7)
Christian	17 (5.8–40.5)	4 (0.3–37.2)	23.8 (10.3–46)	7.2 (1.5–28.5)	4 (0.3–37.2)	8.9 (1.6–36.9)	9.8 (2.6–30.8)	ND	14.9 (4.7–38.2)
Other ^c	77.1 (62.4–87.2)	71 (68.2–73.6)	77.5 (61.7–88.1)	27.3 (14.8–44.8)	67.7 (61.1–73.7)	24.3 (12.4–41.9)	1.2 (0.2–5.8)	3.3 (0.2–36.7)	1 (0.2–6.8)
Marital status									
Never married	4.2 (2.9–6.1)	1.7 (0.3–8)	4.9 (3.3–7.3)	1.0 (0.4–2.3)	1.7 (0.3–8)	0.8 (0.3–2)	3.1 (2–4.7)	ND	4 (2.6–6.1)
Married	19.1 (17.1–21.3)	8 (5.8–10.9)	21.2 (18.9–23.8)	3.7 (3–4.5)	3.7 (2.1–6.4)	3.7 (3–4.5)	15.5 (13.6–17.5)	4.5 (3–6.7)	17.6 (15.4–19.9)
Divorced or separated	26.7 (20.5–33.9)	15.2 (6.5–31.6)	28.6 (21.8–36.6)	7.8 (4.7–12.8)	12 (4.5–28.5)	7.1 (3.9–12.7)	20.3 (15.7–25.8)	3.2 (0.7–13.1)	23.2 (18–29.3)
Widowed	51.9 (45.5–58.3)	31.1 (16.8–50.3)	56.4 (52.1–60.7)	6 (4.3–8.3)	3.3 (0.9–12.1)	6.6 (4.8–9)	46.5 (40.6–52.4)	27.8 (15–45.7)	50.5 (46–54.9)
Years of education									
0–6	24.6 (22.6–26.6)	13.3 (10–17.5)	26.3 (24.2–28.6)	4.2 (3.5–5.1)	4.7 (2.8–7.9)	4.2 (3.4–5)	20.5 (18.7–22.4)	8.7 (6.5–11.7)	22.3 (20.3–24.4)
7–12	3 (1.8–4.9)	2.8 (0.8–10)	3 (1.9–4.8)	0.9 (0.4–2)	1.3 (0.3–5.4)	0.7 (0.4–1.6)	2.1 (1.3–3.3)	1.6 (0.5–5.3)	2.3 (1.4–3.8)
13–15	ND	ND	ND	ND	ND	ND	ND	ND	ND
> 15	ND	ND	ND	ND	ND	ND	ND	ND	ND
Income per day in US\$									
< 1	22 (20–24.1)	10.1 (7.3–13.7)	24.2 (22–26.6)	3.7 (3–4.4)	3.7 (2.2–6)	3.7 (3–4.4)	18.3 (16.5–20.3)	6.5 (4.6–9.2)	20.6 (18.5–22.8)
1–2	16.9 (13.4–21)	11.1 (4.3–25.9)	18.4 (14.5–23)	5.2 (3.5–7.7)	4.3 (1.9–9.5)	5.5 (3.5–8.5)	13.2 (10–17.2)	7.1 (1.5–27.8)	14.7 (11.3–18.9)
> 2–3	9.2 (5–16.2)	1.8 (0.2–13)	12.9 (6.7–23.4)	1.1 (0.4–3.1)	0	1.7 (0.6–4.6)	8.1 (4.4–14.3)	1.8 (0.2–13)	11.2 (5.8–20.5)
> 3	7.6 (4.3–13)	5.5 (2.6–11.3)	8.3 (4.1–16.4)	2.1 (0.6–6.8)	2.4 (0.7–8.3)	2 (0.4–9.7)	5.4 (3–9.5)	3.1 (1.1–8.4)	6.2 (3–12.4)

(Table 3, cont.)

	All tobacco			Cigarettes			Chewing tobacco		
	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)	All % (95% CI)	Urban % (95% CI)	Rural % (95% CI)
Occupation^d									
None	21.6 (17.6–26.3)	10.9 (6.7–17.2)	26.5 (20.1–34.1)	3.0 (1.9–4.6)	3.0 (1.4–6.3)	3.0 (1.7–5)	18.8 (15.2–23)	7.9 (4.8–12.7)	23.8 (17.9–30.9)
Professional (non-health)	0.8 (0.1–5.8)	1.4 (0.2–11.4)	ND	0.8 (0.1–5.8)	1.4 (0.2–11.4)	ND	ND	ND	ND
Midwife	67.9 (17.8–95.4)	ND	67.9 (17.8–95.4)	ND	ND	ND	67.9 (17.8–95.4)	ND	67.9 (17.8–95.4)
Traditional healer	41.5 (5.3–90)	ND	47.2 (5.3–93.5)	ND	ND	ND	41.5 (5.3–90)	ND	47.2 (5.3–93.5)
Technical	2.7 (0.7–9.9)	1.9 (0.2–13.1)	3.5 (0.6–17.8)	0.7 (0.1–5)	ND	1.2 (0.1–10.1)	2.1 (0.4–9.2)	1.9 (0.2–13.1)	2.3 (0.3–17.7)
Clerical	ND	ND	ND	ND	ND	ND	ND	ND	ND
Service	17.5 (5.1–45.5)	25.8 (3.8–75.6)	13.6 (2.9–45.4)	8.3 (1.1–41.6)	25.8 (3.8–75.6)	ND	9.2 (2–33.2)	ND	13.6 (2.9–45.4)
Fireman or police	7.1 (0.9–38.4)	ND	19.3 (2.8–66.5)	7.1 (0.9–38.4)	ND	19.3 (2.8–66.5)	ND	ND	ND
Sales	7.5 (5.5–10.2)	4.6 (2.1–9.9)	9.1 (6.6–12.6)	1.3 (0.7–2.3)	0.4 (0.1–1.9)	1.7 (0.9–3.2)	6.7 (4.8–9.2)	4.2 (1.8–9.5)	8 (5.7–11.3)
Tobacco farming or preparation	34.3 (30.3–38.5)	ND	35.7 (34.3–37.2)	6.9 (3.6–12.9)	ND	7.2 (3.9–12.9)	27.4 (24.3–30.8)	ND	28.6 (25.8–31.5)
Farming or livestock	25.5 (23.5–27.6)	22.1 (15.7–30.2)	25.6 (23.6–27.8)	4.7 (3.9–5.6)	11.3 (6.4–19.1)	4.4 (3.6–5.2)	20.8 (18.9–22.8)	11.6 (6.9–18.7)	21.2 (19.2–23.3)
Labour	10.6 (6.1–17.6)	6.0 (2.1–16.1)	12.2 (6.4–22)	3.9 (1.8–8.1)	6 (2.1–16.1)	3.1 (1.1–8.6)	6.7 (3.5–12.8)	ND	9.1 (4.4–17.8)
Trades or crafts	11.6 (6.6–19.6)	3.1 (0.5–17.5)	14.5 (8.1–24.5)	2.0 (0.7–5.9)	2.9 (0.4–18.3)	1.7 (0.5–6)	9.9 (5.2–17.8)	0.3 (0–2)	13.2 (7.1–23.1)

CI, confidence interval; ND, not determined.

^a Indigenous hill tribes found throughout south-east Asia.

^b Chinese, Lao, Thai, Vietnamese, other.

^c Local or tribal religions (e.g. animism).

^d Physician category had no subjects among women.

Table 5. Percent of tobacco users (aged ≥ 18 years) who gave each reason for starting to use tobacco in nationwide survey, Cambodia, 2005–2006^a

	Experi- menting % (95% CI)	Fashion- able % (95% CI)	Social pressure % (95% CI)	Combat fatigue % (95% CI)	Keep insects away % (95% CI)	Keep warm while farm- ing in rainy season % (95% CI)	Influence of older relatives % (95% CI)	Sadness or depression % (95% CI)	Appear more attractive % (95% CI)	Combat morning sickness % (95% CI)	Receive free cigarettes in army % (95% CI)	Stress % (95% CI)	Easier to meet people % (95% CI)	Decrease appetite % (95% CI)
All men (n = 3255)														
All tobacco	10.5 (8.6–12.6)	0.7 (0.4–1.4)	1.1 (0.7–1.8)	1.7 (1.2–2.6)	9.8 (7.4–12.7)	9.1 (7.6–10.8)	26.1 (22.6–29.9)	1.1 (0.7–1.8)	0.7 (0.5–1.1)	NA	4.5 (3.5–5.8)	8.7 (6.3–11.8)	12.8 (10.3–15.8)	13.3 (11–15.9)
Cigarette	10.5 (8.7–12.7)	0.7 (0.4–1.4)	1.2 (0.7–1.8)	1.6 (1.1–2.4)	10.0 (7.6–13.0)	9.2 (7.7–10.9)	26.1 (22.6–29.9)	1.1 (0.7–1.7)	0.7 (0.5–1.1)	NA	4.6 (3.5–5.9)	8.7 (6.3–11.9)	12.7 (10.2–15.8)	12.9 (10.7–15.6)
Chewing	8.8 (3.5–20.6)	0.7 (0.1–4.9)	ND	10.6 (2.9–31.6)	ND	3.3 (0.6–15.2)	30 (16.9–47.4)	4 (0.9–16.6)	0.7 (0.1–4.9)	NA	ND	8.3 (2.6–23.5)	18.5 (9.1–34)	15.1 (6.2–32.4)
Rural men (n = 2977)														
All tobacco	11.1 (9.1–13.4)	0.8 (0.4–1.4)	1.2 (0.8–1.9)	1.6 (1–2.4)	10.1 (7.5–13.4)	10.1 (8.4–12)	25.9 (22.4–29.7)	1.3 (0.8–1.9)	0.7 (0.4–1.1)	NA	4.6 (3.6–6)	8.6 (6–12.1)	11.7 (9.7–14.1)	12.5 (10.4–15.1)
Cigarette	11.1 (9.1–13.5)	0.8 (0.4–1.5)	1.2 (0.8–1.9)	1.5 (0.9–2.2)	10.3 (7.7–13.7)	10.2 (8.5–12.2)	25.9 (22.4–29.7)	1.2 (0.8–1.9)	0.7 (0.4–1.1)	NA	4.7 (3.6–6.1)	8.6 (6.1–12.2)	11.6 (9.6–14)	12.1 (10–14.6)
Chewing	9.5 (3.8–22.0)	0.8 (0.1–5.2)	ND	9.5 (2.1–33.5)	ND	3.6 (0.7–16.2)	28.8 (15.6–47.0)	4.4 (1.0–17.7)	0.8 (0.1–5.2)	NA	ND	6.5 (1.6–23.2)	19.9 (9.8–36.3)	16.3 (6.7–34.6)
Pipe	1.7 (0.2–12.9)	ND	1.7 (0.2–12.9)	ND	1.5 (0.2–11.6)	3.7 (0.5–24.4)	12.5 (2.3–46.7)	ND	ND	NA	ND	ND	ND	79.0 (45.7–94.3)
Urban men (n = 278)														
All tobacco	6.2 (3.2–11.7)	0.6 (0.1–4.2)	0.8 (0.1–5.0)	2.8 (1.0–7.8)	7.5 (3.7–14.5)	2.1 (1.0–4.6)	27.5 (16.1–42.7)	0.3 (0.1–2.1)	0.9 (0.2–3.6)	NA	3.4 (1.3–8.8)	9.3 (5.2–16.2)	20.2 (9.1–39.2)	18.4 (10.0–31.3)
Cigarettes	6.3 (3.3–11.8)	0.6 (0.1–4.2)	0.8 (0.1–5.0)	2.6 (0.8–7.9)	7.5 (3.7–14.6)	2.1 (1.0–4.6)	27.3 (15.9–42.3)	0.4 (0.1–2.2)	0.9 (0.2–3.6)	NA	3.5 (1.3–8.9)	9.2 (5.0–16.1)	20.4 (9.2–39.4)	18.6 (10.1–31.6)
Chewing	ND	ND	ND	24.1 (2.8–78.2)	ND	ND	44.9 (6.8–90.1)	ND	ND	NA	ND	31.0 (3.8–83.8)	ND	ND

(Table 5, cont.)

	Experi- menting % (95% CI)	Fashion- able % (95% CI)	Social pressure % (95% CI)	Combat fatigue % (95% CI)	Keep insects away % (95% CI)	Keep warm while farm- ing in rainy season % (95% CI)	Influence of older relatives % (95% CI)	Sadness or depression % (95% CI)	Appear more attractive % (95% CI)	Combat morning sickness % (95% CI)	Receive free cigarettes in army % (95% CI)	Stress % (95% CI)	Easier to meet people % (95% CI)	Decrease appetite % (95% CI)
All women (n = 1826)														
All tobacco	13.9 (11.6–16.6)	0.4 (0.2–0.9)	1.0 (0.6–1.8)	2.4 (1.4–3.8)	2.5 (1.4–4.5)	4.3 (2.9–6.3)	31.9 (28.3–35.7)	0.8 (0.4–1.5)	0.4 (0.2–0.9)	17.0 (13.4–21.3)	0.9 (0.4–2.0)	6.3 (4.9–8.1)	8.2 (6.1–10.9)	10.0 (7.7–13.0)
Cigarette	12.2 (7.6–19.2)	ND	1.3 (0.5–3.4)	2.8 (1.3–6.3)	9.5 (5.7–15.4)	5.5 (3.3–9.0)	19.1 (14.4–24.8)	1.8 (0.6–4.9)	0.2 (0.0–1.5)	15.9 (11.6–21.3)	0.8 (0.2–3.8)	12.6 (7.7–19.9)	6.8 (3.9–11.5)	11.6 (7.6–17.4)
Chewing	14.5 (11.8–17.9)	0.5 (0.2–1.1)	1.0 (0.5–1.9)	2.3 (1.4–3.8)	1.0 (0.4–2.5)	4.1 (2.5–6.7)	34.9 (30.7–39.4)	0.6 (0.3–1.2)	0.5 (0.2–1.1)	17.6 (13.4–22.8)	0.9 (0.4–2.0)	5.0 (3.7–6.7)	8.7 (6.4–11.8)	8.5 (6.1–11.6)
Rural women (n = 1724)														
All tobacco	14.0 (11.6–16.9)	0.4 (0.2–0.9)	1.1 (0.6–2.0)	2.4 (1.5–4.0)	2.6 (1.4–4.8)	3.8 (2.8–5.2)	31.9 (28.1–35.9)	0.9 (0.5–1.7)	0.5 (0.2–1.0)	17.8 (14.0–22.3)	0.9 (0.4–2.2)	5.5 (4.3–7.1)	8.3 (6.1–11.3)	9.9 (7.6–12.9)
Cigarette	12.8 (7.5–20.8)	ND	1.6 (0.6–4.1)	2.6 (1.0–6.7)	10.4 (6.0–17.3)	6.3 (3.8–10.4)	19.6 (14.6–25.7)	2.0 (0.7–5.8)	0.3 (0.0–1.8)	17.7 (12.8–23.9)	0.9 (0.2–4.6)	7.4 (4.2–12.6)	6.8 (3.7–12.1)	11.9 (7.6–18.1)
Chewing	14.6 (11.8–18.0)	0.5 (0.2–1.1)	1.0 (0.5–2.0)	2.5 (1.5–4.1)	1.1 (0.5–2.6)	3.4 (2.3–5.1)	34.5 (30.2–39.1)	0.7 (0.3–1.3)	0.5 (0.2–1.2)	18.2 (13.8–23.6)	1.0 (0.4–2.1)	5.2 (3.8–7.0)	8.8 (6.3–12.1)	8.2 (6.0–11.2)
Pipe	ND	ND	ND	ND	ND	ND	23.5 (6.2–59.0)	ND	ND	ND	ND	1.9 (0.3–12.8)	ND	74.6 (37.8–93.4)
Urban women (n = 102)														
All tobacco	12.0 (5.5–24.4)	ND	ND	1.6 (0.4–6.8)	1.9 (0.5–6.7)	9.9 (1.8–40.2)	32.3 (21.5–45.4)	0.3 (0.0–2.0)	ND	7.5 (3.3–16.0)	ND	16.1 (8.6–28.2)	6.8 (2.8–15.5)	11.7 (3.8–30.5)
Cigarette	9.6 (3.2–25.1)	ND	ND	4.2 (1.0–16.1)	4.9 (1.4–15.4)	1.5 (0.2–9.3)	16.4 (6.3–36.7)	0.7 (0.1–4.8)	ND	6.6 (2.2–18.2)	ND	39.1 (19.7–62.7)	6.7 (1.5–25.2)	10.4 (2.9–31.6)
Chewing	13.6 (4.4–35.1)	ND	ND	ND	ND	15.2 (2.5–55.4)	42.4 (26.2–60.3)	ND	ND	8.0 (2.7–21.2)	ND	1.7 (0.3–10.1)	6.8 (2.3–18.7)	12.4 (2.6–42.6)

CI, confidence interval; NA, not applicable; ND, not determined because of small number of observations.

Table 6. Percent of tobacco users (aged ≥ 18 years) who gave each reason for continuing to use tobacco in nationwide survey, Cambodia, 2005–2006^a

	Fashionable % (95% CI)	Social pressure % (95% CI)	Combat fatigue % (95% CI)	Keep insects away % (95% CI)	Keep warm while farming in rainy season % (95% CI)	Influence of older relatives % (95% CI)	Morning sickness % (95% CI)	Sorrow or depression % (95% CI)	Appear more attractive % (95% CI)	Reduce appetite % (95% CI)
All men (n = 3255)										
All tobacco	1.2 (0.3–4.4)	0.7 (0.4–1.1)	6.1 (4.7–8.1)	11.0 (8.0–15.0)	20.1 (17.4–23.2)	23.8 (19.8–28.2)	NA	10.5 (8.0–13.6)	5.3 (3.5–7.9)	21.3 (18.4–24.6)
Cigarette	1.2 (0.3–4.5)	0.7 (0.4–1.1)	6.2 (4.7–8.2)	11.2 (8.1–15.3)	20.4 (17.6–23.5)	23.5 (20.0–27.9)	NA	10.6 (8.1–13.8)	5.3 (3.5–8.0)	21.0 (18.0–24.3)
Chewing	1.0 (0.1–6.9)	ND	4.5 (0.6–26.2)	ND	9.9 (3.0–28.1)	49.2 (28.9–69.7)	NA	7.2 (1.7–26.3)	7.8 (2.0–25.4)	20.5 (8.8–40.9)
Rural men (n = 2977)										
All tobacco	1.4 (0.4–5.0)	0.7 (0.4–1.3)	5.8 (4.5–7.5)	10.9 (7.6–15.2)	22.1 (19.1–25.4)	24.2 (20.1–28.8)	NA	10.5 (7.8–13.9)	3.5 (2.8–4.5)	20.9 (18.0–24.1)
Cigarette	1.4 (0.4–5.1)	0.8 (0.4–1.3)	5.9 (4.5–7.6)	11.1 (7.8–15.5)	22.4 (19.4–25.8)	23.9 (19.8–28.4)	NA	10.6 (7.9–14.1)	3.5 (2.8–4.4)	20.5 (17.6–23.7)
Chewing	1.0 (0.1–6.9)	ND	4.5 (0.6–26.2)	ND	9.9 (3.0–28.1)	49.2 (28.9–69.7)	NA	7.2 (1.7–26.3)	7.8 (2.0–25.4)	20.5 (8.8–40.9)
Pipe	ND	1.7 (0.2–12.9)	ND	1.5 (0.2–11.6)	3.7 (0.5–24.4)	14.1 (3.0–47.0)	NA	ND	ND	79.0 (45.7–94.4)
Urban men (n = 278)										
All tobacco	ND	ND	8.5 (3.0–22.1)	12.2 (5.2–25.9)	5.9 (2.9–11.6)	20.7 (9.8–38.6)	NA	10.5 (5.5–19.2)	18.0 (8.0–35.8)	24.2 (13.7–39.0)
Cigarette	ND	ND	8.5 (3.0–22.1)	12.2 (5.2–25.9)	5.9 (2.9–11.6)	20.7 (9.8–38.6)	NA	10.5 (5.5–19.2)	18.0 (8.0–35.8)	24.2 (13.7–39.0)
Chewing	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
All women (n = 1826)										
All tobacco	0.8 (0.4–1.6)	1.9 (1.1–3.2)	6.8 (5.0–9.1)	3.0 (2.1–4.4)	9.6 (7.2–12.7)	28.6 (24.5–33.1)	13.9 (9.6–19.8)	10.1 (7.4–13.6)	4.0 (2.5–6.3)	21.4 (17.7–25.6)
Cigarette	1.1 (0.3–4.2)	1.8 (0.7–4.5)	5.0 (2.6–9.3)	12.3 (8.1–18.2)	10.9 (7.1–16.4)	17.1 (12.3–23.5)	11.7 (7.3–18.1)	11.2 (6.7–18.1)	2.4 (1.0–5.9)	26.5 (19.4–35.1)
Chewing	0.7 (0.3–1.7)	2.0 (1.1–3.6)	7.4 (5.4–10.2)	0.8 (0.4–1.6)	9.5 (7.0–12.8)	31.6 (26.7–36.9)	14.8 (9.5–22.3)	10.0 (6.9–14.2)	4.5 (2.7–7.3)	18.6 (14.9–23.1)
Rural women (n = 1724)										
All tobacco	0.7 (0.3–1.5)	2.0 (1.1–3.4)	6.6 (4.8–9.0)	2.7 (1.8–4.1)	10.3 (7.7–13.6)	29.4 (25.1–34.1)	14.7 (10.1–21)	9.1 (6.7–12.2)	3.4 (2.2–5.1)	21.2 (17.4–25.6)
Cigarette	0.6 (0.1–4.1)	2.2 (0.9–5.4)	3.4 (1.5–7.9)	12.0 (7.5–18.6)	13.0 (8.4–19.4)	17.6 (12.5–24.2)	13.9 (8.7–21.3)	10.2 (5.9–17.1)	1.8 (0.8–4.1)	25.3 (18.5–33.6)
Chewing	0.7 (0.3–1.7)	2.0 (1.1–3.7)	7.4 (5.3–10.3)	0.8 (0.4–1.7)	10.0 (7.4–13.5)	32.1 (27.1–37.5)	15.3 (9.8–23.2)	9.1 (6.5–12.6)	3.8 (2.4–6.0)	18.8 (14.9–23.4)
Pipe	ND	ND	ND	ND	ND	23.5 (6.2–59.0)	ND	2.4 (0.5–11.5)	ND	74.1 (37.7–93.1)
Urban women (n = 102)										
All tobacco	2.2 (0.5–9.6)	1.1 (0.2–7.6)	9.6 (4.1–21.1)	6.4 (2.5–15.4)	0.4 (0.1–2.9)	18.9 (7.5–40.1)	3.6 (0.9–13.1)	22.4 (7.3–51.3)	12.2 (2.9–39.1)	23.1 (10.8–42.8)
Cigarette	3.4 (0.5–20.5)	ND	12.2 (4.6–28.6)	14.0 (5.6–30.8)	0.9 (0.1–5.8)	15.0 (4.4–39.9)	1.3 (0.2–9.2)	15.9 (4.3–44.3)	5.4 (0.7–30.6)	32.0 (12.3–61.3)
Chewing	1.2 (0.2–8.5)	2.1 (0.3–13.5)	7.4 (2.2–22.3)	ND	ND	22.2 (6.7–53.0)	5.6 (1.1–23.8)	28.0 (5.9–70.8)	18.0 (3.2–59.3)	15.5 (5.8–35.4)

CI, confidence interval; NA, not applicable; ND, not determined because of small number of observations.

^a Data available from <http://publichealth.llu.edu/epibio/toltdata.htm>