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Beliefs About Tobacco, Health, and Addiction Among Adults in Cambodia: Findings from a National Survey

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Abstract

There remains a very high rate of smoked and smokeless tobacco use in the Western Pacific Region. The most recent findings from national adult tobacco surveys indicate that very few daily users of tobacco intend to quit tobacco use. In Cambodia, a nation that is predominantly Buddhist, faith-based tobacco control programs have been implemented where, under the fifth precept of Buddhism that proscribes addictive behaviors, monks were encouraged to quit tobacco and temples have been declared smoke-free. In the present study, we included items on a large national tobacco survey to examine the relation between beliefs (faith-based, other) about tobacco, health, and addiction among adults (18 years and older). In a stratified, multistage cluster sample ($n = 13,988$) of all provinces of Cambodia, we found that (1) 88–93% believe that Buddhist monks should not use tobacco, buy tobacco, or be offered tobacco during a religious ceremony; (2) 86–93% believe that the Wat (temple) should be a smoke-free area; (3) 93–95% believe that tobacco is addictive in the same way as habits (opium, gambling, alcohol) listed under the fifth precept of Buddhism; and (4) those who do not use tobacco are significantly more likely to cite a Buddhist principle as part of their anti-tobacco beliefs. These data indicate that anti-tobacco sentiments are highly prevalent in the Buddhist belief system of Cambodian adults and are especially evident among non-users of tobacco. Our findings indicate that faith-based initiatives could be an effective part of anti-tobacco campaigns in Cambodia.

Keywords

Buddhism; Tobacco; Smokeless tobacco; Cambodia; Religiosity

Introduction

Cambodia has been identified as having one of the highest rates of cigarette smoking in Southeast Asia. Recent estimates indicate that about 48% of adult men smoke cigarettes ($n = 1,223,000$ smokers) and 17% of adult women chew tobacco ($n = 560,000$ chewers) in the form of a betel quid (Singh et al. 2009). In Cambodia, non-governmental organizations have, during the past decade, initiated a number of cessation programs such as “Tobacco free Kids” and “Khmer Quit Now” (ADRA-Cambodia 2010). Despite these efforts, the number of current users who indicate a plan to quit in the immediate future remains very low in this nation. One noteworthy project funded by the Rockefeller foundation was the “Smoke-free Monks/Smoke-free Wats (temples)” focused on a faith-based approach to tobacco control and tobacco cessation in Cambodia. This project was built on the concept that since the prevalence of smoking among monks is approximately 35% and tobacco is a popular offering to monks at the temples, cessation programs and campaigns should be aimed at the following: (1) persuading the 55,000 monks of the nation to serve as an example and quit cigarette smoking and (2) designating the 3,820 Wats (temples) in the country as smoke-free areas (Yel et al. 2005).

The rationale for targeting monks and temples was that under the fifth precept of Buddhism, behaviors such as alcohol use, opium use, and gambling are to be avoided due to being addictive. In the Khmer language, words for addiction include a term used in spiritual teaching by monks—“machea”—and a common colloquialism—“ngien”. The term “machea” describes the addictive behaviors (alcohol use, opium use, gambling) that are specifically proscribed by the fifth precept and is not commonly known to those Cambodians who do not closely study the written teachings. In contrast, the term “ngien” is a colloquialism that translates into “craving” and is commonly known to the Khmer public.

The “Smoke-free Monks/Smoke-free Wats (temples)” project posited that classifying cigarettes as being addictive under this Buddhist precept would enable effective faith-based campaigns and programs for tobacco cessation and prevention in a nation that is 95% Buddhist (Yel et al. 2005). Program efforts focused on the chief monks in each of the 22 provinces and resulted in two high-ranking monks with national influence giving full support to the concept that tobacco could be classified as addictive under Buddhist precepts. Program efforts focused on establishing smoke-free policies in Wats and resulted in several Wats becoming completely smoke-free within a relatively short span of time.

In the present study, our main objective was to examine and measure the prevalence of Buddhist beliefs about addiction and tobacco use in a large national sample. During 2005–2006, we completed the largest nationwide survey of adult tobacco use ever conducted in Cambodia ($n = 13,988$) through a collaborative effort of the Fogarty-NIH sponsored Tobacco Control Leadership Training Program (TCLT) and the National Institute of Statistics (Ministry of Planning, Phnom Penh, Cambodia) (Singh et al. 2009). Our aims in the current analysis of the data from Cambodia are to (1) examine the prevalence of faith-based “anti-tobacco” beliefs and (2) compare Buddhist beliefs about tobacco use held by tobacco users and non-users. These analyses can be used to evaluate the efficacy of faith-based cessation and prevention programs in Cambodia and the region.

Methods

Study Population

For the TCLT survey, we assembled a nationwide, representative sample of 13,988 adults aged 18 years and older using methods that have been previously described (Rudatsikira et al. 2008; Singh et al. 2009). Briefly, we conducted a stratified three-stage cluster sample using the 1998 Cambodia General Population Census as a sampling frame. Specifically, we stratified the country into 17 provincial sampling domains, and within each domain, we then randomly selected 26 villages (we use the term “village” to represent a rural village or urban area of comparable size) by circular systematic sampling with probability of inclusion of the village proportionate to its size. Survey teams consisted of 4–5 interviewers and enumerators from the National Institute of Statistics (Ministry of Planning, Phnom Penh, Cambodia) working in each of the 17 census-derived regions described above. A total of 92 personnel 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, these teams updated the household enumeration and cartography of the sampling units that was obtained during the 1998 census. In each household, all adults aged 18 and older were asked to participate in the study (with informed consent), and we found that less than 3% declined to complete the survey. The final sample consisted of 13,988 adults. The large sample provided us an excellent statistical power (90%) to estimate prevalence as low as 5% to within about a 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 0.50 US dollar (USD) was provided for participating subjects.

Questionnaire

The interviewer-administered survey included items on demographics, health status, tobacco use (commercial cigarettes, hand-rolled cigarettes, chewing tobacco, tobacco pipe), age at initiation of tobacco, reasons for starting to smoke, knowledge and attitudes about tobacco, and smoking cessation. Survey items were designed during (1) ethnographic studies (key informant interview, focus groups) conducted on tobacco and health issues in rural and urban centers; (2) graduate-level training in survey research of Ministry of Health personnel that involved their selection and modification of items from tobacco use surveys of other nations (Ferry et al. 2006); and (3) consultation with local NGOs who 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 for content, criterion, and semantic equivalence by bilingual and monolingual personnel using methods described by Flaherty (Flaherty et al. 1988). Pertinent issues about the design of items on tobacco use and Buddhist beliefs are discussed as follows.

Tobacco Items—The tobacco items were in the form of (1) interviewer-administered items adapted from WHO surveys and other national prevalence surveys that measured intensity and duration of the tobacco use and (2) interviewer-administered pictograms of commercial and local tobacco products based on the findings of qualitative research (focus groups, key informants) of rural and urban tobacco users in Cambodia (Singh et al. 2009).

Focus Groups Data on Buddhist Beliefs Used for Survey Design—Coded themes from an extensive series of focus groups were used to design items on Buddhist beliefs for the national survey. Specifically, during 2001, the Rockefeller foundation and ADRA

Cambodia conducted a series of focus groups among 1,500 monks in five provinces of Cambodia including the capital (Phnom Penh) (WHO 2009).

These focus groups and key informant interviews identified pertinent themes such as: (1) monks are respected role models and teachers who are closely associated with schools; (2) Buddhist teachings advise against harming self and others; (3) Buddhist teachings advise against the use of addictive (“ngien”, “machea”) substances; (4) some monks encourage the community not to offer tobacco as gifts at the Wat (temple); (5) a monk’s disposal of the offerings of tobacco from the community is acceptable; (6) some monks bury the tobacco offerings so that they do not harm others; (7) some community members are confused by the conflicting messages from the media, monks, and health professionals; (8) tobacco advertising may be considered misleading and against Buddhist teachings; and (9) monks want more information and resources to use for anti-tobacco teaching.

Statistical Analysis

Data analysis for this study needed to account for the stratified, multistage cluster sampling protocol described above. The 95% confidence intervals for prevalence, means, and odds ratios for tobacco use, beliefs, and health variables were calculated using a Taylor series linearized approach to compute between-cluster variance estimators that accounted for the intraclass correlation among subjects within the same village. Point estimates for prevalence, means, and odds ratios were further adjusted by sample weights to account for different sampling fractions within each of the 17 domains described above. Odds ratios were derived from logistic regression models where a belief item (agree/disagree) was the dependent variable, tobacco use (smoking, chewing) was the independent variable, and age was included as a confounder. These statistical analyses were performed using SUDAAN software release 9.0 (RTI International, Research Triangle Park, North Carolina).

Results

Demographic trends in the national sample have been previously reported (Singh et al. 2009). Briefly, the adults (aged 18 and older) in the sample were predominantly Khmer ethnicity (95%), Buddhist (96%), completed 6 years or less of school (74%), and earned 2 USD per day or less (87%).

Prevalence of Anti-Tobacco Belief Systems in Cambodia

We found strong evidence against the use of cigarettes in religious contexts as evidenced by the following: (1) 83–93% of adults in urban and rural areas of Cambodia indicated that monks should not use tobacco, buy tobacco, or be given tobacco as an offering at the Wat(temple) and (2) 85–92% of adults in urban and rural areas indicated that the Wat (temple) should be smoke-free.

When considering beliefs about addiction (Table 1), we found that more than 96% of adults in urban and rural areas were aware of and agreed with the fifth precept of Buddhism that described gambling, opium, and alcohol as being addictive or “ngien”. In this context, it is noteworthy that more than 93% of the same adults also believe that tobacco was addictive or “ngien”.

Belief Systems and Cigarette Smoking

In Table 2, we compare the belief systems of cigarette smokers and non-smokers in logistic regression models that included a confounder variable for age.

We found strong, statistically significant associations indicating that men and women who did not smoke cigarettes were twofold to threefold more likely to believe that monks should not use tobacco, buy tobacco, or be offered tobacco. Similar associations were found between avoidance of cigarettes and a belief that the Wat (temple) should be smoke-free. Non-smokers were up to sixfold more likely to agree with the precept of Buddhism that identifies opium, gambling, and alcohol as being addictive. Non-smokers were threefold more likely than smokers to classify cigarettes as being addictive under the same Khmer term “ngien”.

Belief Systems and Chewing Tobacco (i.e., Betel Quid)

For the chewing tobacco habits that occur primarily among women (Singh et al. 2009), we found that those women who did not chew tobacco were significantly more likely (ORs ranging from 1.3 to 1.6) to believe that monks should not chew tobacco, buy tobacco, or be offered tobacco at the temple, as shown in Table 3. Overall adults who did not chew were 2–6 times more likely to believe that tobacco was addictive in the same way as substances mentioned under the fifth precept of Buddhism.

Discussion

Our findings from a large national sample of adults in Cambodia indicate the following: (1) 88–93% believe that Buddhist monks should not use tobacco, buy tobacco, or be offered tobacco during a religious ceremony; (2) 86–93% believe that the Wat (temple) should be a smoke-free area; (3) 93–95% believe that tobacco is addictive in the same way as addictive habits (opium, gambling, alcohol) specifically listed under the fifth precept of Buddhism; and (4) those who do not use tobacco are significantly more likely to cite Buddhism as part of their anti-tobacco beliefs.

Buddhism and Tobacco Control in the Western Pacific Region

The fifth precept of Buddhism strongly discourages addictive behaviors such as drugs, alcohol, and gambling. In fact, in Burma, about half the monks believe the fifth precept is the most important precept due to the severity of the consequences that may follow from breaking it. Such consequences include “present waste of money, increased quarreling, liability to sickness, loss of good name, indecent exposure of one’s person, and weakening of one’s wisdom (Harvey 2000).”

Our findings from a large national sample indicate that more than 90% of Cambodians link addiction to tobacco with behaviors proscribed under the fifth precept. This is noteworthy when considering what may be an effective theme for anti-tobacco campaigns in Cambodia—a country where Khmer Buddhism is practiced by more than 95% of the population. Previous studies of Buddhism and tobacco control are also noteworthy in this context. Smith and Umenai have reported that among Buddhist monks who smoke, 84% want to quit, and 60% of those who want to quit gave health as the main reason (Smith and Umenai 2000). A community survey funded by the Rockefeller Foundation found that 94.7% of monks want to quit and 98% would attend a quit program. In smoking cessation programs among monks, Yel et al. have found an 87% quit rate due to the cessation program that was confirmed through salivary cotinine testing (Yel et al. 2005).

In the Western Pacific Region, the inclusion of Buddhist beliefs in tobacco control activities has a long history. One of the earliest recorded instances occurred in Bhutan where, in 1729, a tobacco control law was passed by the prominent leader His Holiness Shabdrung Ngawang Namgyal. This law had a significant impact on the decrease in the use of tobacco products by monks and the religious community and a sustaining influence on the nation as a whole

(Ugen 2003). A recent study indicated that less than 1% of the nation smokes cigarettes and 8% chew tobacco. Ugen et al. have concluded that two of the main factors that underlie successful tobacco control in Bhutan include the following: (1) monks being highly involved in the lives of people in this country and (2) anti-tobacco support from the heads of the religious organizations. In Thailand, Swaddiwudhipong et al. have reported that anti-smoking interventions by Buddhist monks substantially increased quit attempts relative to a control sample (Swaddiwudhipong et al. 1993).

Relation Between Religiosity and Tobacco

A number of the world's religions have proscriptions and/or counsel against tobacco use that have varying degrees of efficacy in controlling tobacco use among adherents. In Christianity, both Adventists and Mormons are encouraged to follow their church's guidelines on avoidance of tobacco. Ellen White, a leading religious figure to the Seventh Day Adventists, has stated that, "Tobacco, in whatever form it is used, tells upon the constitution. It is a slow poison" (White 1864). Such teachings seem to be an effective tobacco control measure. According to a 2008 study, about 1.1% of SDAs currently smoke (Butler et al. 2008), as compared to a prevalence of 20.6% in the US adult population. ("Vital signs: current cigarette smoking among adults aged = 18 years—United States, 2009," 2010). The word of wisdom, considered a special revelation in Mormonism, advises that "tobacco is not for the body, neither for the belly, and is not good for man...". A 1996 Utah Health Status Survey found that the prevalence of smoking was 9.2% in adult Mormon men and 4.1% in Mormon women (Merrill et al. 2003). Also noteworthy are the recent trends toward incorporating faith-based initiatives into tobacco control programs in Muslim countries (Saloojee et al. 2007). Since the 1990s, there has been a trend among scholars and religious leaders (muftis) in Egypt, Oman, and Saudi Arabia to consider tobacco to be "haram" or sinful (WHO 2004). By 2002, the Ministry of Health in Saudi Arabia began an initiative to make Mecca and Medina—the two holiest cities in Islam— tobacco-free (Saloojee et al. 2007). The rationale for these measures was that the principle in the Islamic faith that to "expose yourself to destruction" could be applied to the harm caused by smoking (WHO 2004). The efficacy of these measures needs study. Our group recently found that in Egypt, users of a tobacco waterpipe (i.e., hookah, narghile) are distinct from cigarette smokers in their perception that their form of tobacco use is less harmful and/or less subject to religious proscription (Singh et al. 2009).

Conclusions

Anti-tobacco sentiments concerning smoke-free temples, tobacco use among monks, and the addictive nature of all forms of tobacco are highly prevalent in the Buddhist beliefs of Cambodian adults and are especially evident among non-users of tobacco. Our findings indicate that faith-based initiatives could be an effective part of anti-tobacco campaigns in Cambodia. Such campaigns (ADRA-Cambodia 2010) include the ongoing efforts in parts of Cambodia to promote smoke-free temples, encouraging monks to quit tobacco (Yel et al. 2005) and encouraging monks to educate the community about the addictive and harmful nature of tobacco.

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References

- ADRA-Cambodia. Cambodia Action for Policy on Smoking and Health (CAPSH). 2010. from <http://toh.adracambodia.org/projects/capsh/capsh.htm>
- Butler TL, Fraser GE, Beeson WL, Knutsen SF, Herring RP, Chan J, et al. Cohort profile: The Adventist Health Study-2 (AHS-2). *International Journal of Epidemiology*. 2008; 37(2):260–265. [PubMed: 17726038]
- Ferry LH, Job J, Knutsen S, Montgomery S, Petersen F, Rudatsikira E, et al. Mentoring Cambodian and Lao health professionals in tobacco control leadership and research skills. *Tobacco Control*. 2006; 15(Suppl 1):i42–i47. [PubMed: 16723675]
- Flaherty JA, Gaviria FM, Pathak D, Mitchell T, Wintrob R, Richman JA, et al. Developing instruments for cross-cultural psychiatric research. *The Journal of Nervous and Mental Disease*. 1988; 176(5): 257–263. [PubMed: 3367140]
- Harvey, P. An introduction to Buddhist ethics: Foundations, values, and issues. Cambridge University Press; New York: 2000.
- Merrill RM, Hilton SC, Daniels M. Impact of the LDS church's health doctrine on deaths from diseases and conditions associated with cigarette smoking. *Annals of Epidemiology*. 2003; 13:704–711. [PubMed: 14599735]
- Rudatsikira EM, Knutsen SF, Job JS, Singh PN, Yel D, Montgomery SB, et al. Exposure to environmental tobacco smoke in the nonsmoking population of Cambodia. *American Journal of Preventive Medicine*. 2008; 34(1):69–73. [PubMed: 18083453]
- Saloojee, Y.; Chaouki, N.; World Health Organization, Regional Office for the Eastern Mediterranean. Tobacco free Mecca and Medina. Center for Tobacco Control Research and Education; UC San Francisco: 2007. Retrieved from <http://escholarship.org/uc/item/46p7t7g8>
- Singh PN, Yel D, Sinn S, Sothy K, Lopez J, Job JS, et al. Tobacco use among adults in Cambodia: Evidence for a tobacco epidemic among Cambodian women. *Bulletin of the World Health Organization*. 2009; 87:909–912.
- Smith MT, Umenai T. Smoking among Buddhist monks in Phnom Penh, Cambodia. *Tobacco Control*. 2000; 9(1):111. [PubMed: 10798864]
- Swaddiwudhipong W, Chaovakiratipong C, Nguntra P, Khumklam P, Silarug N. A Thai monk: An agent for smoking reduction in a rural population. *International Journal of Epidemiology*. 1993; 22(4):660–665. [PubMed: 8225740]
- Ugen S. Bhutan: The world's most advanced tobacco control nation? *Tobacco Control*. 2003; 12(4): 431–433. [PubMed: 14660782]
- Vital signs: Current cigarette smoking among adults aged = 18 years—United States, 2009. *MMWR Morb Mortal Wkly Rep*. 2010; 59(35):1135–1140. [PubMed: 20829747]
- White, E. Spiritual gifts. Vol. Vol. 4. Steam Press of the Seventh-day Adventist Publishing Association; Battle Creek, Michigan: 1864.
- WHO. Islamic ruling on smoking: The right path to health. 2004.
- WHO. Cambodia Smoking Statistics TC Measures 09. 2009. from http://www.wpro.who.int/NR/rdonlyres/BD984B4E-E353-4B28-854F-92295CCB1F96/0/CambodiaSmokingStatisticsTCmeasures_09.pdf
- Yel D, Hallen GK, Sinclair RG, Mom K, Srey CT. Biochemical validation of self reported quit rates among Buddhist monks in Cambodia. *Tobacco Control*. 2005; 5:359. [PubMed: 16183989]

Table 1

Subjects indicating agreement with beliefs concerning Buddhism, tobacco, addiction, and smoke-free areas in a national sample of 13,988 adults from Cambodia

	Men	Women
<i>Monks should not use tobacco</i>		
Urban	89	89
Rural	89	90
<i>Monks use of tobacco will affect community use of tobacco</i>		
Urban	76	68
Rural	77	75
<i>Monks should not buy tobacco</i>		
Urban	93	89
Rural	88	87
<i>Monks should not accept cigarettes as an offering; it is an addictive (ngien) offering that gives no benefit to the offerer</i>		
Urban	76	71
Rural	71	70
<i>Cigarettes should not be offered to monks</i>		
Urban	83	86
Rural	87	86
<i>Monks are wrong to throw away or not accept cigarettes</i>		
Urban	55	48
Rural	64	62
<i>Smoking should not be allowed in the Wat (temple)</i>		
Urban	93	92
Rural	85	86
<i>Buddhism prohibits gambling, opium, and alcohol</i>		
Urban	97	96
Rural	98	97
<i>Gambling, opium, and alcohol, are ngien</i>		
Urban	96	97
Rural	97	96
<i>Alcohol is ngien</i>		
Urban	95	96
Rural	97	96
<i>Opium is ngien</i>		
Urban	99	99
Rural	97	97
<i>Tobacco is ngien</i>		
Urban	95	95
Rural	93	93
<i>A smoker cannot reach Sel Doub</i>		
Urban	42	40

	Men	Women
Rural	44	43
<i>It is a sin for a cigarette or pipe smoker to produce smoke that harms others</i>		
Urban	81	84
Rural	77	77
<i>Harming your body with tobacco is wrong</i>		
Urban	83	79
Rural	71	74

Table 2

Age-adjusted odds ratios for the relation between non-smoking and agreement with proscriptive beliefs (faith-based, other) about tobacco in a national sample of 13,988 adults from Cambodia

	Men (odds ratio [95% CI]) ^d	Women (odds ratio [95% CI]) ^d
<i>Odds ratios for agreement with the following proscriptive beliefs on tobacco: "monks should not use tobacco"</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.8 [1.3, 2.3]	2.9 [1.9, 4.5]
<i>Monks use of tobacco will affect community use of tobacco</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.2 [1.0, 1.5]	1.6 [1.1, 2.3]
<i>Monks should not buy tobacco</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.8 [1.4, 2.4]	2.2 [1.4, 3.4]
<i>Monks should not accept cigarettes as an offering; it is an addictive (ngien^b) offering that gives no benefit to the offerer</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.6 [1.2, 2]	2.1 [1.5, 2.9]
<i>Cigarettes should not be offered to monks</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.8 [1.4, 2.3]	2.9 [2, 4]
<i>Monks are wrong to throw away or not accept cigarettes</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	0.9 [0.8, 1.1]	0.8 [0.6, 1.2]
<i>Smoking should not be allowed in the Wat (temple)</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.9 [1.4, 2.4]	2.0 [1.4, 2.9]
<i>Buddhism prohibits gambling, opium, and alcohol</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.3 [0.8, 2]	2.8 [1.4, 5.6]
<i>Gambling, opium, and alcohol, are ngien</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.6 [1, 2.5]	4.0 [2.4, 6.7]
<i>Alcohol is ngien</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.0 [0.6, 1.5]	4.0 [2.4, 6.7]
<i>Opium is ngien</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.8 [1.1, 2.8]	6.7 [4.2, 11.1]
<i>Tobacco is ngien</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	2.0 [1.4, 2.9]	3.2 [2, 5]
<i>A smoker cannot reach Sel Doub^c</i>		

	Men (odds ratio [95% CI]) ^a	Women (odds ratio [95% CI]) ^a
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.5 [1.2, 1.7]	1.4 [1, 1.9]
It is a wrong for a cigarette or pipe smoker to produce smoke that harms others		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	1.6 [1.2, 2.3]	2 [1.5, 2.7]
<i>Harming your body with tobacco is wrong</i>		
Cigarette smoker	1.0 [referent]	1.0 [referent]
Cigarette non-smoker	2.0 [1.5, 2.6]	2.0 [1.5, 2.7]

^aOdds ratios derived from a logistic regression model with a proscriptive belief (agree, disagree) as the dichotomous outcome, smoking status as the main effect, and age as a confounder

^bColloquial Khmer term for addictive (i.e., “craving”)

^cKhmer-Buddhist term for “highest spiritual state”

Table 3

Age-adjusted odds ratios for the relation between non-chewing of tobacco and agreement with proscriptive beliefs (faith-based, other) about tobacco in a national sample of 13,988 adults from Cambodia

	Men (odds ratio [95% CI]) ^a	Women (odds ratio [95% CI]) ^a
<i>Odds ratios for agreement with the following proscriptive beliefs on tobacco: "monks should not chew tobacco"</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	0.57 [0.2, 1.9]	1.4 [1.1, 1.8]
<i>Monks use of tobacco will affect community use of tobacco</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	0.48 [0.2, 1.2]	1.1 [0.9, 1.5]
<i>Monks should not buy tobacco</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	0.76 [0.3, 2.1]	1.3 [1.0, 1.7]
<i>Monks should not accept cigarettes as an offering; it is an addictive (ngien^b) offering that gives no benefit to the offerer</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	1.4 [0.8, 2.5]	1.6 [1.3, 2.0]
<i>Cigarettes should not be offered to monks</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	1.7 [0.8, 3.4]	1.2 [0.9, 1.6]
<i>Monks are wrong to throw away or not accept cigarettes</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	0.66 [0.4, 1.2]	0.97 [0.8, 1.2]
<i>Buddhism prohibits gambling, opium, and alcohol</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	3.66 [0.8, 16]	1.7 [0.9, 3.3]
<i>Gambling, opium, and alcohol, are ngien</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	3.6 [1.2, 11]	1.9 [1.2, 3.0]
<i>Alcohol is ngien</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	1.8 [0.4, 7.2]	1.4 [0.8, 2.3]
<i>Opium is ngien</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	3.7 [0.98, 14]	1.4 [0.9, 2.4]
<i>Tobacco is ngien</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	6.21 [3.5, 11]	2.1 [1.4, 3.2]
<i>A smoker cannot reach Sel Doub^b</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	1.5 [0.8, 2.8]	1.6 [1.3, 1.9]
<i>It is wrong for a cigarette or pipe smoker to produce smoke that harms others</i>		

	Men (odds ratio [95% CI]) ^a	Women (odds ratio [95% CI]) ^a
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	1.5 [0.8, 2.8]	1.5 [1.2, 1.9]
<i>Harming your body with tobacco is a sin</i>		
Chewer	1.0 [referent]	1.0 [referent]
Non-chewer	2.1 [1.3, 3.7]	1.7 [1.4, 2.1]

^aOdds ratios derived from a logistic regression model with a proscriptive belief (agree, disagree) as the dichotomous outcome, “non-chewing of tobacco” as the main effect, and age as a confounder

^bColloquial Khmer term for addictive (i.e., “craving”)

^cKhmer-Buddhist term for “highest spiritual state”