Comparisons between Cigarette Smoking and Alcoholic Drinking Behavior Survey and Global Adult Tobacco Survey in Thailand

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Abstract

The National Cigarette Smoking and Alcoholic Drinking Behavior Survey (NCSADBS) has been used as one of the key components of tobacco use surveillance in Thailand in the past two decades. In 2009 and 2011, Thailand conducted the Global Adult Tobacco Survey (GATS), following a global standard protocol surveying tobacco use. The estimated prevalence of current cigarette use from NCSADBS was lower than that from GATS. In this paper, we examined the discrepancy of the prevalence of tobacco use, comparing NCSADBS and GATS on the key indicator, prevalence of current smoking. The comparisons were based on sample design and data collection. The use of proxy responses in the estimates from NCSADBS was identified to be the main cause of the discrepancy. The elimination of proxy responses from the estimates will provide more accurate reporting of tobacco use in Thailand.

1. Introduction

Monitoring tobacco use using surveillance is one of the key tobacco control strategies proposed by the World Health Organization to implement the Framework Convention on Tobacco Control (FCTC). Thailand has a long tobacco control history among developing countries. Since two comprehensive national laws, the Tobacco Products Control Act and the Non-Smokers' Health Protection Act, were enacted almost two decades ago, Thailand has achieved great success, as evidenced by a decrease in the prevalence of current smoking among men from 59.3% in 1991 to 41.7% in 2007 (Temsirikulchai et al, 2008), and 45.6% in 2009 (Ministry of Health, Thailand, 2009) and the continued low prevalence of smoking among women. In the past two decades, tobacco surveillance in Thailand relied on two national repeated surveys: National Health and Welfare Survey (NHWS) and, National Cigarette Smoking and Alcoholic Drinking Behavior Survey (NCSADBS) (Sangthorn et al, 2011). Prevalence rates of tobacco use obtained from NHWS and NCSADS were comparable, as the two surveys were conducted alternatively by the National Statistical Office, Thailand, using the similar sample design, same question wording on tobacco use, and the same fieldwork and data collection procedures.

In 2009 and 2011, Thailand conducted Global Adult Tobacco Survey (GATS), following a global standard protocol surveying tobacco use in low and middle income countries in the world. The estimated prevalence of tobacco use from NHWS and NCSADBS was lower than that from GATS, for example, the prevalence of current smoking among men was 31.0% estimated from NCSADBS in 2007 and 45.6% from GATS in 2009. NHWS and NCSADBS used nearly identical sample design and the same tobacco use questions and the only difference is that the

two surveys were conducted in alternate years. Given these similarities we used the NCSADBS for comparison with GATS. The purpose of the study was to determine the possible reasons for the differences in the estimates.

2. Methods

Both NCSADBS and GATS were operated by the National Statistical Office, Thailand. The level of interviewers and supervisors and the quality of fieldwork were comparable for both surveys. Our comparison will focus on the sample design and data collection procedures. In Thailand, more than 95% of tobacco users are cigarette smokers and the prevalence of tobacco use is low for women. The variable used for the comparison was current cigarette smoking, which was defined as daily smoking or less than daily smoking.

3. Results

Sample design:

The target population of GATS, household members aged 15 year or older, was a subset of the target population of NCSADBS, household members aged 11 years or older. Both surveys used the same stratification methods, with 9 strata, a combination of 5 regions (Bangkok and 4 other geographic regions) and urbanicity. The first two stages of sampling were the same in both surveys. At the first stage, selection probability proportional to size sampling method was applied to sample primary sampling units (PSU), which were enumeration areas (EA) used in census. PSU allocation is shown in the Table 1. At the second stage, a simple random sampling method was applied to select a fixed number of households from the previously selected PSU, (15 and 12 in urban and rural areas respectively for NCSADBS and 16 and 28 in urban and rural areas respectively for GATS). In NCSADBS, all eligible people who were 11 years or older were included in the final sample with size of 177,350 persons, while in GATS, one person would be randomly selected from all eligible people, aged 15 years or older, at the last stage of sampling. The sample size of GATS was 21,488 persons.

Table 1 Sample allocation of primary sampling units by region and residence area in the National Cigarette Smoking and Alcohol Drinking Behavioral Survey (NCSADBS) and the Global Adult Tobacco Survey (GATS)

	2011 NCSADBS			2011 GATS		
	Total	Urban	Rural	Total	Urban	Rural
Region	4,830	2,780	2,050	1,088	792	296
Bangkok	260	260		264	264	
Central	1,640	900	740	206	132	74
North	1,030	580	450	206	132	74
Northeast	1,080	600	480	206	132	74
South	820	440	380	206	132	74

Data collection:

In NCSADBS, all available members from selected households were surveyed. If the members were not present, proxy responses were collected. It was common that one member of the household, often the head of the household, answered survey questions for all members. In GATS, no proxy responding was allowed. If the randomly selected person was not available, the interviewer would schedule an appointment for a revisit in an appropriate time. The individual would be treated as a nonrespondent, if three visits were made and the interview could not be carried out.

Table 2 presents the prevalence of current smoking obtained from NCSADBS with and without proxy responses and from GATS. If the proxy response was included, the prevalence estimated from NCSADBS was lower for both men and women than that estimated from GATS, 41.69% vs. 46.55% for men and 2.14% vs. 2.61% for women respectively. If the proxy response was excluded, the estimated prevalence was 45.27% for men and 2.86% for women, similar to estimates from GATS. That the estimated overall prevalence of current smoking from NCSADBS with proxy data was lower than that from GATS was true for both men and women. This is also true for all subgroup estimates among men and the most subgroup estimates among women (Table 3). The only exception was for women aged between 15-24 years or located in Northeast or South region. Table 3 also shows that the estimated prevalence was higher after excluding the proxy data than that including them and the former was much closer to the estimates from GATS for men and women in the overall and subgroup analysis.

4. Discussion

NCSADBS has been used in Thailand to monitor the tobacco use. GATS, following a global standard of tobacco surveillance, is currently used as a benchmark to identify the potential factors that influence estimates of the key variable of tobacco surveys, the prevalence of current smoking.

The stratified two-stage cluster sampling design in NCSADBS assured all surveyed individuals would be selected with similar selection probability, which can make statistical estimation feasible and introduce smaller sampling errors. However, it was difficult to conduct a face to face interview of all household members in practice as they might not be present because of different schedules. The data collection for this situation can be much more expensive or proxy data collection is inevitable. GATS used an additional stage of sampling one individual from the selected household. Although this approach does not provide equal probability of sample selection, the sample size is smaller and quality of data collection can be more easily controlled than the former. In GATS, no proxy response was allowed. When the selected individual was not at home, the interviewer would revisit the household. In NCSADBS, as all household members were selected for interview, it was not practical to revisit those household members who were not at the household during the initial interview. The proxy response was then used as a compromise. Since both surveys were conducted by the same agency using similar interviewers, the interview techniques used in both surveys were also similar. Therefore, our results suggest that proxy responding is a reasonable explanation for the differences in the estimates. For smoking status, proxy reports are often lower than self-report (Gilpin et al, 1994).

It is not unusual older household members may not be aware of tobacco use in younger members.

Providing accurate estimates of cigarette smoking is the goal of any surveillance system. Therefore, we recommend that the use of proxies be eliminated as has been the case in other surveys.

Table 2 Estimated prevalence (%) of current smoking from the NCSADBS and the GATS by demographic variables

	Men			Women		
	NCSADBS[1]	GATS	NCSADBS[2]	NCSADBS[1]	GATS	NCSADBS[2]
All	41.69	46.55	45.27	2.14	2.61	2.86
Age						
15-24	31.76	42.00	42.76	0.76	0.43	1.33
25-44	47.59	50.50	49.74	1.71	2.34	2.15
45-59	45.11	48.74	46.73	2.95	3.71	3.48
60+	32.61	38.30	34.43	3.42	3.90	4.16
Residence						
Urban	34.67	39.63	37.79	1.75	2.98	2.30
Rural	45.23	50.08	49.36	2.35	2.41	3.16
Region						
Bangkok	32.06	36.51	37.45	1.57	2.80	2.25
Central	37.38	44.54	41.69	2.24	3.69	3.06
North	37.04	39.35	40.66	4.68	4.71	5.90
Northeast	46.50	49.70	50.22	1.08	1.04	1.50
South	50.52	59.24	53.66	1.54	1.50	1.89
Income						
Lowest 1/3	39.77	47.83	45.56	2.32	3.10	3.18
Middle 1/3	48.94	51.54	50.72	2.22	2.65	2.82
High 1/3	34.91	40.03	37.30	1.24	1.75	1.74
Note: [1] Including proxy response						
[2] Excluding proxy response						

Table 3 Difference (%) of estimated prevalence of current smoking between the NCSADBS and the GATS by demographic variables

	Men		Women		
	Difference[1]	Difference[2]	Difference[1]	Difference[2]	
All	-4.87	-1.29	-0.47	0.25	
Age					
15-24	-10.24	0.76	0.33	0.90	
25-44	-2.90	-0.76	-0.63	-0.19	
45-59	-3.63	-2.01	-0.76	-0.23	
60+	-5.68	-3.86	-0.48	0.26	
Residence					
Urban	-4.96	-1.84	-1.22	-0.67	
Rural	-4.85	-0.72	-0.06	0.75	
Region					
Bangkok	-4.45	0.95	-1.23	-0.55	
Central	-7.16	-2.86	-1.45	-0.63	
North	-2.32	1.31	-0.03	1.19	
Northeast	-3.20	0.52	0.04	0.45	
South	-8.72	-5.58	0.04	0.39	
Income					
Lowest 1/3	-8.06	-2.27	-0.78	0.07	
Middle 1/3	-2.59	-0.81	-0.42	0.17	
High 1/3	-5.12	-2.73	-0.50	-0.01	

Note: [1.] Difference between NCSADBS including proxy response and GATS

[2.] Difference between NCSADBS excluding proxy response and GATS

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6

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