

textbooks (*reasons to use tobacco*: 9.8%, *social influences*: 9.8%, *resistance skills*: 14.6%).

The distribution of the sub-categories of each component, ranged widely. For the *consequences of tobacco use*, physiological consequences such as “tobacco use can result in exacerbation of asthma”, which was included in 28 (68.3%) textbooks, was the most frequently described. Social consequences, such as “smoking can damage the health of surrounding people”, was the second most frequently included sub-category. It appeared in 17 textbooks (41.5%). For *social norms*, “the norm that tobacco use is not socially accepted” was described in 15 textbooks (36.6%). On the other hand, “the norm that most peers do not use tobacco” was only described in one textbook (2.4%). For the *reasons to use tobacco* component, “acceptance by peers,” which appeared in 4 textbooks (9.8%), was the most frequently included among the 4 reasons that appeared in the textbooks. For *social influences*, “influence by adults” was the highest (n=3, 7.3%) among the 4 influences, which included peers, adults, media and general society. For *resistance skills*, “the skill to avoid making friends who use tobacco” was the highest (n=4, 9.8%) among the 8 skills that appeared in the textbooks. Yet, none of the textbooks contained explanations regarding methods for training students in these skills.

## **Discussion**

Our results suggest that the textbooks in target countries did not comprehensively

cover nor systematically integrate the health education components for tobacco prevention.

### *The content of the textbooks*

The component to be carried in the majority (30 out of 41) of textbooks was the *consequences of tobacco use*. Other components were included to a much lesser degree. This finding suggests that knowledge-based education is still a common type of tobacco prevention education in schools in the target countries. Knowledge about the consequences of tobacco use is one of the components of tobacco use prevention laid down by WHO guidelines, but the knowledge alone has limited effect when it comes to reducing smoking behavior among adolescents (Thomas & Perera, 2006).

The *social norms* component was covered by almost half (n=19, 46.3%) of the 41 textbooks. Among the sub-categories of *social norms*, however, “the norm that most peers do not use tobacco” was described in only one textbook. Overestimation of peer smoking, the incorrect assumption that a greater number of their peers smoke, can influence schoolchildren’s own smoking behavior, even at primary school age (Sussman et al., 1988; Wang et al., 2011). Correcting the norm of overestimation of peer smoking habits is an extremely important objective for normative education for adolescents to address.

Compared with the 2 components above, the other 3 components (*reasons to use*

*tobacco, social influences* and *resistance skills*) were described much less frequently in the textbooks. Even descriptions about peer pressure were included in only 12.2% of the target textbooks (“Acceptance by peers” in *reasons to use tobacco* and “Influence by peers” in *social influences*), despite it being one of the strongest predictors of tobacco using behavior among adolescents globally (Graham et al., 1991; Unger et al., 2002). In addition, all of the descriptions of *resistance skills* only explained the behavior and none of them applied training methods, such as role-playing activities, for developing these skills (Hansen, 1992).

The 5 components were not comprehensively covered or systematically integrated into the textbooks in any of the countries. The social influences approach has been considerably effective in reducing adolescent smoking prevalence and initiation (Botvin, 2000) and many tobacco prevention programs have employed this approach in the last three decades. In this approach, adolescents learn about the influences on tobacco using behavior that are received from their peers, family members, and the media (Evans et al., 1978). Their misperceptions that tobacco use is normative are also corrected and knowledge-based education is expected to support this normative education (Hansen & Graham, 1991). As a consequence they learn practical approaches on how to handle or avoid social influences that they are likely to encounter (Botvin & Griffin, 2007). However, skills training to deal with peer pressures may fail in the absence of conservative norms against tobacco use among peers (Hansen & Graham,

1991; Donaldson et al., 1996). Thus, all of the 5 components need to be systematically integrated into the textbooks of certain subjects in order to reduce or prevent tobacco use.

### *Target grades and period*

The descriptions about tobacco use prevention appeared in primary school textbooks in all of the target countries except for Bangladesh and Sri Lanka, where the information appeared in middle-school textbooks. As school-based prevention education targets all students in the classroom, the education should be implemented before the onset of tobacco use. Some students in developing countries start using tobacco earlier than middle school. In Ghana and Malawi, for instance, about 40% of smokers aged 13 to 15 years had smoked their first cigarette before age 10 (The Global Youth Tobacco Survey Collaborative Group, 2002). Although middle school students are the main focus of research about school-based prevention (Botvin & Griffin, 2007), smoking prevention programs during primary school have effects on smoking intentions and initiations even in secondary school (Crone et al., 2011). A critical time period for implementation of tobacco prevention education might be primary school in these countries (Huang et al., 2010).

In addition, the content on tobacco use prevention was taught repeatedly in multiple grades. The effectiveness of booster sessions has been shown if such programs included core

components like social influences, social norms, and resistance skills (Botvin, 2000). In this study, these core components were not covered comprehensively and the subject was not always the same among the multiple sessions across grades in each country, which is unlikely to be effective (Flay, 2009). These results suggest that booster sessions in target countries have a limited effect.

#### *Delivery methods*

As shown in the results, interactive approaches were rarely applied in the descriptions of tobacco use prevention. In terms of preventing substance use, school-based programs applying interactive approaches are more effective than non-interactive approaches (Tobler & Stratton, 1997). Interactive approaches promote the exchange of ideas among peers (Tobler et al., 2000), and improve adolescents' motivations and skills to prevent tobacco using behavior. As teaching skills in these approaches are also required by teachers, adequate methodological guidance for teachers should be provided before application of such interactive approaches in these countries (Mohammad & Kumari, 2007).

In this study, we focused on school textbooks in the regular curriculum. Other forms of educational resources that are designed to prevent tobacco use may also be available in schools. In Cambodia, an international NGO has been providing school-based tobacco use prevention

education through drama performances (ADRA, 2001). Although school textbooks have not frequently been revised, they play a pivotal role in settings where resources are limited (Mohammad & Kumari, 2007). In addition, school textbooks are available for all schools nationwide whereas donor-based projects sometimes target limited areas of the country, and more likely to be sustainable than educational resources provided by donors.

This study has three limitations. Firstly, it lacked data on high school textbooks. One of the key factors for the long-term effects of school-based programs was booster sessions in high schools (Flay, 2009). Therefore the results of this study might be an underestimation or an overestimation due to this lack of high school data. However, because most children in the target countries, with the exception of Sri Lanka do not go on to high school level education, data on the high school textbooks would seem to be of limited value. Secondly, the content of textbooks alone does not necessarily reflect the reality of school-based education. In particular, in the case of interactive approaches, the actual content relies on teacher skills and time spent on the topic, which are beyond our study target. However, when other educational resources are not available, textbooks are a central and important resource for teachers (Mohammad & Kumari, 2007).

Finally, the policy aspect of school regulations regarding tobacco use was not taken into account, such as the implementation of tobacco use restrictions in schools. As

well-implemented school policies are an important component of school-based health promotion (Evans-Whipp, 2004), further study is necessary to assess the influence of school policy on tobacco use among students as well.

## **Conclusions**

In terms of tobacco prevention education, the content of school textbooks in the 9 target countries did not comprehensively cover the necessary components. Furthermore, they were not integrated systematically, boosted sufficiently, or delivered interactively. Most of the key tobacco use prevention components from the WHO guidelines were limited inclusions in the textbooks in the target countries, or absent altogether. Improving school textbook content following the WHO guidelines could be effective for preventing tobacco use among adolescents in developing countries.

## **List of abbreviations**

FCTC: Framework Convention on Tobacco Control, GYTS: Global Youth Tobacco Survey

## **Competing interests**

The authors declared no conflicts of interests with respect to the authorships and/or publication of this article.

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### **Author's contributions**

JS performed the analysis and drafted the manuscript. DN, TM, JK and MJ conceived of the study and participated in its design and coordination. DN and MJ helped to draft the manuscript. DN, ACJ, SS, KK, SHE, SY and IA collected the data and helped to perform the analysis. All authors read and approved the final manuscript.

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QFjAA&url=http%3A%2F%2Fwww.afro.who.int%2Findex.php%3Foption%3Dcom\_docman

%26task%3Ddoc\_download%26gid%3D5922&ei=GsmLT\_2mLuKimQXer8jKCCQ&usg=AFQj

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Table 1. Subjects and grades of textbook content with components for tobacco use prevention in target countries

	a) The consequences of tobacco use	b) Social norms	c) Reasons to use tobacco	d) Social influences	e) Resistance skills
Bangladesh	Islamic studies (6) Hindu-religious studies (6) Science (8)	Islamic studies (6) Hindu-religious studies (6)			
Cambodia	Science (7, 9)	Science (1, 7, 9)			Science (9)
Laos	Language (2) Sociology (5)	Science (8) Sociology (4)	Sociology (5)	Sociology (5)	Sociology (5)
Nepal	Science (3-8) Civic and social studies (6)	Science (3-8) Civic and social studies (6)		Science (5)	Science (5-8)
Sri Lanka	Health (8)				
Benin	Science (6) French (7) Biology (9)			French (7)	
Ghana	Sociology (5-6, 9) Sciences (4,7)	Sociology (7, 9)	Sociology (6, 9)	Sociology (7)	
Niger	Reading & writing (3) English (4) Biology (9)		English (4)	English (4)	
Zambia	Science (3, 4, 7 <sup>‡</sup> ) Sociology (2) Technology (6 <sup>‡</sup> , 7)	Technology (1, 3 <sup>‡</sup> , 6 <sup>‡</sup> ) English (7)	Science(7)		

‡discussion groups



Table2. Components of textbook content about tobacco by grade in target countries

	grade 1	grade 2	grade 3	grade 4	grade 5	grade 6	grade 7	grade 8	grade 9
Zambia	b	a	a	a		a,b	a,b,c		
Cambodia	b						a,b		a,b,e
Laos		a		b	a,c,d,e			b	
Nepal			a,b	a	a,b,d,e	a,b,e	a,b,e	a,b,e	
Niger			a	a,c,d					a
Ghana				a	a	a,c	a,b,c		a,b,c
Benin						a	a,d		a
Bangladesh						a,b		a	
Sri Lanka								a	

a: The consequences of tobacco use, b: Social norms, c: Reasons to use tobacco, d: Social influences, e: Resistance skills

Table3. Content of descriptions of tobacco use among textbooks in target countries (n=41)

Content	n	%
The consequences of tobacco use (n=30, 73.2%)		
Physiological consequence	28	68.3
Social consequence	17	41.5
Psychological consequence	8	19.5
Social norms (n=19, 46.3%)		
The norm that tobacco use is not socially accepted	15	36.6
The norm that tobacco use should be controlled	8	19.5
The norm that most peers do not use tobacco	1	2.4
Reasons to use tobacco (n=4, 9.8%)		
Acceptance by peers	4	9.8
Coping with stress	3	7.3
Curiosity	2	4.9
Being strong	1	2.4
Unknown (open question without any answers)	1	2.4
Social influences (n=4, 9.8%)		
Influence by adults	3	7.3
Influence by general society	2	4.9
Influence by media	1	2.4
Influence by peers	1	2.4
Resistance skills (n=6, 14.6%)		
The skill to avoid making friends who use tobacco	4	9.8
The skill to advise tobacco using peers/family to quit	3	7.3
The skill to utilize leisure time for other activities	2	4.9
The skill to avoid curiosity about tobacco	1	2.4
The skill to avoid believing promotion messages	1	2.4
The skill to avoid thinking about trying tobacco use just once	1	2.4
The skill to avoid imitating others' tobacco use	1	2.4
The skill to reject offers of tobacco by peers	1	2.4



## 教科書の中のマラリア情報 アジア・アフリカ9カ国の小・中学生用 教科書による健康教育推進のために

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## 背景



- マラリア
  - 1) 学童の主な欠席原因
  - 2) 学童による間違った自己治療
- マラリア健康教育
  - 1) 学校カリキュラムの中でも提供すべき
  - 2) ライフ・スキル教育を重視すべき

## 先行研究



- 教科書の内容を研究した先行研究: 14研究
- 先進国の教科書を調べた研究が大半。
- 性教育、性感染症、栄養に関する記述内容を調べた研究が大半。

## 目的

- マラリアの予防や治療のために学童が知っておくべきライフ・スキルが、マラリアが流行している国の学習教科書に記載されているかどうかを調べること。

## 対象国

Ghana, Niger, Benin, Zambia

Cambodia, Laos, Bangladesh,  
Nepal, Sri Lanka

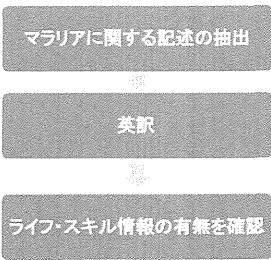


## 教科書の収集

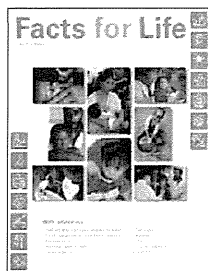
- 公立の小・中学校で使用されている教科書
- 1～9学年迄の教科書
- 全教科の教科書
- 合計474冊



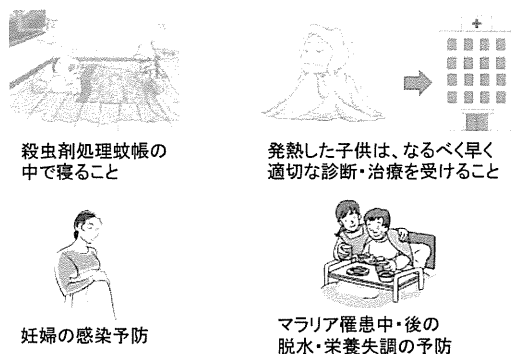
### 調査方法



ライフ・スキル情報の出典

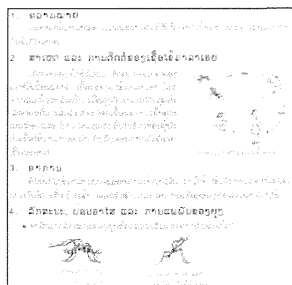


### マラリア対策のためのライフ・スキル



### 結果: マラリアに関する記述

記述内容	n (n=35)	%
伝達様式	27	77
予防	21	60
疫学情報	20	57
原因(寄生虫)	19	54
症状	13	37
治療	8	23
その他	8	23



マラリアに関する記述の例 (ラオス 4年生 World around us)

### 結果: マラリア教育の学年

	1	2	3	4	5	6	7	8	9
Cambodia					✓				✓
Laos				✓				✓	
Bangladesh				✓				✓	
Nepal						✓			
Sri Lanka							✓	✓	
Zambia		✓	✓		✓	✓	✓	✓	
Niger		✓			✓		✓		✓
Benin				✓			✓		✓
Ghana				✓	✓			✓	✓

### 結果: ライフ・スキル情報の有無

	殺虫剤蚊帳	早期診断治療	妊婦対策	脱水・栄養
Cambodia	✓	✓	✓	✓
Laos	✓			
Bangladesh				
Nepal				
Sri Lanka				
Zambia	✓			
Niger				
Benin				
Ghana	✓			

### 結論

- マラリアに関する記述はあっても、ライフ・スキル情報はほとんど記述されていなかった。
- ライフ・スキル情報を教科書に取り込むように改善する必要がある。