

**Table S1.** Textbook publishers, authors and years of publication/revision.

Country	Textbook (Grade)	Publisher	Publisher location	Authors	Published year	Revised year
Laos	Science (8)	Ministry of Education. Laos	Vientiane, Laos	Khambounphan P, Sibounhueang P, Nanthavoung B. Khounphilaphan B. Keosada H, Silalak B. Philavong V	1997	-
	World around us (4)	Ministry of Education. Laos	Vientiane, Laos	Xaynyavong B, Wainyakoun S	2009	-
Cambodia	Practical science (5)	Ministry of Education, Youth and Sport	Phnom Penh. Cambodia	Kimsan I, Thysaron T, Sary K, Prasoeu T. Hak S, Hak K. Srong T, An SP	2000	2005
	Sociology (9)	Ministry of Education, Youth and Sport	Phnom Penh. Cambodia	Yahon C. Pao P, Kimsen B, Bunheng N, Yar K, Chutema M, Nim P, Somaly N, Neang B. Vanthany M, Sokhema T, My L	1999	-
Bangladesh	Science (4)	National Education and Textbook Board	Dhaka, Bangladesh	Ministry of Primary and Mass Education	2004	-
	Home economics (8)	National Education and Textbook Board	Dhaka, Bangladesh	Ministry of Education	1996	-
Nepal	Health and physical education (6)	Ministry of Education, Curriculum Development Center	Bhaktapur, Nepal	Maharjan RK, Shrestha HP, Serchan L, Maharjan SK, Rokaya RB	1994	2001
Sri Lanka	Health and physical education (7)	Educational Publications Department	Colombo, Sri Lanka	Pushpakumara WMNJ, Nalika WDP, Piyaseeli WAN, Abeywickram A, Senanayak S. Piyas WAN, Sugathadas S	2007	-
	Science (8)	Educational Publications	Colombo, Sri Lanka	Pushpakumara WMNJ, Nanayankara EFD, Nalika	2008	-

		Department			WDP, Ranasinghe RAD, Sriyalatha KVN, Kumara KDB, Ratnatilaka AAL, Silva ADAD, Ranatunga S, Ariyasingha K, Siriwardhana AWA, Jayaratne HTCG, Disanayaka LADIS, Adamlebbe J		
Zambia	English (2)	Cambridge Press	University	Cape Town, South Africa	Londt C, Morrison K, Tonkin S	2006	-
	English (4)	Longman Zambia Ltd.		Lusaka, Zambia	Chisense W, Gondwe ES, Mupinde C, Mundambo LM, Shipota M	2007	-
	English (7)	Longman Zambia Ltd.		Lusaka, Zambia	Chisense W, Gondwe ES, Mupinde C, Mundambo LM, Shipota M	2007	-
	English (9)	Macmillan Zambia Ltd	Publishers	Lusaka, Zambia	Hurry B, Zimba S	2003	-
	Environmental science (5)	Juta & Co. Ltd.		Cape Town, South Africa	Mashambe CM, Lupele JK, Hamooya BM, Shiyanda J	1996	-
	Environmental science (8)	Zambia Publishing House	Educational	Lusaka, Zambia	Banda AJ, Mudenda VJ, Chengo A, Tindi E, M'hango IY, Ziwa AJ	1990	1994
	Social and development studies (2)	Maiden Publishing House		Lusaka, Zambia	Mushiko ECB, Zulu S, Tembo CM	2005	-
	Social and development studies (7)	Longman Zambia Ltd.		Lusaka, Zambia	Musonda M, Simasiku S, Mayondi C	2007	-
	Integrated science (3)	Longman Zambia Ltd.		Lusaka, Zambia	Chisala FC, Phiri D, Sakala E, Shampile L	2006	-
	Integrated science (7)	Longman Zambia Ltd.		Lusaka, Zambia	Chisala F, Phiri DS, Shampile L, Sikapizye A	2007	-
	Creative and technology	Cambridge University		Cape Town, South Africa	Wakumelo M	2006	-

	studies (6)	Press	Africa			
Niger	Science (5)	National Institute for Pedagogical Documentations Research and Promotion	Niamey, Niger	Adamou A, Arouna M. Biba M, Gaoh DR	2009	-
	Reading and writing (2)	National Institute for Pedagogical Documentations Research and Promotion	Niamey, Niger	Dembel DA, Abba M, Tinga D, Semandi O, Hamadou M, Foumakoye AN	2009	-
	Reading and writing (5)	National Institute for Pedagogical Documentations Research and Promotion	Niamey, Niger	Dembel DA, Maïromēya H, Maïnassara C, Ousmane S	1994	-
	Biology (7)	Bordas	Paris, France	Djakou R, Thanon YS	1991	1996
	Biology (9)	Bordas	Paris, France	Djakou R, Thanon YS	1991	1996
Benin	Science (4-5)	Nathan	Paris, France	Not indicated	1999	-
	Life and earth science (7)	Hatier International	Paris, France	Panaf	2002	-
	Biology (7)	Bordas	Paris, France	Djakou R, Thanon YS	1991	1996
	Biology (9)	Bordas	Paris, France	Djakou R, Thanon YS	1991	1996
Ghana	Citizenship education (4)	Unimax Macmillan Ltd.	Accra, Ghana	Otu C, Quartey SM, Skelt J	2008	-
	Citizenship education (5)	Unimax Macmillan Ltd.	Accra, Ghana	Otu C, Quartey SM, Skelt J	2008	-
	Social studies (5)	EPP Books Services	Accra, Ghana	Nkansah B, Palm H, Awuku A, Tahil M, Benkyi GO, Fomena A	Not indicated	2010

Social studies (9)	Adwinsa Publications Ltd.		Accra, Ghana	Amoah EA, Baabereyir A, Cobbinah JA, Dake GY, Ngaaso CK	2005	2008
Integrated science (8)	Sedco-Longman Publishing Ltd.	Sedco	Accra, Ghana	Wiredu MB, Doku T, Joe-Adjei EC	2008	-
Integrated science (9)	Sedco-Longman Publishing Ltd.	Sedco	Accra, Ghana	Wiredu MB, Doku T, Joe-Adjei EC	2008	-

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# Content analysis of school textbooks on health topics: A systematic review

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## Summary

High-quality textbooks and learning materials are especially important for school children, but school textbooks may contain incorrect health information. The objective of this study was to review the findings of analytical studies about the contents of textbooks used in elementary, junior high, or high schools. Of 450 studies we screened, we reviewed 14 that met the inclusion criteria, and summarized information regarding: *i*) authors and publication year, *ii*) target country, *iii*) topics selected, *iv*) school level, *v*) textbook subject(s), *vi*) analytical methods, and *vii*) findings. Of the selected 14 studies, 9 were conducted in the United States and Spain. Health topics focused mainly on sexuality, HIV/AIDS, and nutrition. The reviewed studies were classified according to the amount of topic information they contained, the accuracy of the health information provided, and the health information priorities conveyed. The findings of reviewed studies can be summarized as follows: some current school textbooks provide insufficient content and contain inaccurate or out-of-date health information. This study found through health-related content analysis of the school textbooks that textbooks in the United States and Spain cover sexuality, sexually transmitted diseases, and nutrition more often than do textbooks in other countries. Content quality is sometimes inappropriate and requires improvement.

**Keywords:** School textbooks, school health, health education, content analysis, systematic review

## 1. Introduction

School health education has proven to be effective in increasing knowledge and improving attitudes, beliefs, and skills needed to practice healthy behaviors (1,2). School textbooks are essential materials for school health education (3,4). Particularly in resource-limited settings, school textbooks can play an important role as a source of reliable information (5). Because school textbooks can provide health information on disease prevention and essential health skills, the information

they contain must be reliable. The United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasizes improving the quality of textbooks as one of its policy recommendations within the Education For All Framework (6).

Despite the importance of accuracy, however, previous studies have indicated that school textbooks contain incorrect or insufficient health information (7). To reduce the likelihood of students receiving and accepting incorrect information, regular revision and regular improvement of content quality is essential for raising the health levels of students and their family members. Reviews of school textbooks by government authorities and the inclusion of priorities of national health policies are also recommended, yet few studies have assessed textbooks in terms of their health information content or examined their accuracy and frequency of revision.

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The objective of this study was to review the findings of analytical studies of the contents of textbooks used in elementary, junior high, and high schools.

## 2. Methods

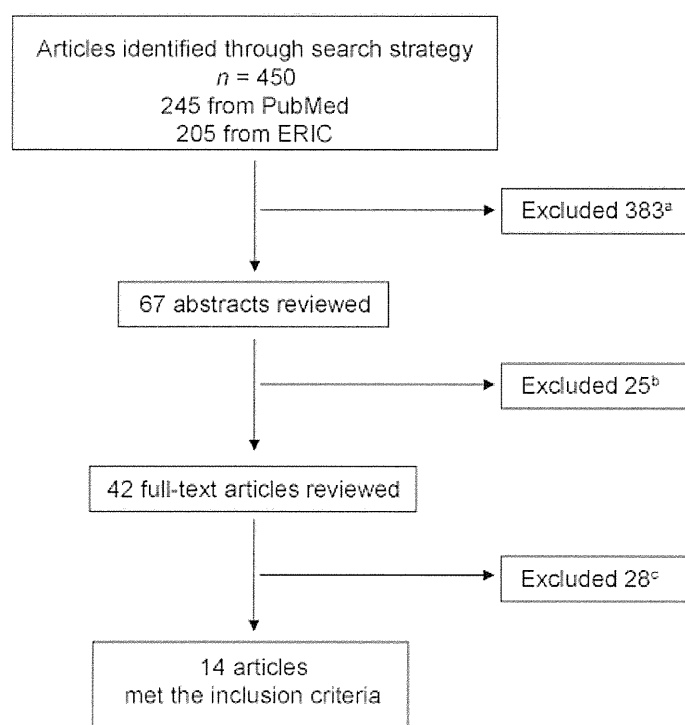
### 2.1. Search strategy and inclusion/exclusion criteria

We did a search for eligible literature regarding school health and school textbooks. First, we conducted an electronic search of popular academic databases for health and education. Our electronic search strategy was first to look at the PubMed and the Education Resources Information Center (ERIC) Internet databases. PubMed is a service of the U.S. National Library of Medicine from MEDLINE and other life science journals of a biomedical nature. ERIC is an online digital library of education research and information, sponsored by the Institute of Education Sciences of the U.S. Department of Education. Both databases seemed appropriate choices because they are widely used in their respective fields (medicine and education) and cover the key words of the reviewed studies. In both PubMed and ERIC, the key words "schools" AND "textbooks" AND "health" were used

to retrieve articles published between January 1980 and June 2009, with no language restrictions. The search strategy also included a review of the references cited by the identified studies. The process and the number of systematic reviews are shown in Figure 1.

The inclusion criteria were the following: the study must include content analysis of school textbooks; the textbooks examined must be used in elementary, junior high, or high school; the textbooks must include health-related information; and the articles must have been published between 1980 and 2009. As education systems in different countries differ, school levels were classified according to grades or ages, and defined as elementary school, junior high school, or high school. Content analysis is defined as the systematic, objective, qualitative analysis of message characteristics (8). Exclusion criteria were content analysis of content unrelated to health, use of intervention analysis, or use of the textbooks in kindergartens or college/university-level education.

Titles and abstracts of studies were screened primarily using the key words. Two reviewers independently assessed all titles and abstracts retrieved through the electronic searches. An initial relevance screening generated 450 studies in total from the literature search, including 245 studies from PubMed



**Figure 1. Flow chart of the study selection process.** <sup>a</sup> The 383 excluded articles included those with no content analysis or content analysis on other topics. <sup>b</sup> These 25 articles were excluded because target school levels did not meet the inclusion criteria. <sup>c</sup> These 28 excluded articles included intervention studies or content analysis not related to health topics.

and 205 from ERIC.

Of these 450 studies, 383 were excluded due to a lack of content analysis or a suggestion in the titles or abstracts that the content analysis was of non-health-related content. This screening yielded 67 studies that met the initial inclusion criteria. Next, the abstracts of the 67 studies were collected and independently reviewed, and excluded from full-text review if the content analysis was not focused on school textbooks or if the topic was not health-related.

Of the 67 studies, 25 were excluded because their target school levels did not meet our inclusion criteria. The remaining 42 studies returned by the searches were included in the full-text review. Full-text copies of the 42 studies identified as potentially relevant were retrieved; their full texts in English were collected and reviewed; they included 8 non-English studies that had been translated into English. In cases where reviewers disagreed on the eligibility of reviews, a discussion was held in order to obtain consensus. The studies in full-text were included if they met all of the above-mentioned inclusion criteria (use of content analysis, use of textbooks in elementary, junior high, or high school, and focus on health information, including hygiene, infectious diseases, and other health topics). We excluded intervention studies and systematic reviews. The 42 full-text screened studies were reexamined several times by two reviewers.

Of the 42 full-text studies, 28 were excluded because they included intervention studies or systematic reviews, or they analyzed non-health content. Ultimately 14 studies met the inclusion criteria and were examined. Of the 14 studies, 5 were not written in English: 3 were in Spanish (4,9,10), 1 was in Portuguese (11), and 1 was in German (12). We asked native speakers of Spanish, Portuguese, and German to translate the 5 studies into English and reviewed the English translations. Searches were conducted between May and August 2009.

## 2.2. Assessment

All the studies of content analysis were examined from two aspects: the content of relevant domains, and the total numbers of pages, tables, figures, and pictures/illustrations. All were summarized using a form containing 7 categories for comparison. The 7 categories included: *i*) authors of references and year of publication, *ii*) target country, *iii*) specific health topic, *iv*) school level or grade, *v*) textbook subject(s), *vi*) analytical method(s), and *vii*) findings. This process resulted in a document with tables.

## 3. Results

We summarized the characteristics of the 14 studies of content analysis we examined in Table 1.

### 3.1. Target country

Of 14 studies, 12 were conducted in North America or Europe. The target countries were: the United States in 6 studies, Spain in 3, and Brazil, Canada, Mexico, Switzerland, and the United Kingdom in 1 each. Twelve of the studies were conducted in developed countries, 2 in middle-income countries, none in low-income countries.

### 3.2. Specific health topics covered

Of the 14 studies, 2 evaluated the priorities of the health information content in the textbooks (4,9). The main health topics in 12 studies were sexuality, sexually transmitted diseases (STDs), and nutrition. Of the included studies, 4 focused on sexuality, including reproductive health, gender representation, and STDs (7,13-15), 3 focused on nutrition or diet, including excessive intake of sugar-rich food (12,16,17), and 1 each focused on HIV/AIDS (10), mental health (18), hearing health (19), oral cancer (20), and vaccination (11). Two other Spanish studies identified the priorities of health topics covered. In a study conducted by Catalán in 2003, the priorities were hygiene, followed by eating (9); in the other study conducted by Barrio Cantalejo *et al.* in 2008, they were diet, physical exercise, and the impact of environmental contamination (4).

### 3.3. Target school levels and textbook subjects

Target school levels and textbook subjects were diverse. Of the 14 studies, 9 studies targeted a single school level: 5 targeted elementary schools, 3 targeted junior high schools, and 1 targeted high schools. The remaining 5 targeted multiple school levels: 1 study each targeted elementary and junior high schools, elementary and high schools, or junior high and high schools; the remaining 2 studies targeted all three school levels. The textbooks examined covered the full range of subjects: health science, language, arts, mathematics, history, science, arithmetic, algebra, and chemistry.

### 3.4. Analytical methods

All 14 studies examined were descriptive studies of content analysis. Content analysis is an in-depth analysis of messages using quantitative or qualitative techniques. The studies' analytical methods fell into three main patterns: *i*) analysis of the amount of topic information in words, pictures, and/or illustrations (8 studies); *ii*) examination of the accuracy of health information (2 studies); *iii*) identification of health-related topics and their priorities (2 studies). Of the two remaining studies that did not fall into any of the three main patterns, one identified the impact of political and

**Table 1. Results of reviews by target country, school grade level, subjects, and methodology**

Author, year	Target country	Specific health topics	School level and grades	Subjects of texts	Analytical methods	Findings
Tolan and Lounsbury, 1982	US	Mental health	High school. No information about grades.	Health textbooks	Examination of community mental health ideology presented in high school health textbooks.	Information in high school health textbooks does not adequately represent modern mental health knowledge or practice. It does not meet society's mental health needs.
D'Onofrio and Singer, 1983	US	Nutrition, sugar, sweets	Grades K-3 in elementary school.	Readers, pre-readers, and reading workbooks	Analysis of food-related content in words and pictures in texts.	Food-related content in the texts revealed an excessive emphasis on sweets in both words and pictures. The poor results of nutrition education have been publically decried. Unintended messages may work against the promotion of healthy eating habits. Textbook revision is clearly indicated.
Kroger and Yarber, 1984	US	STD and sexuality	Junior high school. No information about grades.	Health science and sex education	Assessment of potential contribution of textbooks to STD control objectives.	Sex education textbooks contribute to STD control objectives better than do health science textbooks. Health science textbooks may not contribute toward reducing STD incidence. Both types of textbooks present biomedical information without significant errors.
Frager and Kahn, 1988	US	Hearing health and protection	Elementary school. No information about grades.	School health textbooks	Identification of health information on hearing and assessment of its usefulness to prevent hearing loss.	More content regarding the signs and causes for hearing problems was identified than recommendations for avoiding hearing problems. Hearing health mobilizing information is lacking.
Beyer <i>et al.</i> , 1996	US	Gender representation	Junior high and high school. No information about grades.	History, mathematics, science, and reading	Examination of gender inequity in written textbooks.	Illustrations showed greater female representation. Greater male representation included that related to drug use, sexual exploitation, sexual desire, and homosexuality. Greater female representation included that related to body image, diseases of the reproductive organs, and hygiene.
Baysac <i>et al.</i> , 2004	US	Oral cancer	Grades 1-12 in elementary, junior high, and high school.	Health education	Evaluation of quality, completeness, and accuracy of oral cancer information.	Current school health textbooks do not provide adequate information about oral cancer prevention and early detection. To achieve Healthy People 2010 objectives, correct and adequate information about risk factors and examinations for oral cancer are needed.
Gavidia Catalán, 2003	Spain	All health information	Elementary, junior high, and high school. No information about grades.	All subjects	Identification of 1) presence or absence of education for health, 2) inclusion of health-related topics, 3) degree of health covered, 4) inclusion in the subject or dealt with on a transversal basis, 5) methodological aspects.	Sixty-three percent of the texts analyzed included topics on health education. Most topics were related to hygiene and eating. Health-related concepts most often dealt with are those of being disease-free and in a state of well-being. Current school textbooks are not sufficient either as a point of reference or as an adequate resource.
Barrio Cantalejo <i>et al.</i> , 2008	Spain	All health information	Elementary and high school. No information about grades.	No information about subjects.	Identification of 1) health priorities defined by health organizations, 2) messages on health, 3) extent to which these messages fit the priorities established.	The priorities most frequently covered in the textbooks were diet, physical exercise, and the impact of environmental contamination. The health messages contained in school textbooks are not well adapted to the priorities defined by health organizations.

Abbreviations: STD, sexually transmitted diseases; STI, sexually transmitted infection.

*(to be continued)*



**Table 1. Results of reviews by target country, school grade level, subjects, and methodology** (*continued*)

Author, year	Target country	Specific health topics	School level and grades	Subjects of texts	Analytical methods	Findings
de Irala <i>et al.</i> , 2008	Spain	Sexuality, human reproduction, and STIs	14-15-year-olds in secondary school	Biology	Evaluation of the extent to which textbooks on sexuality and human reproduction promote healthy reproductive lifestyles as well as avoidance of risk behavior among adolescent students.	All textbooks presented inaccurate information and incomplete perception of sexuality or risky behavior. On average, 12.6 incorrect messages were identified in each textbook. Eleven of 12 textbooks examined provided misleading statements on condom use for contraception and STI prevention and on family planning methods. The textbooks were neither appropriate nor sufficiently comprehensive for adolescent education on issues of sexuality. Results suggest a need for alternative textbooks based on better scientific evidence. Teenage sexual activities described in the textbooks are not supported by epidemiological data from the Spanish National Institute of Statistics.
Succi <i>et al.</i> , 2005	Brazil	Vaccines	Grade 1-8 in elementary school	Science and biology	Evaluation of content of textbooks with regard to concepts and information on vaccination.	Despite Ministry of Education recommendations, 34% of elementary-level textbooks did not include the subject of vaccination. More than half of the textbooks with content on vaccines presented some erroneous information on vaccination, errors in vaccination schedules, out-of-date information, omission of content, or inadequate illustrations.
Baron, 1990	Canada	Nutrition	Grade 1-6 in elementary school	Language, arts, and mathematics	Detection of nutrition messages in words and pictures.	A large proportion of references were to sugar-rich foods. Unintended information may influence nutritional habits of children.
Granados-Cosme <i>et al.</i> , 2007	Mexico	HIV/AIDS prevention	Grade 5-6 in elementary and 1-3 grade in junior high school	Natural science, biology, civics, and ethics education	Clarification of social actors' positions and interests and their influence on the content of textbooks.	Those actors whose beliefs are based on tradition and are contrary to modernization oppose the inclusion of topics on sexuality and HIV/AIDS in the school curriculum. The deficiencies and decline in HIV/AIDS prevention education were caused by actions from opposition groups.
Eichholz-Helbling <i>et al.</i> , 1984	Switzer-land	Nutrition	Grade 1-4 in elementary school	Reading, arithmetic, and language	Examination of contents regarding nutrition in the textbooks.	Educational information regarding nutrition can be found in all textbooks, but it was not adjusted to today's perceptions.
Reiss, 1998	UK	Sexuality	14-15-year-olds in high school	Biology and science	Analysis of health topics related to human sexuality in school science textbooks.	Some science textbooks are sensitively written, comprehensive, and helpful. Others fail to tackle personal issues dealing with menstruation, ignore lesbian and gay issues, and either omit or fail to deal adequately with cultural issues in spite of the regulations of the UK Government's own Circular.

Abbreviations: STDs, sexually transmitted diseases; STI, sexually transmitted infection.

social ideology on the content of HIV/AIDS education (10), another identified gender representation and examined gender inequity in textbook descriptions (14).

As the objective basis of analyses, 4 studies cited the country's national health policies or recommendations as a standard, and compared them with the content of health information in the textbooks. The 4 studies cited Healthy People 2010 in the United States, health priorities defined by health organizations or authorities in Spain, or recommendations of the Ministry of Education in Brazil. Other studies had no standards by which to evaluate the contents.

### 3.5. Findings

To summarize the quality of the school textbooks examined in findings, we chose the amount, the accuracy, and the currency of the health information on target health topics. We showed the results using the "+" symbol in Table 2. Of 14 studies reviewed, 11 reported that the school textbooks examined provided insufficient content or lacked information regarding the target topics; 5 studies reported that the health information in textbooks included inaccuracies or false information; and 5 studies reported that the health information was not current or was out-of-date and needed revision. In total, the authors of 13 of the 14 studies indicated that the textbooks they examined needed further improvement or revision.

In comparisons of the contents with national health policies or priorities, 4 studies cited the target country's health policy or Ministry of Health/Education recommendations as standards. For example, they cited Healthy People 2010 objectives (20), the guidelines of Ministry of Education (MEC) (11), the UK Government's own Circular, the Local

Government Act, and the Education Act (15), 24 priorities defined by the World Health Organization, the European Union, the Spanish Ministry of Health and Consumer Affairs, and the Spanish Society of Public Healthcare Administration (4).

## 4. Discussion

Content analysis of school textbooks often focused on sexuality/reproductive health and STDs; 4 out of 14 studies focused on these topics. These topics are important because unintended pregnancy is one of the main reasons why female students drop out of school (21,22). Furthermore, young people are particularly vulnerable to HIV infection: 15-24-year-olds account for 50% of new cases worldwide (23). They must be provided with essential skills and information before they become sexually active (24). The authors of these studies examined textbooks used in elementary and junior high schools (targeting 14-15-year-old students).

Although sex education is known to be difficult to deliver in school settings (25), previous studies have reported that school children in many countries identify textbooks or school as their primary source of health information (26-29). The importance of information delivered in school settings has also been demonstrated by its long-term impact on healthy behaviors (30,31). Thus, the contents of school textbooks require regular revision to provide students with accurate health information regarding sexuality, STDs, and reproductive health.

Three studies highlighted the over-representation of graphical information presenting sugar-rich food in the textbooks (12,16,17). The authors suggested the potential impact on school children of the over-representation of unhealthy eating behaviors. As

**Table 2. Quality of the school textbooks examined**

Author, year	Specific health topics	Quality		
		Insufficient information	Lack accuracy	Out-of-date information/ need revision
Tolan and Lounsbury, 1982	Mental health	+	+	+
D'Onofrio and Singer, 1983	Nutrition		+	
Kroger and Yarber, 1984	STD and sexuality	+		
Frager and Kahn, 1988	Hearing health and protection	+		+
Beyer <i>et al.</i> , 1996	Gender representation	+		
Baysac <i>et al.</i> , 2004	Oral cancer	+	+	
Gavidia Catalán, 2003	All health topics	+		
Barrio Cantalejo <i>et al.</i> , 2008	All health topics	+		
de Irala <i>et al.</i> , 2008	Sexuality, human reproduction, and STIs	+	+	+
Succi <i>et al.</i> , 2005	Vaccines	+	+	+
Baron, 1990	Nutrition			
Granados-Cosme <i>et al.</i> , 2007	HIV/AIDS prevention	+		
Eichholzer-Helbling <i>et al.</i> , 1984	Nutrition			+
Reiss, 1998	Sexuality	+		

+: include the comment shown at the top of the column.

unintended messages conveyed in textbooks may counteract efforts to promote healthy eating habits, those responsible for textbook selection should draw up health content guidelines.

In the 14 studies we reviewed, none focused on tobacco use, injury prevention, or alcohol/substance abuse, which have been emphasized as central to health education curricula in school settings (32,33). Our results also revealed that the researchers paid little attention to these topics in content analysis. However, educational interventions using various approaches including peer-education and linkage with supportive communities and policies have been intensively utilized in the school setting (34-36). Nonetheless, these studies emphasized the importance of comprehensive approaches and of basic curricula as principal components of health education.

The findings examined by the studies we reviewed were summarized as follows: most of the reviewed articles consistently reported insufficient health information provided by the textbooks. This tendency was particularly evident in the studies dealing with sexuality or STDs (7,13,15). However, 13 out of 14 studies reviewed also reported a wide range of variation among publishers in content insufficiency, inaccuracy, or out-of-date information.

In comparisons of content with national health policies or recommendations, only 4 studies cited the country's national health policy or recommendations as a standard. To evaluate the quality of school textbooks objectively, some standard of comparison is needed.

We also found that studies were mostly confined to developed nations: the target countries of 13 of the 14 studies were the U.S., Spain, Canada, Switzerland or the United Kingdom. This might be due to wider availability of textbooks in developed countries. However, 80% of the world's children live in developing countries where resources for textbook development are more likely to be limited than in developed countries (37,38). School textbooks used in developing countries also need to be examined with a view to improving the contents of health information.

To regularly and reliably provide sufficient and accurate health information in school textbooks to school children, we need to assess the adequacy of all school textbooks, whether they are used in developed or in developing countries.

## 5. Conclusion

In conclusion, this study showed that health-related content analysis of school textbooks is done mostly in Spain and the United States and most frequently examines content related to sexuality, STDs, and nutrition. The quality of the content is sometimes inappropriate and requires improvement.

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- (Received October 26, 2010; Revised February 5, 2011; Accepted March 10, 2011)

# 学校ベース型の健康増進プロジェクト

— こども達の活動が地域を健康にする —

国際保健において学校での取り組みの有効性を支持するエビデンスの蓄積とともに、学校保健は世界戦略として普及しつつある。さらに地域保健を強化する役割も期待されている。本研究会では、『こども達の活動が地域を健康にする』というコンセプトのもと、学校での様々な取り組みを紹介しつつ、事例の積み上げと検証を通じて、地域保健の強化に資する包括的な学校保健モデルの構築を目指す。

座長：小林潤（国立国際医療センター国際医療協力局）  
溝上哲也（国立国際医療センター研究所）

開会の辞 小林潤  
17:30～17:35

演題1：東南アジア、西アフリカにおける学校保健の普及状況  
17:35～17:55（20分）  
国立国際医療センター 国際医療協力局 小林潤

演題2：スリランカにおける学校ベースの生活習慣病予防  
17:55～18:15（20分）  
財団法人札幌がんセミナー 理事長 小林博

演題3：ラオス学校保健の近況  
18:15～18:35（20分）  
東京大学大学院医学系研究科国際地域保健学 教授 神馬征峰

演題4：ラオス農村地域における学校保健支援  
18:35～18:45（10分）  
青森県立大学健康科学部 助教 山本加奈子

演題5：学校保健研究のモニタリング、評価方法について  
18:45～18:55（10分）  
国立国際医療センター研究所 野本まりの

演題6：ベナンの小学校教科書における健康に関する記述について  
国立国際医療センター研究所 野中大輔  
18:55～19:05（10分）

## ベナンの小学校教科書における健康に関する記述について

国立国際医療センター研究所  
野中大輔

## ベナン(Benin)

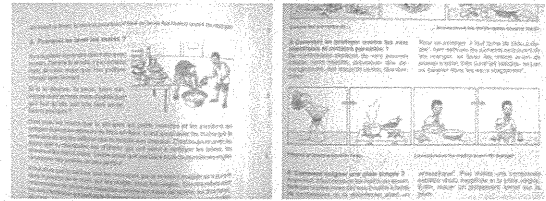
- 西アフリカ
- 公用語: 仏語
- 主要死因: 下気道感染症(17%)、マラリア(14%)、下痢(8%)、HIV・AIDS(7%)、周産期死亡(7%)、脳血管疾患(4%)、虚血性心疾患(4%)、交通事故(2%)
- 教育制度: 小学校6年間中学4年間の義務教育
- 教科書: 各校の図書室に保管。中古品は購入可
- 小学校卒業完了率: 34%(UNESCO 2005)

## 収集した教科書

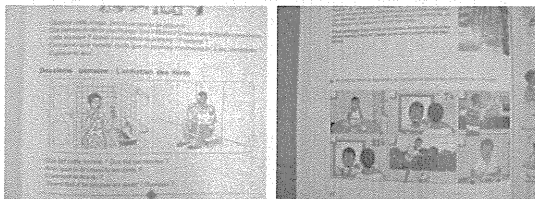
	仏語	算数	科学	社会 (歴史・地理)	道徳
一年(CI)	◎	○	—	—	×
二年(CP)	◎	◎	—	—	×
三年(CE1)	○	◎			×
四年(CE2)	◎	◎	◎		×
五年(CM1)	◎	◎		○	×
六年(CM2)	◎	○	◎		×

凡例 ◎: 収集済  
○: 収集中  
×: 授業は有るが教科書の存在不明  
—: 授業は無い

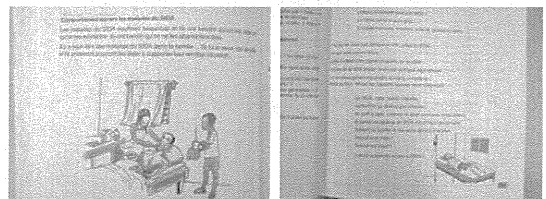
## 手洗い 仏語



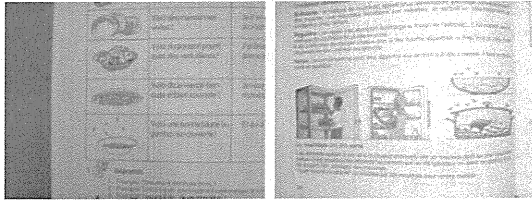
## 歯科衛生 仏語4年生用、科学5・6年生用



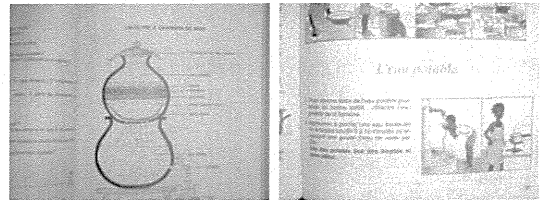
## HIV/AIDS 仏語4年生用、仏語5年生用



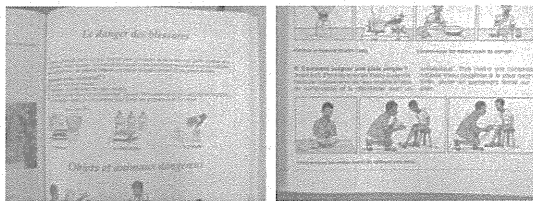
食品衛生  
仏語2年生用、科学3・4年生用



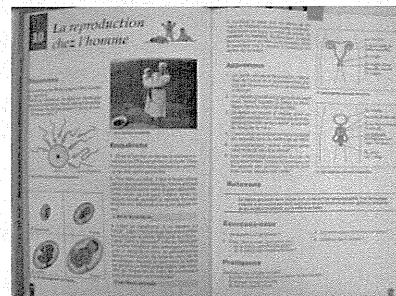
安全な水  
仏語4年生用、科学5・6年生用



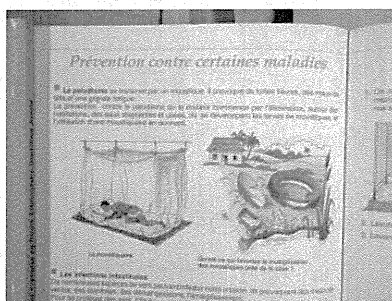
外傷管理  
科学3・4年生用、科学5・6年生用



性教育  
科学 5・6年生用



マラリア  
科学 3・4年生用



結果一覧

	仏語	科学
一年(CI)	身体の清潔、受療行動	—
二年(CP)	食品衛生	—
三年(CE1)	—	睡眠、栄養、運動、身体の清潔、食品衛生、歯科衛生、安全な水、外傷手当、体温計
四年(CE2)	食品衛生、歯科衛生、HIV/AIDS	食品衛生、歯科衛生、安全な水、外傷手当、体温計
五年(CM1)	受療行動、HIV/AIDS、タバコ	性教育、食品衛生、歯科衛生、栄養素、安全な水、外傷手当、動物咬傷、マラリア、トイレ、体温計
六年(CM2)	家畜の疾病	—

### 結論

- 仏語の教科書に、健康に関する記述がある。
- 歯科衛生、食品衛生が強調されている。
- 殺虫剤処理蚊帳(マラリア)や経口補水液、性感染症予防方法に関する記述はない。

### 謝辞

- ご清聴ありがとうございました。
- 研究費:厚生労働科学研究費補助金  
地球規模保健課題推進研究事業  
H21-地球規模-若手011



## 平成 22 年度 第一回 学校保健研究班 班会議

開発途上国における保健医療サービス強化のための学校保健普及についての研究



平成 22 年 4 月 16 日（金） 於国立国際医療研究センター国際医療協力部 3 階戦略検討室

### 12:00～12:10 主任研究者挨拶

溝上哲也（国立国際医療研究センター国際臨床研究センター国際保健医療研究部）

### 12:10～12:30 主任研究者発表・討論

溝上哲也

包括的学校保健のプロセス及び効果の評価に関する研究

### 12:30～12:40 発表・討論

斉藤加恵（国立国際医療研究センター国際臨床研究センター国際保健医療研究部）

学校保健研究班ホームページについて

### 12:40～12:50 休憩

### 12:50～13:10 分担研究者発表・討論

小林潤（国立国際医療研究センター 国際医療協力部）

包括的学校保健の援助政策とアジアからアフリカへの応用研究

### 13:10～13:30 分担研究者発表・討論

小林博（財団法人札幌がんセミナー）

生活習慣病予防を目指した学校保健モデルの開発に関する研究

### 13:30～13:50 分担研究者発表・討論

門司和彦（総合地球環境学研究所）

包括的学校保健を推進する県レベルの施策に関する研究

### 13:50～14:00 休憩

### 14:00～14:10 発表・討論

野中大輔（国立国際医療研究センター国際臨床研究センター国際保健医療研究部）

教科書研究（厚生労働科学研究費地球規模保健課題研究事業）

### 14:10～15:00 総合討論（15:00 閉会）

今後の研究班の方向性、シンポジウムの開催について

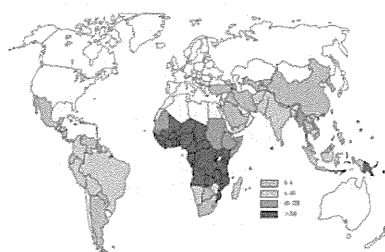
## ガーナにおける学童をヘルスマッセン ジャーとした参加型健康教育による マラリア対策

Irene Ayi<sup>1</sup>, Daisuke Nonaka<sup>2,3</sup>, Josiah K Adjovu<sup>4</sup>, Shigeki Hanafusa<sup>5</sup>,  
Masamine Jimba<sup>2</sup>, Kwabena M Bosompem<sup>1</sup>, Tetsuya Mizoue<sup>2</sup>, Tsutomu  
Takeuchi<sup>6</sup>, Daniel A Boakye<sup>1</sup>, Jun Kobayashi<sup>5</sup>

<sup>1</sup>West African Centre for International Parasite Control, Parasitology Department, Naguchi Memorial  
Institute for Medical Research, University of Ghana, Accra, Ghana  
<sup>2</sup>Department of Epidemiology and International Health, National Center for Global Health and Medicine,  
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<sup>4</sup>Zoology Department, University of Ghana, Accra, Ghana  
<sup>5</sup>Department of International Medical Cooperation, National Center for Global Health and Medicine,  
Tokyo, Japan  
<sup>6</sup>Department of Tropical Medicine and Parasitology, School of Medicine, Keio University, Tokyo, Japan

*Malaria Journal* 2010,9:98

## マラリアの流行地域



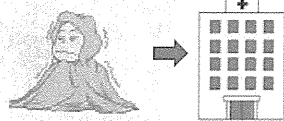
2006年度推定マラリア罹患率(人口1,000当り)

出典: World malaria report 2008

## マラリア健康教育のキー・メッセージ



蚊帳の中で寝る



早期に適切な治療を受ける

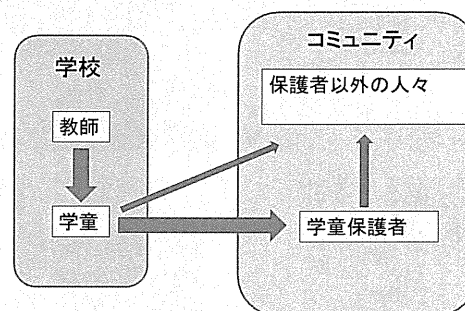


蚊帳のメンテナンス  
(殺虫剤処理等)



蚊の発生源を減らす

## コンセプト: 学童から地域へ

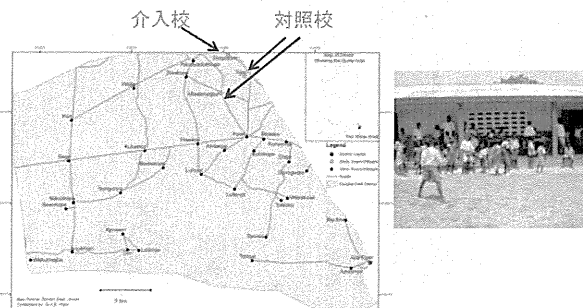


## 先行研究 コンセプトに関連するマラリア健康教育

- ケニア (Onyango-Ouma *et al.* 2005)
- タイ (Okabayashi *et al.* 2006)
- ラオス (Nonaka *et al.* 2008)

エビデンスは少ない。  
罹患率や有病率の変化が調べられていない。

## 研究地



## 対象者属性

### 学童の属性

	介入校 (n=105)	対照校 (n=81)
年齢:中央値	13歳	12歳
性別:女性	43.8%	45.7%
学年		
3年生	33.3%	38.3%
4年生	35.2%	28.4%
5年生	31.4%	33.3%

### 大人の属性

	介入校 (n=250)	対照校 (n=133)
年齢:中央値	35歳	35歳
性別:女性	96.3%	93.6%
職業		
農業	68.0%	77.4%
商業	17.2%	12.8%
その他	14.8%	9.8%

## 健康教育(介入)



教師に対する研修



朝礼や音楽・体育等の授業を活用したマラリア教育



キャンペーン（歌や絵の披露）

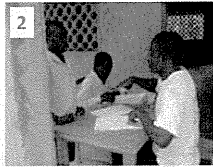


キャンペーン（蚊帳の処理）

## 調査

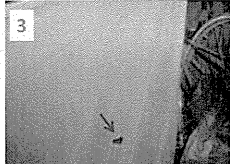
### 介入前後に実施

1. マラリア原虫検査
2. 質問票を用いたインタビュー



### 介入前のみ実施

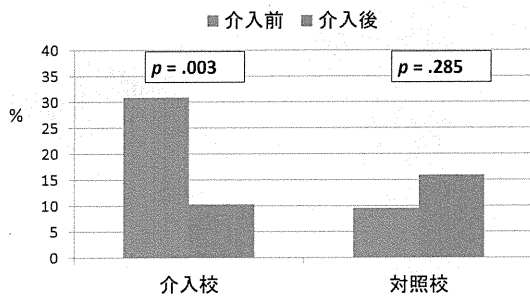
3. 蚊帳・網戸・蚊発生源の観察



## 知識・行動の変化(介入校)

知識(上6問)／行動(下2問)	知識がある人／行動している人の割合(%)			
	学童		大人	
	前	後	前	後
蚊帳は殺虫剤処理等のメンテナンスが必要	30.5	55.2	51.4	52.1
パラセタモールだけでマラリアは治療できない	34.0	69.5	66.0	74.3
マラリア媒介蚊の発生源	42.2	74.3	57.4	66.7
蚊の刺咬によってマラリアになることがある	76.2	99.0	95.2	92.2
マンゴーを食べることによってマラリアにならない	10.5	79.8	15.6	61.1
清潔でない水の飲用ではマラリアにならない	16.3	43.8	16.9	40.9
蚊帳の中で寝た。	-	-	99.0	93.6
蚊帳の殺虫剤処理をした。	-	-	21.5	50.0

## 学童のマラリア有病率の変化



## 結論

- 学童だけではなく地域の人々に対しても、知識や行動の改善が見られた。
- 学童のマラリア有病率の減少に、マラリア健康教育が貢献したことが示唆された。

## 謝辞

ご協力、誠にありがとうございました。

- 研究参加者
- ガーナ教育局・保健局職員の方々
- WACIPACプロジェクト関係者
- 野口記念医学研究所関係者
- 研究費：厚生労働科学研究費、国際医療研究開発費