

The Health Behavior in School-Aged Children study in Semarang, Indonesia: methodological problems in cross-cultural research

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SUMMARY

Since the 'Health Behavior in School-Aged Children' (HBSC) study was implemented by three European countries in 1982, it has been adopted by over 25 countries, including Canada and Australia. It is generally expected that African and Asian countries will follow. This paper reviews some methodological constraints in adapting the HBSC study in Indonesia. Although the international HBSC team has reported methodological problems in the cross-national study, no attempt to extend the original European study to South-east Asia has been described before. Cultural, religious, economical and social differences create specific obstacles as well as challenges. Next to problems related to adaptation of the questionnaire, we experienced more structural problems both in its preparation and implementation. Lack of technical infrastructure and communication facilities can serve as an example. This might be a problem insofar it affects the results. It is argued that

for some behaviors such as smoking, cross-national comparability is probably not a problem. For others, e.g. use of alcohol, comparability of the data should be treated with caution. Smoking is one of the most compromising health-risk behaviors among male youngsters in Indonesia, with about 25% regular smokers (at least once a week) among 15-year-old boys. Alcohol use is less common, but data are probably less reliable because of the social and religious taboos on alcohol use and confusion about alcoholic drinks. More efforts should be made in order to examine validity of the HBSC study in non-Western countries. Furthermore, insofar developing countries will participate in this study in the near future, it is recommended that specific strategies are elaborated. These include detailed rules for translation and adaptation of the standard questionnaire, and the development of specific culture-relevant additional packages.

Key words: cross-cultural research; HBSC; Indonesia; methodology

INTRODUCTION

The main objectives of our 'Health Behavior among School-Aged Children' (HBSC) study in Indonesia (1996) were two-fold: (1) to collect information on health-related behaviors with Indonesian youngsters, and (2) to provide recommendations for further adaptation and use of the HBSC in non-Western countries. Our decision to use the HBSC study was based on several grounds. So far, only a few broad-spectrum

studies in Indonesia focus on adolescents' health behavior, especially longitudinal studies. Actual studies have a limited comparability of national and international results. The HBSC also comes with extensive procedures that guide the participating countries in a similar way through all steps of the study. Further, the HBSC has the advantage that it is basically developed for cross-national use. On the one hand, strict rules and

procedures enhanced the validity of cross-national comparison. On the other hand, the HBSC is flexible enough to allow each country to add/modify items and topics according to specific needs (via focus questions and/or additional packages).

The international HBSC team has described structural as well as practical problems. This ranges from translation problems to differences in sampling procedures (Smith *et al.*, 1992). However, we expect that among European countries more common denominators in the (core) health behaviors exist, allowing these behaviors to be questioned in a valid way for all participating countries. This is not necessarily the same for countries with a totally different cultural, political and economical background.

Three questions will be examined.

- (1) Is the HBSC a valid and appropriate instrument to collect health behavior data and provide input for the health promotion policy in Indonesia?
- (2) Are modifications of both the HBSC instrument and procedures required?
- (3) Can we find a balance between 'core' (the same questions for all participating countries), 'regional core' (the same questions for all participating countries in one region, i.e. South-east Asia), and 'focus' (specific for one country), in order to maximize both national relevance and cross-national comparison?

HEALTH BEHAVIOR STUDIES IN INDONESIA

Indonesia is a tropical South-east Asian archipelago and consists of more than 13 000 islands, covering an area of about 10 200 000 square kilometers. The population reaches 200 million, making Indonesia the world's fifth most populous country. Indonesia is characterized by an enormous cultural diversity: more than 250 languages and 300 ethnic groups have been described. There are five official religions: Islam, Catholicism, Protestantism, Buddhism and Hinduism. Indonesia is predominantly Islamic (more than 90%). Religion plays an important part in the daily life. The official language is Indonesian or *Bahasa Indonesia*. Sixty-five percent of the people live in Java, a fertile, densely populated island, with an average of 850 people per square kilometer (Kantor Statistik Propinsi Jawa Tengah,

1994). Semarang, where this HBSC study was conducted, is the commercial capital of Central Java. It is a harbor town with a population of 1.5 million (1994), situated on the north coast.

The Indonesian elementary and secondary education system includes Elementary School or SD (6 years), Junior High School or SMP (3 years), and General and Vocational Senior High School or SM(T)A (3 years). The basic education of 9 years is compulsory. Although children usually go to the elementary school at the age of 6 years, many children start their school at a later age, especially children in suburban or rural areas.

Health has always been a main topic in Indonesia's national policy, as is shown during the first 25-year development plan (National Institute of Health Research and Development, 1993). Programs are directed towards public health services, referential health efforts, disease prevention and eradication, public health counseling, education and training, controlling of drugs, substances in food hazardous for health, nutrition improvement, clean water supply and improvement of environmental health. Public health services focus on women, children and infants (i.e. pregnancy, child nutrition, immunization and family planning).

Along with the escalating threat of chronic diseases (respiratory diseases, hypertension, cardiovascular diseases and AIDS) issues of adolescents' health will become an increasingly serious concern as their numbers will substantially grow during the next 25-year development period (National Institute of Health Research and Development, 1993). Risk behaviors include alcohol drinking, drug abuse, smoking, food habits, and lack of physical exercise (Adhyatma, 1992). It is adolescents' behavior that has been of growing concern to the government and society—especially in larger urban areas.

Smoking is very common among males in Indonesia, as is the case in other developing countries (Collishaw and Lopez, 1995). People are constantly exposed to cigarette advertisements through a variety of media sources (TV, radio, cinema, newspapers and magazines, big billboards). Cigarette companies often sponsor many regional as well as national events, including sports events. Tobacco control efforts in Indonesia are minimal. This is not surprising, as economically, the government of Indonesia benefits greatly from the sale of tobacco (Ganiwijaya *et al.*, 1995). This is mainly due to the popularity

of clove cigarettes, which are increasingly popular on the national and the international markets. They account for 90% of the national tobacco market.

Although many surveys in Indonesia confirm that smoking behavior among school-age children is common (Kristanti, 1995), different prevalence figures can be found which are probably more due to the different research design, methods and target groups, rather than to different smoking behavior. A study conducted on psychology students ($n = 170$) at the faculty of psychology of UNIKA Soegijapranata, Semarang in Central Java (Smet, 1994) found that 56.7% of the male respondents report smoking (7% of the female students) and 80.5% of the male subjects ever tried a cigarette (13.3% for females). Retrospective questions about the onset of smoking indicate that smoking starts from as early as 10 years of age. Almost 30% of the actual smokers tried their first cigarette before the age of 14, and 75% before the age of 18 years. Satoto (1995) reports that 18% of smokers were among (male and female) high school students. Comparison between Indonesian and Belgian students revealed that Indonesian youngsters generally start smoking later than their Belgian counterparts, but have caught up when they are about 18 years old (Smet, 1994).

Alcohol use is one of the main sources of concern for both government and religious/societal groups. A study in Semarang among senior high school students revealed that 12.7% of the respondents drink alcohol (Satoto, 1995). Other studies though show totally different results. A study among 15–19-year-olds all over Indonesia mentions 'only' 0.8% of alcohol users (Kristanti, 1995). Different approaches, methods and target groups at least partially explain the different results.

Gradually more research is being done in Indonesia on health-risk behavior among adolescents. Only few systematic studies though have used a broad spectrum or 'life-style' approach and focused on a variety of health risk behaviors.

BACKGROUND AND OBJECTIVES OF THE HBSC STUDY

The HBSC survey is a cross-national study on the health behavior of children at school age. The

first cross-national study began in 1982 by researchers from three European countries: England, Norway and Finland. Shortly thereafter, the project was adopted by the World Health Organization (WHO) for Europe as a WHO-collaborative study (Aarø *et al.*, 1986). In the 1993–94 study more than 24 countries participated (see King *et al.*, 1996). The next survey period is 1997/1998.

The major objective is to collect international comparative health-related information about school-aged youngsters and to stimulate health promotion and health education activities (King and Coles, 1992). In addition, the study is directed towards the goal of developing national information systems on the health and life-style of young people—of use to planners and policy makers as well as scientists (Nutbeam *et al.*, 1993).

The underlying philosophy of the study has been described as a life-style approach and differs from classical medical epidemiology (Nutbeam *et al.*, 1991). No single 'grand theory' of health behavior among adolescents exists and the study has not been restricted to the concepts or framework of any specific theoretical model (Nutbeam and Aarø, 1991). The study is based on consecutive surveys that have been designed to stimulate a longitudinal study among three age groups: 11-, 13-, and 15-year-olds. The study is not restricted to school children, but defined as a study among school-aged children.

The standard international questionnaire is developed in English by the participating countries at a series of international planning meetings, and is designed to minimize reporting error (Smith *et al.*, 1992). It consists of two elements:

- (i) *Core questions.* The core part comprises a number of carefully selected behavioral questions relevant to major health problems, and used by each participating country. This includes questions on smoking habits, use of alcohol, dental hygiene, eating habits, physical activity and behaviors related to risk of injury. Other items cover psychosocial aspects of health, as well as social-demographic variables.
- (ii) *Special focus questions.* The special focus section of the questionnaire changes over time and includes several foci from which each participating country is free to choose from.

The international HBSC research team has elaborated a research protocol outlining the

requirements for data collection, including administration of questionnaires, sampling, computing and data analysis (see Aarø and Wold, 1989; Wold *et al.*, 1994).

METHODOLOGICAL PROBLEMS IN THE IMPLEMENTATION OF THE HBSC STUDY IN INDONESIA

Method and procedures

In the first stage we discussed cross-cultural issues as well as the feasibility to manage this study in Semarang. Core and focus questions were selected and translated. A sample from elementary school grade 6, junior high school year 2 and senior high school year 1, were used for the first field test.

In May and June 1995 the research group conducted a pilot survey with the translated HBSC questionnaire. The subjects of this survey were 545 junior and senior high school students, ranging between 11 and 18 years old, in Semarang and Batang (a small city 50 km west of Semarang). The sample covered both rural and urban schools. The pilot study included discussion about the questionnaire with all pupils and separate focus groups with 73 students participating in eight groups.

In June 1996 we organized a last try-out in a grade 6 Elementary School class with the revised questionnaire. The class teacher was invited to comment on the questionnaire. The actual study was conducted in July–August 1996. The target population was the municipality (kabupaten) Semarang. Of 1026 schools a sample of 149 schools were selected. The total number of schools and pupils in Semarang, as of January 1994, and the actual number of schools and pupils in the final sample, are presented in Table 1. The final sample included 6276 pupils, with 2410 pupils

from 86 elementary schools (86 classes), 1809 pupils from 33 junior high schools (47 classes) and 2057 from 30 senior high schools (53 classes). A total of 3722 school children met the strict HBSC age criteria and were used in further HBSC analysis. Ratio of boys/girls was 51.2 : 48.2%, respectively.

Adaptation of the questionnaire

As is stressed in many studies, the validity of cross-cultural research is threatened by methodological difficulties including those stemming from the translation of questionnaires. The challenge is to adapt the instrument in a culturally relevant and comprehensible form while maintaining the meaning of the original items (Sperber *et al.*, 1994). Taking into account that the HBSC is designed for cross-cultural study and is implemented in over 25 countries, surprisingly little attention is given to instructions for translation of the questionnaire. According to the HBSC protocol independent translations back to English and careful checking for discrepancies with the original English version are required (Aarø and Wold, 1989; Wold *et al.*, 1994). For this study the questionnaire was translated into '*Bahasa Indonesia*', the official national language. Next to the fact that it was not always easy to find appropriate words or phrases that represent those used in the standard English version (but which is basically the same for all HBSC countries where the standard English version has to be translated into one's regional or national language; see for example Piette *et al.*, 1993), it should be noted that not the Indonesian language, but Javanese, is the mother tongue for most of the respondents. Hence, even a satisfactory translation can be 'alienating' for many of them.

Basically, each participating country is expected to use the core questions in the same manner. The issue remains whether or not the actual core

Table 1: Number of schools and pupils in Semarang and number of schools and pupils used in this study

Education level	Population		Sample		
	No. of schools	No. of pupils	No. of schools	No. of classes	No. of pupils
Elementary school	725	154 694	86	86	2410
Junior high school	169	65 895	33	47	1809
Senior high school	132	51 732	30	53	2057
Total	1026	272 321	149	186	6276

questions give a good idea of major health-related behaviors in Central Java.

Some items are not really appropriate in Indonesia. For example, in the core part injury related behavior is measured by the item 'How often do you use a seat belt when you sit in a car?' Taking into account that even in Europe seat belt use is subject to different legislation and customs (Piette *et al.*, 1993) the validity of this item is questionable in Indonesia as only a few people have a car. Other behaviors, such as food habits, are so different that even a perfect translation of each food item will provide unreliable results. The whole cultural 'gastronomic' climate in Central Java is very different from Europe (and probably other South-east Asia countries) and fried potatoes, hamburgers, whole wheat or rye bread, low vs. whole fat milk are not on the daily Javanese menu.

Many health risks typically found in developing countries are not part of the international standard HBSC version. For example, no questions in the HBSC are related to (prevention of) infectious diseases, still very common in developing countries (Suharyo, 1992). Including them only as 'additional packages' for separate countries prevents cross-national comparison. Insofar the HBSC will be extended to non-Western countries, specific 'core questions' should be developed for groups of countries with similar health-related conditions.

In addition, other behaviors might be relevant but difficult to examine. Sexual behavior can serve as an example. As AIDS and other STDs are an increasing problem (National Institute of Health Research and Development, 1993), focus questions about healthy sexuality (sexual behavior and maturation), and about protection against HIV/AIDS (safe sex behaviors) were originally included in the questionnaire. However, sexuality is a sensitive item, and most schools participating in the pilot study were very reluctant to have these questions included in the questionnaire. They were dropped in the actual study.

To enhance validity, we used focus groups during the pilot study to examine topics that were considered relevant by school-aged adolescents. These focus group interviews provided us with more in-depth information and enabled us to select relevant topics for the focus questions in our actual study, i.e. smoking behavior, social and school life. Moreover, the focus groups were of great help in determining specific questions and/or response categories. For example, the pilot

study showed that most of the school children had never heard of 'dental floss', hence this (core) item was dropped. Focus groups were also used to determine the sort of (local) alcoholic drinks that are well known among Indonesian youngsters.

Still then, validity problems became obvious during the data analysis. Suspicious 'face validity' has to do with an unexpected or strange response pattern. For example, we found that 11-year-old children tend to take more medication than 15-year-olds do; a phenomenon that has been observed in other countries too (Piette *et al.*, 1993). We did not examine this phenomenon further, but it is hypothesized that younger children are more convinced that the term 'medication' includes *jamu*—the traditional and famous Javanese medicines.

Problems with administration, sampling and data collection

Obtaining authorization to conduct research in Indonesian schools turned out to be a time-, energy- and labor-consuming process in order to tackle all the bureaucratic steps. This procedure took almost 3 labor-intensive months. It should be noted that this study was not organized by the government or a governmental institution, but on the initiative of a private, catholic university. Official permission to conduct the study in the schools was granted for a maximum period of 3 months. If for any reason we would have to postpone the data collection, the whole process should have been repeated. Clearly, the pressure to comply with the strict time schedule was relatively high. After this procedure, research assistants approached every school and explained and discussed the research proposal and questionnaire with the school principal. In some cases this proved to be a hard job due to lack of infrastructure and communication facilities and reluctant school officials. Twenty-five research assistants—senior psychology students—were necessary to do most of the fieldwork, from introductory school visits to final data collection.

The sampling method used was cluster sampling with the school class as a basic unit, three age groups with mean ages 11.5, 13.5, and 15.5 years old respectively, and a minimum of 1200 pupils in each age group, as recommended by the international protocol. Problems that turned up during the sampling procedure were: (1) lack of an accurate sample list of schools; (2) withdrawal of schools after initial co-operation;

(3) heterogeneous age groups within school grades (only 59.3% of the whole sample fell precisely within the three age categories as required by the HBSC protocol; over-sampling is therefore recommended to reach the required minimum of 1200 pupils in each age group); and (4) lack of up-to-date statistics about school-aged children who do not attend school.

In particular, the latter is a source of concern. The HBSC protocol prescribes that all school-age children should be surveyed. In countries in which a substantial segment of the adolescent population falls outside the school system, separate data collections among these groups are recommended (Aarø and Wold, 1989). Official statistics in Central Java that report that 16% of all children between the age of 10 and 14 are considered as 'labor-force' (Kantor Statistik Propinsi Jawa Tengah, 1994) can serve as a rough estimate. They are not surveyed in this study.

Because of sampling problems, 27 new schools (18% of the original sample list) were randomly selected. In some schools two classes were selected, especially for senior high school, despite the recommendation to select only one class per school to avoid homogeneity problems occurring within a school.

Data were collected according to the standardized HBSC procedures. Nevertheless, perceived lack of privacy might be rather high compared with European countries. Partly, this has to do with more 'extreme' situations such as overcrowded classes, a different idea of 'individual' working and less experienced research assistants. Some students indeed revealed the fear that the answers would not be kept secret and that the teacher or school would penalize them if they gave the 'wrong' answers. As a consequence we expect 'social desirability' to be a bigger problem than in other HBSC countries. 'Strange' responses such as an overwhelming majority of respondents (90%) who report to like school a lot, might be partly explained by this phenomenon.

SELECTED RESULTS

Selected data about smoking behavior and alcohol use are presented in this paper. In particular alcohol use is of growing concern for 'modern' Indonesia, especially in larger urban areas. At the same time measurement of alcohol use illustrates quite well the methodological

problems that make cross-national and national comparability of the data at least questionable.

With respect to smoking, the following questions were asked:

- (i) Have you ever smoked tobacco?
- (ii) How often do you smoke tobacco at present?
- (iii) Did you ever try to stop smoking?
- (iv) Do you think you will smoke daily when you are about 20 years old?

With respect to alcohol use, respondents were asked:

- (i) Have you ever tasted an alcoholic drink?
- (ii) At present, how often do you drink anything alcoholic, such as beer, wine, etc.?
- (iii) Have you ever had so much alcohol that you were really drunk?

All data were calculated separately for each age and gender group.

Prevalence of smoking

Figure 1 shows the percentage of students who have ever tried tobacco, and the percentage of actual tobacco users. As expected, both experimentation and actual use increase with age, and are much higher for boys than for girls. About 10 times more boys than girls have experimented with and actually use tobacco. At the age of 15, about 46.5% of all male students have ever smoked tobacco. This figure is more than double the percentage of 11-year-old boys (= 20.8%). Only 0.5%, 1.5% and 4.1% of the 11-, 13-, and 15-year-old girls, respectively, have ever tried smoking.

Respondents smoking at least once a week are considered 'smokers'. Percentages of actual

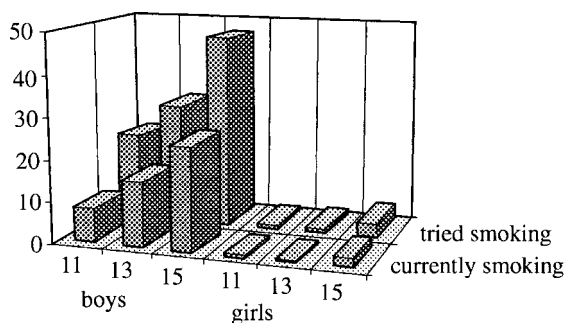


Fig. 1: Prevalence of smoking experimentation and actual smoking (%).

smokers are about half of the percentage of 'experimenters', especially among boys. At the age of 11, 8.2% of all boys are 'smokers'. For 15-year-olds, this number has tripled (24.7%). Among girls smoking is clearly not yet accepted as in Western countries: no more than 1.7% of 15-year-old girls reported to be a smoker.

The question 'Do you think that you will smoke daily when you are about 20 years old?' gives an idea about how respondents perceive their smoking habits in the future. About 39% of all male respondents is convinced (surely) not to smoke when 20 years old. Percentages are about the same for all age groups. For smokers, percentages are much lower: 10%, 12.9% and 7.5% for 11-, 13-, and 15-year-olds, respectively. Most striking, however, is the large percentage—about 60% for all age groups—of male respondents who have not made up their mind yet ('maybe yes' and 'maybe no'). This means that potentially a large number of youngsters can be considered at risk for smoking behavior. The most convinced 'future smokers' are found among smoking 13-year-old boys. More than 45% of them thinks they will maybe or surely smoke when 20 years old. The percentage of girls who are sure not to smoke at the age of 20, increases from 82.8% for 11-year-olds to 90% for 15-year-olds. It is surprising that 11-year-old girls are less sure about their (non)smoking future than 15-year-old girls.

Percentages for 'trying to stop smoking' are only calculated for present smokers. Many of the current smokers indicate that they have tried to stop smoking. The percentage, especially among boys, is very high, ranging from 85.7% to 91.9%. For 11-year-olds the percentage of 'trying to stop smoking' is a bit lower than for the other groups. There is no difference between 13- and 15-year-old boys. For girls percentages cannot be calculated due to low proportions in each age group.

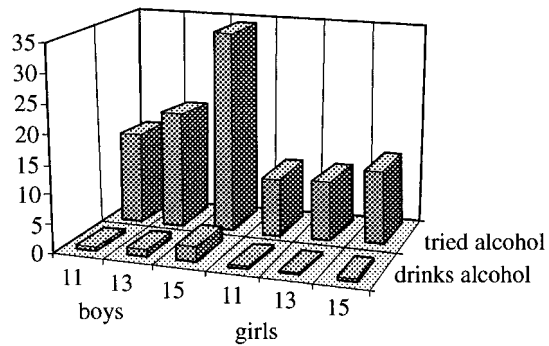


Fig. 2: Prevalence of alcohol experimentation and actual use (%).

Prevalence of alcohol use

The proportion of students trying and consuming alcohol is presented in Figure 2. This figure shows that, in general, both alcohol tasting and present alcohol use increase with age, and are much more common among boys than girls. The difference between males and females is not as distinct as in smoking experimentation. Among male students, alcohol experimentation increases from 14% (11-year-olds) to 18.9% (13-year-olds) and to 34.2% (15-year-olds). The tendency among females is similar. About 5% of 11-year-old girls have tried an alcoholic drink. The figures increase to 10.2% in the 13-year-old group and 12.9% among 15-year-old girls.

Students were not asked directly whether or not (and how much) they drink alcohol now. They were asked how much they drink beer, wine, and other alcoholic beverages. Based on this it was calculated how much alcohol they consume in general. Prevalence of regular alcohol use among girls is almost non-existent. Only 0.4% ($n = 7$) of all girls report drinking

Table 2: Percentage of male and female students who intend not (or probably not) to smoke when 20 years old for (a) current smokers and (b) all students

	11 years		13 years		15 years	
	Boys	Girls	Boys	Girls	Boys	Girls
Maybe no	56.0	50.0	41.2	50.0	57.5	20.0
Surely no	10.0	50.0	12.9	50.0	7.5	53.3
Current smokers <i>n</i>	50	4	86	2	161	15
Maybe no	57.7	16.4	39.6	10.4	44.6	8.5
Surely no	38.0	82.8	39.8	89.4	39.0	90.0
All students <i>n</i>	608	643	555	549	653	714

alcohol at least once a week. For all male students the overall percentage of regular alcohol users is 1.7% ($n = 31$). Regular alcohol use among male students though is gradually increasing with age, from 0.8 (11-year-olds), 1.4 (13-year-olds) and 2.8% (15-year-olds).

Only eight girls (0.5%) report ever having been drunk. For boys this is 2.7%. As is the case for regular alcohol use, percentages of 'ever being drunk' for boys are gradually increasing with age, from 0.7% (11-year-olds), 1.4% (13-year-olds) to 5.6% (15-year-olds).

DISCUSSION

With this study we hoped to gather some international comparative epidemiological data about health-related behaviors with adolescents, and to provide some suggestions for further adaptation and implementation of the HBSC study in Indonesia and other South-east Asian countries. Smith *et al.* (1992) argued that, given the reservations about the comparability of the data from different countries, international comparisons of the prevalence of individual health behaviors based on the HBSC survey should be treated with caution. This is even more appropriate when countries involved have a totally different cultural, religious, political and economical background.

The first series of methodological problems have to do with the adaptation and validation of the research instrument. Other difficulties arose during the preparation and implementation phase of the study. Accurate translation of the standard international questionnaire is a difficult task, although probably not more than it is for other participating countries. A more complex problem to tackle is the selection of the questions. As the HBSC was developed in Europe, the focus is mainly on risk behaviors related to health problems typical for industrialized countries. Questions about food can be easily translated but tend to lack relevance as Javanese eating habits are very different from Western dietary patterns.

Whereas cultural influences are clear, one should not underestimate the general political and social-religious climate. Indonesia is basically a religious country and the largest Islamic country in the world. Questions about alcohol, premarital sex, etc. are sometimes regarded with suspicion, especially in rural areas.

In Indonesia, there are reasons to doubt that school-based self-reporting inventories are as reliable to measure behavior as they are in Western countries. The tendency to comply with social norms (social desirability) is a very important issue in self-reporting instruments. We suspect many risk behaviors to be under-reported for two reasons. To answer 'honestly' in the sense of 'telling the truth' is of less importance than to answer in a polite and respectful way. The main social rule in Javanese society is to avoid face loss for both parties and to avoid (open) conflict. It is very important to sense what will please the other party and to answer accordingly. We should not be surprised therefore that students find it 'normal' to report they don't smoke, because they believe this is what the other party would like to hear.

Lack of privacy and as a consequence not being fully able to ensure the respondents' anonymity, is another important reason to expect different results. It was not uncommon during the administration of the questionnaire that pupils were talking to each other, often encouraged and distracted by fellow pupils who were looking through open doors or windows. The classical situation—sometimes hampered by a lack of space—does not allow much individual working. Another important issue concerns the teacher's behavior. At least in one class it was reported that the teacher commented on the questions and was 'snooping' into the pupils' answers. Hence, the perception of anonymity—crucial in self-reports—is far more questionable than is the case in European countries. Not surprisingly, items of a sensitive nature both social-cultural and religious, can be expected to be under-reported. Even more 'innocent' items ('do you like school?') may be subject to social desirability.

Compared with European HBSC countries we expect relatively more 'structural obstacles' in developing countries. The lack of a reliable infrastructure and communication network on the municipal level impeded us from communication with government officials and schools by simply using telephone or fax. The gigantic task of personally visiting all 150 schools (at least twice but often three times or more) could be partly taken care of by the assistance of a team of 25 senior psychology students. The influx of research assistants clearly has both advantages and disadvantages. The point is that we should take into account that all these specific obstacles and solutions during the survey preparation and

data collection might result in methodological differences rather than 'real' differences, if compared with other countries.

We do not expect methodological differences/problems to affect all results to the same extent. For smoking behavior, there is no reason to assume that data are less or more reliable than they are in other countries. Prevalence of smoking as found in our study is comparable with other epidemiological studies in Indonesia (see above). About 25% of 15-year-old boys regularly smoke. Smoking among female students is still uncommon and confirms low prevalence estimates of women's smoking in developing countries (Collishaw and Lopez, 1995).

Results about use of alcohol should be looked to with more suspicion, even when compared with other studies in Indonesia. Prevalence rates of alcohol use among high school students range between 0.8 and 12% (see above). Interpretation of prevalence figures of alcohol use is not straightforward. Prevalence rates might be influenced by social-religious factors during data collection as well. On Java, which is predominantly Muslim, drinking alcohol is prohibited by Islamic laws and socially not accepted. As we assume that 'perceived privacy' during data collection is rather low (see above) we can expect students to under-report use of alcohol (and illegal drugs). The reported use of alcohol in our study might therefore be far below the real prevalence.

This study was conducted in Kotamadya (municipality) Semarang. Although the target region is acceptable for the HBSC study (the target areas should be an administrative region with at least 1 million inhabitants) we are aware that it counts for less than 1% of the total population of Indonesia. It is a restriction of this study that interpretation of the data cannot be extrapolated beyond the target population in Semarang. Semarang is mainly an urban area (although many parts can be considered as 'rural' and 'remote'), and is situated on the most economically developed island. Education, health and other infrastructure, economical and social welfare are considerably better than in other parts of Indonesia. Therefore, we can expect adolescents' health behaviors to differ from the rest of the country, and even to differ from other parts in the province of Central Java.

CONCLUSIONS AND RECOMMENDATIONS

Insofar as the international HBSC team encourages the participation of African and Asian countries, the research protocol should take into account specific problems encountered in these regions. Sampling procedures can serve as an example. It is our experience that, due to many unpredictable sampling 'errors', over-sampling is recommended. However, over-sampling also means a considerable amount of additional organization, time and financial effort.

Regarding the questionnaire, we should aim at a common denominator as much as possible for a number of variables, such as for smoking behavior. There should be room for variation according to local needs, practices and interests, e.g. nutrition questions. It is recommended that (non-Western) countries in the same region evaluate common variables resulting in 'regional core questions'. Apart from the item selection, also the validity of self-reporting methods should not be taken for granted, e.g. for questions on alcohol drinking in Muslim countries. Items that examine the reliability of the answers, such as items measuring social desirability, accuracy of responses, over- and/or under-reporting of specific behaviors, etc. can be included and/or other measures (e.g. biomarkers) should be used in conjunction with the survey.

It is recommended that the HBSC study (in Indonesia) should not be limited to Semarang and surroundings. Problems can be expected to increase gradually when larger or more regions are involved. Cultural, religious, language, and social-economic conditions vary widely according to the region. Therefore, extension of the HBSC study to a national level, will be a serious challenge. A realistic target for the future is to start with 'separate' HBSC studies in several geographical and culturally defined regions such as Java, Kalimantan, Sumatra, Sulawesi, etc., coordinated by a national research team. This implies that several validation studies should be done as well. Clearly, only with a strong national research network—with full support of the government and health-related organizations—such a large-scale study can be realized.

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For this study the HBSC research protocol (1993/1994) was used. HBSC is a WHO/EURO cross-national study.

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