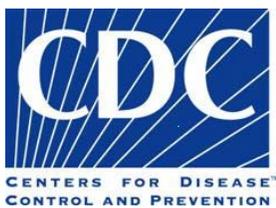


# GLOBAL SCHOOL-BASED STUDENT HEALTH SURVEY – MONGOLIA, 2010



## YOUTH'S HEALTH BEHAVIOUR AMONG SECONDARY SCHOOLCHILDREN



MINISTRY OF HEALTH  
MONGOLIA



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# EXECUTIVE SUMMARY

The 2010 Mongolia GSHS employed a two-stage cluster sample design to produce a representative sample of all students in grades 7-12 aged 12-18 years old in Mongolia. The survey was organized nationwide with financial and technical assistance from the WHO and US CDC and Millennium Challenge Account of Mongolia, EPOS Health Management. The survey was conducted in Mongolia in March 2010.

## METHODS

The Mongolia GSHS surveyed students in grades 7-12 in nine districts of Ulaanbaatar and 21 aimags. The first-stage sampling frame involved the selection of schools. All schools in Mongolia having any of grades 7-12 were included in the sampling. Schools were selected with probability proportional to school enrollment size. The second-stage sampling frame involved the selection of classes within the selected schools. Classes were selected randomly among all eligible classes (grades 7-12).

All 60 selected schools (30 each from urban and rural areas) participated in the survey. All 202 selected classes participated in the survey. All students in each selected class were given a consent form (to be signed by the student) and asked to participate voluntarily in the survey. Of the 6066 eligible students, 5238 participated in the survey. The overall response rate was thus 86%.

The 2010 Mongolia GSHS questionnaire contained 84 questions addressing the following topics: demographics, dietary behaviors, hygiene, violence and unintentional injury, mental health, tobacco use, alcohol use, drug use, sexual behaviors, physical activity and protective factors. In addition, height and weight anthropometric measurements were recorded.

The collected data was sent to the CDC, where it was processed, weighted, and analyzed. Hereafter, all percentages presented are weighted percentages representative of all Mongolian children of the specified demographic. All prevalence estimates were computed with 95% confidence intervals.

## KEY RESULTS

### Demographics

Overall, 5238 students completed usable questionnaires. These included more females than males (52.5% vs. 47.5%). The majority (57%) were aged 13-15 years, 39.2% were 16 years or older, and 3.8% were 12 years or younger. The distribution of students by grade was as follows:

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in 7<sup>th</sup> grade 23.1%, in 8<sup>th</sup> grade 23.3%, in 9<sup>th</sup> grade 20.6%, in 10<sup>th</sup> grade 15.3% and in 11/12<sup>th</sup> grade 17.8%.

### Health Risk Factors

1.9% of students did not have health risk factors, irrespective of gender. The vast majority of students had multiple risk factors: overall, 3.3% of schoolchildren have 1 risk factor and 6.6% has 2 risk factors and 7.9% is 3 risk factors and mainly 80.2% of schoolchildren were determined 4 or more risk factors, respectively.

### Dietary behaviors

5.5% of all students have eating habits that are healthy based on WHO recommendations developed for the Mongolian Ministry of Health. Healthy dietary behaviors decreased with increasing grade level. Urban students have healthier eating habits compared to rural students (6.9% vs. 3.4%).

- *Nutrition Risk Factors:* Overall, 16.6% percent of schoolchildren have one risk factor on the nutrition and 27.6% has two risk factors and 30.9% was three risks and 19.3% was determined 4 or more risks (unhealthy eating practice).
- *Overweight:* 8.3% of students were overweight, 0.8% was obese, and 2.3% were underweight.
- *Breakfast:* 58.6% of students usually/always ate breakfast, 24.1% sometimes ate breakfast, and 17.3% rarely/never ate breakfast. A small fraction of students (3.3%) went hungry usually or always because there was not enough food at their home.
- *Fruits and Vegetables:* One in six students (15.9%) ate fruits and vegetables five or more times per day.
- *Dairy Products:* 27.3% of students consumed dairy products valuable for childhood growth two or more times per day.
- *Carbonated Drinks:* More than one in four students (27.6%) drank carbonated beverages and soft drinks one or more times per day.
- *Fast Food:* Nearly one fifth of students (18.0%) ate fast food on three or more days during the past seven days.

### Hygiene

Overall, 3% of students did not clean their teeth during the past 30 days. Male students are more likely than female students not to clean or brush their teeth. Two thirds of students (63.3%) clean their teeth at least 2 times per day and 92.4% clean their teeth at least once per day.

In the month preceding the survey, prior to eating a meal, 43.2% of schoolchildren washed their hands always, 32.9% is usually and 7.8% washed their hands never/rarely, respectively. Encouragingly, 90.4% of the participants always or usually used soap when washing their hands. Never or rarely using soap when washing was more likely in rural students than urban students. One in ten students (9.7%) said there was no toilet or sink at their school and 35.4% said there is not enough toilets or sinks at school.

### Violence and Unintentional Injury

One in four participants (25.6%) was physically attacked at least one time during the past year.

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Overall, 6.5% of students carried weapons (sticks, stones, knives etc.) during the past month.

Two in five students (38.2%) had an accident and/or injury during the past year. Most injury cases involved bone fractures and joint dislocation. Bone fracture was frequent among injured male students, whereas brain concussion and head and neck injuries were common among injured female students. The main cause of serious injuries was accidental falls.

Two in five students (44.4%) had experience driving a car or other motor vehicle. The percentage of students who used a seat belt when riding in a car or other motor vehicle was 30.3%.

### **Mental Health**

Nearly one in ten students (9.4%) always felt lonely during the past year. Female students (10.7%) were more likely than male students (8.0%) to feel lonely always. A small percentage of students (4.5%) answered that they had no close friends. During the past year, 19.3% (female-22.9%) of students seriously considered attempting suicide, 12.4% (female-13.6%) made a plan about how they would attempt suicide, and 8.6% actually attempted suicide one or more times. Females' urban students were at uniquely high risk.

### **Tobacco Use**

Nearly one quarter of students (23.3%) have smoked cigarettes; one in ten students smoked cigarettes on one or more days during the past month. This indicator was highest among urban male students. Overall, 66.4% of students reported that people smoked in their presence on one or more days during the past seven days and 47.9% reported to have a parent or guardian who uses any form of tobacco.

### **Alcohol Use**

Overall, 29.1% of students had ever drunk alcohol (more than a few sips). During their life, 12.9% of students drank so much alcohol that they were "really drunk" one or more times. Overall, 82.8% of students had seen mass media advertisements for alcohol during the past month, while 73.6% had seen anti-alcohol advertisements.

### **Drug Use**

Nearly one in ten students (9.7%) had ever used drugs, and it was high among urban students. Among those who had used drugs, one in two used drugs the first time when they were 14 years old or younger. A small percentage of students (2.6%) had used marijuana; 3.1% of students had used drugs with sedative effects.

### **Sexual Behaviors**

Overall, 13.4% of students had ever had sexual intercourse. Of those, 31.6% initiated sexual intercourse when they were 16 years old or older; 43.3% did not use a condom the last time they had sexual intercourse with their partners. Nearly one in six (15.9%) had never heard of HIV/AIDS, while 64.0% had been taught about HIV/AIDS at school during the survey school year.

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### Physical Activity

Just over one quarter of students (27.4%) participated in at least 60 minutes of physical activity per day on five or more days during the week preceding the survey; 18.8% of students were physically active every day of the preceding week. Males were more active than females. 6.4% of students went to physical education (PE) class for three or more days during the preceding week. Sports participation was high and constant among males across all grades (above 70%); it was lower among females and declined with increasing grade level (from 66% in 7th grade to 48% in 11/12th grade). Overall, two in five students (41.7%) spent three or more hours per day outside of school doing sitting activities, such as watching television, playing computer games, talking with friends, reading books, or talking on the telephone during a typical day.

### Protective Factors

In Mongolia, 29.0% of students missed class without any permission on one or more days during the past 30 days. Males were far more likely than females to miss class without permission (Male: 36.4%; Female: 22.2%). Two in five students (43.1%) said their parents or guardians usually or always checked their homework in the past month, and this declined with increasing grade level amongst urban students. Slightly more than one in four students (28.7%) said their parents or guardians understand their problems or worries usually or always. Two in five students (43.3%) said their parents or guardians really know how they spend their free time.

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## KEY RECOMMENDATIONS

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We recommend that there be a branch of the Mongolian government devoted solely to adolescent health. In addition, using the results of this survey (which are age, grade, gender, living location and living condition specific) the health education curriculum should be updated and expanded. Finally, there is an urgent need to distribute educational materials and provide guidance to teachers, parents, and students explaining the central aspects of adolescent health detailed in this assessment.

Specific recommendations for each central aspect of adolescent health are detailed in Part 3 of the Mongolia GSHS. Those recommendations are condensed as follows:

- Promote healthy behavior at school:
  - School-based health education class
    - Update to address most lacking areas of adolescent mental health, social skills
    - Increase time given to health education class
    - Increase training of health educators
  - Ensure availability and affordability of healthy food items
  - Increase physical education class attendance
  - Ensure adequate toilets, sinks, and soap at schools, especially rural schools
  - Enact and enforce ban on alcohol and tobacco use of school grounds
  - Expand role of school doctors, social workers, peer educators, and health cabinets
- Promote healthy behavior outside of school:
  - Update and disseminate informational and educational (IEC) materials specifically addressing the issues in adolescent health raised in this survey

- Organize campaign against alcohol and tobacco use among adolescents
- Educate and increase participation of parents in adolescent health
  - Foster parent, teacher, student partnerships

## PART 1: INTRODUCTION

### 1.1 BACKGROUND

In recent years, diseases associated with cultural and lifestyle changes, such as nutrition, physical activity and other risk behaviors, are increasing rapidly among the Mongolian people, including adolescents. Population life expectancy and health status is directly related to adolescent health, as many chronic disease conditions are affiliated with adolescence [1]. Preventing risky behavior such as smoking, alcohol consumption and drug abuse and promoting healthy choices among adolescents can yield positive health outcomes, not just during adolescence, but also during adulthood [2]. Many premature deaths among adults result from behavior initiated during adolescence.

In 2001, WHO (in collaboration with UNAIDS, UNESCO, and UNICEF and with technical assistance from the US CDC) initiated the Global School-based Student Health Survey (GSHS) [3]. Since 2003, Ministries of Health and Education around the world have been using the GSHS to monitor the prevalence of health related behaviors and risk factors among students aged 13 to 15.

In 2010, the Mongolian Ministry of Health and the Public Health Institute conducted the first nationwide GSHS in Mongolia. The GSHS methodology was discussed and approved by the Scientific Council Meeting of the Public Health School, Health Science University of Mongolia and the Committee on Ethics, Ministry of Health.

The purpose of the GSHS is to provide accurate data on health behaviors and protective factors among students to [4]:

- Help countries develop priorities, establish programs, and advocate for resources for school health and youth health programs and policies;
- Establish trends in the prevalence of health behaviors and protective factors for use in evaluation of school health and youth health promotion;
- Allow countries, international agencies, and others to make comparisons across and within countries regarding the prevalence of health behaviors and protective factors.

#### 1.1.1 Mongolian adolescents

According to figures from the Mongolian National Statistics Office, adolescents between 10 and 19 years old represented 24.1% of the total Mongolian population in 2004; in 2008, that figure reached 31.5% [5,6]. An estimated 222,423 students are studying in 755 secondary schools in grades 7 to 12; 51.9% are female students; 43.2% are living in urban areas [7].

Adolescents in Mongolia are not considered a distinct group with specific needs in the population and there is no independent and comprehensive adolescent health and development policy. Although the government of Mongolia has developed health policies and community strategies

related to child health (“National Action Program on the Child Development” in 2000), adolescent specific health studies and policies are desperately needed [8].

### 1.1.2 Health status of Mongolian adolescents

There is significant morbidity and mortality among adolescents due to accidents, suicide, violence, pregnancy-related complications and illnesses. Many of these deaths and illnesses are preventable. Adolescent morbidity is mainly due to respiratory, digestive, and skin and subcutaneous tissues diseases (“Health Indicator 2009,” Health Department). Each year, adolescent morbidity in Mongolia has increased due to injuries, poisoning and external caused diseases, especially among 10-14 year olds. Respiratory disease, digestive disease, and injuries, poisoning, and external caused disease occurred in Mongolia at a rate of 878.0, 681.1, and 304.8 per 10,000 among 10-14 year olds, respectively. Among 15-19 year olds, these rates were 664.3, 612.4, and 359.3, respectively [9,10].

The smoking prevalence in Mongolia was 38.3% among students in 2003, but was measured as 23.4% in 2007 [11]. Overall, 44.2% of students surveyed in 2002 used alcohol and 24.2% had been “really drunk” previously. Additionally, 2.3% had used amphetamines or methamphetamines [12]. Among 15-19 year olds surveyed in 2007, 22% had had sexual intercourse; one in five used condoms. Among adolescents, the average age when first having sexual intercourse was 17 for males and 18 for females. One in four students had knowledge of STI and HIV/AIDS [13].

In addition, research in Mongolia in 2005 indicated serious problems in healthy eating behavior: 8% of adolescents consumed milk products on a daily basis, 71.7% had breakfast only sometimes, and 83.2% had a meal one time per day [14,15].

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## 1.2 OBJECTIVES

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There are a number of central objectives for the 2010 Mongolia GSHS (adapted from ref. 16):

- **Assess health behaviors and protective factors** of adolescent students
- **Identify priority areas** for increased programming, changes in school policy and collaboration with community agencies
- **Provide teachers with a basis for allocating instructional time** in the health and physical education curriculum
- **Provide teens with peer norms** rather than inflated perceptions of what their peers are doing
- **Establish benchmarks for and monitor the impact of national initiatives** to improve adolescent health

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## 1.3 METHODS

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### 1.3.1 Sampling

The 2010 Mongolia GSHS employed a two-stage cluster sample design to produce a representative sample of students in grades 7-12. In total, 60 schools (30 schools from urban and

rural respectively) and 202 classes were selected to participate in the Mongolia GSHS.

School level: The first-stage sampling frame consisted of all schools (urban, rural, public, or private) containing any of grades 7-12. Schools were selected systematically with probability proportional to school enrollment size.

Class level: The second-stage sampling frame consisted of randomly selecting intact classrooms (using a random start) from each school to participate. All relevant classes in each selected school were included in the sampling frame. All students in the sampled classrooms were eligible to participate in the GSHS.

### 1.3.2 GSHS Questionnaire

The Mongolian GSHS questionnaire (Appendix 2) contained 84 questions addressing the following topics:

- Demographics
- Dietary behaviors
- Hygiene
- Violence and unintentional injury
- Mental health
- Tobacco use
- Alcohol use
- Drug use
- Sexual behaviors
- Physical activity
- Protective factors

Of the 84 questions, 58 questions were from the core questionnaire modules and 26 questions were expanded GSHS and country-specific questions. GSHS questions had been formulated by a group of experts including members from WHO, UNAIDS, UNICEF, UNESCO and US CDC.

In addition, two anthropometric measurements (height and weight) were taken. “UNISCALE” electrical scales with 150 kg maximum and 0.1 kg precision were used to measure weight. Student height was measured with a special foldable device. Student growth was assessed using the anthropometric measurements in accordance with age and gender specific percentiles formulated by WHO.

#### Response rates:

*Schools* – 60 schools were selected and all participated in the survey. Response rate: 100%

*Classes* – 202 classes were selected and all participated in the survey. Response rate: 100%

*Students* – 6,066 students were eligible to participate in this survey. 5,238 students completed the survey questionnaire (6% of students had an excused absence due to illness, 5% had an excused absence due to extracurricular activities or sports, and 2.7% had an unexcused absence). four students refused to complete the survey or sign the consent form. Response rate: 86%

*Overall response rate* –  $100\% * 100\% * 86\% = 86\%$

Non-response (by question):

Certain questions were prone to non-response, and warrant further investigation for future Mongolian GSHS to determine if confusing question wording resulted in high non-response. Such questions likely contribute to nonsampling error. Questions having more than 100 missing/blank responses are given below (see Appendix 2 for the complete questions), with the number of missing/blank responses given, along with the percentage that number represents of the total surveyed:

Num.	Question (in brief)	n	%
Q27.	Past year, number of times seriously injured?	542	10.3
Q28.	Past year, what was most serious injury?	427	8.2
Q29.	Past year, what was cause of most serious injury?	413	7.9
Q30.	Past month, number of days bullied?	181	3.5
Q31.	Past month, in what manner bullied?	185	3.5
Q43.	How old when first tried cigarette?	168	3.2
Q46.	Past year, ever tried to stop smoking cigarettes?	153	2.9
Q49.	How old when had first drink?	370	7.1
Q52.	Past month, where obtained alcohol?	177	3.4
Q56.	During life, number of times really drunk?	175	3.3
Q58.	Current school year, taught about problems of drinking?	105	2.0
Q61.	How old when first used drugs?	392	7.5
Q64.	During life, number of times used sedatives?	364	6.9
Q65.	Ever had sexual intercourse?	164	3.1
Q69.	Last sexual intercourse, used contraceptive(s) besides condoms?	119	2.3

Margin of Error:

Based on guidelines from the GSHS Handbook and assuming that there are approximately 220,000 students studying in Mongolia in grades 7 to 12, our survey sample size of over 5,000 students should result in a margin of error of roughly less than  $\pm 3$  percent.

**1.3.3 Data processing, weighting, and analysis**

Responses were read and data coded at the US CDC in Atlanta, Georgia, USA. Processed data was analyzed using MS Excel 2007, EpiInfo 2000, and SPSS 16.0.

The sampling method was a two-stage cluster sample, rather than a simple random sample. Consequently, sampling error cannot be computed using simple statistics. The CDC used the SUDAAN software package to compute standard errors for prevalence values obtained from the data collected in the multistage, clustered sample. The statistical approach used for computing the standard errors is a first-order Taylor Series linear approximation of the deviations of estimates from their expected values.

In addition to the standard errors, SUDAAN estimates the design effect for each statistic, which is the standard error using the given sample design, divided by the standard error that would result if a simple random sample of the same size had been used. A design effect value of one indicates

that the sample design is as efficient as a simple random sample; a value greater than one indicates a tendency for greater sampling error due to the use of a more complex and less statistically efficient design. Since the GSHS uses clusters of students in schools and classes to lower survey costs and reduce survey burden, it is not surprising that the design effect for estimates generated from GSHS data is greater than one.

Using standard errors and design effect values, 95% confidence intervals were computed for each prevalence estimate. Any mention of “statistical significance” in this report refers to hypothesis tests resulting in p-values below 0.05; that is, significance at or above 95% confidence.

#### Weighting:

All prevalence estimates and other percentages reported in this study were adjusted, weighted percentages. They were adjusted for age and grade level. Weighted percents were calculated by applying a weighting factor to each student record to adjust for non-response and for the varying probabilities (likelihood) of selection. The following formula was used to calculate the weighting factor, W:

$$W = W1 \cdot W2 \cdot f1 \cdot f2 \cdot f3$$

W1 = the inverse probability of selecting the school;

W2 = the inverse probability of selecting the classroom within the school;

f1 = a school-level nonresponse adjustment factor calculated by school size category (small, medium, large). The factor was calculated in terms of school enrollment instead of number of schools;

f2 = a student-level nonresponse adjustment factor calculated by class;

f3 = a post-stratification adjustment factor calculated by grade.

The weighted percentages used in this report are a more accurate reflection of the total Mongolian adolescent population than if the results were to be used in their non-weighted form. The weighted results can be used to make inferences concerning the priority health-risk behaviors of all students in grades 7-12 in Mongolia and permit comparisons of findings across points in time and different locations, ages, and genders.

#### **1.3.4 Training**

Training was conducted by the School of Public Health, Health Science University of Mongolia, from March 3<sup>rd</sup> to 5<sup>th</sup>, 2010. Twenty national field workers were trained. The project supervisor introduced and explained the GSHS administration, including how to organize taking questionnaires at the selected schools, how to measure weight and height of students, and other researcher responsibilities. The survey coordinator explained in detail the questionnaire administration protocol for the field, including how to fill out the answer sheet and how to obtain informed consent for weight and height measurement. Researchers practiced taking anthropometric measurements. They also discussed each questionnaire question, carried out pilot testing, and revised the questionnaire.

### 1.3.5 Survey administration and consent

A total of 11 teams (2 researchers and 1 survey assistant in each local area) collected nationwide data from March 9<sup>th</sup> to 25<sup>th</sup>, 2010. Two days prior to the survey, the consent form was distributed and the survey aim was introduced. The consent forms were signed by students, as is customary for high school aged students in Mongolia. The consent form informed the students about the purpose of the survey and problems in adolescent health. The consent form asked for the voluntary participation of students and reminded them that:

- Completing the survey would improve their health education program
- Their name would not be written on the survey, and responses would remain anonymous and confidential
- They would not be paid for completing the survey
- Their grade would not be affected by choosing not to participate in the survey
- Nothing bad would happen if they chose to participate

In rare cases, surveys had nonsensical answers and survey administrators offered students a second chance to complete the survey.

Survey teams operated in the following aimags/regional areas (see Appendix 3 for a list of selected schools):

- 1<sup>st</sup> team: Khovd
- 2<sup>nd</sup> team: Uvs, Bayan-Ulgii
- 3<sup>rd</sup> team: Bayankhongor, Uvurkhangai, Dundgobi, Umnugobi
- 4<sup>th</sup> team: Sukhbaatar, Khentii, Dornod, Dornogobi, Baganuur
- 5<sup>th</sup> team: Arkhangai, Khuvsgul, Bulgan, Orkhon, Kharkhorin
- 6<sup>th</sup> team: Tuv, Selenge, Darkhan-Uul
- 7<sup>th</sup> team: Gobi-Altai
- 8-11<sup>th</sup> teams: Ulaanbaatar city: Chingeltei, Sukhbaatar, Bayanzurkh, Songinokhairkhan, Bayangol, and Khan-Uul districts

### 1.3.6 Survey limitations

The Mongolia GSHS 2010 has several key limitations that should be considered when interpreting the results:

- full-time students in grades 7 through 12 were assessed
- The total number of students surveyed who study at private schools was inadequate for comparison of results between private and public schools
- The measurement of variables such as sadness, hopelessness, loneliness, and anxiety was limited by the fact that measurement was based on single questionnaire items and not on standardized instruments measuring constructs such as depression, hopelessness, and anxiety [17]
- Self-reporting of behavior makes the data inherently subject to reporting errors/bias
- The data are cross-sectional in nature, making it impossible to determine the direction of influence between variables or to determine causal relationships

## PART 2: SURVEY RESULTS

### 2.1 DEMOGRAPHICS

#### 2.1.1 Gender, age, and grade

Amongst Mongolian schoolchildren in grades 7 to 12, 47.5% are male and 52.5% are female. Students are divided into three age groups: 3.8% are 12 years old or younger, 57% are 13 to 15 years old, and 39.2% are 16 years old or older. The distribution of students by grade was as follows: in 7<sup>th</sup> grade 23.1%, in 8<sup>th</sup> grade 23.3%, in 9<sup>th</sup> grade 20.6%, in 10<sup>th</sup> grade 15.3% and in 11/12<sup>th</sup> grade 17.8%. Note that grades 11 and 12 were pooled because grade 12 had recently been introduced in Mongolia and thus contains very few students. The demographic characteristics of the sample by location, gender, age, and grade are given in Table 1. The results are representative of all students in grades 7 to 12 in Mongolia.

*Table 1. Demographics of the sample by location, gender, age and grade, in percent, Mongolia, 2010*

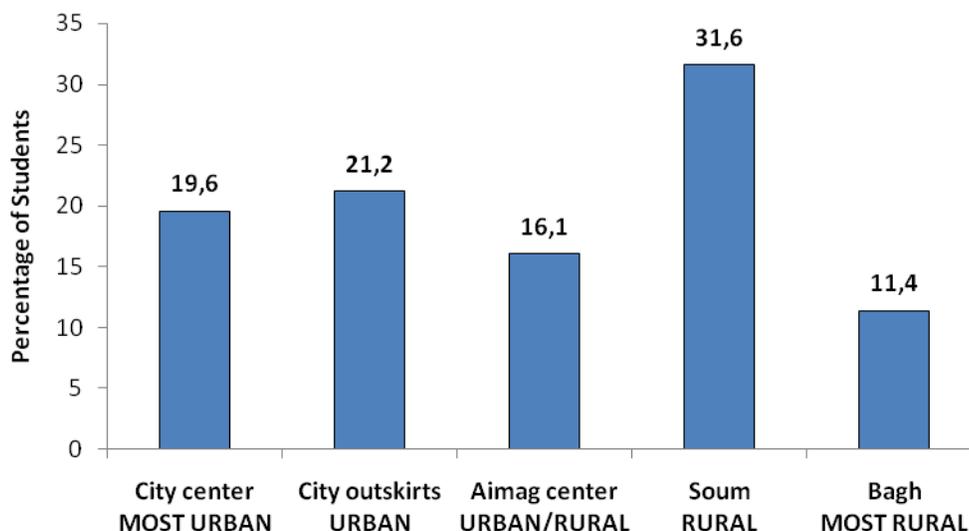
	Gender		Age			Grade				
	Male	Female	≤12	13-15	≥16	VII	VIII	IX	X	XI/XII
Urban	21.9	27.2	3.0	29.0	16.8	11.5	12.9	7.6	7.9	9.1
Rural	21.5	29.4	1.3	30.9	19.0	14.4	12.8	9.9	8.1	5.8
Total	43.4	56.6	4.3	59.9	35.8	25.9	25.7	17.5	16.0	14.9
Weighted Total	47.5	52.5	3.8	57.0	39.2	23.1	23.3	20.6	15.3	17.8

#### 2.1.2 Living place and condition

*Urban:* Mongolia has several large cities: Ulaanbaatar, Erdenet, and Darkhan have populations of about 1.2 million, 90 000, and 75 000, respectively. Such cities have a central area (city center or downtown), usually with more affluence, surrounded by sometimes considerable urban sprawl or suburbs (city outskirts). For the purposes of this survey, students living in either the city center or outskirts were considered “Urban.”

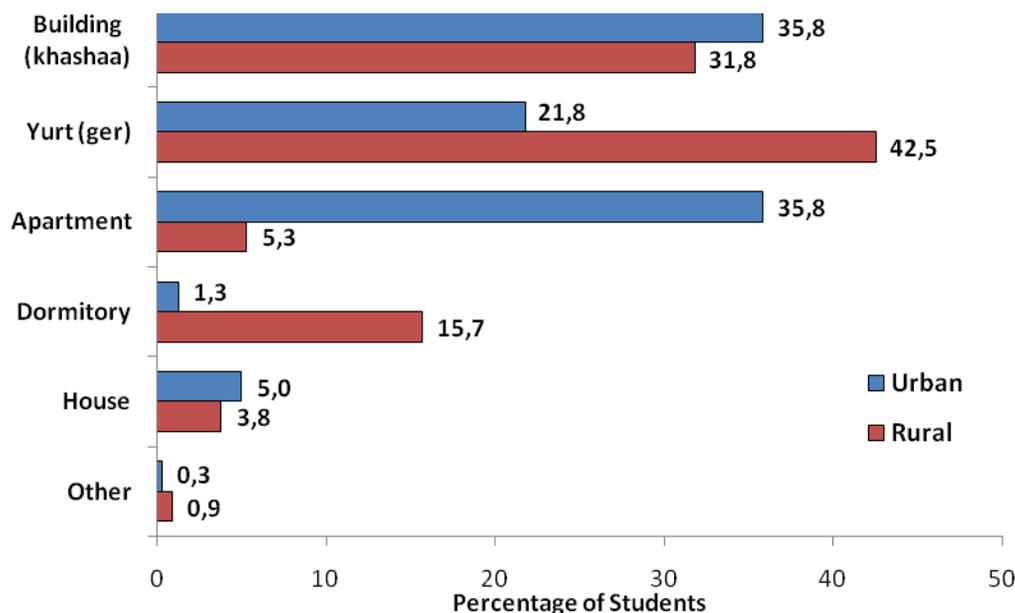
*Rural:* Mongolia has a series of administrative divisions. The country is divided into 21 *aimags* (provinces), generally ranging in population from 50,000-100,000 inhabitants. Each aimag has an aimag center, or central town. The aimags are in turn divided into 329 *soums* (districts), each with about 5,000 inhabitants. Each soum is again subdivided into *baghs*, which serve mainly to sort families of nomads into groups. Students living in aimag center, soum, and bagh divisions were generally considered “Rural,” although some aimag centers sufficiently urbanized to be deemed urban.

Figure 1 summarizes the living location demographic. In total, 48.9% of students were classified as “Urban” and 51.1% were classified as “Rural.”



*Figure 1. Student living location demographics, Mongolia, 2010*

Student living condition was also assessed. Overall, 18.9% of students live in an apartment, 4.4% live in a house, and 9.3% live in a dormitory. In addition, 33.6% live in a building (smaller and with fewer amenities than a house) and 33.2% live in a yurt (*ger*). Amongst urban students, living in apartments, small buildings, and gers was most common. Urban students were much more likely to live in gers than apartments (Figure 2). Most dormitory students (83.5%) were from the most rural living locations (soum and bagh).



*Figure 2. Student living condition (urban versus rural), Mongolia, 2010*

### 2.1.3 Health risk factors among adolescents

We assessed sixteen (16) health risk factors among students as indicated below:

- Dietary
  - (1) Overweight or obese
  - (2) Eat breakfast (never, rarely, sometimes)
  - (3) Eat fruit  $\leq 1$  time per day *OR* eat vegetables  $\leq 1$  time per day *OR* drink milk products  $< 1$  time per day
  - (4) Eat fast food every day *OR* drink carbonated beverages  $\geq 1$  time per day
- Hygiene
  - (5) Clean or brush teeth  $\leq 1$  time per day
  - (6) Wash hands before eating (never, rarely, sometimes) *OR* use soap when washing hands (never, rarely, sometimes)
- Violence and injury
  - (7) Physical attack  $\geq 8$  times per year
  - (8) Serious injury  $\geq 8$  times per year
  - (9) Carry weapon  $\geq 6$  times per month
  - (10) Wear seatbelt (never, rarely, sometimes)
- Mental health
  - (11) Attempt suicide  $\geq 1$  time per year
- Tobacco and alcohol use
  - (12) Smoke cigarettes  $\geq 10$  days per month
  - (13) Drink alcohol (at least one drink)  $\geq 10$  days per month
- Sexual behavior
  - (14) Did not use condom during last sexual intercourse
- Physical activity
  - (15) Watching television, playing computer games, talking with friends, or other sitting activities  $\geq 5$  hours on typical day
- School attendance
  - (16) Miss classes or school  $\geq 3$  days per month

Overall, 3.3% of schoolchildren have 1 risk factor and 6.6% has 2 risk factors and 7.9% is 3 risk factors and mainly 80.2% of schoolchildren were determined 4 or more risk factors, respectively. 1.9% of students did not have risk factors (Table 2). As shown in Table 2, the number of health risk factors increases with increasing grade level ( $p < 0.0001$ ). There was no difference between genders. There was some difference between the number of students with no risk factors in urban (2.4%) and rural (1.2%) areas.

*Table 2. Number of health risk factors among students, Mongolia, 2010*

Number of risk factors	Grade											
	7 <sup>th</sup> grade		8 <sup>th</sup> grade		9 <sup>th</sup> grade		10 <sup>th</sup> grade		11/12 <sup>th</sup> grade		ALL GRADES	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Zero risks	47	3.5	31	2.3	13	1.4	7	0.8	3	0.4	101	1.9
One risk	74	5.5	42	3.2	25	2.8	20	2.4	12	1.6	173	3.3
Two risks	124	9.2	95	7.1	60	6.6	40	4.8	22	2.9	342	6.6
Three risks	142	10.5	121	9.1	64	7.0	49	5.9	31	4.1	408	7.9
4+ risks	962	71.3	1043	78.3	746	82.2	713	86.0	688	91.0	4169	80.3

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## 2.2 DIETARY BEHAVIORS

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Nutrition deficiency and overweight are relevant to adolescent health. Obesity amongst adolescents has negative consequences for student intellect and biological development, and may lead to coronary heart disease, diabetes, gallbladder disease, some types of cancer, and osteoarthritis of the weight-bearing joints. Drinking carbonated beverages and eating fast foods are important causes of overweight and obese adolescents [18,19].

Fruits and vegetables are good sources of complex carbohydrates, vitamins, minerals, and other substances important for good health. Dietary patterns that include higher intakes of fruits and vegetables are associated with several health benefits, including a decreased risk for some types of cancer [20].

This survey assessed dietary behavior by questioning not the students' past one month consumption of fruits, vegetables, milk products, carbonated and soft drinks, and fast food, but also whether students eat breakfast or receive beneficial dietary information in school.

### 2.2.1 Underweight, overweight, and obese

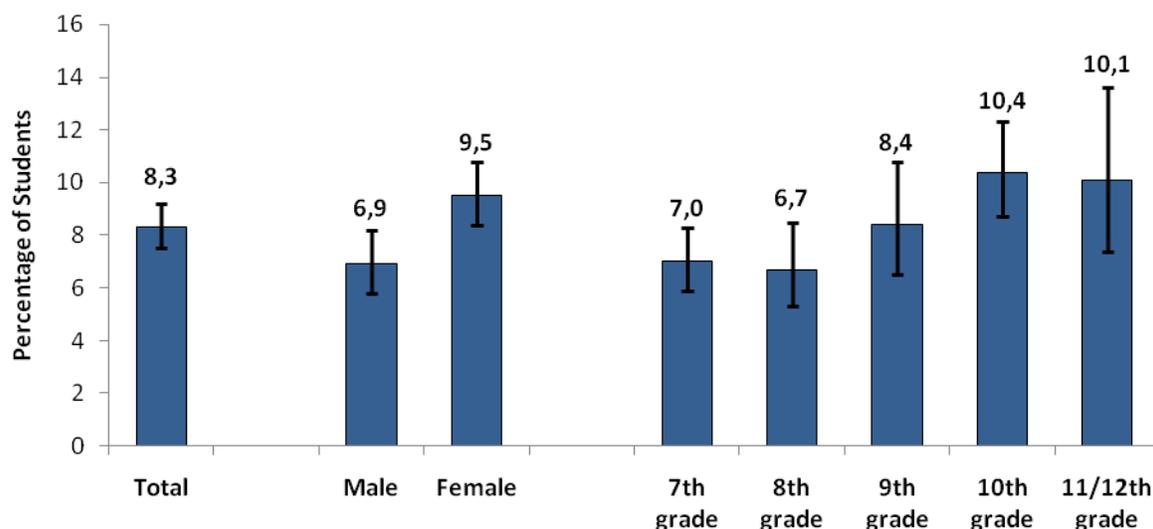
Overall, 16.5% of students consider themselves as “overweight” whereas 17.3% feel “underweight.” Female students were much more likely than male students to see themselves as “very overweight” (26.0% vs. 5.9%).

The height and weight of students was measured to assess growth and body mass. Body mass index (BMI) was computed, where BMI is equal to a student's weight (in kg) divided by their height squared (in m<sup>2</sup>). To determine underweight, normal, overweight, and obese categories, percentiles from WHO/CDC were used that accounted for the age and gender of the children. Students below the 5<sup>th</sup> percentile were classified as “underweight.” Students between the 5<sup>th</sup> and 85<sup>th</sup> percentiles were “normal.” Students between the 85<sup>th</sup> and 95<sup>th</sup> percentile were “overweight.” Finally, students above the 95<sup>th</sup> percentile based on BMI for their age and gender were “obese.”

One in twelve students (8.3%) was overweight, 0.8% was obese, and 2.3% were underweight. Overweight and obese indications were statistically different according to gender, age, and urban/rural location:

- Female students were more likely to be overweight than male students (Female: 9.5%; Male: 6.9%;  $p < 0.003$ ).
- Overweight trended upwards with grade level (Figure 3), but varied between age groups. Amongst students aged 12 or under, one fifth were overweight (19.4%). For students aged between 13-15 years old, males had 6.2% prevalence of overweight while females had 8.1% prevalence. For students aged 16 years old or older, 6.8% of males and 10.5% of females were overweight.
- Urban students were more likely to be overweight than rural students (Urban: 9.4%; Rural: 7.4%;  $p < 0.02$ ).

Figure 3 indicates the trend of increasing prevalence of overweight with increased grade level, as well as the statistically significant difference between males and females.



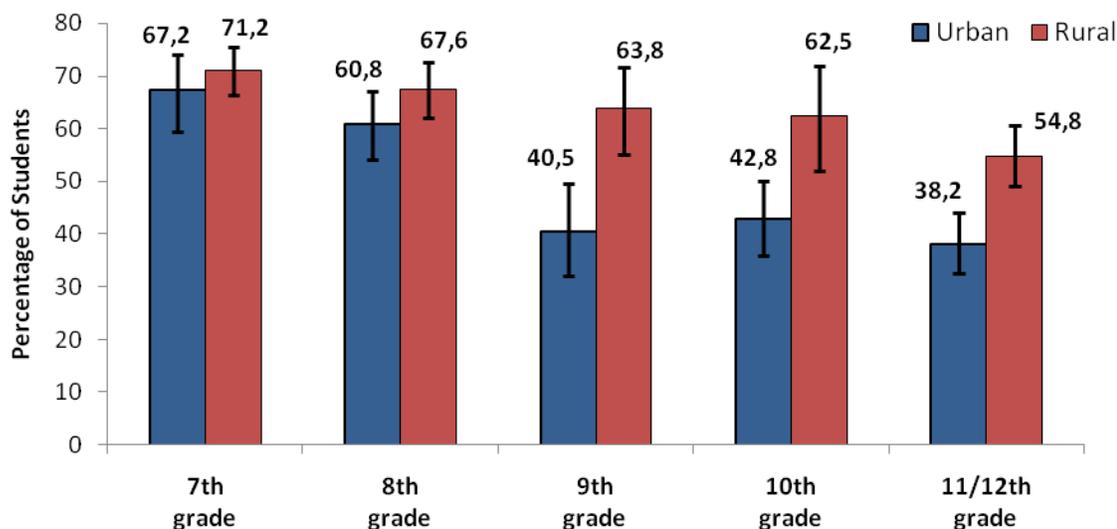
**Figure 3. Percentage of students overweight based on BMI from measured height and weight, by gender and grade level (Error bars indicate 95% CI), Mongolia, 2010**

Obesity prevalence was quite low (0.8%). Differences were seen in the obesity rate between males (1.0%) versus females (0.5%), and urban (1.3%) versus rural (0.3%) students. Like overweight prevalence, obesity was highest amongst students 12 years old or younger at 3.1%, and highest among urban students in this age group (3.9%). Students aged 13-15 and 16+ had 0.7% and 0.6% obesity prevalence, respectively.

There was no significant difference in the prevalence of underweight between sexes. However, there was a statistically significant difference in underweight schoolchildren in urban (3.0%) versus rural (1.7%) settings.

### 2.2.2 Food consumption

Amongst all students, 58.6% ate breakfast usually/always, 24.1% ate breakfast sometimes, and 17.3% ate breakfast rarely/never. The prevalence of rural students who always/usually eat breakfast (64.8%) was 14.1% more than urban students. The disparity in breakfast eating between urban and rural students is shown in Figure 4. The percentage of students who eat breakfast usually/always declines with increasing grade level. Moreover, males were significantly more likely than females to have breakfast usually/always (61.0% vs. 56.3%).



**Figure 4. Percentage of students who usually or always eat breakfast, by grade and location, (±95% CI) Mongolia, 2010**

More than half of students (53.3%) said that they were taught the benefits of healthy eating in school. Dietary behaviors are summarized in Table 3.

**Table 3. Dietary behaviors of students (for preceding one month), by gender, Mongolia, 2010**

Indicator	Total % (CI)*	Male % (CI)	Female % (CI)
Went hungry usually or always because there was not enough food in their home	3.3 (2.9-3.9)	3.8 (3.0-4.7)	2.8 (2.2-3.6)
Ate fruits, such as bananas, oranges, apples, grapes, and melon one or more times per day	16.4 (14.9-18.1)	16.9 (14.8-19.2)	15.7 (13.9-17.6)
Ate vegetables, such as carrots, cabbage, and green vegetables one or more times per day	19.3 (17.5-21.3)	21.9 (19.7-24.3)	17.0 (15.1-19.0)
Ate dairy products, such as milk, yogurt, and cheese two or more times per day	27.3 (25.6-29.1)	28.0 (25.8-30.3)	26.7 (24.3-29.2)
Drank carbonated soft drinks two or more times per day	27.6 (25.1-30.3)	29.5 (26.5-32.7)	25.9 (23.1-28.9)
Ate at fast food restaurants three or more times (past seven days)	18.0 (14.9-21.5)	17.1 (14.3-20.2)	18.9 (15.3-23.2)

\*95% confidence interval

As shown in Table 3, 3.3% of students went hungry usually or always during the past one month because of insufficient food in their home. In rural areas, the prevalence of this indicator reached 4.5%. One in six students (16.4%) usually ate fruits, such as apples, bananas, oranges, grapes, and kiwis, two or more times per day and 19.3% usually ate vegetables, such as carrots, cabbage, and other green vegetables, three or more times per day during the past month. Overall, 15.9% of students met WHO recommendations of eating fruits and vegetables five or more times per day. Fruit and vegetable consumption of five or more times per day was significantly higher among urban than rural students (18.0% vs. 14.8%). Additionally, consumption of fruits and vegetables

decreases with increasing age, irrespective of rural or urban living. For example, consumption of fruits and vegetables five or more times per day during the past month for children aged 12 or younger was 26.2% (CI 19.3-34.4) , aged 13 to 15 was 18.5% (CI 16.9-20.2), and aged 16 or older was 11.1% (CI 9.4-13.0).

Dairy products such as milk, yogurt, and cheese valuable for adolescent growth were consumed two or more times per day by 27.3% (CI 25.6-29.1) of students in the past month. Dairy consumption was 36.6% for children 12 years old or younger, 30.4% for 13 to 15 year olds, and 21.9% for 16 year old or older, showing a decreasing trend with age. There was comparable dairy consumption in rural and urban areas.

Overall, 27.6% of students drank carbonated beverages one or more times per day during the past month. Consumption of carbonated beverages differed between males and females (29.5% vs. 25.9%) as well as in terms of location, with urban consumption being 10.2% more than rural (Urban: 33.3%, CI 30.2-36.6; Rural: 23.1%, CI 19.3-27.2). As taken by age group, high consumption of carbonated and soft drinks occurred among students under 15 years old. It was 31.4% for students 12 years old or younger, 29.9% for 13-15 years, and 24.0% for 16 years old or older.

Overall, 18.0% (CI 14.9-21.5) of students ate fast food three or more times for past seven days at restaurants such as Pizza, or Max Burger and Mondonald. There were profound differences between urban and rural consumption of fast food: 29.1% of urban students ate fast food three or more times for past seven days, compared to 9.1% of rural students.

### 2.2.3 Dietary risk factors

In Mongolia, 5.5% of surveyed students (Male: 6.2%; Female: 5.0%) followed the healthy eating recommendations put forth by WHO, namely they did not have a dietary risk factor (see below). Adherence to these healthy eating recommendations by grade was 7.9%, 6.8%, 4.3%, 3.9%, and 2.8% for 7, 8, 9, 10, 11/12 grades, respectively. Healthy eating has a clear declining trend with increasing grade level. In addition, 6.9% of urban and 3.4% of rural students follow the dietary recommendations ( $p < 0.0001$ ).

The following dietary risk factors were defined:

- (1) Overweight
- (2) Eat breakfast (never, rarely, sometimes)
- (3) Eat  $\leq 1$  serving fruit per day; Eat  $\leq 1$  serving vegetables per day; Drink  $< 1$  serving milk products per day
- (4) Eat fast food (chips, pizza, burgers, etc.) every day; Drink carbonated beverages  $\geq 1$  time per day

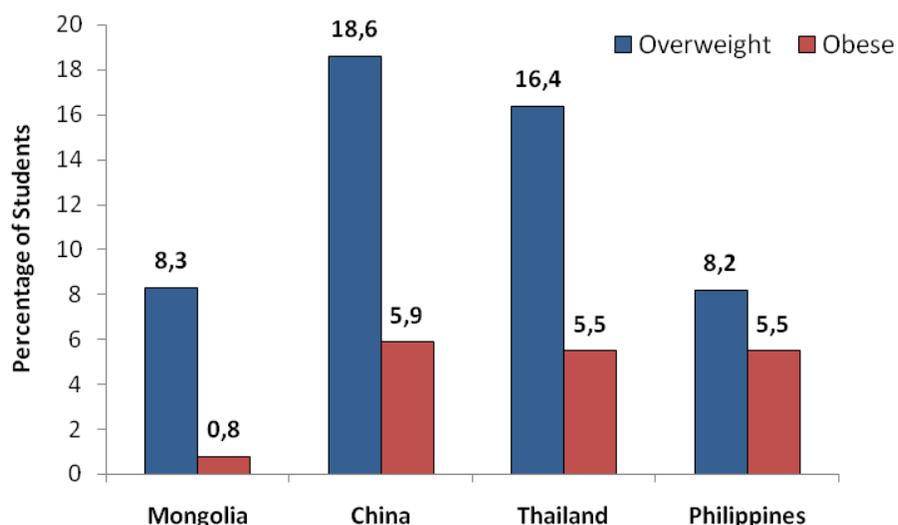
Overall, 16.6%, 27.6%, 30.9%, and 19.3% of students had 1, 2, 3, and 4 or more dietary risk factors.

### Discussion

Overweight and obesity among adolescents has recently seen a marked increase in the world, especially in Asia. This survey found that, among adolescents in Mongolia, 8.3% are overweight, 0.8% is obese, and 2.3% are underweight.

The prevalence of overweight and obese adolescents in Mongolia reached similar findings as previous studies (6.9% in 1997, “Nutrition status of Mongolia”; and 8.3% in 2005, “Rapid assessment of adolescent nutrition”). It is not possible to compare directly the GSHS-Mongolia results with the results of the above surveys in 1997 and 2005, due to differences in sample size, target groups and area. The GSHS survey provides the first comprehensive, national information on the prevalence of weight problems and risk factors of the students aged 12 and over, and should serve as a benchmark for future GSHS studies.

This survey confirms the need to monitor closely the increasing levels of overweight and obese adolescents in Mongolia, especially among young children and females. Overweight and obese prevalence was compared between Mongolia and Thailand (South East Asia) and China and the Philippines (Asia Pacific region) in Figure 5. The comparison is illustrative: Mongolia has a lower obesity level than all three countries, and matches the Philippines for relatively low levels of overweight adolescents.



*Figure 5. Overweight and obese adolescents: comparing Mongolia to other countries in the Asia region completing the GSHS survey, Mongolia, 2010*

Fruits and vegetables from import and plow land are insufficient for the needs of the Mongolian population. Therefore, fruit and vegetable consumption by Mongolian students cannot meet WHO recommendations and “Recommended Dietary Intake of Mongolia.” Fruit and vegetable consumption by Mongolian students was less by 3.1-4.2 times that of nearby Asian countries, such as the Philippines, Thailand, and China.

Consumption of dairy products, a main source of calcium and vitamin D for adolescents, were insufficient and were very roughly comparable to previous studies (Urban 28.8%, Rural 12.9% in 2002, “Health behavior of adolescence”; and 23.4% in 2007, “Schoolchildren’s health”).

Overall, 3.3% of students went hungry usually or always during the past one month because of inadequate food in their home, which is comparable to the same GSHS survey of students in China and Thailand.

In summary, student knowledge and practice of health eating appears to be severely deficient in certain aspects in Mongolia. Programs to address the key findings of this study are urgently needed.

### Key Findings

1. *Healthy Eating*: In Mongolia, 5.5% of students met healthy diet recommendations of the WHO and “Guidelines of Mongolia.” Slightly more males met the recommendations versus females (Male: 6.2%; Female: 5.0%). Healthy eating decreased with increasing grade level. More urban students met healthy eating recommendations than rural students (6.9% versus 3.4%,  $p < 0.0001$ ).
2. *Risks*: Overall, 16.6%, 27.6%, 30.9%, and 19.3% of students had 1, 2, 3, and 4 or more risks nutrition risk factors (related to unhealthy eating practice).
3. *Overweight/Obese/Underweight*: Overall, 8.3% of students were overweight, 0.8% were obese, and 2.3% were underweight. Female students were significantly more likely than male students to be overweight.
4. *Fruits and Vegetables*: 15.9% or one sixth of students ate fruits and vegetables five or more times per day during the past month. Adequate fruit and vegetable consumption was significantly more likely among urban students (18.0%) than rural students (14.8%).
5. *Dairy*: Dairy products were consumed two or more times per day by 27.3% of students in the past month. Consumption of dairy products decreased with age.
6. *Carbonated Beverages*: Overall, 27.6% of schoolchildren drank carbonated and soft drinks every day. Consumption of carbonated and soft drinks by urban students was 10.2% more likely than by rural students.
7. *Fast Food*: Overall, 18.0% of students ate at fast food restaurants very often; urban students were 20.0% more likely to eat fast food than rural students.

## 2.3 HYGIENE

Dental caries (i.e., tooth decay, cavities) affect between 60-90% of children in developing countries and is the most prevalent oral disease among children in several Asian and Latin American countries. In Africa, the incidence of dental caries is expected to rise drastically in the near future due to sugar consumption and inadequate fluoride exposure [21]. Poor oral health can affect a child's ability to communicate and learn. More than 50 million school hours are lost annually because of oral health problems [22]. In both developed and developing countries, many children do not have access to water fluoridation or professional dental care. Daily tooth cleaning or brushing can help to prevent from some dental disease [23].

Diarrheal diseases kill nearly 2 million children every year. Hygiene education and the promotion of hand-washing can reduce the number of diarrheal cases by 45% [24]. About 400 million school-aged children are infected with worms worldwide. These parasites consume nutrients from children they infect, cause abdominal pain and malfunction, and can impair learning by slowing cognitive development [25].

Existing studies suggest that dental hygiene practices are deficient in Mongolia, and that diarrheal diseases account for a consequential portion of all morbidity and mortality in the country. In this chapter, we determined student hygiene practices, such as tooth cleaning and hand-washing habits.

### 2.3.1 Teeth cleaning habits of adolescents

Among all students, 3.0% had not cleaned their teeth during the last one month period. Nearly two thirds (63.3%) clean their teeth at least 2 times per day, and 92.4% clean their teeth at least once per day (Figure 6).

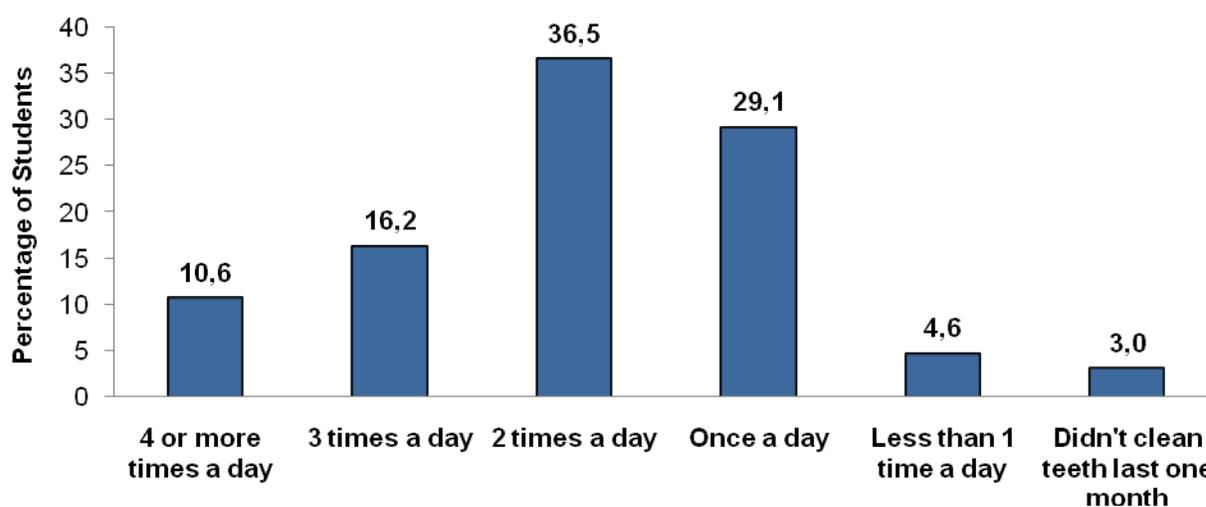
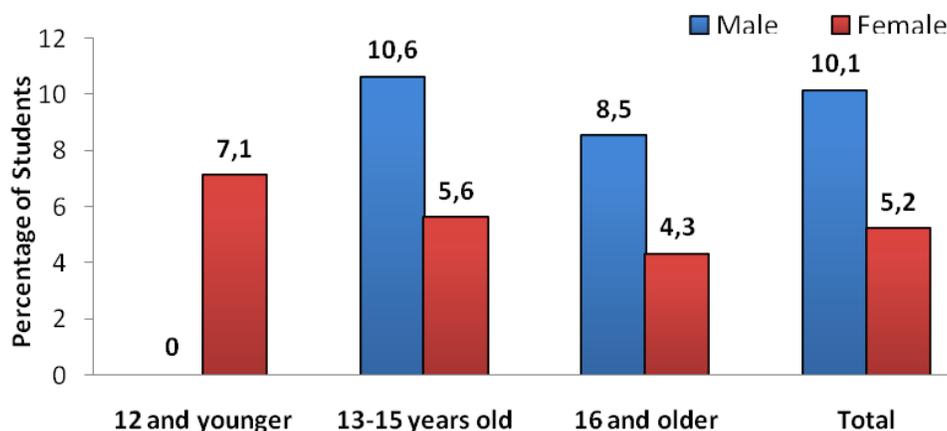


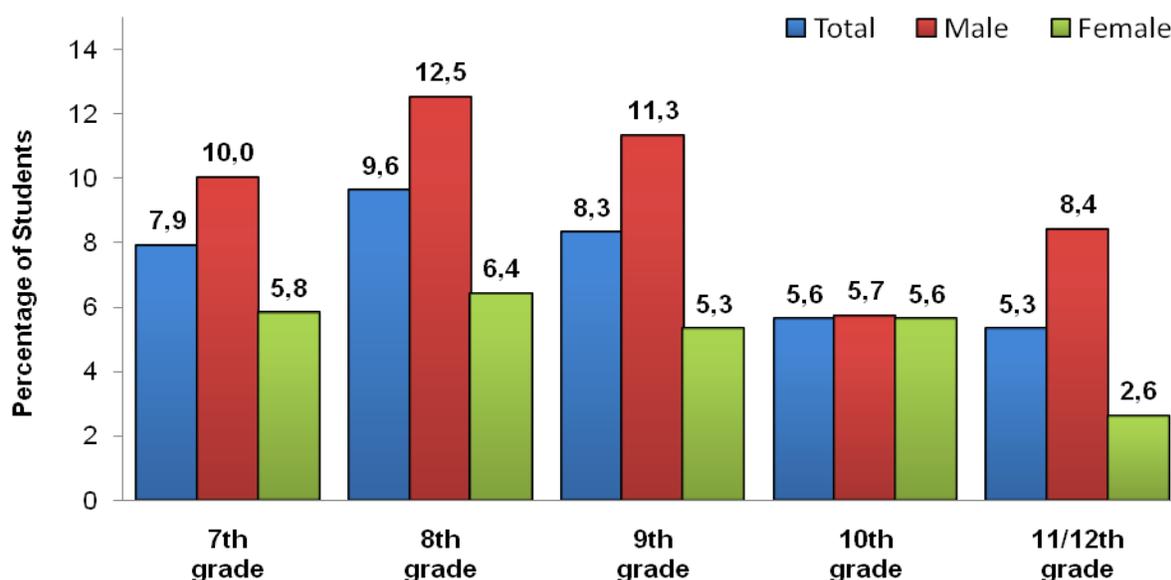
Figure 6. Teeth cleaning frequency among students, Mongolia, 2010

About one in thirteen students (7.6%, CI 6.5-8.9) cleaned their teeth less than once per day or not at all during the last month – a significant hygiene risk factor. The percentage of male participants in this category was significantly higher than females ( $p < 0.05$ ) (Figure 7).



*Figure 7. Percentage of students who cleaned their teeth less than once per day or not at all during the last one month period, Mongolia, 2010*

The percentage of 8<sup>th</sup> and 9<sup>th</sup> grade students who cleaned their teeth less than once per day or not at all during the last one month period was higher than in other grades (Figure 8).



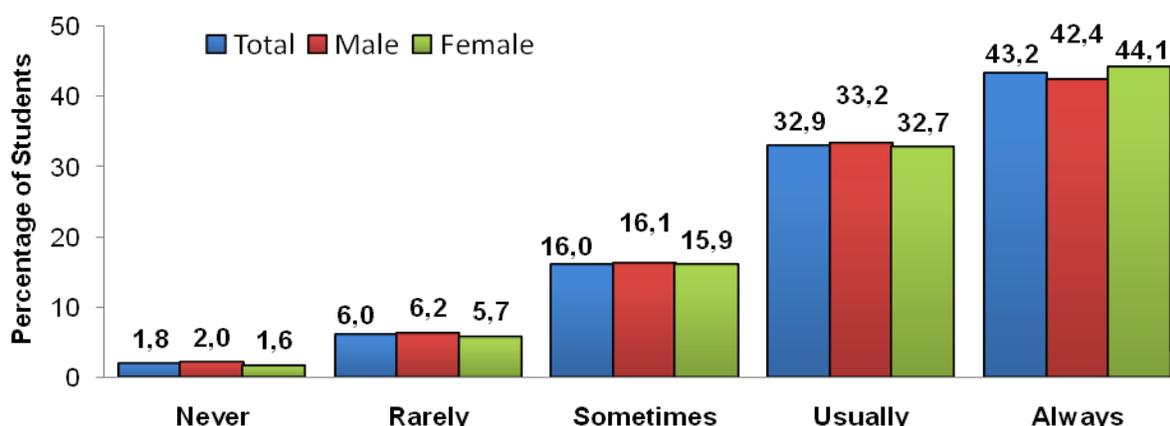
*Figure 8. Percentage of students who cleaned their teeth less than once per day or not at all during the last one month period, by grade, Mongolia, 2010*

Across all grades except the 10<sup>th</sup> grade, males accounted for significantly more of the students who cleaned their teeth less than once per day or not at all than did females, indicating that teeth

cleaning educational efforts may need to be more directed at males.

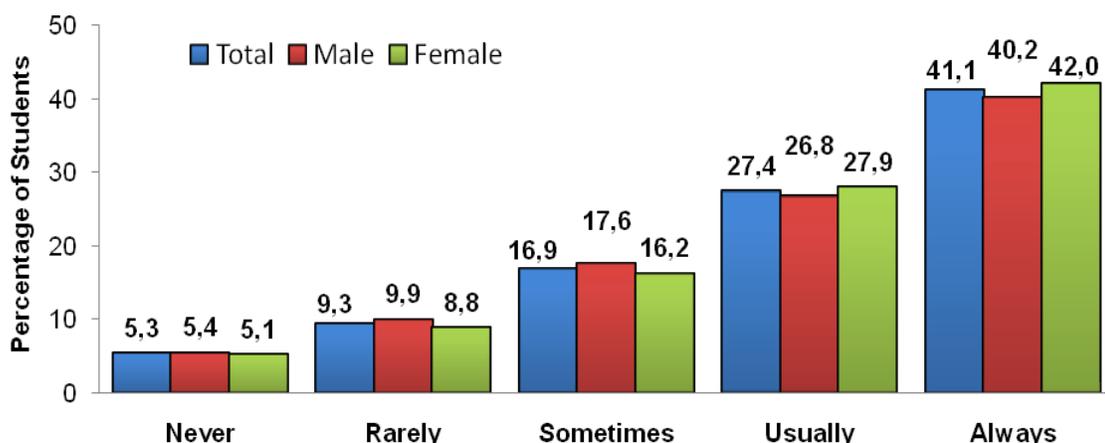
### 2.3.2 Hand-washing habits of adolescents

Hand-washing habits were assessed based on whether the children wash their hands before eating a meal or after going to the restroom, as well as whether they use soap when washing their hands. About two in five students (43.2%) answered that they always washed their hands before eating meals during the last month, while 32.9% of them usually washed their hands before eating meals (Figure 9). A small but significant percentage of students (7.8%) rarely or never wash their hands before eating meals.



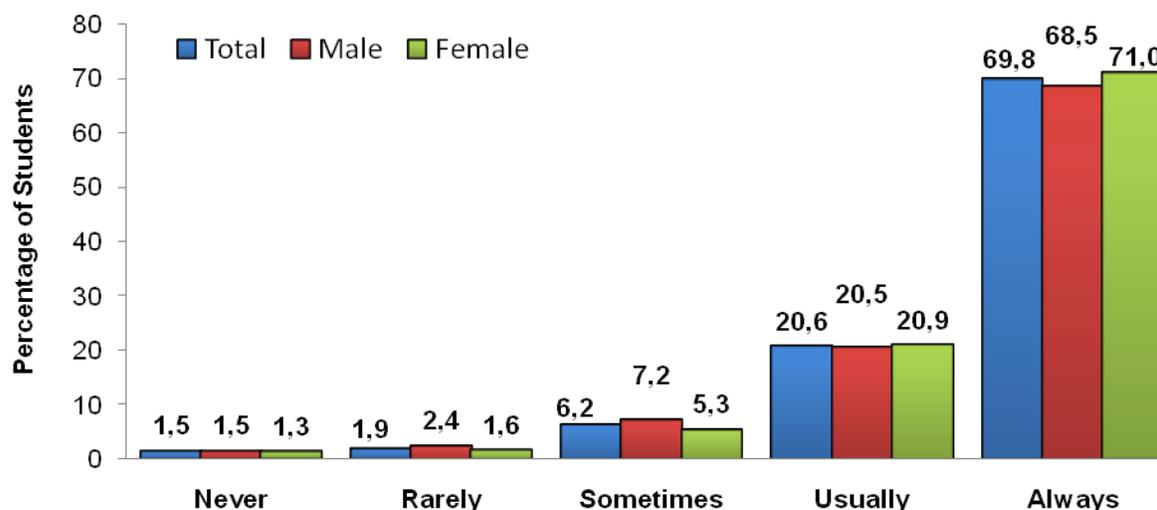
*Figure 9. Hand-washing habit before meals during the last one month period,*

After using the toilet, 41.1% of students always wash their hands while 27.4% usually wash their hands. There is little difference between male and female participants in this indicator (Figure 10). Almost one in seven students (14.7%) never or rarely wash their hands after using toilet.



*Figure 10. Hand-washing habit after using the toilet during the one month period, Mongolia, 2010*

Encouragingly, 90.4% of participants always or usually use soap when washing their hands. A small number of students (1.5%) answered that they never use soap when washing their hands (Figure 11).



*Figure 11. Soap usage during hand washing, by frequency, Mongolia, 2010*

Table 4 summarizes hygienic behavior of students by location and gender.

*Table 4. Hygienic behavior of students in one month, by location and gender, Mongolia, 2010*

Indicator	Location	Total % (CI)*	Male % (CI)	Female % (CI)
Cleaned their teeth less than once per day or not at all	Total	7.6 (6.5-8.9)	10.1 (8.4-12.0)	5.2 (4.3-6.3)
	Urban	5.9 (4.3-8.0)	8.2 (5.6-11.9)	3.6 (2.7-4.9)
	Rural	9.1 (7.5-10.9)	11.6 (9.7-13.9)	6.5 (5.0-8.3)
Never or rarely wash their hands before the meal	Total	7.8 (6.9-8.8)	8.3 (6.9-9.8)	7.2 (6.2-8.5)
	Urban	7.0 (6.1-8.1)	7.1 (5.4-9.3)	7.0 (5.6-8.5)
	Rural	8.5 (7.0-10.2)	9.2 (7.3-11.6)	7.5 (5.8-9.6)
Never or rarely wash their hands after using toilet	Total	14.7 (13.2-16.3)	15.4 (13.5-17.5)	13.9 (12.1-15.9)
	Urban	10.2 (8.6-12.0)	11.0 (8.7-14.0)	9.5 (8.0-11.3)
	Rural	18.2 (15.9-20.9)	19.0 (16.2-22.2)	17.4 (14.4-20.9)
Never or rarely use soap when washing hands	Total	3.4 (2.9-4.0)	3.9 (3.0-5.0)	2.9 (2.3-3.5)
	Urban	2.1 (1.7-2.6)	2.8 (2.2-3.6)	1.4 (0.9-2.3)
	Rural	4.5 (3.6-5.5)	4.8 (3.3-6.9)	4.0 (3.0-5.2)

\*95% confidence interval

Indicators – such as never cleaning teeth, never washing hands before meals or after using the toilet, and never using soap when washing hands – show that hygienic behavior of students, especially rural students, has much room for improvement. Additionally, poor hygienic behavior is particularly pronounced in male participants, regardless of rural or urban living situation (Table 4).

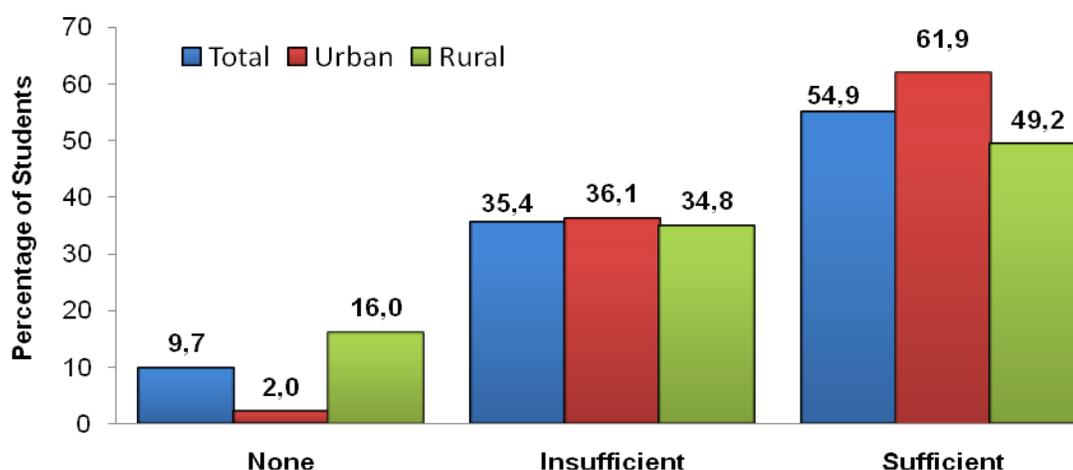
The percentage of students who did not or rarely used soap when washing hands in the past one month was higher among rural children than among urban students. When we look at this indicator considering the respondents' gender, it was significantly higher among urban male participants (4.8%, CI 3.3-6.9) as well as among rural female (4.0%, CI 3.0-5.2) participants.

This study also assessed hand washing before meals *at school*. More than half of the students (59.9%) never or rarely washed their hands before eating meals at school during the past month. There was little difference between male and female participants in this indicator (Table 5).

**Table 5. Hand-washing behavior before eating meals at school, Mongolia, 2010**

Hand washing behavior	Total		Male		Female	
	n	%	n	%	n	%
Never	2061	41.8	892	42.1	1160	41.6
Rarely	981	18.1	403	17.3	574	18.9
Sometimes	853	15.9	364	16.0	483	15.8
Usually	623	11.6	279	11.9	334	11.4
Always	658	12.5	290	12.7	358	12.2
<b>Total</b>	<b>5176</b>	<b>100.0</b>	<b>2228</b>	<b>100.0</b>	<b>2919</b>	<b>100.0</b>

Additionally, this study assessed the availability of toilets and sinks at school. Disturbingly, one in ten students (9.7%) responded that there were no toilets or sinks at school and 35.4% responded that there are not enough toilets or sinks at school (Figure 12). Lack of a toilet or sink was particularly common for rural students, while urban students had substantially higher sufficient levels numbers of toilets and sinks. Students responding that there were insufficient numbers of toilets or sinks were at similar levels in both urban and rural settings.



**Figure 12. Availability of restrooms (sinks or toilets) at school, Mongolia, 2010**

## Discussion

About 7.6% of students cleaned or brushed their teeth less than daily or never in the month

preceding the survey. This indicator was higher among rural schoolchildren. Additionally, 3.0% of students never cleaned their teeth in the past month. In Thailand, the percentage of students who did not clean their teeth in the past month was 2.5%, whereas in Philippines this indicator was 1.2%. Thus, poor dental behavior was higher in Mongolia, especially among rural male students, compared to other countries.

This study established that 7.8% of schoolchildren never or rarely wash their hands before eating meals and 14.7% never or rarely wash their hands after using the toilet. This problem is likely related, in part, to the insufficient numbers of toilets, sinks, and restrooms in schools.

The percentage of Thai students who never or rarely wash their hands before eating meals (9.0%) was similar to Mongolian students; however, the percentage of Thai students who never or rarely wash their hands after using the toilet was much less (4.2%) compared to Mongolia. The percentage of Chinese students who never or rarely wash their hands before eating meals (3.0%) and after using the toilet (3.2%) was also less compared to our study.

Table 6 provides further evidence that hygiene related behavior among Mongolian adolescent schoolchildren is poor compared to other countries (lower percentages are better).

**Table 6. Comparative indicators of some hygiene related behaviors, by country, 2010**

Country	Never or rarely wash hands before eating meals, % (CI)*	Never or rarely wash hands after using the toilet, % (CI)
Jordan	7.5 (6.2-8.8)	5.6 (4.2-7.0)
Lebanon	4.4 (3.6-5.2)	2.3 (1.7-2.9)
Oman	6.2 (4.8-7.6)	7.7 (6.1-9.3)
China	3.0 (1.9-4.1)	3.2 (2.2-4.2)
Uganda	6.2 (4.7-7.7)	8.1 (5.9-10.3)
Venezuela	7.1 (5.4-8.8)	3.0 (2.1-3.9)
Philippines	4.3 (3.2-5.4)	4.0 (3.1-4.8)
<b>Mongolia</b>	<b>7.8 (6.9-8.8)</b>	<b>14.7 (13.2-16.3)</b>

\*95% Confidence Interval. Source: GSHS reports

### Key Findings

1. A small but significant percentage of Mongolian students very rarely or never cleaned their teeth in the month preceding the survey. Generally, male students had poor dental cleaning behavior compared to female students.
2. About two thirds of students (63.3%) cleaned their teeth at least 2 times per day.
3. About 40% of students regularly wash their hands before meals and after using the toilet, and use soap when washing.
4. One in ten students said there were no toilets or sinks at school; this indicator was highest in rural areas. Most urban students said there were enough toilets and sinks at school; however, more than half of them still do not wash their hands before eating meals at school.
5. Poor hygiene (rare teeth cleaning, rare hand washing before meals and after using the toilet, not using soap when washing) was most pronounced among rural male students.

## **2.4 VIOLENCE AND UNINTENTIONAL INJURY**

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Unintentional injuries are a major cause of death and disability among young children [26]. Each year, about 875,000 children under the age of 18 die from injuries and 10 to 30 million have their lives affected by injury. Injury is highly associated with age and gender. Males aged 10-14 have 60% higher injury death rates than females. Teenagers aged 15-19 have higher rates than those aged 10-14 years [27].

Victims of bullying have increased stress and a reduced ability to concentrate and are at increased risk for substance abuse, aggressive behavior, and suicide attempts [28].

In this chapter, we assessed whether students were physically attacked, in a physical fight, bullied, injured, or carried weapons. We also assessed whether students drove motor vehicles and their seat belt wearing habits when riding in cars.

**Physical attack:** A physical attack occurs when one or more people hit or strike someone, or when one or more people hurt another person with a weapon (such as a stick, knife, or gun). It is not a physical attack when two students of about the same strength or power choose to fight each other.

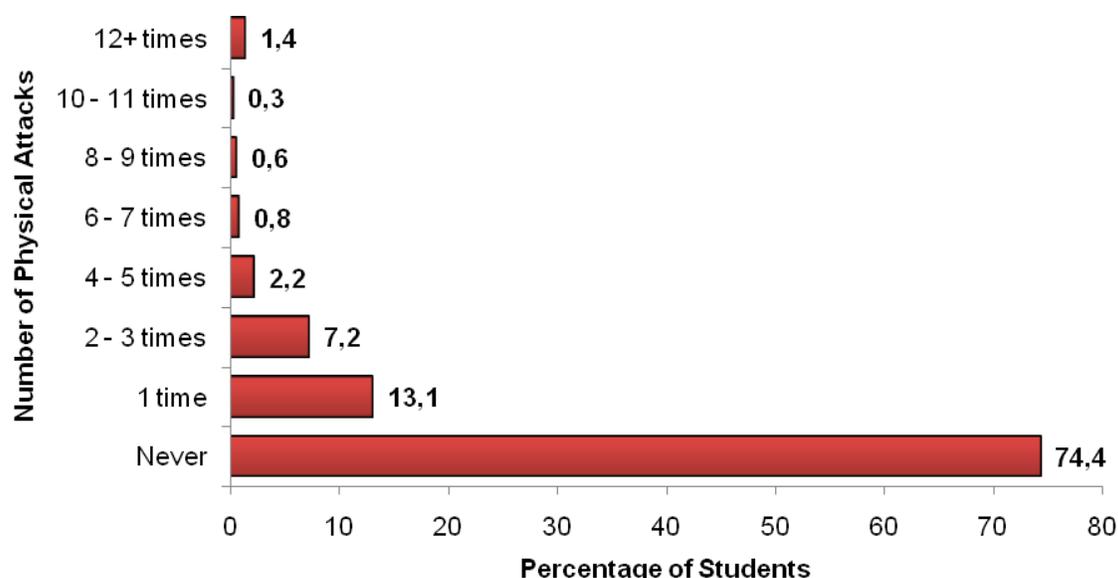
**Physical fight:** A physical fight occurs when two students of about the same strength or power choose to fight each other.

**Bullying:** Bullying occurs when a student or group of students say or do bad and unpleasant things to another student. It is also bullying when a student is teased a lot in an unpleasant way or when a student is left out of things on purpose. It is not bullying when two students of about the same strength or power argue or fight or when teasing is done in a friendly and fun way.

**Injury:** Miss one or more days of class, sports, or other activities due to injury confirmed by a doctor.

One in four participants (25.6%) were physically attacked at least once during the past one year period (Figure 13). Most attacked students were attacked 1-3 times. Although few students fell in the 8-9 and 10-11 attack categories, the 12 or more attacks category shows a noticeable increase, perhaps indicating a small group of students who are habitually attacked.

## PART 2: SURVEY RESULTS 2.4 VIOLENCE AND UNINTENTIONAL INJURY



*Figure 13. Physical attacks during the past one year period, Mongolia, 2010*

Among all students, 38.2% had an accident or injury during the past one year period. Most of the injury cases were broken bones and dislocated joints. Broken bones were frequent among male students (37.6%) whereas brain concussion, head and neck injuries, loss of consciousness, or could not breathe were common among female students (23.8%) (Table 7). The main cause of serious injuries was falling.

*Table 7. Serious injuries among students during the past one year, by gender, Mongolia, 2010*

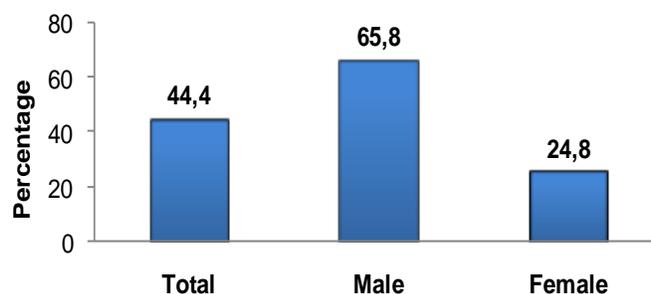
Most serious injury	Total		Male		Female	
	n	%	n	%	n	%
Broken bone or dislocated joint	285	14.8	183	37.6	102	22.5
Cut or stab wound	154	8.0	69	14.2	84	18.5
Concussion or head or neck injury, lost consciousness, could not breathe	196	10.2	87	17.8	108	23.8
Gunshot wound	11	0.6	9	1.8	1	0.2
Bad burn	40	2.1	15	3.1	25	5.5
Poisoned or took too much of a drug	17	0.9	5	1.0	12	2.6
Other	240	12.5	119	24.4	121	26.7
<b>Total</b>	<b>1922</b>	<b>100.0</b>	<b>487</b>	<b>100.0</b>	<b>453</b>	<b>100.0</b>

One in four students (24.5%, CI 22.5-26.6) was bullied one or more days in the preceding month. The percentage of children being bullied decreases with increasing grade level. Most of the students being bullied were being hit, kicked, pushed, shoved around, or locked indoors. A significant minority of students (6.5%) carried weapons (e.g., gun, knife, club or stick) on one or more days during the past month.

Nearly half of students (44.4%) aged 12-18 had experience driving motor vehicles. Driving experience increased with increasing age, and was significantly more likely among males than females (Figure 14).

## PART 2: SURVEY RESULTS 2.4 VIOLENCE AND UNINTENTIONAL INJURY

Among the students, 30.3% never used a seat belt when riding in a vehicle with someone else in the past month. 13.7% usually or always used a seat belt. One in ten students (11.6%) had ridden in a vehicle driven by someone that had been drinking alcohol and doing so was more frequent among male students (Table 8).



*Figure 14. Percentage of students who had experience driving motor vehicles, by gender, Mongolia, 2010*

*Table 8. Seat belt usage and riding in motor vehicles driven by someone who had been drinking, among students during past one month period, by gender, Mongolia, 2010*

	Total		Male		Female	
	n	%	n	%	n	%
<b>Seat belt usage when riding in motor vehicles</b>						
Was not in someone's motor vehicle	935	17.8	332	14.7	591	20.3
Never	1549	30.3	628	28.8	911	31.6
Rarely	1167	22.4	547	24.4	615	20.6
Sometimes	820	15.8	368	16.5	450	15.3
Usually	381	7.1	198	8.5	182	6.0
Always	367	6.6	172	7.2	194	6.2
Total	5219	100.0	2245	100.0	2943	100.0
<b>Riding in car driven by someone who had been drinking alcohol</b>						
Was not in someone's motor vehicle	2547	48.7	1001	44.3	152	52.5
0 day	2051	39.3	907	40.7	1138	38.2
1 - 2 days	460	8.9	241	10.8	219	7.4
3 - 5 days	72	1.4	48	2.1	22	0.7
6 - 9 days	32	0.6	13	0.6	18	0.6
10 and more days	51	1.0	32	1.4	18	0.6
Total	5213	100.0	2242	100.0	2940	100.0

### Discussion

One in four students experienced a physical attack in the past year and one in four students were bullied in the past month. Our bullying prevalence (24.5%) was comparable to the prevalence in Tajikistan (24.8%). Other GSHS results for bullying in the Asia-Pacific region were: Indonesia (39.8%), the Philippines (37.8%), and Thailand (32.9%). Based on confidence intervals, Mongolia has significantly lower prevalence of bullying than these countries. Interestingly, the Beijing, China GSHS found relatively low bullying levels of 16.4%.

Among the students, 38.2% had an accident or injury during the past year, which was roughly comparable to other Asian countries: Indonesia (33.7%), the Philippines (45.0%), and Thailand (34.1%). Injury prevalence in Tajikistan was substantially lower at 21.8%.

## **PART 2: SURVEY RESULTS 2.4 VIOLENCE AND UNINTENTIONAL INJURY**

Almost half of the participants (44.4%) aged 12-18 had experience driving motor vehicles; two-thirds of males (65.8%) had experience driving motor vehicles. The vast majority of students did not always wear seatbelts when riding in vehicles. During the past one month period, one in ten students rode in a motor vehicle driven by someone who had been drinking alcohol and this indicator was more frequent among male students. We feel this is particularly problematic as it indicates adults are setting a negative example for many schoolchildren and socializing the practice of driving while under the influence of alcohol.

### **Key Findings**

1. One in four students experienced a physical attack in the past year, and one in four students was bullied in the past month. Violence decreased with increasing age and grade level.
2. Among the students, 38.2% had an accident or injury during the past year. Types of injury were different among males and females: broken bones were most common among males, whereas concussion, head and neck injuries, lost consciousness, or inability to breathe were most common among females.
3. Almost half of the participants (44.4%) aged 12-18 had experience driving motor vehicles; two-thirds of males (65.8%) had experience driving motor vehicles.
4. About half of the students never or rarely wore seat belts when riding in motor vehicles and less than one in ten students always use a seat belt.
5. During the past one month period, one in ten students rode in a motor vehicle driven by someone who had been drinking alcohol and this indicator was more frequent among male students.

## 2.5 MENTAL HEALTH

Worldwide, approximately 20% of children and adolescents suffer from a disabling mental illness [29]. Anxiety disorders, depression and other mood disorders, and behavioral and cognitive disorders are among the most common mental health problems among adolescents. Half of all lifetime cases of mental disorders start at age 14 [30]. Every country and culture has children and adolescents struggling with mental health problems. Most of these young people suffer needlessly, unable to access appropriate resources for recognition, support, and treatment. Ignored, these young people are at high risk for abuse and neglect, suicide, alcohol and other drug use, school failure, violent and criminal activities, mental illness in adulthood, and health-jeopardizing impulsive behaviors. Each year, about 4 million adolescents worldwide attempt suicide. Suicide is the third leading cause of death among adolescents [31,32].

In this chapter, we assessed whether students were felt lonely, insomnia due to worries, problem of suicide and about number of friends. We also assessed whether students received information how to manage stress and anger during the school year.

Table 9 shows that nearly one in ten students in Mongolia experienced loneliness during the past year “usually” or “always”. Female students (10.7%) had these experiences more than male students (8.0%). Urban students reported feeling lonely 11.7% and this result was 7.5% for rural students. There was no difference between grades.

**Table 9. Mental health problems and whether taught lesson on stress management among students during the past year, by gender, Mongolia, 2010**

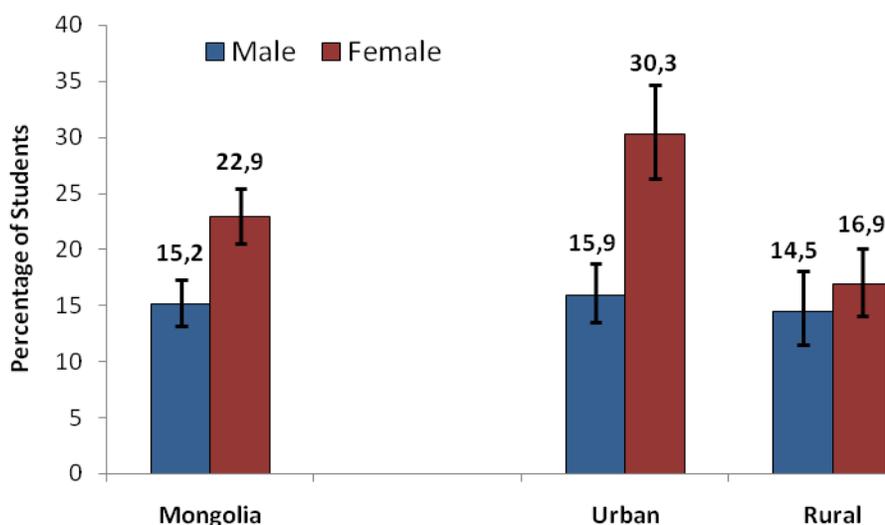
Indicator	Total % (CI)*	Male % (CI)	Female % (CI)
Felt lonely: “Usually” or “Always”	9.4 (8.5-10.4)	8.0 (6.9-9.4)	10.7 (9.4-12.0)
Experience insomnia due to worries: “Usually” or “Always”	4.6 (3.9-5.5)	4.2 (3.4-5.2)	4.9 (3.9-6.2)
Ever seriously considered attempting suicide: “Yes”	19.3 (17.5-21.1)	15.2 (13.2-17.3)	22.9 (20.5-25.4)
Ever planned about how to attempt suicide: “Yes”	12.4 (11.1-13.9)	10.9 (9.4-12.6)	13.6 (11.8-15.6)
Attempted suicide: 1 or more attempts	8.6 (7.6-9.8)	7.1 (6.1-8.3)	9.8 (8.2-11.6)
Close friends: “0” (do not have a close friend)	4.5 (3.9-5.1)	4.4 (3.4-5.7)	4.5 (3.9-5.3)
Taught in during current school year to manage anger and stress: “Yes”	38.0 (35.1-41.0)	38.0 (34.9-41.2)	38.1 (34.6-41.8)

\*95% Confidence Interval

The percentage of students who were so worried they could not sleep at night (insomnia) was 4.6% and there was no significant difference between genders or ages. Insomnia due to worry was experienced by 5.1% of urban students, whereas 4.3% of rural students experienced it. Interestingly, 41.8% (CI 35.0-48.8) of those students who experienced insomnia had also been bullied (whereas the overall bullying prevalence was 24.5% for one or more times in past month).

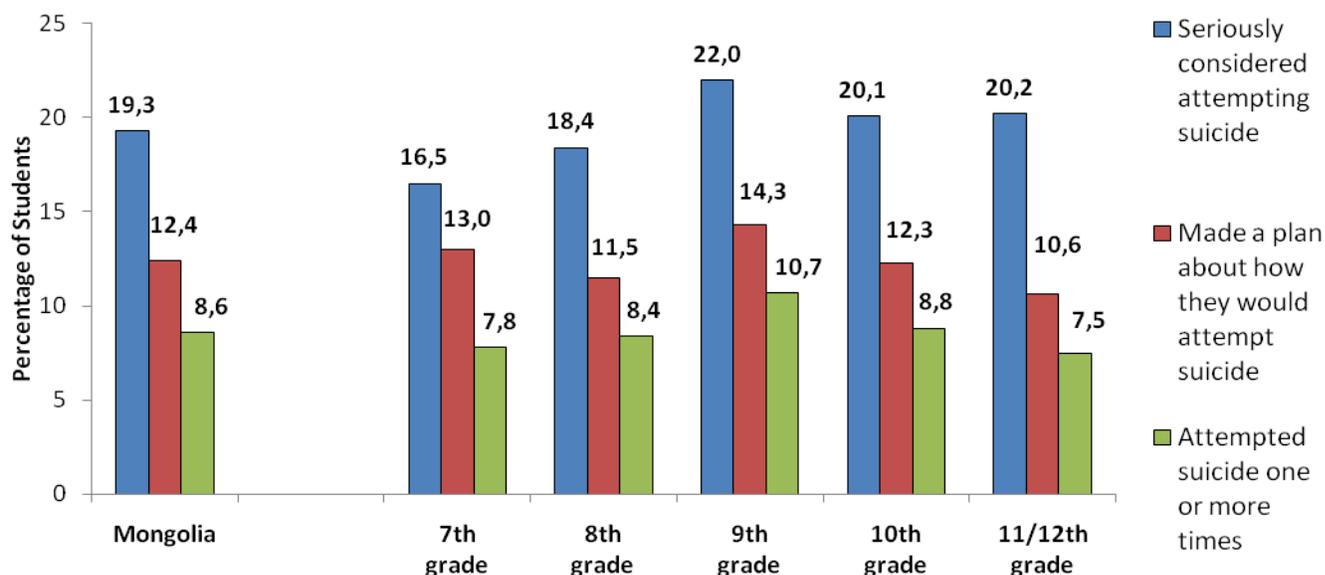
During the past one year period, 19.3% of students considered attempting suicide, 12.4% made a plan to commit suicide, and 8.6% actually tried to commit suicide one or more times.

Table 9 shows that female students had consistently higher levels of negative indicators than male students. For instance, 22.9% of female students answered that they had thought about committing suicide in the past one year. This indicator is 7.7 percentage points higher than male students and it is statistically significant ( $p < 0.0001$ ). Interestingly, this difference is almost entirely accounted for by urban female students; rural female students showed a slight difference from their male counterparts (Figure 15). Irrespective of gender, the percentage of urban schoolchildren who seriously considered attempting suicide is 7.5 percentage points higher than rural schoolchildren ( $p < 0.0001$ ).



*Figure 15. Percentage of schoolchildren who seriously considered attempting suicide in past one year, by gender and location, ( $\pm 95\%$  CI) Mongolia, 2010*

There was no clear trend across age groups or grades with respect to those who had seriously considered attempting suicide, had made a plan about attempting suicide, or had attempted suicide one or more times, although there was an apparent maximum in 9<sup>th</sup> grade for all categories that warrants further investigation (Figure 16).



*Figure 16. Suicidal thoughts, plans, and attempts among schoolchildren, by grade, Mongolia, 2010*

A small percentage of students (4.5%) did not have any close friends (Urban: 5.0%; Rural: 4.1%). There was no gender difference, although children aged 12 or younger were apparently more likely than the other age groups not to have close friends.

About two in five students (38.0%) had had a class or lecture about stress and anger management since the beginning of the academic year, irrespective of gender; the percentage declined with increasing grade level, especially after 8<sup>th</sup> grade (Table 10).

*Table 10. Percentage of schoolchildren who were taught stress and anger management during the current school year, by grade and location, Mongolia, 2010*

Grade	Total % (n)	Location	
		Urban	Rural
7 grade	42.7 (580)	39.0 (235)	45.4 (345)
8 grade	44.3 (592)	40.6 (274)	47.1 (318)
9 grade	39.7 (352)	34.4 (130)	44.0 (222)
10 grade	31.4 (255)	26.2 (105)	36.3 (150)
11/12 grade	27.7 (212)	28.3 (133)	27.1 (79)

## Discussion

Adolescents commonly face mental health issues related to their emotions, behaviors, and thoughts. In comparison with other countries, mental health problems are relatively frequent among Mongolian schoolchildren. The percentage of schoolchildren who feel lonely always or usually was according research 6.9% in China, 8.1% in Thailand, 10.6% in the Philippines, and

9.4% in Mongolia. A 2002 Mongolian study found this indicator to be 6.5%. The percentage of teenagers who did not have close friends varies from China, Thailand, and the Philippines from 3.2% to 10.2%; it was 4.5% in Mongolia.

A Chinese study found that 14.3% of students had thought of suicide. This indicator was 8.5% in Thailand, 17.1% in Philippines, 12.6% in Tajikistan, 15.1% in Jordan. In comparison with these studies, our study result (19.3%) was much higher. The percentage of female schoolchildren who thought of suicide was higher than male schoolchildren, a trend similar to other studies. It is particularly concerning that 30.3% of female urban students had seriously thought of suicide and warrants targeted intervention.

Despite a “Mental health” national program that has been implemented for 10 years in Mongolia, this study shows that the effectiveness of this national program is not satisfactory. The issues raised by this study should be addressed through specific interventions aimed at adolescents and require improved coordination of partner organizations.

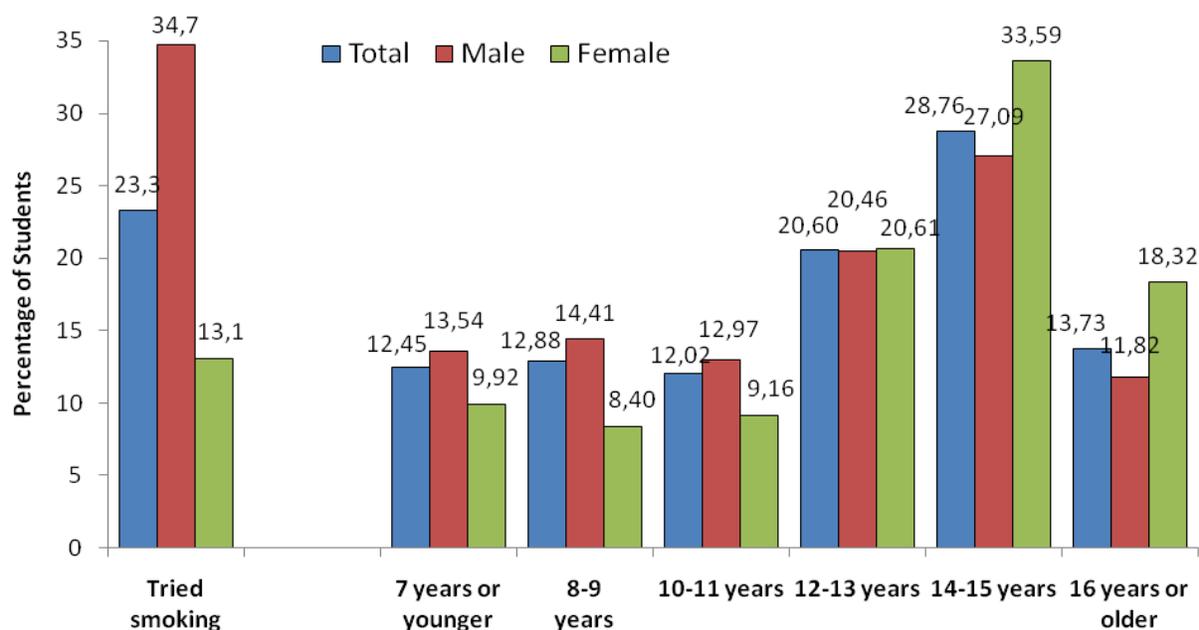
### **Key Findings**

1. Among Mongolian schoolchildren, 9.4% felt lonely always or usually. The percentage of female schoolchildren who feel lonely is 2.7 percentage points higher than male schoolchildren. Feeling loneliness is 4.2 percentage points more prevalent among urban schoolchildren than rural schoolchildren.
2. The percentage of schoolchildren who cannot sleep at night due to worries was 4.6% and 41.8% of them have been bullied by somebody.
3. One in five students (19.3%) thought of suicide in the past year, 12.4% planned to attempt suicide, and 8.6% attempted suicide one or more times. Urban and female students were significantly more likely to think of suicide than rural or male students, though this difference was almost entirely accounted for by urban females.
4. Among the study participants, 4.5% of them do not have close friends.
5. 38.0% of schoolchildren have had classes or lectures on how to handle stress and anger.

## 2.6 TOBACCO USE

About 1.1 billion people worldwide smoke and the number of smokers continue to increase. Among these, about 84% live in developing and transitional economy countries. Currently 5 million people die each year from tobacco consumption, the second leading cause of death worldwide. If consumption patterns continue, an estimated 10 million people will die per year from tobacco consumption by 2020 [33]. Smokers have markedly increased risks of multiple cancers, particularly lung cancer, and are at far greater risk of heart disease, strokes, emphysema and many other fatal and non-fatal diseases. Those who chew tobacco risk cancer of the lip, tongue and mouth. Children are at particular risk from second-hand (passive) smoke and parental smoking. Adverse health effects of second-hand smoke include pneumonia and bronchitis, coughing and wheezing, worsening of asthma, middle ear disease, and possibly neurobehavioral impairment and cardiovascular disease in adulthood. Many studies show that parental smoking is associated with higher youth smoking [34].

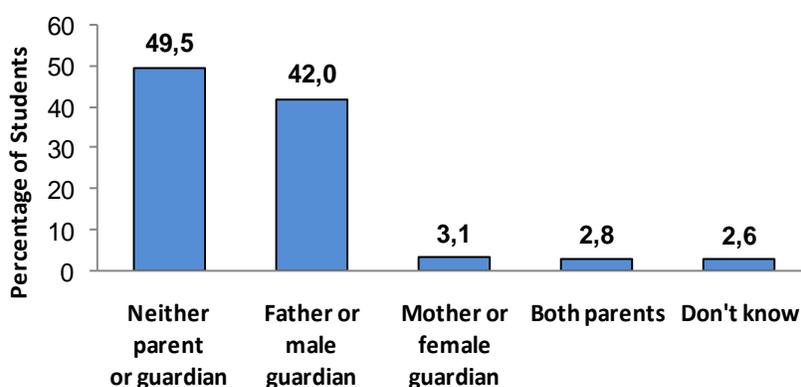
According to this research about one in four Mongolian students (23.3%) has ever smoked a cigarette. More than twice as many males as females had tried smoking (Male: 34.7%; Female: 13.1%). The schoolchildren were most likely to have first smoked a cigarette between ages 12 to 15. There was a modest gender difference regarding the average age for first trying a cigarette (Figure 17).



*Figure 17. Percentage of students who had tried smoking and, amongst those, the age at which they first smoked a cigarette, Mongolia, 2010*

When asked about how many days in last month they had smoked, nine out of ten (89.9%) schoolchildren had not smoked at all. However, 2.1% of schoolchildren had smoked all days in the past month (i.e., were regular smokers). In the past month, 94.1% of schoolchildren had not used tobacco products other than cigarettes, such as pipe tobacco, cigars, and chewing tobacco.

Two thirds of students (66.4%) experienced passive smoking on at least one day of the preceding week. One in five schoolchildren (20.2%) was in an environment where people smoked in their presence on all days of the preceding week. With increasing age and grade level, students are more likely to be in the presence of others who are smoking. Half of all schoolchildren have parents or guardians who smoke, with this being attributable largely to fathers and male guardians (Figure 18). Both parents of 2.8% of schoolchildren smoke.



*Figure 18. Smoking situation of schoolchildren's parents or guardians, Mongolia, 2010*

Table 11 summarizes the data for smoking related indicators. More than half (57.5%) of schoolchildren started smoking when they were 14 years old or younger. Male schoolchildren (61.3%) were significantly ( $p < 0.0001$ ) more likely to start smoking when they were 14 or younger than female schoolchildren (48.0%).

10.1% of schoolchildren smoked one or more times during the past month. This indicator was higher among males and urban students, and was highest among urban male schoolchildren. Nearly one in ten students (7.7%) had tried to quit smoking in the past month, while one in ten have tried to quit smoking in the past one year and this indicator was highest (20.6%) among urban male schoolchildren.

**Table 11. Tobacco and smoking related indicators among schoolchildren, by gender and location, Mongolia, 2010**

Indicators	Location	Total % (CI)*	Male % (CI)	Female % (CI)
Amongst those who had smoked, started smoking at age 14 or younger	Total	57.5 (53.9-61.1)	61.3 (56.9-65.4)	48.0 (41.2-54.8)
	Urban	57.3 (52.4-62.0)	65.1 (59.4-70.4)	43.8 (36.1-51.8)
	Rural	57.9 (52.0-63.7)	56.9 (50.2-63.4)	--
Smoked one or more times in past one month	Total	10.1 (9.0-11.3)	16.9 (15.1-18.9)	4.0 (2.9-5.5)
	Urban	12.7 (10.5-15.2)	19.7 (17.0-22.6)	6.3 (3.8-10.0)
	Rural	8.1 (6.9-9.4)	14.6 (11.9-17.7)	2.2 (1.6-3.1)
Used tobacco products other than cigarettes in past one month	Total	5.9 (4.9-7.1)	9.8 (7.9-12.0)	2.1 (1.5-3.0)
	Urban	5.8 (4.3-7.8)	9.8 (7.5-12.9)	2.1 (1.1-4.1)
	Rural	5.9 (4.6-7.6)	9.7 (7.0-13.3)	2.2 (1.5-3.2)
Tried to quit smoking in past one year	Total	11.0 (9.9-12.3)	18.0 (16.1-20.0)	4.7 (3.5-6.3)
	Urban	13.4 (11.1-16.1)	20.6 (18.0-23.5)	6.8 (4.3-10.7)
	Rural	9.1 (7.9-10.5)	15.7 (13.0-18.9)	3.0 (2.1-4.2)
Experienced secondhand smoking in past one week period	Total	66.4 (64.4-68.3)	70.3 (67.6-72.8)	63.0 (60.2-65.6)
	Urban	73.6 (71.7-75.5)	75.2 (72.4-77.8)	72.3 (69.5-74.9)
	Rural	60.5 (57.0-63.9)	66.2 (61.5-70.6)	55.6 (50.8-60.2)
One or both parents or guardians smoke	Total	47.9 (45.9-49.9)	46.6 (44.3-48.9)	49.1 (46.2-52.0)
	Urban	51.2 (49.1-53.3)	49.0 (45.3-52.7)	53.4 (49.9-56.9)
	Rural	45.2 (41.9-48.7)	44.6 (41.5-47.8)	45.7 (41.0-50.5)

\*95% confidence interval, '--': fewer than 100 students

## Discussion

In Mongolia about 23.3% of schoolchildren have smoked a cigarette. More than twice as many males as females had tried smoking (Male: 34.7%; Female: 13.1%). The male schoolchildren smoked more than female schoolchildren and smoking rate is increased in older grades. Many study result show that youth smoking is associated with parental smoking.

The Mongolian smoking situation amongst schoolchildren is similar to Thailand and China, but less than Jordan and the Philippines (Table 12). Usage of tobacco related products was similar to studies in Uganda and the Philippines, 2.5 times less than in Jordan, and 3.1 times higher than in China. Mongolia has a relatively high level of passive smoke exposure amongst schoolchildren, especially amongst urban students (73.6%).

**Table 12. Comparison of schoolchildren tobacco use and second smoke exposure, by country, 2010**

Country	Smoked cigarettes one or more times in past month, % (CI)*	Used other tobacco products in past month, % (CI)	Experienced secondhand smoke in past week, % (CI)
Jordan	12.6 (10.1-15.1)	15.0 (12.8-17.2)	76.0 (74.7-77.3)
China	8.7 (6.9-10.5)	1.9 (1.3-2.5)	61.5 (56.8-66.2)
Uganda	4.3 (3.0-5.6)	5.5 (4.1-6.9)	43.1 (37.2-49.0)
Thailand	8.8 (7.3-10.3)	7.4 (5.9-8.9)	40.7 (37.8-43.6)
Philippines	14.6 (12.2-17.0)	6.2 (5.0-7.4)	54.2 (51.8-56.6)
<b>Mongolia</b>	<b>10.1 (9.0-11.3)</b>	<b>5.9 (4.9-7.1)</b>	<b>66.4 (64.4-68.3)</b>

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*\*95% Confidence Interval. Source: GSHS reports*

There is some evidence from previous studies in Mongolia that tobacco use is declining among adolescents, but comparison across studies is not possible due to differences in study design. Repeating the GSHS in Mongolia periodically should better allow quantification of trends in tobacco use among adolescent.

**Key Findings**

1. Among all respondents, 23.3% of them answered that they had tried smoking. More than twice as many males as females had tried smoking (Male: 34.7%; Female: 13.1%). Most of the smokers, regardless of gender, have started smoking between the ages of 14-15.
2. One in ten schoolchildren smoked one or more times in the past month; one in fifty smoked every day in the past month. About one in twenty schoolchildren have tried tobacco related products.
3. Two thirds of schoolchildren experienced secondhand smoking (66.4%) and half (47.9%) have one or more parents or guardians who smoke.

## 2.7 ALCOHOL USE

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Alcohol use causes about 20% to 30% of esophageal cancer, liver disease, homicide and other intentional injuries, epilepsy, and motor vehicle accidents worldwide. Heavy alcohol use places one at a greater risk for cardiovascular disease [35,36]. Worldwide, alcohol use causes 3% of deaths annually (1.8 million), which is equal to 4% of the global disease burden. Intentional and unintentional injuries are far more common among youth and young adults. Unintentional injuries are the leading cause of death among 15 to 25 year olds and many of these injuries are related to alcohol use [37,38]. Young people who drink are more likely than those who do not drink to use tobacco and other drugs and engage in risky sexual behavior. Problems with alcohol can impair adolescents' psychological development and negatively influence both the school environment and leisure time [39,40].

In this chapter, we determined the usage of alcoholic drinks by Mongolian adolescents. We defined one drink as follows: one glass of wine, bottle of beer, shot glass of alcohol, liquor and other alcoholic beverages. Having a few sips of alcohol was not considered a drink.

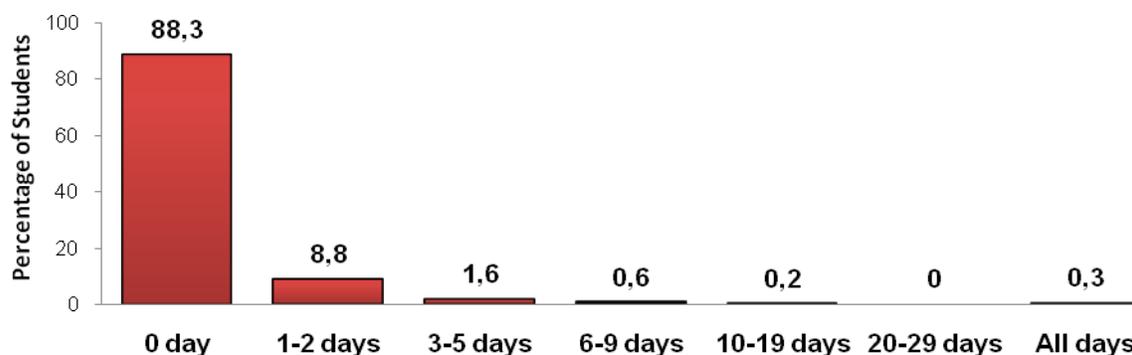
### 2.7.1 Adolescent usage of alcoholic drinks

Nearly one third of students (29.1%) had used alcoholic drinks. Male usage of alcoholic drinks is 9.3 percentage points higher than female usage. A small fraction of schoolchildren first tried alcoholic drinks when they were 7 years old or younger (3.4%). One in ten schoolchildren first tried alcoholic drinks when they were 16 years old or older (Table 13).

*Table 13. Schoolchildren usage of alcoholic drinks, by gender and age, Mongolia, 2010*

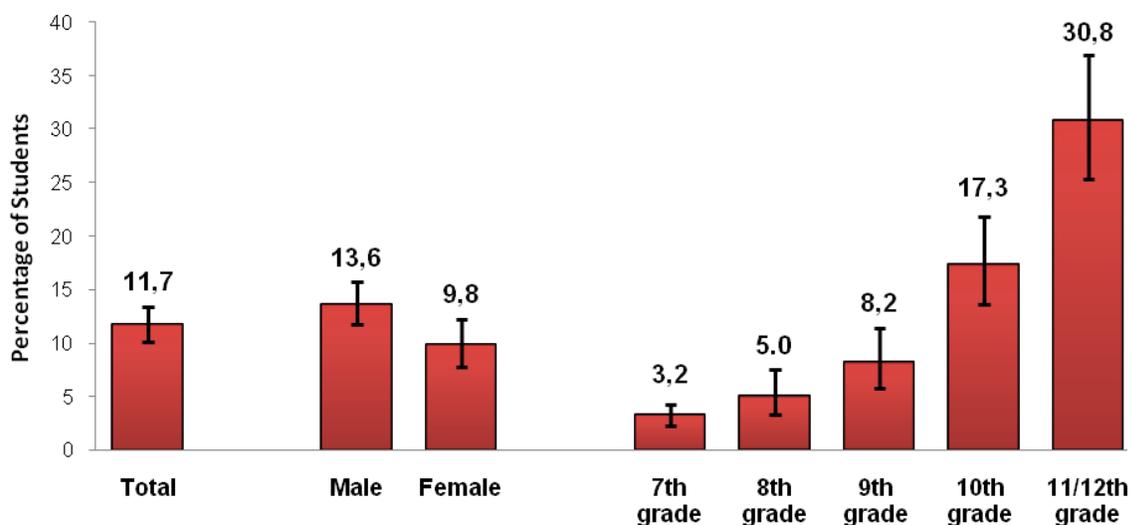
Age when first tried an alcoholic drink	Total % (n)	Male % (n)	Female % (n)
Never tried	70.9 (3540)	65.9 (1399)	75.2 (2124)
7 years old or younger	3.4 (168)	3.9 (83)	2.8 (81)
8-9 years old	1.8 (85)	2.2 (45)	1.4 (39)
10-11 years old	1.6 (80)	2.1 (45)	1.2 (35)
12-13 years old	3.7 (185)	4.6 (101)	3.0 (84)
14-15 years old	8.4 (383)	10.7 (212)	6.4 (170)
16 years old or older	10.3 (427)	10.6 (186)	10.1 (241)

About one in ten children (11.7%, CI 10.1-13.4) had at least one alcoholic drink in the past month, although most (8.8%) drank on 1-2 days of the past month period (Figure 19).



*Figure 19. Number of days having at least one alcoholic beverage during the past month, Mongolia, 2010*

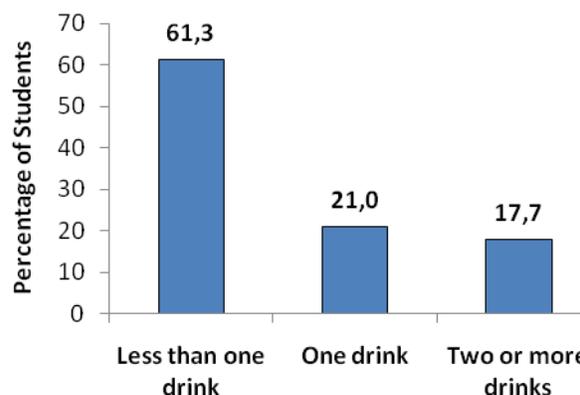
Alcohol usage increases with increasing grade level (Figure 20).



*Figure 20. Percentage of schoolchildren who had at least one alcoholic drink in the past month, by gender and grade, ( $\pm 95\%$  CI) Mongolia, 2010*

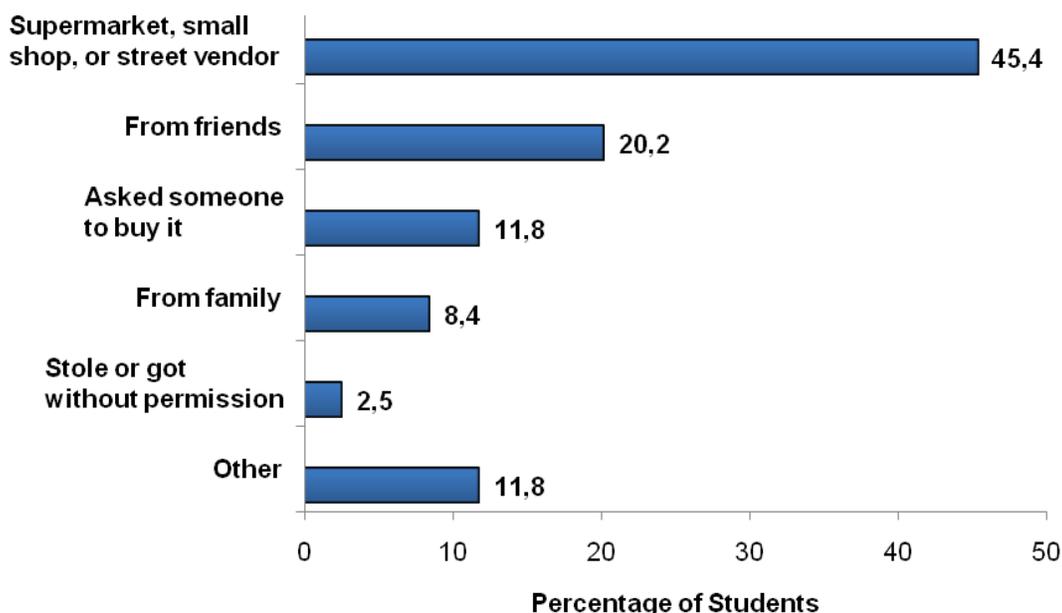
Amongst those who had had a drink in the past month, about 61% usually had less than one drink, 21% had one drink, and 17.7% had two or more drinks (Figure 21). The number of schoolchildren having two or more drinks was very small for grades 7 to 9, but grew substantially in 10<sup>th</sup> and 11/12<sup>th</sup> grades.

Amongst the approximately 12% of students who drank in the past month, buying alcoholic drinks from supermarkets, small shops, or street vendors



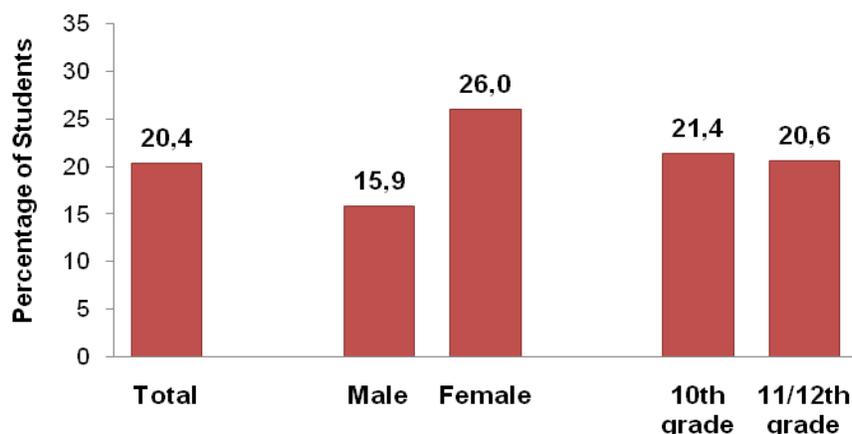
*Figure 21. Schoolchildren who drank alcohol in the past month (by number of drinks), Mongolia, 2010*

was most common (Figure 22).



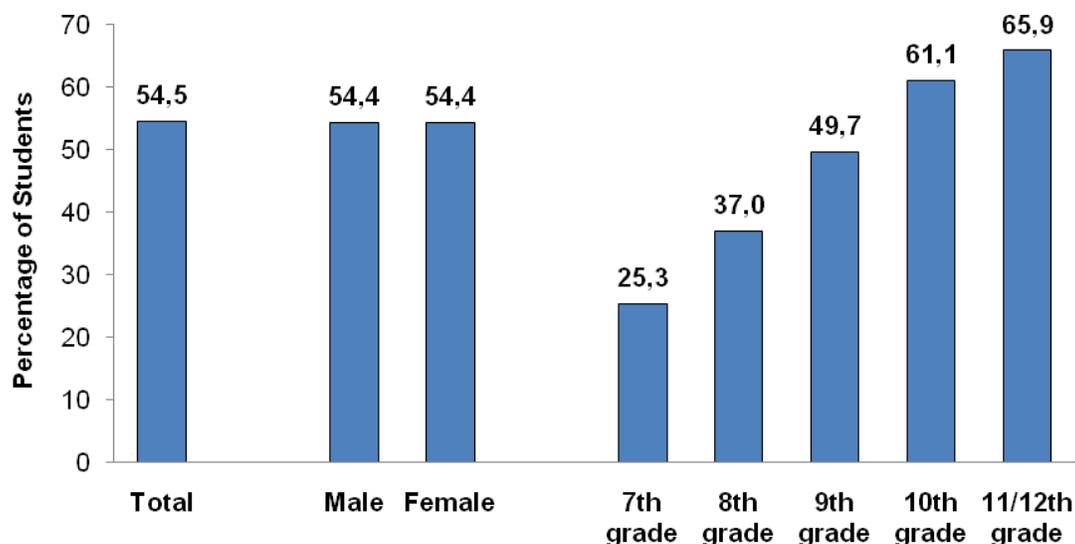
*Figure 22. Location of alcohol purchase amongst those who used alcoholic drinks in past one month, Mongolia, 2010*

One in five students (20.4%) who drank alcohol in the past month got the alcoholic beverages from their friends, particularly among 10<sup>th</sup> grade female students (Figure 23).



*Figure 23. Percentage of students who got alcoholic beverages from their friends, amongst students who drank alcohol in the past month, by gender and grade, (data shown for grades with over 100 respondents) Mongolia, 2010*

Amongst those who drank alcoholic beverages, half (54.5%) used beer (Figure 24). Figure 24 shows that the proportion of alcohol users that used beer increased with increasing grade level.



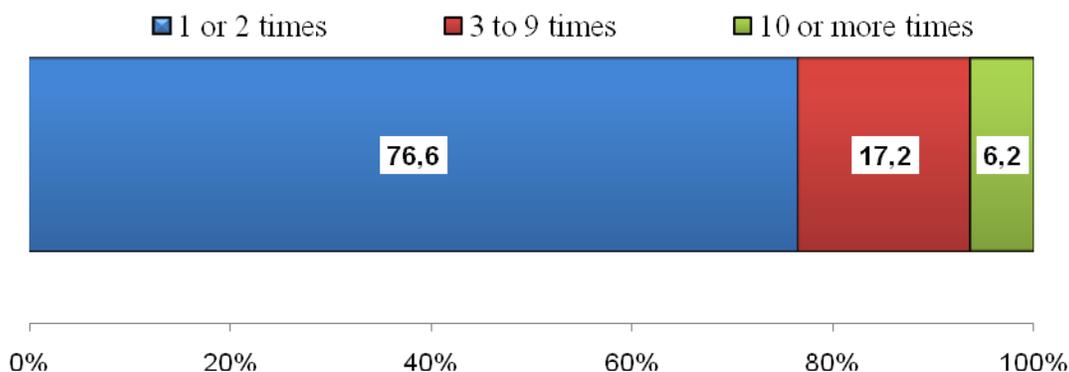
*Figure 24. Percentage of schoolchildren who usually drink beer, by gender and grade, Mongolia, 2010*

More than half of schoolchildren (59.7%) who used alcoholic drinks use them in their own or a friend's home. One in ten students who used alcohol does so in a pub or disco. There were modest differences between males and females (Table 14). More female students (30.0%) used alcohol at their own home than males (23.6%), who (11.2%) in turn preferred more than females (5.1%) to use alcohol outside, in the street.

*Table 14. Location of alcohol usage by schoolchildren, Mongolia, 2010*

Place where they use alcohol	Total		Male		Female	
	%	n	%	n	%	n
At home	26.8	320	23.6	141	30.0	176
At friend's home	31.2	372	31.3	187	31.2	183
At school	3.1	37	4.0	24	2.0	12
Outside, in the street	8.2	98	11.2	67	5.1	30
At pub or disco club	12.8	153	13.4	80	12.3	72
At restaurant	6.3	75	4.5	27	8.1	47
Other	11.6	138	12.0	72	11.3	66

We determined the extent to which the schoolchildren drink alcoholic beverages until the point of becoming "really drunk" (staggering when walking, not being able to speak correctly, and vomiting are signs of being really drunk). One in eight (12.9%) schoolchildren had used alcoholic beverages until they were drunk. Most (76.6%) who had done so were drunk 1-2 times. However, 37 students (6.2%) indicated they had been drunken 10 or more times in their life (Figure 25).



**Figure 24. Percentage of students getting “really drunk” 1-2, 3-9, or 10+ times, amongst students who indicated they had gotten drunk at least once, Mongolia, 2010**

Alcoholic beverage usage is shown in Table 15. Amongst those who ever had a drink, about one third (31.8%, CI 30.8-41.8) had their first drink before 14 years of age. The percentage of males who started to use alcoholic beverages before 14 years old, had ever been drunk, and got into trouble as a result of drinking was significantly higher than females.

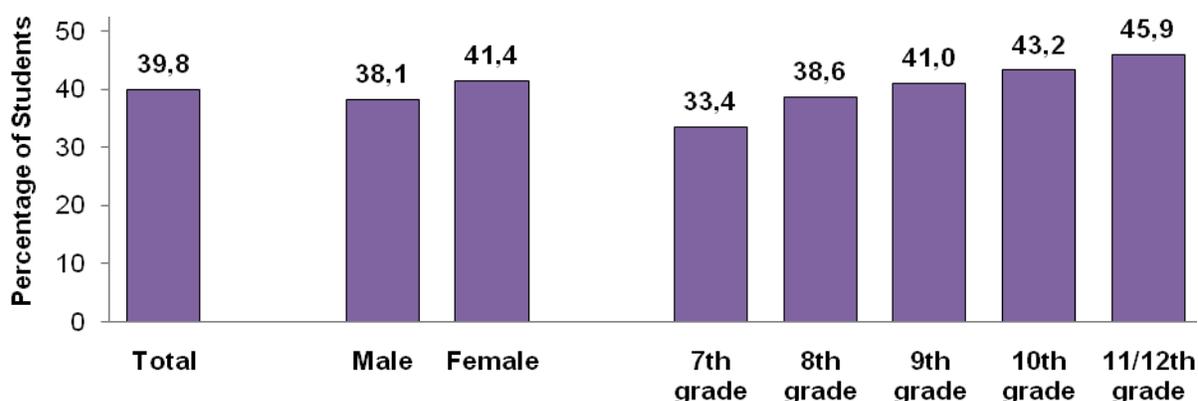
**Table 15. Alcohol usage of students, by gender, Mongolia, 2010**

Indicator	Total % (CI)*	Male % (CI)	Female % (CI)
Really drunk one or more times in life	12.9 (11.1-15.0)	16.3 (14.1-18.6)	9.9 (7.8-12.4)
Amongst those who ever had a drink, had first drink before age 14 years	36.1 (30.8-41.8)	37.1 (32.0-43.8)	33.7 (27.5-40.5)
Got into trouble with family/friends, missed class, fought with someone because of alcohol	4.9 (3.9-6.1)	7.2 (5.7-9.1)	2.7 (1.8-4.0)

\*95% confidence interval

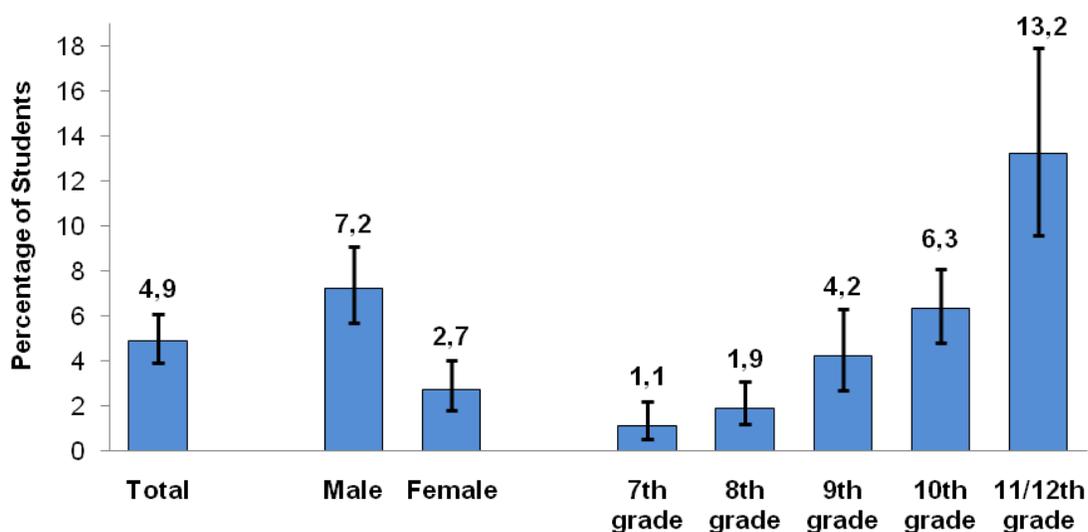
### 2.7.2 Parental alcohol usage and negative consequences from drinking

Overall, about two in five students (39.8%) perceived that their parents drank alcohol. Interestingly, the percentage of students saying that their parents or guardians drank alcohol increased with increasing grade level (Figure 26).



*Figure 25. Percentage of students indicating that their parents or guardians drink alcoholic beverages, Mongolia, 2010*

When asked whether they had got into trouble with family or friends, missed school, or got into fights as a result of drinking alcohol, 4.9% of students responded that they had at least one time. The percentage of students having problems as a consequence of drinking increased with increasing grade level and was significantly higher among males (Figure 27). Amongst those students who had problems due to drinking, 79.7% said it had happened 1-2 times, while 20.3% said it had happened 3 or more times.



*Figure 26. Percentage of students absent from class, late to class, fought with someone, or got into trouble with parents or friends due to drinking, ( $\pm 95\%$  CI) Mongolia, 2010*

### 2.7.3 Exposure to information on alcohol in the mass media and school

A very high percentage of schoolchildren (82.8%) had seen advertisements promoting alcohol in the mass media (e.g., TV, radio, and internet); urban children were especially likely to have seen ads about alcohol (90.2%) (Table 16). About half of all students (48.4%) said they have seen mass media alcohol ads “a lot,” while 34.3% said they had seen “a few” ads. 31.5% of students had seen “a lot” of anti-alcohol advertisements in the mass media, while 42.0% had seen a few. More than half (58.4%) of students had attended a school lecture on the damage of alcoholic beverages in the survey year. About 50% of respondents of schoolchildren in 7<sup>th</sup> and 8<sup>th</sup> grade and more than 60% of schoolchildren in 9<sup>th</sup> and 10<sup>th</sup> grade attended lectures on the damage of alcoholic beverages.

*Table 16. Information gathering about alcoholic beverages by schoolchildren, Mongolia, 2010*

Indicator	Total		Urban		Rural	
	%	(n)	%	(n)	%	(n)
Seen ads for alcoholic beverages in the mass media	82.8	(4288)	90.2	(2283)	77.0	(2005)
Seen anti-alcohol ads in the mass media	73.5	(3812)	76.3	(1933)	71.4	(1879)
Lectured on the harms of alcohol in school	58.4	(2985)	57.2	(1433)	59.3	(1552)

### Discussion

Nearly one third of Mongolian students (29.1%) had used alcoholic beverages, while one in ten (11.7%) had at least one alcoholic beverage in the month preceding the survey. Mongolian schoolchildren drinking prevalence is comparable to levels in Thailand and China (15.6%) and substantially less than in the Philippines (52.4%). As with other countries, alcohol use is significantly higher among male schoolchildren.

One in ten (12.9%) Mongolian schoolchildren said that they had used alcoholic beverages until they were drunk. This is 1.5 times less than Thailand level (19.8% ± 2.5%), 1.9 times higher than the Philippines level, and 1.5 times higher than the Chinese level (8.4% ± 2.3%).

### Key Findings

1. Nearly one in three students (29.1%) had ever used alcoholic beverages. The youngest age of first using alcoholic beverages was 7 years old. Most respondents first start to drink alcoholic beverages at age 16 or older.
2. One in ten (11.7%) students had at least one alcoholic beverage in the month preceding the survey. Males are more likely to drink alcoholic beverages than females.
3. Beer is the most commonly used alcoholic beverage. The most common place for obtaining alcohol is from stores and street vendors; getting alcohol from friends is the second most common.
4. The most common drinking location for schoolchildren was at their own or a friend’s home.

5. Two out of five students indicated that one or both of their parents or guardians drinks alcoholic beverages.

## 2.8 DRUG USE

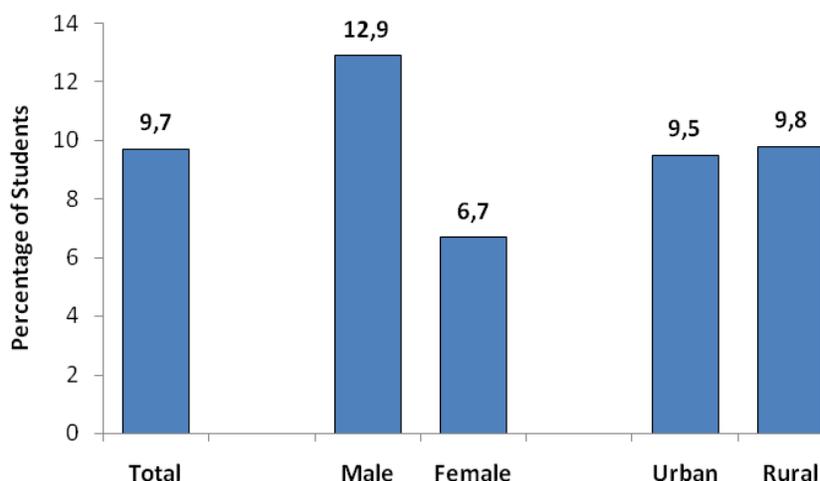
### 2.8.1 General drug use

Studies such as the National Survey on Drug Use and Health, formerly called the National Household Survey on Drug Abuse, reported by the Substance Abuse and Mental Health Services Administration, indicate that some children are already abusing drugs by age 12 or 13, which likely means that some may begin even earlier. Early abuse includes such drugs as tobacco, alcohol, inhalants, marijuana, and psychotherapeutic drugs. If drug abuse persists into later adolescence, abusers typically become more involved with marijuana and then advance to other illegal drugs, while continuing their abuse of tobacco and alcohol. Studies have also shown that early initiation of drug abuse is associated with greater drug involvement, whether with the same or different drugs. Note, however, that both one-time and long-term surveys indicate that most youth do not progress to abusing other drugs. But among those who do progress, their drug abuse history can vary by neighborhood drug availability, demographic groups, and other characteristics of the abuser population. In general, the pattern of abuse is associated with levels of social disapproval, perceived risk, and the availability of drugs in the community [50].

Marijuana is the most commonly used illicit drug among youth in the United States. Current marijuana use decreased from 27% in 1999 to 21% in 2009. Current cocaine use increased from 2% in 1991 to 4% in 2001 and then decreased from 2001 (4%) to 2009 (3%) [51,52].

*(Marijuana, cocaine, inhalants, hashish, cannabis, poppy, opium, or sedatives)*

One in ten students (9.7%) has used drugs at least once. Males were significantly more likely to have used drugs than females (Figure 28).



*Figure 27. Percentage of schoolchildren who had used drugs (marijuana, cocaine, inhalants, hashish, cannabis, poppy, opium, or sedatives) in their lifetime, by gender and location, Mongolia, 2010*

Amongst those who had ever used drugs, the percentage that first used drugs before 14 years of age was fairly evenly distributed across genders and locations (Table 17). Half of those who had used drugs first used drugs before the age of 14.

**Table 17. Amongst students who had used drugs, percentage who used before 14 years of age, by gender and location, Mongolia, 2010**

Gender	Mongolia, n=428	Urban, n=214	Rural, n=214
	% (CI)*	% (CI)	% (CI)
Total	50.0 (42.3-57.6)	46.8 (37.6-56.2)	52.6 (40.0-64.8)
Male	48.8 (39.6-58.1)	47.3 (34.3-60.7)	50.0 (36.3-63.6)
Female	51.0 (40.2-61.7)	--	--

\*95% Confidence Interval. '--': fewer than 100 students

### 2.8.2 Usage of marijuana

Marijuana usage (also known as cannabis or hashish) was low; 2.6% of students had used marijuana one or more times in their life; 1.8% had used marijuana in the past month (Table 18). Most marijuana users used it 1-2 times.

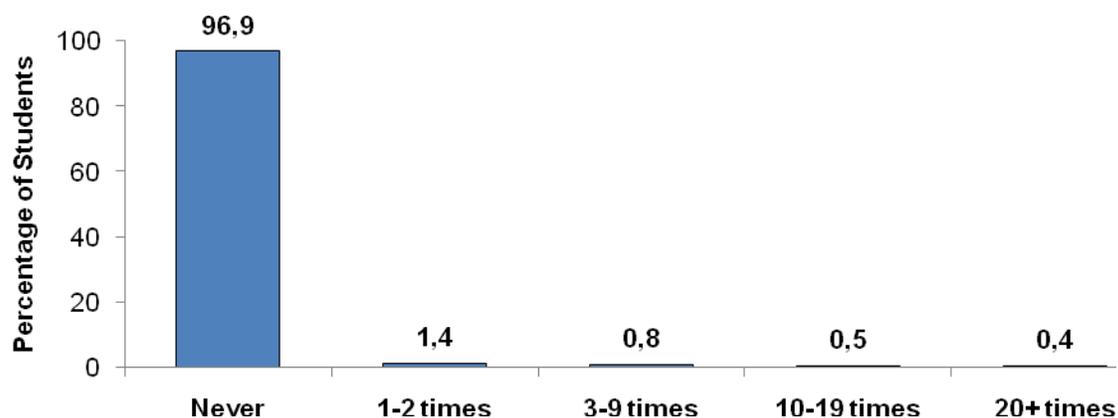
**Table 18. Usage of marijuana, by location and gender, Mongolia, 2010**

Gender	Mongolia % (CI)*	Urban % (CI)	Rural % (CI)
<b>Used marijuana at least once in lifetime</b>			
Total	2.6 (2.0-3.3)	2.3 (1.6-3.4)	2.8 (2.0-3.9)
Male	3.9 (3.0-5.1)	4.0 (2.7-5.8)	3.8 (2.6-5.6)
Female	1.3 (0.8-2.0)	0.8 (0.3-1.8)	1.7 (1.0-2.8)
<b>Used marijuana in last month</b>			
Total	1.8 (1.4-2.4)	1.4 (0.9-2.3)	2.2 (1.5-3.0)
Male	2.6 (1.8-3.7)	2.4 (1.4-4.0)	2.8 (1.6-4.6)
Female	1.1 (0.7-1.6)	0.6 (0.2-1.5)	1.5 (1.0-2.4)

\*95% Confidence Interval

### 2.8.3 Sedative drug usage

Drugs with sedative effects (seduksin, dimedrol, or doroperidol) were used infrequently, with 96.9% of students never using (Figure 29). Most students who used drugs with sedative effects used them 1-2 times in their lifetime.



*Figure 28. Usage of drugs with sedative effects, Mongolia, 2010*

### Discussion

Based on our survey, Mongolia 2010, 9.7% of schoolchildren have used drugs at least once and 2.6% of them used one or more times during their life and 3.1% of students had used sedative drugs, respectively. Drug usage of Mongolian schoolchildren was slightly higher than schoolchildren in Thailand (6.1%) and the Philippines (6.7%), and substantially higher than schoolchildren in China (0.9%) and Tajikistan (1.1%).

### Key Findings

1. One in ten (9.7%) students has used drugs at least once in their lifetime. General drug usage was higher among urban schoolchildren and many first used drugs before 14 years of age.
2. 2.6% of students had used marijuana; 3.1% of students had used drugs with sedative effects (such as seduksin, dimedrol, or doroperidol)

## 2.9 SEXUAL BEHAVIORS

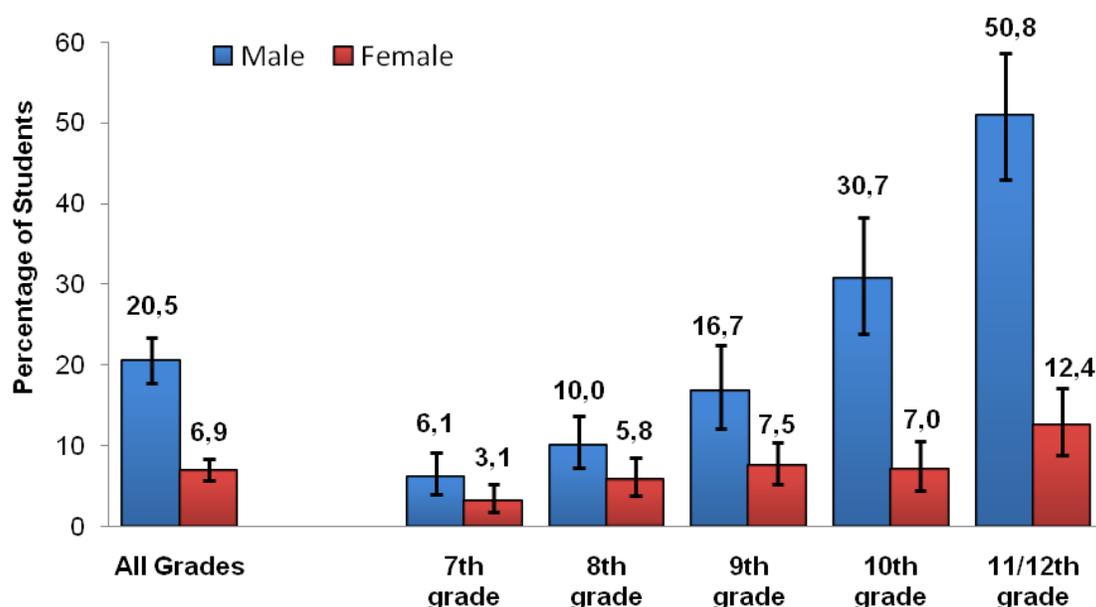
An estimated 33 million people worldwide are infected with HIV; 5.4 million of them are 15-24 year olds. Every year, 2.7 million people are newly infected and 2 million people die due to HIV/AIDS [41].

Studies show that adolescents who begin sexual activity early are likely to have sex with more partners, to have sex with partners who have been at risk of HIV exposure, and to have unprotected sex (i.e., not use condoms). In many countries, HIV/AIDS is reducing average life expectancy, threatening food security and nutrition, dissolving households, overloading the health care system, reducing economic growth and development, and reducing school enrolment and the availability of teachers [42].

HIV/AIDS has yet to affect Mongolia in a profound way. However, existing research has shown that unsafe sexual behavior is common among the general adult population in Mongolia. Safe sexual behaviors will be critical to avoid an HIV/AIDS epidemic in Mongolia. In this chapter, sexual behavior, condom usage and HIV/AIDS knowledge were assessed.

### 2.9.1 Sexual behaviors

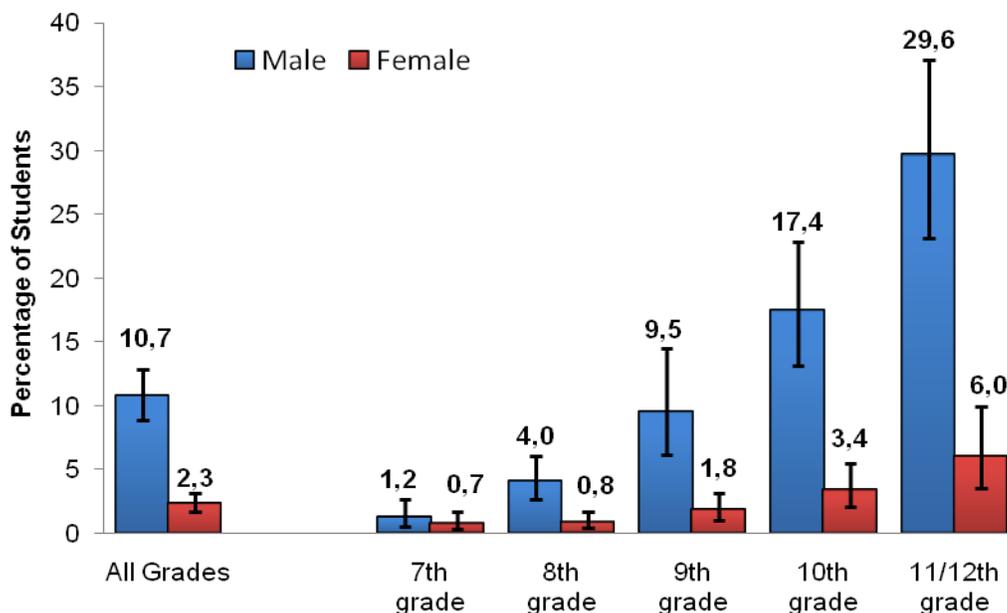
More than one in eight students (13.4%) had ever had sexual intercourse. The percentage of children who had had sexual intercourse increased profoundly with increasing grade level, and was substantially different by gender (Figure 30).



*Figure 29. Percentage of students who had ever had sexual intercourse, by gender and grade level, ( $\pm 95\%$  CI) Mongolia, 2010*

About 6% of schoolchildren under 12 years old, 7% of 13-15 years old schoolchildren, and 23.0% of schoolchildren 16 years old or older have had sexual intercourse in Mongolia. There was little difference between urban and rural areas.

Nearly half of those students who had ever had sexual intercourse (45.1%) have had one partner, with one in five students (20.4%) having had two partners and declining numbers of students having more than two partners. Amongst all students, the percentage of students having sex with two or more partners increases with grade level and is substantially higher among males (Figure 31).



*Figure 30. Percentage of students who had sexual intercourse with two or more people during their life, by gender and grade level, ( $\pm 95\%$  CI) Mongolia, 2010*

### 2.9.2 Usage of condoms and contraceptives

Two in five students (43.3%) who had had sexual intercourse did *not* use a condom in their last sexual encounter. Two thirds of students (65.4%) who had had sexual intercourse did not use any other (besides condoms) method of contraception. Contraceptive use was much higher among rural students than urban students, though the variability in both groups was high. One quarter of students who had had sexual intercourse had their first sexual encounter before age 14.

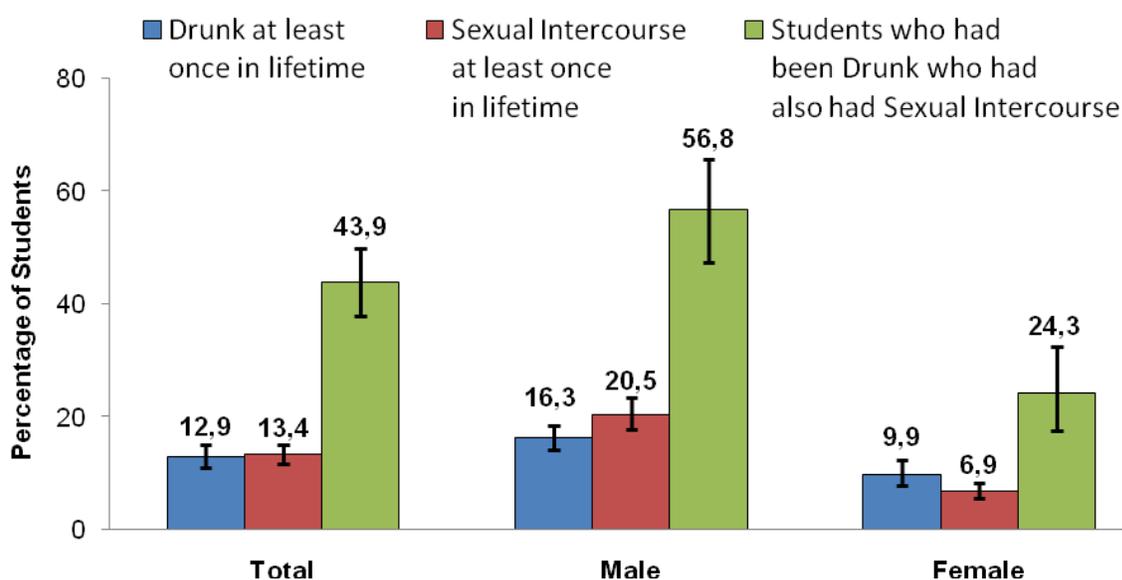
Table 19 summarizes the sexual behavior findings for urban and rural students.

**Table 19. Sexual behavior of students, by gender and location, Mongolia, 2010**

Indicator		Total % (CI)*	Male % (CI)	Female % (CI)
Had sexual intercourse	Urban	14.1 (12.1-16.4)	21.1 (18.5-23.9)	7.6 (5.5-10.5)
	Rural	12.9 (10.5-15.8)	19.9 (15.6-25.2)	6.3 (4.8-8.2)
Sexual intercourse before age 14	Urban	28.7 (22.9-35.4)	27.9 (21.7-35.0)	--
	Rural	29.2 (22.8-36.6)	25.7 (18.5-34.6)	--
More than two sexual partners	Urban	7.2 (6.0-8.5)	11.8 (9.5-14.6)	--
	Rural	5.7 (4.3-7.5)	9.8 (7.1-13.3)	--
Used condom in last sexual intercourse	Urban	58.1 (50.5-65.4)	60.5 (53.7-67.0)	--
	Rural	57.3 (48.3-65.9)	60.9 (49.4-71.3)	--
Used contraception method in last sexual intercourse	Urban	25.6 (19.5-33.0)	25.0 (18.6-32.7)	--
	Rural	42.6 (34.6-50.9)	39.3 (30.1-49.3)	--

\*95% Confidence Interval. '--': fewer than 100 students

Two in five students (43.9%) who had been drunk at least once in their lifetime had also had sexual intercourse (Figure 32).



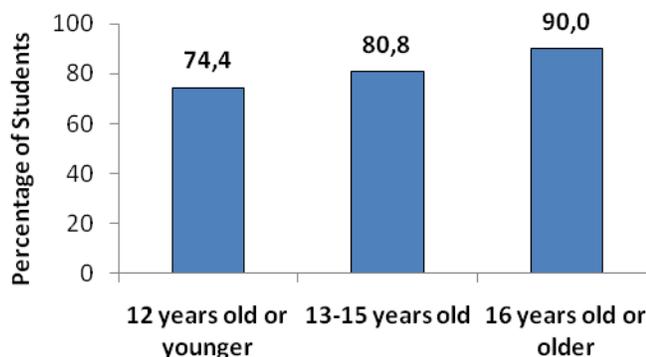
**Figure 31. Relationship between getting drunk and having sexual intercourse: percentage of students who got "really drunk" at least once in lifetime, who had sexual intercourse at least once in lifetime, and those who had been drunk who also had ever had sexual intercourse, by gender, ( $\pm 95\%$  CI) Mongolia, 2010**

The percentage of students who had ever been drunk and also had ever had sexual intercourse was significantly higher among males (56.8%, CI 47.3-65.7) than females (24.3%, CI 17.6-32.4) ( $p < 0.05$ ).

### 2.9.3 Knowledge of HIV/AIDS

Most students (84.1%) had heard of HIV infection or the disease called AIDS. The percentage of schoolchildren who heard about HIV/AIDS increased with age (Figure 33).

Two out of three students (64.0%) had been taught about prevention of HIV/AIDS in the current academic year at school. However, 23.8% had not heard about HIV/AIDS prevention and 12.2% were unsure. Most schoolchildren in 9<sup>th</sup>-11<sup>th</sup> grades (73.5%-75.8%) got information about prevention of HIV/AIDS in this academic year at school; 38.1% of schoolchildren in 7<sup>th</sup> grade and 64.3% of schoolchildren in 8<sup>th</sup> grade got such information. Nearly half of students (45.3%) had been taught about the signs and symptoms of HIV/AIDS in their classes during the academic year. One out of five schoolchildren had discussed HIV/AIDS with their parents or guardians.



**Figure 32. Percentage of schoolchildren who had heard about HIV/AIDS, Mongolia, 2010**

Table 20 summarizes the awareness, education, and discussion at home of HIV/AIDS amongst rural versus urban adolescents.

**Table 20. Awareness, education, and discussion of HIV/AIDS amongst schoolchildren, by gender and location, Mongolia, 2010**

Indicator		Total % (CI)*	Male % (CI)	Female % (CI)
Heard about HIV/AIDS	Urban	89.4 (85.9-92.0)	88.7 (85.2-91.5)	89.9 (86.0-92.9)
	Rural	79.8 (77.4-82.0)	79.1 (75.3-82.4)	81.0 (78.1-83.5)
Taught during academic year about avoiding HIV/AIDS	Urban	63.5 (57.4-69.1)	64.1 (58.4-69.5)	62.8 (55.8-69.3)
	Rural	64.4 (58.3-70.0)	62.1 (56.0-67.8)	66.7 (60.0-72.8)
Taught during academic year about signs/symptoms of HIV/AIDS	Urban	41.7 (37.2-46.3)	43.8 (38.8-48.9)	39.6 (34.5-45.0)
	Rural	48.3 (42.1-53.8)	47.6 (42.0-53.4)	49.0 (42.7-55.4)
Discussed HIV/AIDS with parents or guardians	Urban	19.9 (17.8-22.2)	19.4 (16.1-23.1)	20.4 (17.7-23.4)
	Rural	24.2 (20.8-27.9)	22.8 (18.9-27.1)	25.4 (22.2-28.8)

\*95% Confidence Interval

### Discussion

According to our survey, 13.4% of survey respondents had ever had sexual intercourse and it was significantly higher among males than females (20.5% versus 6.9%), a finding similar to other countries. This is thought to be because males begin sexual activity at an earlier age and engage in sexual intercourse with older and non-schoolchildren women. Response bias could be responsible in part for the large differential between males and females. Follow-up research is needed to assess the nature of this gender difference. This also suggests that efforts to promote healthy sexual behaviors in adolescents should be specifically targeted at males. Sexual behaviors

varied widely between participating GSHS countries, although direct comparison was not possible in many cases because some surveys asked about sexual behaviors in the preceding year while our survey asked about lifetime behaviors.

In addition, about half of (43.3%) of respondents who had had sexual intercourse did not use a condom in their last sexual encounter, putting them at risk for pregnancy and STI transmission. Condom usage by Mongolian schoolchildren was lower than Tajikistan (57.7%) and Thailand (61.0%), further emphasizing the need for better availability and promotion of condoms in Mongolia.

There was an association between getting drunk and having sexual intercourse, although causation or the direction of this association is impossible to determine from this survey and suggests an area for further research. Regardless, this result indicates that programs to address sexual intercourse and excessive drinking should do so while recognizing the interrelated nature of these behaviors.

### **Key Findings**

1. More than one in ten students (13.4%) had ever had sexual intercourse, increasing with grade level. Males were significantly more likely to say they had had sexual intercourse than females (20.5% vs. 6.9%).
2. More than half of respondents who had had sexual intercourse (54.9%) did so with two or more sexual partners. In addition, 43.3% of respondents who had had sexual intercourse did not use a condom in their last sexual encounter, putting them at risk for pregnancy and STI transmission.
3. Most students (84.1%) had heard of HIV infection or the disease called AIDS; however, 64.0% of all students (around 74% in 9-11<sup>th</sup> grades) had been taught about prevention of HIV/AIDS in the current academic year at school.

## 2.10 PHYSICAL ACTIVITY

Participating in adequate physical activity throughout life and maintaining normal weight are the most effective ways to prevent many chronic diseases, including cardiovascular disease and diabetes. The prevalence of type 2 diabetes is increasing globally, especially amongst children and adolescents [43]. Participating in adequate physical activity also helps build and maintain healthy bones and muscles, control weight, reduce blood pressure, ensure a healthy blood profile, reduce fat, and promote psychological well-being [44].

Roughly 60% of the world's population does not get enough physical activity. Patterns of physical activity acquired during childhood and adolescence are likely to be maintained into adulthood; thus, sedentary behavior adopted at a young age has lifelong adverse consequences [45].

In this study (in Mongolia,) one quarter of students (27.4%) did physically active movement for at least 60 minutes five or more days in the last week. 18.8% of students did at least 60 minutes physically active movement for all seven days of the last week. Urban and rural schoolchildren had significantly different levels of daily physical activity, with urban schoolchildren more physically active on a daily basis than rural schoolchildren (Urban: 20.5%; Rural: 17.5%;  $p < 0.003$ ).

Table 21 summarizes indicators related to physical activity.

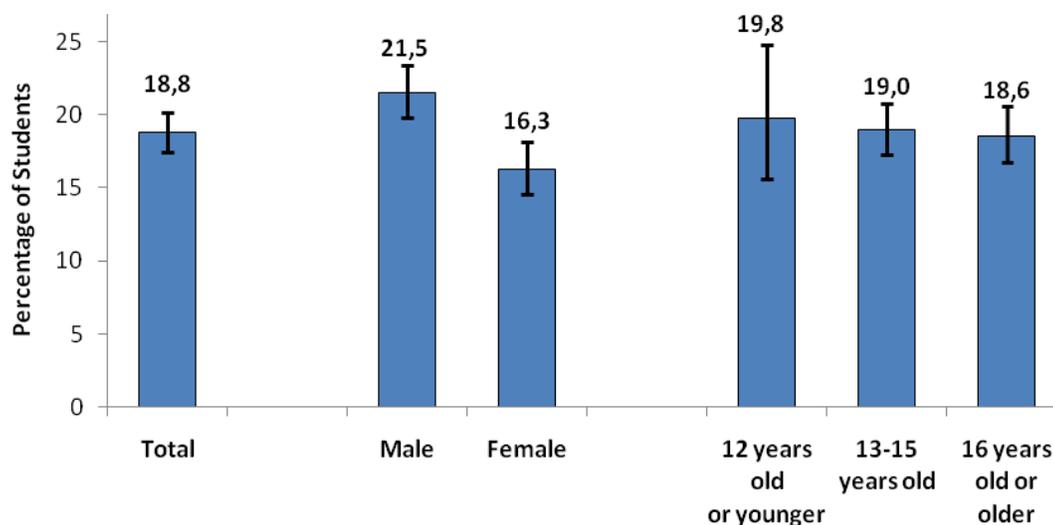
**Table 21. Physical and sitting activities among schoolchildren, by gender, Mongolia, 2010**

Indicator	Total % (CI)*	Male % (CI)	Female % (CI)
Did at least 60 minutes of physically active movement five or more days in last one week	27.4 (25.6-29.2)	29.3 (26.4-32.3)	25.6 (23.7-27.6)
Did at least 60 minutes of physically active movement all seven days in last one week	18.8 (17.5-20.2)	21.5 (19.8-23.4)	16.3 (14.6-18.2)
Did not walk or ride bicycle from home to school in last one week	21.8 (18.5-25.4)	23.9 (20.7-27.4)	19.8 (16.4-23.8)
Attended physical education class 3 or more days per week	6.4 (5.2-7.8)	6.7 (5.6-8.1)	5.9 (4.3-8.0)
Attended physical education class 5 days per week	3.2 (2.6-4.1)	3.2 (2.6-4.0)	3.2 (2.2-4.4)
Spends 3 or more hours a day watching television, playing computer games, talking with friends, or doing other sitting activities	41.7 (39.2-44.2)	40.3 (37.8-42.8)	43.2 (39.8-46.6)
Play on one or more sports teams	64.5 (66.2-66.8)	72.4 (69.9-74.8)	57.5 (54.2-60.7)

\*95% Confidence Interval

The percentage of students who are active for 60 minutes on a daily basis remained roughly constant across age groups, although there was large variability in the 12 years old or under age

group. Males were significantly more likely than females to do physical activity daily ( $p < 0.001$ ) (Figure 34).

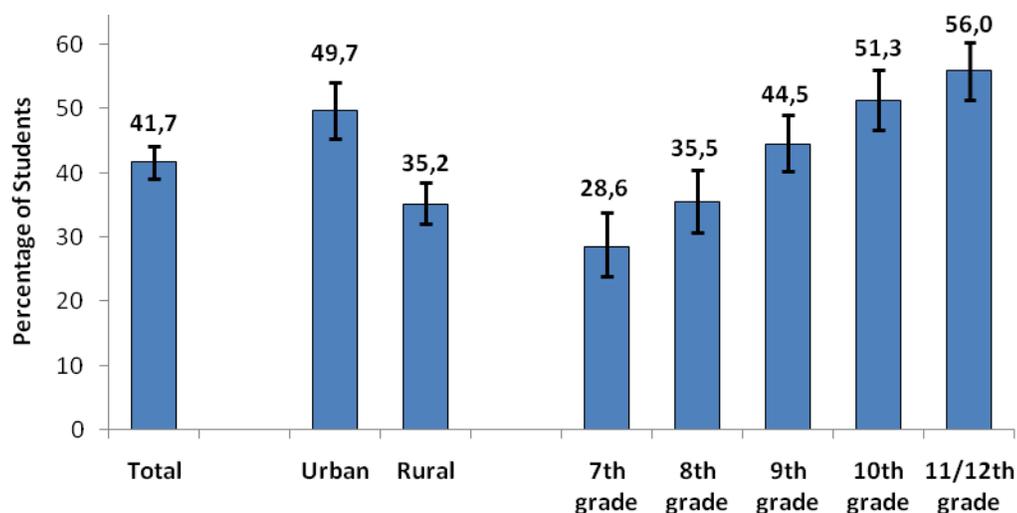


**Figure 33. Percentage of schoolchildren who did at least 60 minutes physical movement every day of last week, by gender and age, ( $\pm 95\%$  CI) Mongolia, 2010**

One in five students (21.8%; Male: 23.9%; Female: 19.8%) did not walk or bike between school and home in the week preceding the survey. There was a strong declining trend with increasing age: 30.5% did not walk or bike among 12 and younger age group, 23.3% among 13-15 age group, and 18.7% among 16 and above age group. In other words, more students walk or bike to school as they get older. More urban students (29.7%) than rural students (15.4%) did not walk or bike between school and home; in other words, rural students were significantly more likely to walk or bike between home and school ( $p < 0.0001$ ).

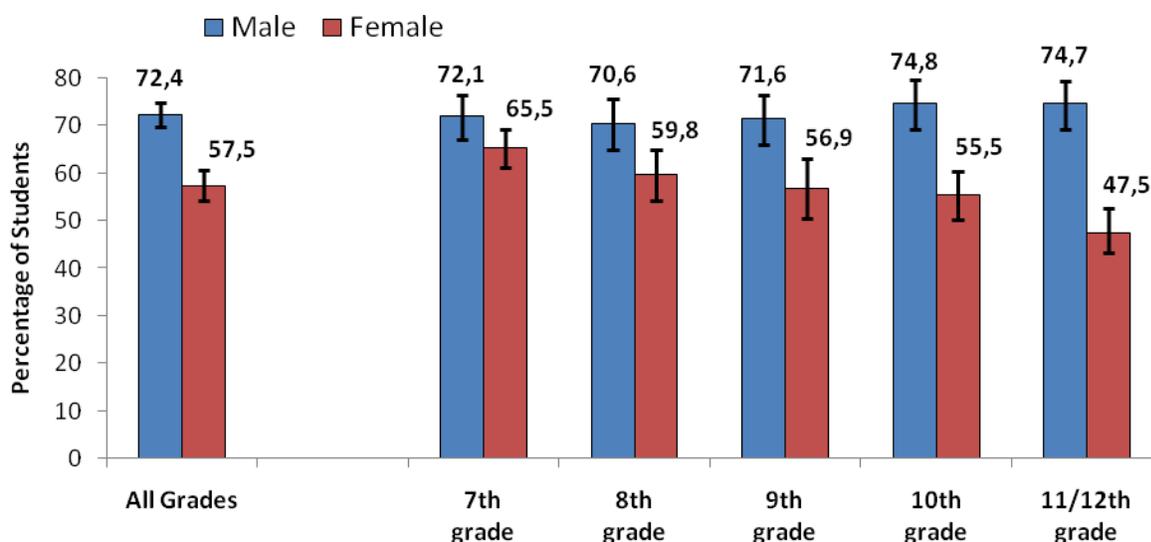
6.4% of all schoolchildren attended physical education (PE) class 3 or more times per week during the school year. Rural students attended PE class more than urban students (8.0% vs. 4.3%). Regular attendance in a PE class declined with increasing age and grade level.

Two in five students (41.7%) spend three or more hours per day watching television, playing computer games, talking with friends, or doing other sitting activities; there was not a significant difference between genders. Spending three or more hours per day doing sitting activities increases with grade level. Sitting activities were significantly higher among schoolchildren in urban areas versus rural areas (Figure 35).



**Figure 34. Percentage of schoolchildren who spend 3 or more hours doing sitting activities, by location and grade level, ( $\pm 95\%$  CI) Mongolia, 2010**

Two thirds of students (64.5%) played on sports teams in the past year (30.7% played on one team, 19.8% played on 2, and 14.1% played on 3 or more sports teams). Males were significantly more likely to play on one or more sports teams than females (Male: 72.4%; Female: 57.5%;  $p < 0.0001$ ). Playing on one or more sports teams declines with increasing grade level for females (Figure 36), but did not show a similar trend for males. While the gender gap in sports team participation is non-significant in 7<sup>th</sup> grade, it is highly significant by 9<sup>th</sup> grade and continues to widen by 11/12<sup>th</sup> grade. There is no substantial difference between rural and urban schoolchildren with respect to this indicator.



**Figure 35. Percentage of schoolchildren playing on one or more sports teams in past year, by gender and grade, ( $\pm 95\%$  CI) Mongolia, 2010**

**Discussion**

Less than one in five Mongolian schoolchildren indicated that they get at least an hour of physical activity every day of the week. Although Mongolia had comparable levels of physical activity compared to other countries (21.0% in China, 15.5% in Thailand, 16.0% in Jordan, and 7.6% in the Philippines), there is much need for improvement, especially in light of the risk of health disease associated with inadequate physical activity.

Lack of physical activity is compounded by two in five students spending three or more hours a day watching television, playing computer games, talking with friends, or doing other sitting activities. This trend increased with grade level (Fig. 35) – something that deserves further investigation. In addition, it was worrisome that female participation in sports declined rapidly with increasing grade level (Fig. 36), also warranting further research.

The Government of Mongolia created a national program in 2005 called, “Strengthening health care of the community,” intended to change the behavior of the youngest generation, including increasing their physical activity. This survey indicates that the success of this national program has thus far been insufficient.

**Key Findings**

1. 18.8% of students did at least 60 minutes of active physical movement every day. Males are significantly more likely to get physical activity than females, though the difference was modest (Male: 21.5%; Female: 16.3%).
2. 6.4% of schoolchildren attended physical education class 3 or more times per week. There is a declining attendance in physical education classes with increasing age and grade level.
3. Two in five students (41.7%) spend 3 or more hours a day watching television, playing computer games, talking with friends, or doing other sitting activities.
4. Sports participation was high and constant among males across all grades (above 70%); it was lower among females and declined with increasing grade level (from 66% in 7<sup>th</sup> grade to 48% in 11/12<sup>th</sup> grade).

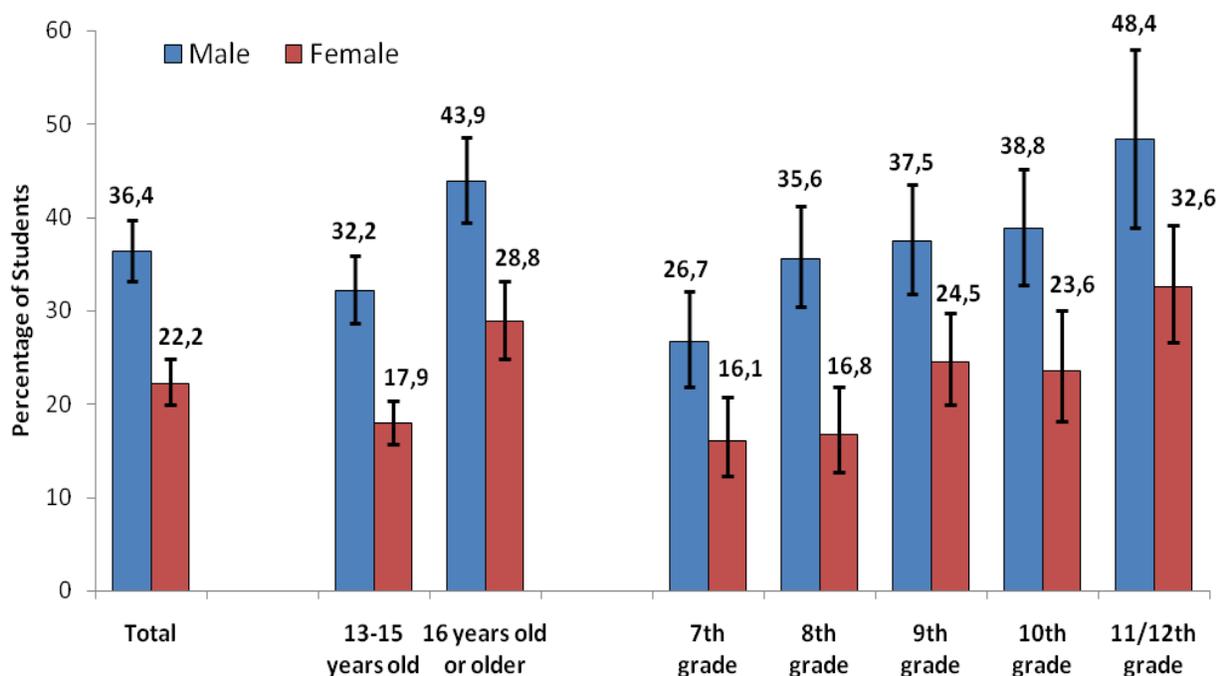
## 2.11 PROTECTIVE FACTORS

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For most adolescents, school is the most important setting outside of the family. School attendance is related to the prevalence of several health risk behaviors [46]. Adolescents who have a positive relationship with teachers and who have positive attitudes towards school are less likely to initiate sexual activity early, less likely to use illicit substances, and less likely to experience depression. The same is true of adolescents who live in a social environment which provides meaningful relationships, encourages self-expression, and also provides structure and boundaries [47]. Parental bonding and connection is associated with lower levels of depression and suicidal ideation, alcohol use, sexual risk behaviors, and violence [48].

Being liked and accepted by peers is crucial to young people's health, and those who are not socially integrated are far more likely to exhibit difficulties with their physical and emotional health. Isolation from peers in adolescence can lead to feelings of loneliness and adverse psychological symptoms. Interaction with friends tends to improve social skills and strengthen the ability to cope with stressful events [49].

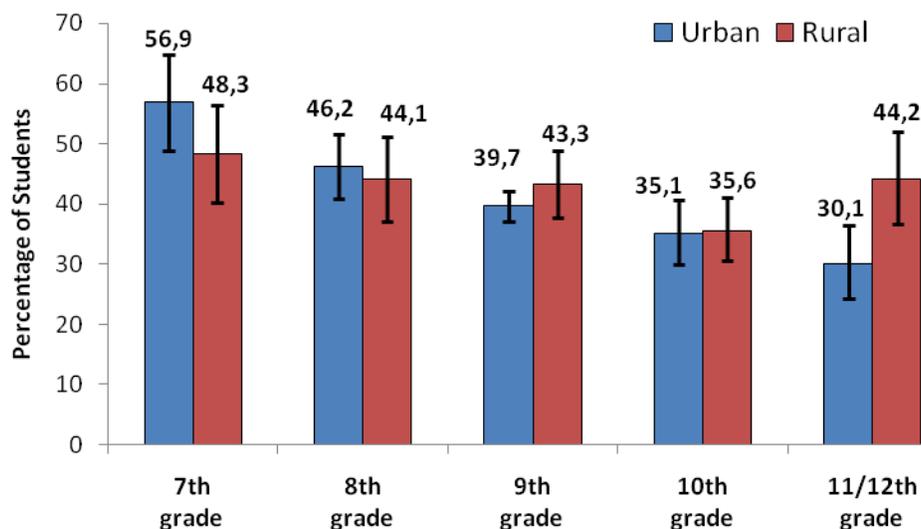
In Mongolia, 29.0% of students missed class without permission one or more days in the past month. Males were significantly more likely to miss class without permission than females ( $p < 0.0001$ ). Missing class without permission increased with increasing age and grade level (Figure 37; age group 12 years old or younger not shown due to insufficient sample size). There were not significant differences between urban (29.7%) and rural (28.5%) students.



**Figure 36. Percentage of students who missed one or more classes without permission in past month, by gender, age, and grade level, ( $\pm 95\%$  CI) Mongolia, 2010**

One in four students (25.4%) said their friends and classmates cared about them and their studies usually or always. This indicator was 5.9 percentage points higher among urban students compared to rural students.

Two in five students (43.1%) said their parents or guardians checked their homework to see if it was done usually or always during the past 30 days. There were no significant difference between females (43.1%) and males (43.8%). Figure 38 shows a modestly declining trend in the percentage of urban students responding that their parents usually or always check their homework. There is not a clear trend for rural students.



*Figure 37. Percentage of students responding that their parents or guardians check their homework for completion usually or always in the past month, by location and grade level, ( $\pm 95\%$  CI) Mongolia, 2010*

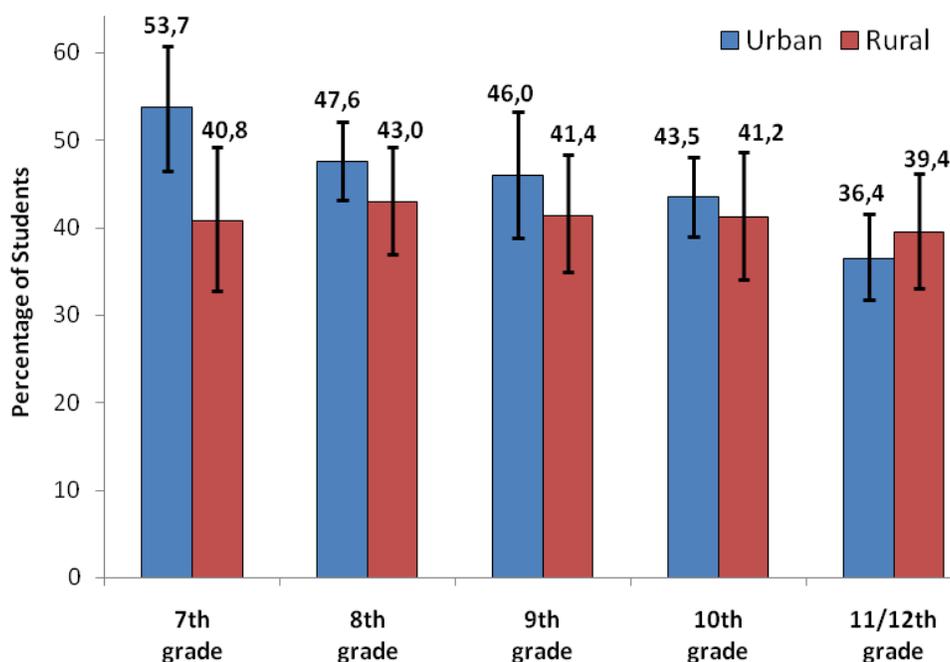
Slightly more than one in four schoolchildren (28.7%) responded that their parents or guardians understood their problems and worries usually or always in the month preceding the survey. Females were more likely to say their parents understood than males (Male: 27.5%, Female: 29.7%). Table 22 summarizes this indicator across age groups and grades.

**Table 22. Percentage of students whose parents or guardians understood their problems and worries usually or always during the past month, by location, age, and grade level, Mongolia, 2010**

	Total		Urban		Rural	
	n	%	n	%	n	%
<b>Age group</b>						
12 and younger	222	36.8	155	37.3	67	--
13-15 age	3111	30.2	1511	29.0	1600	31.1
16 and older	1853	25.8	873	22.9	980	27.8
<b>Grade level</b>						
7 <sup>th</sup> grade	1339	34.0	595	35.5	744	32.9
8 <sup>th</sup> grade	1327	28.1	666	27.6	661	28.5
9 <sup>th</sup> grade	901	26.4	390	22.8	511	29.4
10 <sup>th</sup> grade	826	26.4	408	25.9	418	26.8
11/12 <sup>th</sup> grade	768	26.9	468	22.9	300	30.5
<b>Total</b>	<b>5161</b>	<b>28.7</b>	<b>2527</b>	<b>27.3</b>	<b>2634</b>	<b>29.9</b>

--: fewer than 100 students

Two in five students (43.3%) said their parents or guardians really knew what they were doing with their free time usually or always. There was little difference between genders. There was a modest decline in this indicator with increasing grade level amongst urban students, but no clear trend amongst rural students. Urban 7<sup>th</sup> graders were significantly more likely to say that their parents knew what they were doing with their free time versus urban 11/12<sup>th</sup> graders (Figure 39).



**Figure 38. Percentage of students indicating their parents or guardians really know what they do with their free time usually or always, by location and grade level, (±95% CI) Mongolia, 2010**

Four in five students (81.7%) said their parents never or rarely went through their things without their permission, and this indicator was similar across genders. Table 23 summarizes this indicator across ages, grades, and living locations.

**Table 23. Percentage of students saying their parents or guardians never or rarely go through their things without their approval, by location, Mongolia, 2010**

	Total		Urban		Rural	
	n	%	n	%	n	%
<b>Age Group</b>						
12 and younger	223	88.2	155	89.9	68	--
13-15 age	3119	82.4	1514	79.0	1605	85.2
16 and older	1857	80.3	876	78.1	981	81.8
<b>Grade Level</b>						
7 <sup>th</sup> grade	1345	86.2	597	85.5	748	86.7
8 <sup>th</sup> grade	1328	81.4	665	77.8	663	84.1
9 <sup>th</sup> grade	902	80.4	394	75.7	508	84.1
10 <sup>th</sup> grade	829	80.2	408	79.5	421	80.9
11/12 <sup>th</sup> grade	770	79.4	469	77.2	301	81.3
<b>Total</b>	<b>5217</b>	<b>81.7</b>	<b>2554</b>	<b>79.2</b>	<b>2663</b>	<b>83.8</b>

--: fewer than 100 students

Table 24 summarizes the protective factors findings among schoolchildren in this survey.

**Table 24. Protective factors and missed class without permission among schoolchildren in past month, by gender, Mongolia, 2010**

Indicators	Total % (CI)*	Male % (CI)	Female % (CI)
Missed class without permission one or more days	29.0 (26.7-31.5)	36.4 (33.2-39.7)	22.2 (19.9-24.8)
Students in school are caring/kind and helpful (usually, always)	25.4 (23.5-27.5)	26.7 (24.7-28.8)	24.1 (21.5-26.8)
Parents or guardians checked homework to see if it was done (usually, always)	43.1 (40.5-45.8)	43.8 (40.7-46.8)	42.6 (39.9-45.3)
Parents or guardians understood problems and worries (usually, always)	28.7 (26.8-30.7)	27.6 (25.1-30.2)	29.7 (27.4-32.1)
Parents or guardians really knew what student was doing with free time (usually, always)	43.3 (40.2-46.4)	42.1 (38.6-45.7)	44.4 (41.4-47.4)
Parents or guardians never or rarely go through student's things without their approval	81.7 (80.3-83.1)	81.9 (80.1-83.5)	81.6 (79.9-83.2)

\*95% Confidence Interval

## Discussion

The percentage of students saying their parents or guardians check their homework, know how they spend their time, and understand their problems and worries was lower than in many Asian countries. Missing class without permission for one or more days in a month was substantially higher in Mongolia (29.0%) than in China (4.6%). Amongst urban males in 11/12<sup>th</sup> grade in Mongolia this indicator was 54.1%.

There were declining trends with increasing grade level in two indicators amongst urban children: the percentage saying their parents checked their homework and really knew what they did with their free time. 28.7% of students felt their parents or guardians understood their problems and worries usually or always.

**Key Findings**

1. In Mongolia, more than one in four students (29.0%) missed class without permission in the past month. Males were significantly more likely than females to miss class without permission (Male: 36.4%; Female: 22.2%;  $p < 0.0001$ ). Missing class without permission became more prevalent with increasing age and grade level.
2. Two in five students (43.1%) said their parents or guardians usually or always checked their homework in the past month, and this declined with increasing grade level amongst urban students.
3. Slightly more than one in four students (28.7%) said their parents or guardians understand their problems or worries usually or always.
4. Two in five students (43.3%) said their parents or guardians really know how they spend their free time.
5. Four in five students (81.7%) said their parents or guardians rarely or never go through their things without their permission.

## PART 3: CONCLUSIONS AND RECOMMENDATIONS

### 3.1 CONCLUSIONS

- *Health Risk Factors:* The vast majority of students had multiple health risk factors: 3.3%, 6.6%, 7.9%, and 80.2% of students had 1, 2, 3, and 4 or more risk factors, respectively. 1.9% of students had zero health risk factors, irrespective of gender.
- *Dietary Behaviors:*
  - One in twelve students (8.3%) was overweight and 0.8% were obese. Overweight was particularly high among females and urban students.
  - one in six students met WHO recommendations for consumption of fruits and vegetables.
  - one in four students met WHO recommendations for consumption of dairy products.
  - One in four students drank carbonated and soft drinks one or more times per day during the past month.
  - One in five students ate at fast food restaurants three or more days in the past week.
- *Hygiene:* Two thirds of students (63.3%) clean their teeth at least 2 times per day, and 92.4% clean their teeth at least once per day. Two in five students wash their hands regularly before eating meals or after using toilet and use soap when washing hands. One in ten students (9.7%) said that there are no toilets or sinks at school. This was particularly problematic amongst rural students (16.0%). One third of students (35.4%) said there were not enough toilets or sinks at their school.
- *Violence and Unintentional Injury:* One in four students (25.6%) was physically attacked at least once during the past year and one in four was bullied in the last month. More than a third of students (38.2%) had an accident or injury during the past year. The percentage of students who used a seat belt when riding in a motor vehicle during the past month was 30.3%.
- *Mental Health:* One in ten students always felt lonely during the past year, one in five seriously considered attempting suicide, one in eight made a plan about how they would attempt suicide, and one in twelve actually tried to commit suicide one or more times. Female urban students were particularly high-risk.
- *Tobacco, Alcohol, and Drug Use:*
  - One in four students has smoked cigarettes and one in ten has smoked cigarettes on one or more days during the past month. More than half of the students reported that people smoked in their presence.
  - Nearly one third of students (29.1%) had used alcohol. Two in five students (39.8%) said their parents or guardians drink alcohol.
  - One in ten students (9.7%) had ever used drugs.
- *Sexual Behaviors:* One in seven students (13.4%) had had sexual intercourse. However, males were far more likely than females to indicate they had ever had sex or had had sex with more than one partner. For example, amongst males in 11/12<sup>th</sup> grade 50.8% said they had had sexual intercourse, compared to 12.4% of females in 11/12<sup>th</sup> grade. Two in five of those who had sexual intercourse (43.3%) did not use a condom the last time they had sexual intercourse.

- *Physical Activity:* one in five students (18.8%) was physically active for at least 60 minutes every day. Two in five (41.7%) spent three or more hours per day doing sitting activities, such as watching television, playing computer games, talking with friends, reading books, or talking on the telephone, and time spent doing sitting activities increased dramatically with grade level. Sports participation was high and constant among males across all grades (above 70%); it was lower among females and declined with increasing grade level (from 66% in 7<sup>th</sup> grade to 48% in 11/12<sup>th</sup> grade).
- *Protective Factors:* Nearly one third of students (29.0%) missed class or school without permission on one or more days in the past month, and this was higher among males and increased with increasing grade level. Slightly more than one quarter of students (28.7%) reported their parents usually or always understood their problems and worries; 43.3% reported their parents usually or always knew what they were doing with their free time; and 43.1% reported their parents usually or always checked to see if their homework was done.

## 3.2 RECOMMENDATIONS

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There is limited existing data on adolescent health in Mongolia. This comprehensive survey is the first baseline dataset on health related risk factors and protective factors for Mongolian adolescents, namely those in grades 7 through 12.

Comparison of the results of this assessment to previously conducted surveys (though by nature limited due to differences in survey methodology and sample selection) indicates that there has been no substantial improvement in adolescent health in the last decade. This is unsurprising given the limited emphasis on adolescent health in Mongolia.

The government of Mongolia is implementing many projects and programs aimed at preventing disease, improving dietary behaviors, and generally improving population health. However, child and adult health remains the major focus of these programs; adolescent health has not been addressed in a substantive way. For example, in the Mongolian national programs on food safety and mental health, one item in each (out of hundreds) was directly targeted at adolescents.

The findings of this survey warrant a call to action and increased financial support from the stakeholders in adolescent health. Currently, research on Mongolian adolescents is fragmented between different branches of the Mongolian government, nongovernmental organizations, and international institutions. Adolescent health problems are complex and require close collaboration and integration at the policy level to implement interventions successfully.

We thus recommend that there be a branch of the Mongolian government devoted solely to adolescent health. In addition, using the results of this survey (which are age, grade, gender, living location and living condition specific) the health education curriculum should be updated and revised. The GSHS should be repeated in Mongolia periodically to track changes in adolescent health over time. Finally, there is an urgent need to distribute educational materials and provide guidance to teachers, parents, and students explaining the central aspects of adolescent health detailed in this assessment, including:

- Healthy dietary behavior
- Good hygiene
- Prevention of activities that lead to injuries
- Sound mental health and protective factors
- Abstinence from tobacco, alcohol, and drug use
- Safe sexual behaviors
- Ample physical activity

Specific recommendations for these central aspects of adolescent health follow.

### **Dietary Behaviors and Nutrition**

- Educational and informational (IEC) materials and advocacy efforts:
  - Emphasize the importance of breakfast and healthy foods (vegetables, fruits and

- milk products), and the harms of fast food and carbonated beverages
  - Train parents and educators how to use more local berries and vegetables not only foreign fruits, as well as students
- Healthy dietary behaviors at school:
  - Train school kitchen workers on healthy diet
  - Increase availability of healthy food items at school
  - Decrease availability of unhealthy food items at school
  - Actively involve students to change habits
  - Incentivize good behavior
- School-based health education class:
  - Increase class time
  - Improve lesson quality through further training of educators
  - Customize classes to the specific to the needs of particular demographics (i.e., grade level, urban/rural, etc.)
- School doctors:
  - Train to assess and track student growth and health
  - Train to implement intervention with underweight, overweight, and obese students
  - Increase role in disseminating healthy dietary habits

## **Hygiene**

- Renew hygiene standards for the school environment, perhaps including mandates for a required ratio of restrooms to number of students, availability of soap, and hygiene lessons
- Improve the hygienic situation of schools, especially rural schools
  - Ensure that all schools have toilets and sinks available to students, and that the students are aware of these toilets and sinks
  - Ensure that there are a sufficient number of toilets and sinks relative to the enrollment size of the school
  - Ensure that there is soap and running water available for student hand-washing before meals
- Hold practical school lessons on the importance of cleaning teeth twice daily and washing hands before meals. Demonstrate how to properly clean teeth and wash hands

## **Violence and Unintentional Injury**

- Bullying (experienced by one in four students in the preceding month) and physical attacks (experienced by one in four students in the preceding year) are far too prevalent; interventions to reduce violence must be made, including classes on respecting others and other creative interventions
- Accidents and injuries are especially common among younger students; further research on the risks of injury must be undertaken and appropriate actions taken to reduce this problem
- Many of the students have driven a motor vehicle, yet most do not usually use seat belts when riding in motor vehicles; therefore, it is important to increase distribution of IEC materials on the benefits of seat belt usage

## **Mental Health and Protective Factors**

- Student counseling:
  - An alarming number of students are thinking about suicide; there is dire need for mental health counseling and support, especially among female urban students
  - Identify students with mental health problems and provide counseling and support of these students
- School-based health education class:
  - Increase time spent on mental health including education about normal physiological development, crisis in adolescence, and what is not normal depression
  - Improve lesson quality through further training of instructors on mental health issues
  - Include topics of particular importance, including suicide, depression, stress, and loneliness
- Parents:
  - Increase participation in fostering their child's mental health
  - Educate about mental health and good methods for communicating with adolescents, including talking openly about feelings and some of the issues of adolescence (like unwanted pregnancy and suicidal thoughts)
    - Use mass media, personal meetings with parents, and IEC materials to educate and inform
  - Create opportunity for consultation between parents, schoolchildren, and instructors
- School doctors:
  - Increase communication with social workers; together consult schoolchildren, distribute IEC materials, and share new training knowledge about mental health issues
- Social workers; coordination with doctor/social worker
  - Train to increase knowledge of adolescent health issues
  - Shift away from office work to adolescent health, especially the social aspects of health
- Health cabinets:
  - Provide further training and increase their role in promoting student mental health

## **Tobacco and Alcohol Use: Anti-smoking and Anti-drinking campaigns**

- Anti-smoking and anti-drinking campaign:
  - Organizations in Mongolia devoted to childhood issues (e.g., National Authority for Children) should cooperatively develop an anti-smoking and anti-drinking campaign, involving active participation from adolescents
  - Laws prohibiting sale of tobacco and alcohol to underage children must be strengthened and enforced
    - Encourage greater participation of local government
  - Combat adult tolerance of tobacco and alcohol use by youth through mass media campaigns
  - Halt mass media advertisements for tobacco and alcohol aimed at youth

- Healthy behavior at school:
  - Change school by-laws to prohibit tobacco and alcohol use at school, creating a non-smoking and non-alcoholic environment
  - Organize self-supporting clubs at schools that foster healthy behaviors
- Educate families and teachers:
  - Specially educate families who have a smoking environment at home and to tell them risks of passive smoking
  - Systematically train secondary school teachers on issues related to tobacco and alcohol use
  - Organize IEC campaign on tobacco and alcohol use

### **Sexual Behaviors and Reproductive Health: HIV/AIDS and STI prevention**

- School-based health education class:
  - Educate about HIV/AIDS and STI prevention
  - Advise safe sexual behaviors
    - Abstinence
    - Avoiding multiple partners
    - Contraceptives and condoms
    - Avoiding unwanted pregnancy and abortion
- Peer educators:
  - Train on HIV/AIDS and STI prevention, condom use, and how to provide support to students regarding sexual behaviors and how to negotiate in difficult situation.
- Foster teacher, parent, and school doctor partnerships
- Ensure condoms are accessible and affordable

### **Physical Activity: Promoting active movement**

- Healthy behavior at school:
  - Determine physical condition and activity level of students, and develop school physical education policy and regulations accordingly
  - Exercise during break times
  - Incentivize active movement of students in school activities, such as through intra- and inter-school sports competitions and bike-to-school/walk-to-school competitions
- Healthy behavior outside of school:
  - Increase participation in physically active after school activities, like sports and clubs, especially amongst female students
  - Organize a wide variety of sporting events and competitions, aiming for wider involvement of students in physical activities
- Educate families:
  - Educate students on the benefits of physical activity
  - Teach parents about the harms of sitting activities for their children and encourage they limit their child's time watching television, playing computer games, etc.

# APPENDICES

## Appendix 1. Detailed survey results

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## Appendix 2. Survey questionnaire

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### *MONGOLIA GLOBAL SCHOOL-BASED STUDENT HEALTH SURVEY, 2010*

This survey is about your health and the things you do that may affect your health. Students like you all over your country are doing this survey. Students in many other countries around the world also are doing this survey. The information you give will be used to develop better health programs for young people like yourself in your country.

DO NOT write your name on this survey or the answer sheet. The answers you give will be kept private. No one will know how you answer. Answer the questions based on what you really know or do. There is no right or wrong answers.

Completing the survey is voluntary. Your grade or mark in this class will not be affected whether or not you answer the questions. If you do not want to answer a question, just leave it blank.

Make sure to read every question. Fill in the circles on your answer sheet that match your answer. Use the pencil you are given. When you are done, do what the person who is giving you the survey says to do.

Here is an example of how to fill in the circles:

Fill circle like this:  Not like this:  Not like this: 

Example: Do fish live in water?

- A. Yes
- B. No

Answer sheet:

1.        

**YOUR TRUTHFUL ANSWERS ARE APPRECIATED.**

1. How old are you?
  - A. 11 years old or younger
  - B. 12 years old
  - C. 13 years old
  - D. 14 years old
  - E. 15 years old
  - F. 16 years old or older

2. What is your gender?
  - A. Male
  - B. Female

3. What grade are you currently in?
  - A. 7<sup>th</sup> grade
  - B. 8<sup>th</sup> grade
  - C. 9<sup>th</sup> grade
  - D. 10<sup>th</sup> grade
  - E. 11<sup>th</sup> grade
  - F. 12<sup>th</sup> grade

4. Where do you live?
  - A. City center
  - B. City suburb or outskirts
  - C. Aimag center
  - D. Soum center
  - E. Bagh

5. What is your living condition?
  - A. Ger in the khashaa
  - B. Building in the khashaa
  - C. Dormitory
  - D. Apartment
  - E. House
  - F. Some other place

**The next 7 questions ask about your height, weight, eating breakfast, and going hungry.**

6. What is your height, in centimeters, without your shoes on?

WRITE YOUR BODY HEIGHT IN THE SHADED SPACE OF THE SECOND ROW AND THEN CAREFULLY FILL IN THE APPROPRIATE CIRCLES IN THE COLUMN.

Height (cm)		
1	5	3
0	0	0
<input checked="" type="radio"/>	1	1
2	2	2
	3	<input checked="" type="radio"/>
	4	4
	<input checked="" type="radio"/>	5
	6	6
	7	7
	8	8
	9	9
9 I do not know		

7. What is your body weight, in kilograms, without your shoes on?

WRITE YOUR BODY WEIGHT IN THE SHADED SPACE OF THE SECOND ROW AND THEN CAREFULLY FILL IN THE APPROPRIATE CIRCLES IN THE COLUMN.

Weight (kg)		
0	5	2
<input checked="" type="radio"/>	0	0
1	1	1
2	2	<input checked="" type="radio"/>
	3	3
	4	4
	<input checked="" type="radio"/>	5
	6	6
	7	7
	8	8
	9	9
1 I do not know		



8. How do you describe your weight?
- A. Very skinny
  - B. Skinny
  - C. Normal weight
  - D. Slightly overweight
  - E. Very overweight
9. During the past month, how often did you eat breakfast?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always
10. What is the main reason you did not eat breakfast?
- A. I always eat breakfast
  - B. I do not have time, late for class
  - C. I do not like to eat breakfast
  - D. Do not usually have food at home
  - E. Other
11. During the past month, how often did you feel hungry because there was not enough food at your home?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always
12. During this school year, were you taught in any of your classes about healthy food?
- A. Yes
  - B. No
  - C. I do not know

**The next 5 questions ask about your eating habits.**

13. During the past month, how many times per day did you **usually** eat fruit (except juice and beverage) such as apples, mandarins, bananas and kiwis?
- A. I did not eat fruit during the past month
  - B. Less than one time per day
  - C. Once per day
  - D. Twice per day
  - E. Three times per day
  - F. Four times per day
  - G. Five or more times per day
14. During the past month, how many times per day did you **usually** eat vegetables, such as carrots, cabbage and green vegetables?
- A. I did not eat vegetables during the last one month
  - B. Less than one time per day
  - C. Once per day
  - D. Twice per day
  - E. Three times per day
  - F. Four times per day
  - G. Five or more times per day
15. During the past month, how many times per day did you **usually** drink carbonated soft drinks, such as Coca, Pepsi or Terelj?
- A. I did not drink carbonated soft drinks during the past month
  - B. Less than one time per day
  - C. 1 time per day
  - D. 2 times per day
  - E. 3 times per day
  - F. 4 times per day
  - G. 5 or more times per day

16. During the past month, how many times per day did you **usually** drink milk or eat milk products, such as milk, yogurt, cheese and sieved milk?
- A. I did not drink milk or eat milk products during the last one month
  - B. Less than one time per day
  - C. 1 time per day
  - D. 2 times per day
  - E. 3 times per day
  - F. 4 times per day
  - G. 5 or more times per day
17. Last week, how many days did you eat fast food, like at Maks and Mondonald restaurants or in the school cafeteria?
- A. 0 days
  - B. 1 day
  - C. 2 days
  - D. 3 days
  - E. 4 days
  - F. 5 days
  - G. 6 days
  - H. 7 days

**The next 6 questions ask about your hygiene behavior.**

18. During the past month, how many times per day did you **usually** brush your teeth?
- A. I didn't brush my teeth during the past 30 days
  - B. Less than 1 time per day
  - C. 1 time per day
  - D. 2 times per day
  - E. 3 times per day
  - F. 4 or more times per day
19. During the past month, how often did you wash your hands before eating?
- A. Never
  - B. Rarely
  - C. Sometimes

- D. Usually
- E. Always

20. During the past month, how often did you wash your hands before eating at school?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always
21. During the past month, how often did you wash your hands after using the toilet?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always

22. During the past month, how often did you use soap when washing your hands?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always

23. At your school, are there enough sinks and toilets?
- A. There are no sinks or toilets at my school
  - B. Enough
  - C. Not enough

**The next question asks about what you drink at school.**

24. Do you drink water, tea, or other fluids at school?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always

**The next question asks about physical attacks. A physical attack occurs when one or more people hit or strike someone, or when one or more people hurt another person with a weapon (such as a stick, knife, or gun). It is not a physical attack when two students who have the same strength or power choose to fight each other.**

25. Last year, how many times were you physically attacked?
- A. 0 times
  - B. 1 time
  - C. 2 or 3 times
  - D. 4 or 5 times
  - E. 6 or 7 times
  - F. 8 or 9 times
  - G. 10 or 11 times
  - H. 12 or more times

**The next question asks about physical fights. A physical fight is when two students who have the same strength or power choose to fight each other.**

26. Last year, how many times did you physically fight?
- A. Never
  - B. 1 time
  - C. 2 or 3 times
  - D. 4 or 5 times
  - E. 6 or 7 times
  - F. 8 or 9 times
  - G. 10 or 11 times
  - H. 12 or more times

**The next 3 questions ask about serious injuries that happened to you. A serious injury occurs when a doctor gives permission to miss one or more days from school, sports and other activities.**

27. Last year, how many times were you seriously injured?
- A. 0 times
  - B. 1 time
  - C. 2 or 3 times
  - D. 4 or 5 times
  - E. 6 or 7 times
  - F. 8 or 9 times
  - G. 10 or 11 times
  - H. 12 or more times
28. Last year, what was the most serious injury that happened to you?
- A. I was not seriously injured during the last year
  - B. I had a broken bone or a dislocated joint
  - C. I had a cut or stab wound
  - D. I had a concussion or other head or neck injury, was knocked out, or could not breathe
  - E. I had a gunshot wound
  - F. I had a bad burn
  - G. Overdose of medicine or drug
  - H. Other
29. Last year, **what was the main cause** of the most serious injury that happened to you?
- A. I was not seriously injured during the last year
  - B. I was in a car and motor vehicle accident or hit by a motor vehicle
  - C. I fell
  - D. Something fell on me or hit me
  - E. I was attacked, abused or was fighting with someone
  - F. I touched a fire or flame

- G. I inhaled or swallowed something bad for me
- H. Other

**The next 2 questions ask about bullying. Bullying occurs when a student or group of students say or do bad and unpleasant things to another student. It is also bullying when a student is teased a lot in an unpleasant way or when a student is left out of things on purpose. It is not bullying when two students of about the same strength or power argue or fight or when teasing is done in a friendly and fun way.**

30. During the last month, on how many days were you bullied?
- A. Never
  - B. 1 or 2 days
  - C. 3 to 5 days
  - D. 6 to 9 days
  - E. 10 to 19 days
  - F. 20 to 29 days
  - G. All days
31. During the last month, **how** were you usually bullied?
- A. I was not bullied during the last month
  - B. I was hit, kicked, pushed, shoved around, or locked indoors
  - C. I was made fun of because of my race, nationality, or color
  - D. I was made fun of because of my religion
  - E. I was made fun of with sexual jokes, comments, or gestures
  - F. I was left out of activities on purpose or completely ignored
  - G. I was made fun of because of how my body or face looks
  - H. Other

**The next question asks about carrying a weapon.**

32. During the last month, on how many days did you carry a weapon (e.g., wooden stick, stone, knife, etc.) with you?
- A. Never
  - B. 1 day
  - C. 2 – 3 days
  - D. 4 – 5 days
  - E. 6 or more days

**The next three questions ask motor vehicle safety.**

33. Have you ever driven a car or other motor vehicle?
- A. Yes
  - B. No
34. During the last month, how often did you fasten your seatbelt when you were driving or riding in a car or other motor vehicle?
- A. I did not ride in motor vehicle driven by someone else
  - B. Never
  - C. Rarely
  - D. Sometimes
  - E. Usually
  - F. Always
35. During the last month, how many times did you ride in a car or other motor vehicle driven by someone who had been drinking alcohol?
- A. I did not ride in motor vehicle driven by someone else
  - B. 0 days

- C. 1- 2 days
- D. 3 - 5 days
- E. 6 - 9 days
- F. 10 or more days

**The next questions ask about your feelings and friendships.**

36. During the last year, how often have you felt lonely?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always
37. During the last year, how often have you been so worried about something that you could not sleep at night?
- A. Never
  - B. Rarely
  - C. Sometimes
  - D. Usually
  - E. Always
38. During the last year, did you ever seriously consider attempting suicide?
- A. Yes
  - B. No
39. During the last year, did you make a plan about how you would attempt suicide?
- A. Yes
  - B. No
40. During the last year, how many times did you actually attempt suicide?
- A. 0 times
  - B. 1 time
  - C. 2 or 3 times
  - D. 4 or 5 times
  - E. 6 or more times

41. How many close friends do you have?
- A. 0
  - B. 1
  - C. 2
  - D. 3 or more

42. During this school year, were you taught in any of your classes how to manage anger and stress?
- A. Yes
  - B. No
  - C. I do not know

**The next 6 questions ask about cigarette and other tobacco use.**

43. How old were you when you first tried a cigarette?
- A. I have never smoked cigarettes
  - B. 7 years old or younger
  - C. 8 or 9 years old
  - D. 10 or 11 years old
  - E. 12 or 13 years old
  - F. 14 or 15 years old
  - G. 16 years old or older
44. During the last month, on how many days did you smoke cigarettes?
- A. 0 days
  - B. 1 or 2 days
  - C. 3 to 5 days
  - D. 6 to 9 days
  - E. 10 to 19 days
  - F. 20 to 29 days
  - G. All days

45. During the last month, on how many days did you use any other form of tobacco?
- A. 0 days
  - B. 1 or 2 days
  - C. 3 to 5 days
  - D. 6 to 9 days
  - E. 10 to 19 days
  - F. 20 to 29 days
  - G. All days
46. During the last year, have you ever tried to stop smoking cigarettes?
- A. I have never smoked cigarettes
  - B. I did not smoke cigarettes during the last year
  - C. Yes
  - D. No
47. During the past 7 days, on how many days have people smoked in your presence?
- A. 0 days
  - B. 1 or 2 days
  - C. 3 or 4 days
  - D. 5 or 6 days
  - E. All 7 days
48. Which of your parents or guardians use any form of tobacco?
- A. Neither
  - B. My father or male guardian
  - C. My mother or female guardian
  - D. Both
  - E. I do not know

**The next 12 questions ask about drinking alcohol. Drinking alcohol does not include drinking a few sips of alcohol. A “drink” is a glass of wine, a bottle of beer, a small glass of liquor, or a mixed drink.**

49. How old were you when you had your first drink of alcohol other than a few sips?
- A. I have never had a drink of alcohol other than a few sips
  - B. 7 years old or younger
  - C. 8 or 9 years old
  - D. 10 or 11 years old
  - E. 12 or 13 years old
  - F. 14 or 15 year
  - G. 16 years old or older
50. During the past month, on how many days did you have at least “ONE DRINK” containing alcohol?
- A. 0 days
  - B. 1 or 2 days
  - C. 3 to 5 days
  - D. 6 to 9 days
  - E. 10 to 19 days
  - F. 20 to 29 days
  - G. All 30 days
51. During the past month, on the days you drank alcohol, how many drinks did you **usually** drink per day?
- A. I did not drink alcohol during the past 30 days
  - B. Less than one drink
  - C. 1 drink
  - D. 2 drinks
  - E. 3 drinks
  - F. 4 drinks
  - G. 5 or more drinks

52. During the past month, how did you **usually** get the alcohol you drank? CHOOSE ONLY ONE ANSWER.

- A. I did not drink alcohol during the past month
- B. I bought it in a store, shop, or from individuals
- C. I gave someone else money to buy it for me
- D. I got it from my friends
- E. I got it from my family
- F. I stole it or got it without permission
- G. Other

53. What type of alcohol do you **usually** drink? CHOOSE ONLY ONE ANSWER.

- A. Never
- B. Beer, lager, or stout
- C. Wine
- D. Spirits
- E. Traditional alcohol
- F. Alcohol fermented at home
- G. Other

54. Last time you drank, where did you drink alcohol?

- A. Never had a drink of alcohol
- B. At home
- C. At friend's or someone's home
- D. At school
- E. Outside, in a park, or garden
- F. At a bar, pub, or disco
- G. In a restaurant
- H. Other

55. Who in your family drinks alcoholic beverages?

- A. Neither
- B. My father or male guardian
- C. My mother or female guardian
- D. Both
- E. I do not know

**Staggering when walking, not being able to speak right and throwing up are some signs of being "really drunk."**

56. During your life, how many times did you drink so much alcohol that you were "**really drunk**"?

- A. Never
- B. 1 or 2 times
- C. 3 to 9 times
- D. 10 or more times

57. During your life, **how many times** have you got into trouble with your family or friends, missed school, or got into fights as a result of drinking alcohol?

- A. Never
- B. 1 or 2 times
- C. 3 to 9 times
- D. 10 or more times

58. During this school year, were you taught in any of your classes about the harms associated with drinking alcohol?

- A. Yes
- B. No
- C. I do not know

59. During the past month, how often did you see advertisements for alcohol on mass media (such as the TV, radio, magazine or internet)?

- A. Many times
- B. A few times
- C. Never

60. During the past 30 days, how often did you see anti-alcohol advertisements on mass media (such as the TV, radio, magazine or internet)?

- A. Many times
- B. A few times
- C. None

**The next 4 questions ask about drug use. This includes using marijuana, hashish, inhalant, cannabis, poppy, opium as well as the sedatives seduksin and demidrol.**

61. How old were you when you first used drugs?
- A. I have never used drugs
  - B. 7 years old or younger
  - C. 8 or 9 years old
  - D. 10 or 11 years old
  - E. 12 or 13 years old
  - F. 14 or 15 years old
  - G. 16 years old or older
62. During your life, how many times have you used marijuana (also called hashish or cannabis)?
- A. 0 times
  - B. 1 or 2 times
  - C. 3 to 9 times
  - D. 10 to 19 times
  - E. 20 or more times
63. During the past month, how many times have you used marijuana (also called hashish or cannabis)?
- A. 0 times
  - B. 1 or 2 times
  - C. 3 to 9 times
  - D. 10 to 19 times
  - E. 20 or more times
64. During your life, how many times have you used the sedatives **seduksin, dimedrol, or doroperidol**?
- A. 0 times
  - B. 1 or 2 times
  - C. 3 to 9 times
  - D. 10 to 19 times
  - E. 20 or more times

**The next 5 questions ask about reproductive health.**

65. Have you ever had sexual intercourse?
- A. Yes
  - B. No
66. How old were you when you had sexual intercourse for the first time?
- A. I have never had sexual intercourse
  - B. 11 years old or younger
  - C. 12 years old
  - D. 13 years old
  - E. 14 years old
  - F. 15 years old
  - G. 16 years old or older
67. During your life, with how many people have you had sexual intercourse?
- A. I have never had sexual intercourse
  - B. 1 person
  - C. 2 people
  - D. 3 people
  - E. 4 people
  - F. 5 people
  - G. 6 or more people
68. The **last time** you had sexual intercourse; did you or your partner use a condom?
- A. I have never had sexual intercourse
  - B. Yes
  - C. No
69. The **last time** you had sexual intercourse, did you or your partner use any other method of birth control, such as withdrawal, rhythm (safe time), medicine, or any other method to prevent pregnancy?
- A. I have never had sexual intercourse
  - B. Yes
  - C. No

D. I do not know

**The next 4 questions ask about HIV/AIDS.**

70. Have you ever heard of HIV/AIDS?  
A. Yes  
B. No
71. During this school year, were you taught in any of your classes how to avoid getting infected with HIV/AIDS?  
  
A. Yes  
B. No  
C. I do not know
72. Have you ever talked about HIV/AIDS with your parents or guardians?  
  
A. Yes  
B. No
73. During this school year, were you taught in any of your classes the signs and symptoms of HIV/AIDS infection?  
  
A. Yes  
B. No  
C. I do not know

**The next questions ask about physical activity. Physical activity is any activity that increases your heart rate and makes you get out of breath. Physical activity includes sports, playing with friends, walking to school, running, fast walking, biking, dancing, and football.**

74. During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (ADD UP ALL THE TIME YOU SPENT IN ANY KIND OF PHYSICAL ACTIVITY EACH DAY)  
  
A. 0 days  
B. 1 day  
C. 2 days  
D. 3 days  
E. 4 days  
F. 5 days  
G. 6 days  
H. 7 days
75. During the past 7 days, on how many days did you walk or ride a bicycle between school and home?  
  
A. 0 days  
B. 1 day  
C. 2 days  
D. 3 days  
E. 4 days  
F. 5 days  
G. 6 days  
H. 7 days
76. During this school year, on how many days per week did you go to physical education (PE) class?  
  
A. 0 days  
B. 1 day  
C. 2 days  
D. 3 days  
E. 4 days  
F. 5 or more days



77. During the past year, on how many sports teams did you play?

- A. Never played on sports teams
- B. 1 team
- C. 2 teams
- D. 3 or more teams

**The next question asks about the time you spend mostly sitting when you are not in school or doing homework.**

78. How much time per day do you **usually** spend during watching television, playing computer games, talking with friends, or doing other sitting activities?

- A. Less than 1 hour per day
- B. 1 to 2 hours per day
- C. 3 to 4 hours per day
- D. 5 to 6 hours per day
- E. 7 to 8 hours per day
- F. More than 8 hours per day

**The next questions ask about your experiences at school and at home.**

79. During the past month, on how many days did you miss classes or school without permission?

- A. 0 days
- B. 1 or 2 days
- C. 3 to 5 days
- D. 6 to 9 days
- E. 10 or more days

80. During the past month, how often did your classmates or other friends show they care about your studies (i.e., were kind and helpful)?

- A. Never
- B. Rarely
- C. Sometimes
- D. Usually
- E. Always

81. During the past month, how often did your parents or guardians check to see if you had done your homework?

- A. Never
- B. Rarely
- C. Sometimes
- D. Usually
- E. Always

82. During the past month, how often did your parents or guardians understand your problems and worries?

- A. Never
- B. Rarely
- C. Sometimes
- D. Usually
- E. Always

83. During the past month, how often did your parents or guardians really know what you were doing with your free time?

- A. Never
- B. Rarely
- C. Sometimes
- D. Usually
- E. Always

84. During the past month, how often did your parents or guardians go through your things without your permission?

- A. Never
- B. Rarely
- C. Sometimes
- D. Usually
- E. Always



### Appendix 3. List of Selected Schools, Enrollment, Selection weight, and Within School Intervals

#### GSHS Selected Schools

Country: **Mongolia Urban**

School ID	School Name	Enrollment	School selection Weight	Within School Interval
208	Mongolia Urban – “Future” complex, Songinokhairkhan district_public school	3607	1	32.392
207	Mongolia Urban – “Education” complex, Baganuur_public school	2066	1.30935222745147	24.7389505443069
206	Mongolia Urban - EUTsS Bayangol district_public school	1794	1.50787162871501	21.4819347901678
204	Mongolia Urban – “Erdenet” complex, Orkhon_public school	1444	1.87335297916533	17.2909218712387
202	Mongolia Urban - Bayan-Undur Orkhon_public school	1328	2.03698923336953	15.9019004466794
200	Mongolia Urban - Oyunii ireedui, DarkhanUul_public school	1153	2.34615932516456	13.8063939872148
198	Mongolia Urban - 84th school Bayanzurkh district_public school	1044	2.59111274129764	12.5011928210341
195	Mongolia Urban - XIV school Orkhon_public	902	2.99902627706734	10.8008390082114
192	Mongolia Urban - 62th school Songinokhairkhan district_public school	871	3.10576544421899	10.4296350068206
189	Mongolia Urban - 14th school Bayanzurkh district_public school	837	3.23192556979061	10.0225080375532
186	Mongolia Urban - 97th school Bayanzurkh district_public school	828	3.2670551955492	9.91473913392358
182	Mongolia Urban - 67th school Songinokhairkhan district_public school	777	3.48149511185938	9.30404868002249
179	Mongolia Urban - Amgalan Bayanzurkh district_public school	740	3.65556986745235	8.86099874287856
175	Mongolia Urban - 23th school Chingeltei district_public school	727	3.72093769176718	8.70533254874691
171	Mogolia Urban - 5th school Chingeltei district_public school	665	4.06785218333043	7.96292454596519
167	Mongolia Urban – “Setgemj” complex, Bayangol district_public school	631	4.28703914724998	7.5557975766978
163	Mongolia Urban - 24th school Chingeltei district_public school	599	4.51606294142694	7.17261925268143
158	Mongolia Urban - 37th school	555	4.87409315660313	6.64574905715892

	Chingeltei district_public school			
153	Mongolia Urban - 18th school Khanuul district_public school	537	5.03747058084681	6.43021124989971
148	Mongolia Urban - 42th school Songinokhairkhan district_public school	523	5.17231682966489	6.26257073314255
143	Mongolia Urban - 87th school Bayanzurkh district_public school	508	5.3250427203046	6.08295589375988
137	Mongolia Urban – Mongolian and Indian school Sukhbaatar district_public school	489	5.53194622068453	5.85544376387516
131	Mongolia Urban - 31th school Sukhbaatar district_public school	446	6.06529529577295	5.34054789097816
125	Mongolia Urban - 61st school Chingeltei district_public school	377	7.17538912974731	4.51431962981786
117	Mongolia Urban - 4th school DarkhanUul_public school	317	8.53350694610327	3.79586027228717
108	Mongolia Urban – “Hardworking youth” Sukhbaatar district_public school	264	10.2466731133134	3.16122117313506
96	Mongolia Urban – “Jargalant” school Orkhon_public school	207	13.0682207821968	2.4786847834809
81	Mongolia Urban – “World” Sukhbaatar district_private school	162	16.6982821105848	1.93984026533287
61	Mongolia Urban – “Chandmani” Songinokhairkhan district_private school	113	23.9391301054401	1.35309845668281
31	Mongolia Urban – “Erdem tugs” Sukhbaatar district_private school	66	32.39199999999999	1

Country: **Mongolia Rural**

School ID	School Name	Enrollment	School selection Weight	Within School Interval
406	Mongolia Rural – “Erdem orgil” complex Uvs aimag_public school	1234	2.67277344192906	14.510171117238
403	Mongolia Rural - Nomgon Bayanhongor aimag_public school	1086	3.03701880970577	12.7698912749761
400	Mongolia Rural - Burendund Sukhbaatar aimag_public school	975	3.38277172034919	11.4646813932797
396	Mongolia Rural - 1st school GobiAltai aimag_public school	769	4.28894984049475	9.04239999121236
392	Mongolia Rural – “Erdemiin dalai” school Dundgobi aimag_public school	696	4.73879659100641	8.18401871766425
387	Mongolia Rural – “Temuulel” complex, Sukhbaatar aimag_public	648	5.08981856071059	7.6196036336874

	school			
381	Mongolia Rural - jargalant 3-10 Khovd aimag_public school	613	5.38042810332865	7.20805096828762
376	Mongolia Rural - 5th ahlah BayanUlgii aimag_public school	591	5.58071476707354	6.9493607214649
370	Mongolia Rural - Tarialan Khuvsgul aimag_public school	528	6.24659550632663	6.20856592374529
364	Mongolia Rural - Kharkhorin-1 Uvurkhangai aimag_public school	485	6.80041737595972	5.7029440776827
356	Mongolia Rural - Tsengel ahlah BayanUlgii aimag_public school	428	7.70608043771136	5.0327011654602
348	Mongolia Rural - Nogoонуур ahlah, BayanUlgii aimag_public school	397	8.30781467843945	4.66818309039182
339	Mongolia Rural - Tes akhlakh Uvs aimag_public school	375	8.7952064729079	4.4094928435691
330	Mongolia Rural - Batsumber Tuv aimag_public school	346	9.5323769576314	4.06849206366642
321	Mongolia Rural - Bogd Uvurkhangai aimag_public school	321	10.2747739169485	3.77452587409515
310	Mongolia Rural - Jargalant Khuvsgul aimag_public school	299	11.0307773489648	3.51583562727243
299	Mongolia Rural - Ikhtamir Arkhangai aimag_public school	291	11.3340289599329	3.42176644660962
287	Mongolia Rural - Renchinlkhumbe Khuvsgul aimag_public school	267	12.3528180799268	3.1395589046212
274	Mongolia Rural - Gurvanbulag 11 year Bulgan aimag_public school	251	13.1402487145038	2.95142054329558
261	Mongolia Rural - Bayangol Uvurkhangai aimag_public school	242	13.6289356501672	2.84559271504992
247	Mongolia Rural - Gurvantes Umnugobi aimag_public school	230	14.3400105536542	2.70448894405571
233	Mongolia Rural - Chandmani Khovd aimag_public school	208	15.8567424391368	2.44579869723299
214	Mongolia Rural - Chuluut Arkhangai aimag_public school	195	16.913858601746	2.29293627865593
197	Mongolia Rural - 11th school Dornod aimag_public school	172	19.1755955077934	2.02248738425036
179	Mongolia Rural - Tsetseg Khovd aimag_public school	159	20.7434114927073	1.8696249656733
155	Mongolia Rural - Bayanlig Bayanhongor aimag_public school	131	25.1771177659577	1.54038283335347
126	Mongolia Rural - Dadal Khentii aimag_public school	105	31.4114516889568	1.23465799619935
91	Mongolia Rural - Ulziit Khentii aimag_public school	84	38.7824	1
52	Mongolia Rural - Delgereh Dornogobi aimag_public school	66	38.7824	1
13	Mongolia Rural - SB 5th 9 year Selenge aimag_public school	48	38.7824	1



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