

# BUDAPEST STUDENT HEALTH BEHAVIOR SURVEY - BUDAPEST, HUNGARY, 1999. FINDINGS ON UNINTENTIONAL AND INTENTIONAL INJURIES, ALCOHOL USE, AND SEXUAL ACTIVITY

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## SUMMARY

**Objective:** In Hungary, a large proportion of adult morbidity and mortality can be attributed to health risk behaviors that begin in early adolescence. To date, studies examining health risk behaviors among youth have rarely been undertaken in Hungary. In order to expand current research in this area, the Hungarian Metropolitan Institute of State Public Health and Public Health Officer Service and the Office on Smoking and Health at the U.S. Centers for Disease Control and Prevention developed and implemented the Budapest Student Health Behavior Survey. The objective of this study was to examine health behavior risk factors among secondary school students in Budapest in 1999.

**Methods:** The 1999 Budapest Student Health Behavior Survey is cross-sectional school-based survey. A 2-stage cluster sampling design was used to produce a representative sample of secondary students in grades 9-12 in Budapest. Information was collected on unintentional and intentional injuries, alcohol use, and sexual activity.

**Findings:** During the 30 days preceding the survey, 28.7% of students had rarely or never worn a seatbelt and 68.1% drunk alcohol. During the 12 months preceding the survey, 14.5% had been threatened or injured with a weapon, 12.9% experienced dating violence, and 13.5% seriously considered suicide. Of the 44.7% of students who had had sexual intercourse, 29.5% had  $\geq 4$  sex partners. Of sexually active students, 50.4% had not used a condom at last sexual intercourse.

**Conclusion:** Many secondary school students in Budapest practice behaviors that place them at risk for serious health problems both in the short and long term. Programs and policies that adequately address such behaviors among secondary school students are needed to reduce subsequent morbidity and mortality.

**Key words:** Budapest, Hungary, youth, schools, health-risk behaviors

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## INTRODUCTION

In developed countries, a large proportion of adult morbidity and mortality can be attributed to health risk behaviors that begin in early adolescence. Such behaviors include those that contribute to unintentional and intentional injuries; tobacco, alcohol, and other drug use; physical inactivity; unhealthy dietary behaviors; and sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs; including HIV infection). These behaviors, all of which are preventable and interrelated, contribute simultaneously to poor health, educational, and social outcomes.

Among the developed countries of the world, Hungary stands out with its high rates of illness and death due to behavioral risk factors. While alcohol consumption is declining in most devel-

oped countries, it is rising in many Central and Eastern European Countries (1, 2). Compared to other Central and Eastern European (CEE) countries, mortality from liver cirrhosis among young and middle-aged adults in Hungary is among the highest in the world (1, 2). In 1996, Hungary ranked 10<sup>th</sup> out of 153 countries in per capita consumption of pure alcohol. Adults aged 15 years and older consumed 12.85 litres of pure alcohol (3). Projected mortality rates for cancers related to alcohol as well as tobacco use are expected to be the highest by the period 2000-2004 (4). According to recent data from World Health Organization's (WHO) World Health Statistics Annual report, in 1995 the highest cause-specific mortality rates for cancers were reported in Hungary for both men and women (5). In addition to morbidity and mortality associated with alcohol and tobacco, Hungary also experiences high rates

of suicide with the highest cause-specific mortality rates found among women in Hungary (5).

To date, detailed studies of health behavior risk factors among youth and adults have rarely been undertaken in Hungary. The objective of our study was to assess priority health risk behaviors among youth, specifically secondary school students in Budapest, Hungary. In addition to collecting data on alcohol use and suicide, data was collected on unintentional and intentional injuries, as well as sexual activity, physical activity, and smoking. In this paper, we describe the survey design, sampling methodology, implementation, and findings of the 1999 Budapest Student Health Behavior Survey (BSHBS).

## METHODS

The 1999 BSHBS employed a two-stage cluster sampling design to produce a representative sample of secondary students (grades 9-12) in Budapest (6). Among the 80,352 secondary school students in the city in 1999, 67,253 (84%) attended traditional high schools and 13,099 (16%) attended vocational/technical (vo-tech) schools. The first stage of sampling consisted of randomly selecting 30 schools (21 traditional and 9 vo-tech) from 222 secondary schools in Budapest. Schools were selected with probability proportional to school enrollment size. At the second sampling stage, three to four intact classes per school were randomly selected in grades 9-12 at each of the 30 schools. All students in the selected classrooms were eligible to participate.

### Data Collection

From March through May of 1999, 2,615 (85%) of 3,092 eligible students completed a pretested, standardized survey that included questions on demographics, unintentional and intentional injuries, alcohol use, sexual activity, physical activity, and smoking translated from the U.S. Youth Risk Behavior Survey (7) and questions on sadness and suicide ideation from the 1993 Teenage Attitudes Practice Survey (8). The questionnaire contained 61 multiple-choice questions and 1 open-ended question. Participation in the survey was voluntary, and all information collected was anonymous. Students completed the self-administered questionnaire during a regular class period, recording responses directly on the survey. Active informed parental consent was required of all participating students before survey administration.

### Data Analysis

For each variable, we determined frequency overall and by gender, grade, and type of school (vo-tech versus traditional) and in several cases by age in order to compare to existing studies; cross-tabulations and  $\chi^2$  values were determined for gender by grade and gender by type of school. We applied a weighting factor to each student record to adjust for nonresponse and for varying probabilities of selection. SUDAAN was used to compute 95% confidence intervals (9). We considered differences between prevalence estimates as significant if the 95% confidence intervals did not overlap.

## RESULTS

All selected schools and classrooms agreed to participate; the school response rate was 100% and the overall student response

rate was 85%. The number of male (52.2%) and female (47.8%) students was similar. Most were aged 15-18 (91.7%) and attended traditional high schools (83.3%). In this article we categorized and presented findings as follows: behaviors that contribute to unintentional injuries, behaviors that contribute to intentional injuries, alcohol use, and sexual behaviors that contribute to unintended pregnancy and STDs. Data in the text are presented for overall prevalence and significant findings only. For more detailed results we refer readers to the tables. The results on smoking were previously published. In brief, 46% of students reported current smoking. The prevalence of smoking was similar among males (44.9%) and females (46.9%) and the prevalence of smoking was significantly higher among vo-technical students (60.2%) than traditional high school students (43.1 %) (10,11).

### Behaviors That Contribute to Unintentional Injuries

Behaviors that contribute to unintentional injuries include seatbelt use, riding with a driver who had been drinking alcohol, and driving after drinking alcohol. During the 30 days preceding the survey, 28.7% had rarely or never worn seatbelts when riding in a car driven by someone else, 18.5% of students had ridden  $\geq 1$  times with a driver who had been drinking alcohol, and 4.8% of students had driven a vehicle  $\geq 1$  times after drinking alcohol. Vo-tech students (45.5%) were significantly more likely than traditional students (25.4%) to have rarely or never worn seatbelts or to have ridden with a driver who had been drinking alcohol (25.1% and 17.2%). Male students (8.0%) were significantly more likely than female students (1.7%) to have driven after drinking alcohol, but the latter estimate should be interpreted with caution because of the small number of respondents. Vo-tech students (9.2%) were significantly more likely than traditional students (3.9%) to have driven after drinking alcohol (Table 1).

### Behaviors That Contribute to Intentional Injuries

Behaviors that contribute to intentional injuries included dating violence, forced sexual intercourse, school-related violence, sadness, and suicide ideation and attempts. Thirteen percent of students had been hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend during the 12 months preceding the survey, 4.0% had ever been forced to have sexual intercourse, and 14.5% had been threatened or injured with a weapon  $\geq 1$  times on school property. Female students (5.9%) were significantly more likely than male students (1.8%) to have ever been forced to have sexual intercourse. However, the latter estimate should be interpreted with caution because of the small number of respondents. Vo-tech students (5.3%) were significantly more likely than traditional students (3.7%) to have ever been forced to have sexual intercourse. Male students (17.8%) were significantly more likely than female students (11.4%) to have been threatened or injured with a weapon on school property.

Questions on sadness and suicide ideation and attempts found that during the 12 months preceding the survey, 16.4% of students had felt so sad or hopeless almost every day for  $\geq 2$  weeks in a row that they stopped doing some usual activities, 13.5% of students had seriously considered suicide, 8.5% had made a suicide plan, and 4.4% of students had attempted suicide one or more times. Of the students who had attempted suicide during the past 12 months preceding the survey, 8.7% of students made a suicide attempt that resulted in an injury, poisoning, or overdose that required medical

**Table 1.** Behaviors that contribute to unintentional injuries

	Rarely/never use seatbelts*			Riding 1 times with a driver who had been drinking alcohol†			Driving 1 times after drinking‡		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Grade									
9	28.9 (±4.5)	34.4 (±3.5)	31.8 (±2.8)	15.8 (±3.1)	20.0 (±2.5)	17.9 (±2.2)	1.9 (±1.3) §	8.9 (±2.1)	5.5 (±1.6)
10	32.0 (±3.2)	29.6 (±2.4)	30.8 (±2.1)	15.9 (±1.6)	21.1 (±2.5)	18.6 (±1.6)	1.9 (±0.9) §	5.5 (±0.8) §	3.8 (±0.6)
11	25.1 (±3.2)	34.2 (±3.8)	29.3 (±2.6)	15.5 (±1.5)	25.0 (±3.3)	19.7 (±1.7)	1.3 (±0.7) §	9.5 (±2.7)	5.0 (±1.2)
12	23.2 (±4.1)	19.2 (±2.3)	21.4 (±3.0)	17.8 (±3.3)	17.4 (±3.3)	17.6 (±3.2)	1.4 (±0.6) §	7.8 (±1.5) §	4.2 (±0.9) §
School type									
Vo-tech	40.0 (±6.4)	48.5 (±4.4)	45.5 (±4.0)	21.6 (±2.1)	27.1 (±3.5)	25.1 (±2.3)	1.6 (±1.0) §	13.1 (±1.6)	9.2 (±1.3)
Traditional	25.9 (±2.2)	24.7 (±2.1)	25.4 (±2.0)	15.6 (±1.5)	19.2 (±1.8)	17.2 (±1.5)	1.7 (±0.5) §	6.5 (±1.1)	3.9 (±0.6)
Total	27.4 (±2.1)	30.2 (±2.1)	28.7 (±1.8)	16.2 (±1.4)	21.1 (±1.5)	18.5 (±1.3)	1.7 (±0.4) §	8.0 (±0.9)	4.8 (±0.6)

Values are percentages and 95% confidence intervals.

\*When riding in a car driven by someone else.

†One or more times during the 30 days preceding the survey.

§ Estimate should be interpreted with caution because of the small number of respondents.

attention. Female students (20.6%) were significantly more likely than males (11.7%) to have felt sad or hopeless almost every day for  $\geq 2$  weeks, to have seriously considered suicide (17.9% versus 8.6%), to have made a suicide plan (11.7% versus 5.7%), and to have attempted suicide (6.3% versus 2.4%) (Table 2).

#### Alcohol Use

Two-thirds of respondents (68.1%) had drunk alcohol on  $\geq 1$  of the 30 days preceding the survey (i.e., current alcohol use) and 21.3% had drunk  $\geq 5$  drinks of alcohol on  $\geq 1$  of the 30 days preceding the survey (i.e., episodic heavy drinking). Male students (26.8%) were significantly more likely than female students (16.1%) to report episodic heavy drinking. Vo-tech students (32.8%) were significantly more likely than traditional students (19.0%) to report episodic heavy drinking (Table 3).

#### Sexual Behaviors That Contribute to Unintended Pregnancy and STDs, Including HIV Infection

Behaviors assessed that contribute to unintended pregnancy and STDs included sexual intercourse, condom use, birth control pill use, alcohol or drug use at last sexual intercourse, and HIV and hepatitis B education. Among all respondents, 44.7% of students had had sexual intercourse during their lifetime, 3.2% had initiated sexual intercourse before age 13 years, 29.5% of all students had had sexual intercourse during their lifetime with  $\geq 4$  sex partners, and 6.8% of students had been pregnant or gotten someone else pregnant. Vo-tech students (63.5%) were significantly more likely

than traditional students (40.9%) to have had sexual intercourse. Male students (34.7%) were significantly more likely than female students (24.2%) and vo-tech students (37.6%) were significantly more likely than traditional students (26.9%) to have had  $\geq 4$  sex partners.

During the 3 months preceding the survey, 32.5% of students had had sexual intercourse (i.e., were currently sexually active). Of these students, 49.6% reported they (or their partner) had used a condom during their last sexual intercourse, 32.6% reported that they (or their partner) had used birth control pills before their last sexual intercourse, and 18.7% said that they had used alcohol or drugs at last sexual intercourse. Vo-tech students (47.2%) were significantly more likely than traditional students (29.5%) to be currently sexually active. Male vo-tech students (58.9%) were significantly more likely than female vo-tech students (38.5%) to report condom use. Female students (39.4%) were significantly more likely than male students (24.4% of whom reported their partners used birth control) to report birth control pill use. Male students (25.4%) were significantly more likely than female students (13.0%) to have used alcohol or drugs at last sexual intercourse.

Among students who had had sexual intercourse during their lifetime, 27.5% had been abstinent during the 3 months preceding the survey (i.e., currently abstinent). Male students (34.3%) were significantly more likely than female students (21.3%) to be currently abstinent.

Nearly three-fourths (73.8%) of students had been taught in school about acquired immunodeficiency syndrome (AIDS) or

**Table 2.** Behaviors that contribute to intentional injuries

	Grade				School type		
Health risk behavior	9	10	11	12	Vo-tech	Traditional	Total
On ≥1 times during the 12 months before the survey, was hit, slapped, or physically hurt on purpose by a boyfriend or girlfriend							
Total	18.8 (±2.1)	11.5 (±1.3)	11.6 (±1.7)	9.6 (±1.1)	12.6 (±0.9)	12.9 (±0.8)	12.9 (±0.7)
Female	19.4 (±3.5)*	10.4 (±1.5)	10.5 (±2.3)	7.5 (±1.7) †	12.0 (±1.7)	11.7 (±1.0)	11.7 (±1.0)
Male	18.0 (±2.3)	12.9 (±2.5)	12.9 (±2.2)	12.3 (±3.4) †	12.8 (±1.0)	14.3 (±1.5)	14.0 (±1.2)
Ever forced to have sexual intercourse							
Total	2.5 (±0.1)	4.1 (±0.6)	5.5 (±0.8)	2.9 (±0.6) †	5.3 (±0.1)	3.7 (±0.4)	4.0 (±0.4)
Female	3.7 (±1.0) †	6.5 (±1.1) †	8.0 (±1.1)	4.1 (±1.1) †	10.6 (±2.0) †	5.4 (±0.4)	5.9 (±0.4)
Male	1.4 (±0.7) †	1.6 (±0.8) †	2.5 (±1.2) †	1.5 (±0.8) †	2.6 (±1.0) †	1.5 (±0.6) †	1.8 (±0.6) †
On ≥1 times during the 12 months before the survey, was threatened or injured with a weapon on school property							
Total	20.9 (±1.9)	14.5 (±1.1)	13.6 (±1.1)	8.9 (±1.8)	16.1 (±1.1)	14.2 (±0.7)	14.5 (±0.6)
Female	16.5 (±2.8)	10.0 (±2.0)	10.9 (±1.3)	8.7 (±0.9) †	10.5 (±1.5) †	11.6 (±1.1)	11.4 (±1.0)
Male	23.3 (±3.0)	19.4 (±1.8)	16.9 (±2.2)	9.1 (±3.4) †	19.1 (±1.0)	17.4 (±1.7)	17.8 (±1.3)
During the 12 months before the survey, felt so sad or hopeless almost every day for ≥2 weeks in a row that they stopped doing some usual activities							
Total	18.6 (±2.6)	14.3 (±1.7)	18.5 (±1.7)	14.1 (±1.7)	14.6 (±2.2)	16.8 (±1.0)	16.4 (±0.9)
Female	26.2 (±3.2)	19.3 (±1.9)	22.8 (±2.7)	13.9 (±2.0)	25.3 (±2.9)	20.0 (±1.0)	20.6 (±1.0)
Male	11.5 (±1.7)	9.1 (±1.7)	13.1 (±1.3)	14.4 (±2.6)	9.0 (±1.3)	12.6 (±1.4)	11.7 (±1.1)
During the 12 months before the survey, seriously considered attempting suicide							
Total	15.0 (±1.6)	13.3 (1.8)	14.9 (±1.8)	10.5 (±1.6)	13.7 (±1.4)	13.5 (±1.2)	13.5 (±1.0)
Female	21.6 (±3.2)	18.5 (±2.2)	19.4 (±2.0)	11.7 (±2.7)	23.8 (±2.9)	17.2 (±1.2)	17.9 (±1.1)
Male	8.9 † (±1.4)	7.9 (±1.8)	9.2 (±2.2)	9.0 † (±2.3)	8.4 (±1.6)	8.7 (±1.0)	8.6 (±0.9)
During the 12 months before the survey, made a suicide plan							
Total	11.9 (±1.4)	8.1 (±0.9)	7.9 (±1.6)	5.8 (±1.4)	7.7 (±1.0)	8.7 (±0.9)	8.5 (±0.8)
Female	17.1 (±3.8)	11.7 (±1.4)	10.3 (±1.8)	5.3 (±1.3)	12.5 (±1.6)	10.9 (±1.2)	11.0 (±1.1)
Male	7.1 † (±1.7)	4.3 † (±0.8)	4.9 † (±1.9)	6.5 † (±3.0)	5.2 † (±1.0)	5.8 (±0.7)	5.7 (±0.7)
During the 12 months before the survey, attempted suicide ≥1 times							
Total	6.5 (±1.5)	4.7 (±1.0)	4.3 (±1.0)	1.7 † (±0.6)	5.0 (±0.7)	4.3 (±0.7)	4.4 (±0.6)
Female	10.3 (±2.5)	7.6 (±1.6)	5.5 † (±1.4)	1.8 † (±0.6)	9.4 † (±1.6)	5.9 (±0.9)	6.3 (±0.8)
Male	3.1 † (±0.9)	1.7 † (±0.6)	3.0 † (±1.1)	1.6 † (±1.0)	2.7 † (±0.6)	2.3 † (±0.5)	2.4 (±0.4)

Table 2. (cont.)

	Grade				School type		
Health risk behavior	9	10	11	12	Vo-tech	Traditional	Total
Of students who had attempted suicide during the 12 months before the survey, an attempt required medical attention							
Total	7.3 † (±2.3)	8.7 † (±3.3)	12.4 (±4.2)	3.0 † (±3.0)	8.2 † (±2.5)	9.3 † (±2.1)	8.7 † (±1.6)
Female	10.2 † (±4.4)	14.8 † (±5.7)	10.6 † (±4.4)	-----	12.7 † (±12.7)	10.1 † (±2.4)	10.6 † (±2.4)
Male	5.0 † (±2.7)	2.4 † (±1.5)	14.0 † (±5.9)	5.5 † (±5.3)	6.3 (±2.3)	7.3 (±2.6)	6.9 (±1.8)

Values are percentages and 95% confidence intervals.

\*95% confidence interval

†Estimate should be interpreted with caution because of the small number of respondents.

HIV infection and 46.6% of students had been taught in school about hepatitis B infection (Table 4).

## DISCUSSION

Many secondary school students in Budapest practice behaviors that place them at risk for serious health problems. Some risk factors are more likely to be found among particular subpopulations of students. In the current study, differences by gender and type of school were observed. With regards to gender, male students were more likely than female students to report driving after drinking alcohol, being threatened or injured with a weapon on school property, episodic heavy drinking, having had ≥4 sex partners (among those who were ever sexually active), being currently abstinent, and using alcohol or drugs at last sexual intercourse. In contrast, female students were more likely than male students to report being forced to have sexual intercourse, feeling sad or hopeless almost every day for ≥2 weeks, seriously considering attempting suicide, having made a suicide plan, having attempted suicide, having had a suicide attempt that required medical attention, and using birth control. With regards to type of school, vo-tech students were more likely than traditional students to report rarely or never wearing seatbelts, riding with a driver who had been drinking, driving after drinking alcohol, episodic heavy drinking, being forced to have sexual intercourse, having had sexual intercourse, having ≥4 sex partners, and being currently sexually active.

Results from the BSHBS support earlier findings that school youth are at risk for behaviors that have both short- and long-term effects. Comparisons with findings from previous studies in Hungary are difficult because of a paucity of data and lack of standardization of existing health behavior questions. Data for which comparisons could be made included alcohol use and sexual activity. While the BSHBS had no question on “regular”, daily, or weekly drinking, compared with previous studies more than two-thirds of males (68.7%) and females (67.4%) reported current alcohol use. Conversely, a 1995 study by Kiss et al. of 14- to 19-year-old students in Budapest found that about half as many females as males drank alcohol “regularly” (personal communication, Eva Kiss). The 1997-98 WHO Health Behaviour in School-aged Children (HBSC) study found that among 15-year-old

students in Hungary, 11% of females and 29% of males reported drinking beer, wine, or spirits at least weekly (12). While gender differences are noted between the BSHBS, the study by Kiss et al., and the HBSC survey, alcohol use remains a health risk behavior among students in Budapest whether defined as current use, “regular” use, or weekly use. Comparisons with findings from the 1999 U.S. Youth Risk Behavior Survey (YRBS) found that nationally, 52.3% of males and 47.7% of females currently used alcohol compared with 68.7% of males and 67.4% of females in the current study (13).

In terms of episodic heavy drinking, in the current study 32.8% of vocational/technical students overall reported episodic heavy

Table 3. Alcohol use

	Current alcohol use*			Episodic heavy drinking†		
	Female	Male	Total	Female	Male	Total
Grade						
9	53.3 (±3.5)	57.8 (±5.5)	55.8 (±3.8)	13.4 (±2.8)	22.9 (±3.1)	19.4 (±2.7)
10	66.8 (±2.0)	70.8 (±3.3)	68.8 (±1.9)	18.8 (±2.4)	25.4 (±2.2)	21.9 (±1.6)
11	71.7 (±2.5)	75.2 (±3.8)	73.3 (±1.6)	18.0 (±2.8)	36.8 (±4.0)	26.6 (±1.9)
12	76.6 (±3.8)	72.5 (±2.6)	74.8 (±2.9)	10.9 (±2.3) §	22.4 (±4.7)	16.0 (±2.8)
School type						
Vo-tech	64.1 (±3.8)	70.1 (±1.2)	68.1 (±1.7)	26.0 (±3.1)	35.8 (±1.8)	32.8 (±2.0)
Traditional	67.8 (±1.7)	68.3 (±2.5)	68.1 (±1.6)	14.9 (±1.0)	24.1 (±2.3)	19.0 (±1.3)
Total	67.4 (±1.6)	68.7 (±2.0)	68.1 (±1.4)	16.1 (±1.1)	26.8 (±1.9)	21.3 (±1.1)

Values are percentages and 95% confidence intervals.

\* Drank alcohol on ≥1 of the 30 days preceding the survey.

† Drank ≥5 drinks of alcohol on ≥1 occasions on ≥1 of the 30 days preceding the survey.

§ Estimate should be interpreted with caution because of the small number of respondents.

**Table 4.** Sexual behaviors that contribute to unintended pregnancy and STDs, including HIV infection

	Grade				School type		
Health risk behavior	9	10	11	12	Vo-tech	Traditional	Total
Ever had sexual intercourse							
Total	27.7 (±3.0)	39.4 (±2.3)	53.3 (±3.6)	58.8 (±3.8)	63.5 (±3.4)	40.9 (±2.6)	44.7 (±2.2)
Female	19.7 ¶ (±3.0)	39.9 (±3.8)	50.1 (±4.5)	64.6 (±4.9)	65.0 (±1.8)	41.3 (±2.9)	43.9 (±2.6)
Male	35.0 (±4.7)	39.0 (±2.4)	57.1 (±4.7)	51.9 (±3.7)	62.7 (±4.2)	40.5 (±3.3)	45.6 (±2.8)
First sexual intercourse before age 13							
Total	7.6 ¶ (±2.3)	3.1 ¶ (±1.0)	1.8 ¶ (±0.9)	1.6 ¶ (±0.8)	2.6 ¶ (±0.8)	3.4 ¶ (±0.9)	3.2 (±0.7)
Female	7.5 ¶ (±4.2)	3.3 ¶ (±1.4)	2.0 ¶ (±1.3)	-----	2.3 ¶ (±0.8)	2.4 ¶ (±1.0)	2.4 ¶ (±0.8)
Male	7.6 ¶ (±2.5)	2.8 ¶ (±0.9)	1.6 ¶ (±1.0)	4.2 ¶ (±2.0)	2.8 ¶ (±1.1)	4.1 ¶ (±0.9)	3.7 ¶ (±0.7)
≥4 sex partners during lifetime							
Total	23.5 (±5.6)	26.8 (±1.9)	33.3 (±2.2)	30.1 (±2.4)	37.6 (±2.1)	26.9 (±1.4)	29.5 (±1.3)
Female	10.7 ¶ (±5.0)	18.8 (±2.9)	29.1 (±2.9)	26.3 (±3.7)	30.1 (±2.1)	23.1 (±1.9)	24.2 (±1.7)
Male	30.1 (±5.5)	33.2 (±2.8)	37.6 (±3.3)	35.9 (±5.0)	41.4 (±2.6)	31.5 (±2.9)	34.7 (±2.2)
Currently sexually active *							
Total	17.2 (±2.3)	27.3 (±1.7)	38.9 (±3.2)	47.4 (±3.4)	47.2 (±4.1)	29.5 (±2.0)	32.5 (±1.8)
Female	13.7 (±1.8)	30.2 (±3.3)	38.6 (±3.7)	55.3 (±5.7)	54.1 (±3.2)	32.2 (±2.5)	34.5 (±2.3)
Male	20.3 (±3.8)	24.2 (±1.4)	39.1 (±4.5)	37.9 (±2.6)	43.6 (±5.0)	26.0 (±2.2)	30.1 (±2.0)
Currently abstinent †							
Total	37.1 (±3.1)	30.8 (±2.3)	27.0 ¶ (±2.3)	20.7 (±3.0)	24.4 (±4.4)	28.5 (±1.4)	27.5 (±1.3)
Female	29.3 (±5.9)	23.7 (±3.3)	22.6 (±2.9)	16.2 ¶ (±4.4)	14.6 ¶ (±3.2)	22.5 (±1.5)	21.3 (±1.4)
Male	42.0 (±4.7)	38.1 (±2.6)	31.5 (±3.5)	26.5 ¶ (±4.6)	29.8 (±3.3)	35.8 (±2.5)	34.3 (±2.0)
Condom use during last sexual intercourse §							
Total	57.5 (±6.8)	54.0 (±4.5)	48.7 (±3.6)	45.0 (±3.5)	51.0 (±3.0)	49.0 (±3.2)	9.6 (±2.5)
Female	56.3 ¶ (±12.4)	46.4 (±5.8)	41.5 (±3.8)	43.4 (±5.0)	38.5 (±3.8)	45.4 (±3.0)	44.3 (±2.6)
Male	57.7 (±7.6)	64.3 (±3.6)	57.1 (±6.1)	48.0 (±5.8)	58.9 (±4.7)	56.2 (±3.5)	56.2 (±3.5)
Birth control pill use before last sexual intercourse §							
Total	13.4 ¶ (±4.1)	22.4 (±2.2)	33.9 (±3.7)	47.2 (±3.4)	27.1 (±1.9)	34.4 (±2.4)	32.6 (±1.9)
Female	13.6 ¶ (±7.6)	26.7 (±3.1)	40.5 (±4.6)	53.0 (±4.0)	34.1 (±4.1)	40.5 (±1.7)	39.4 (±1.5)
Male	13.5 ¶ (±4.9)	16.7 (±3.4)	26.0 (±4.2)	37.0 ¶ (±6.1)	22.8 (±2.8)	25.2 (±4.7)	24.4 (±3.2)

Table 4. (cont.)

	Grade				School type		
Health risk behavior	9	10	11	12	Vo-tech	Traditional	Total
Alcohol or drug use at last sexual intercourse §							
Total	27.1 ¶ (±6.3)	18.1 (±3.2)	23.4 (±2.6)	9.6 ¶ (±2.4)	20.1 (±1.7)	18.3 (±2.2)	18.7 (±1.7)
Female	14.9 ¶ (±7.6)	8.4 ¶ (±2.5)	20.1 (±3.5)	9.0 ¶ (±3.7)	14.8 ¶ (±3.3)	12.7 (±2.6)	13.0 (±2.2)
Male	35.0 ¶ (±7.4)	31.2 (±5.5)	27.5 (±3.9)	10.8 ¶ (±2.4)	23.6 (±2.7)	26.4 (±2.7)	25.4 (±2.1)
Have been or gotten someone pregnant							
Total	6.6 ¶ (±2.3)	7.6 ¶ (±1.7)	8.3 (±1.8)	4.4 ¶ (±1.7)	11.0 (±2.4)	5.5 (±1.0)	6.8 (±1.0)
Female	5.1 ¶ (±4.2)	9.7 ¶ (±2.8)	9.3 ¶ (±2.8)	5.9 ¶ (±2.3)	16.7 (±4.2)	6.2 ¶ (±1.4)	7.9 (±1.5)
Male	7.5 ¶ (±2.3)	5.1 ¶ (±1.8)	7.1 ¶ (±1.7)	1.9 ¶ (±1.4)	8.0 ¶ (±1.4)	4.2 ¶ (±1.1)	5.5 (±0.8)
Was taught in school about HIV/AIDS							
Total	78.9 (±2.3)	66.3 (±4.0)	72.1 (±3.3)	80.1 (±4.0)	67.1 (±3.2)	75.2 (±2.6)	73.8 (±2.3)
Female	85.7 (±2.6)	66.3 (±5.3)	72.5 (±3.9)	81.3 (±3.6)	64.0 (±8.1)	77.1 (±2.4)	75.7 (±2.4)
Male	72.6 (±3.0)	66.1 (±4.0)	71.6 (±4.7)	79.1 (±4.7)	68.9 (±3.4)	72.8 (±3.3)	71.9 (±2.6)
Was taught in school about hepatitis B							
Total	47.1 (±4.1)	40.7 (±4.6)	45.9 (±4.0)	54.7 (±5.1)	42.1 (4.4)	47.5 (±3.4)	46.6 (±2.9)
Female	48.2 (±4.9)	39.5 (±4.5)	47.6 (±4.8)	54.8 (±6.4)	42.2 (±11.8)	47.7 (±3.0)	47.1 (±3.0)
Male	46.1 (±4.5)	41.8 (±6.1)	44.2 (±4.5)	54.7 (±4.4)	42.3 (±1.9)	47.2 (±4.3)	46.1 (±3.3)

Values are percentages and 95% confidence intervals.

\* Sexual intercourse during the 3 months preceding the survey.

† Among those who have ever had sexual intercourse, no sexual intercourse during the 3 months.

§ Among currently sexually active students.

¶ Estimate should be interpreted with caution because of the small number of respondents.

drinking during the 30 days preceding the survey and among 15 year old students (data not shown), 50.3% of females and 55.7% of males currently used alcohol and 11.0% and 17.4% of female and male students, respectively, participated in episodic heavy drinking. Our findings are supported by a study conducted by Aszmann which found that 22% of trade school students, especially those aged 15 years, consumed alcohol regularly (e.g. daily, weekly) (14). The HBSC study found that among 15-year-old students in Hungary 11% of female students and 29% of male students reported drinking beer, wine or spirits at least weekly (12). While patterns of current drinking are largely similar among males and females, males are more likely than females to be heavier drinkers. Comparisons with findings from the 1999 YRBS found that nationally, 34.9% of males and 28.1% of females currently participated in episodic heavy drinking compared with 26.8% of males and 16.1% of females in the current study (13).

In the BSHBS 15-year-old (data not shown) males (29.0%) were more likely than 15-year-old females (14.4%) to report current sexual activity, however, more females (70.3%) compared to males (47.6%) reported condom use at last sexual intercourse. Similarly, the HBSC survey found that among 15-year-old students in Hungary more males (47%) than females (34%) had reported having had sexual intercourse. Among those students, 55% and 63% of males and females, respectively reported using condoms during intercourse as protection against disease (12). With regards to sexual activity by school type, Kiss et al. found that vocational/technical students were more likely to be sexually active, and that 60% of sexually active students (compared to about 50% in the current study) did not use condoms regularly/during last sexual intercourse. In the current study 47.2% of vocational/technical students compared to 29.5% of traditional students were currently sexually active. Condom use during last sexual intercourse was

51.0% and 49.0% for vocational/technical students and traditional students, respectively. Comparisons with findings from the 1999 YRBS found that nationally, 36.2% of males and 36.3% of females were currently sexually active (compared to 30.1% of males and 34.5% of females in the current study) and that 65.5% of males and 50.7% of females used a condom during last sexual intercourse (compared to 56.2% of males and 44.3% of females in the current study) (13).

Findings in this report are subject to at least one important limitation. These data apply only to youth who attended secondary school and are not representative of all persons in this age group (e.g., secondary school students who dropped out and approximately 80% of gypsy children who do not attend secondary school; 4% of Hungary's population is Roma) (15,16).

Surveys such as the BSHBS can be used to (1) identify, justify, and support policies and programs that can effectively address the most important public health problems (e.g., suicide, violence, sexually transmitted diseases, HIV infection, obesity, heart disease, and cancer), (2) provide data to set priorities for and support school health programs for secondary school students, (3) provide data that will enable officials to assess the need for new interventions or to modify existing interventions that focus on health risk behaviors among secondary school students in Budapest, (4) allow officials to focus school health programs, curricula, and teacher training programs in Budapest on priority health risk behaviors, (5) provide data to determine whether public information campaigns need to be targeted specifically to adolescents and, if so, to identify the specific behaviors to be addressed in such campaigns, (6) provide other city health departments that may conduct similar surveys with an index against which to compare their survey results, and (7) provide public health and education officials, youth, and the general public with accurate information about health risk behaviors among secondary school students. Importantly, as demonstrated in the current study, many health risk behaviors vary significantly by gender and school type. As such, intervention programs should be designed that specifically address these differences. These steps can successfully lead to reduced premature morbidity and mortality among all youth and into adulthood.

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#### REFERENCES

1. A Summary of Global Status Report on Alcohol. [http://www.who.int/substance\\_abuse/PDFfiles/who\\_ncd\\_msd\\_2001\\_2.pdf](http://www.who.int/substance_abuse/PDFfiles/who_ncd_msd_2001_2.pdf) (accessed July 16, 2003).
2. Proceedings from the 2<sup>nd</sup> conference on health status of Central and Eastern European populations after transition; 2000 June 5-7; Warsaw: 2000.
3. Alcohol Consumption. [http://www.who.int/substance\\_abuse/PDFfiles/global\\_alcohol\\_status\\_report/4Alcoholconsumption.pdf](http://www.who.int/substance_abuse/PDFfiles/global_alcohol_status_report/4Alcoholconsumption.pdf) (accessed July 16, 2003).
4. Bray I: Alcohol- and tobacco-related mortality to rise in Central Europe. *Eur J Cancer* 2000; 36:1726-7.
5. Life Expectancy at Birth Plummets in the Countries of the Former Soviet Union. <http://www.who.int/larchives/inf-pr-19971en/pr97-13.html> (accessed July 16, 2003).
6. National Center for Chronic Disease Prevention and Health Promotion. PCSample user's guide. Atlanta: Centers for Disease Control and Prevention; 1992.
7. Centers for Disease Control and Prevention. Youth risk behavior survey-United States, 1997: Morbidity Mortality Weekly Report CDC Surveillance Summaries 1998;47(no.SS-3).
8. [http://wonder.cdc.gov/wonder/sci\\_data/surveys/nhis/type\\_txt/tapsii.asp](http://wonder.cdc.gov/wonder/sci_data/surveys/nhis/type_txt/tapsii.asp)
9. Shah BV: Software for survey data analysis version (7.5) [software documentation]. Research Triangle Park, NC: Research Triangle Institute, 1997.
10. Centers for Disease Control and Prevention. Prevalence of cigarette smoking among secondary school students-Budapest, Hungary, 1995 and 1999. *Morbidity Mortality Weekly Report* 2000;49:438-41.
11. Kiss É, Easton A, Végh E, Ferenczi L: Prevalence of cigarette smoking among secondary school students-Budapest, 1995 and 1999 (follow up study). *Hung J Publ Health* 2000; 3:16-21.
12. Currie C, Hurrelmann K, Settertobutte W, Smith R, Todd J, editors. Health and health behavior among young people. World Health Organization; 2000. WHO Policy Series: Health policy for children and adolescents issue 1.
13. Centers for Disease Control and Prevention. CDC Surveillance Summaries, June 9, 2000. *Morbidity Mortality Weekly Report* 2000;49(No. SS-5).
14. Aszmann A: Health behaviour in school-aged children, 1986-1993. [Budapest]:[Anonymus]; 1997.
15. Kézdi G: Secondary school education of Roma youngsters. In: *Gypsies in Hungary*. Budapest:Hungarian Academy of Sciences; 1999.
16. Central Intelligence Agency. The World Fact Book 2001. Hungary. Available at <http://www.cia.gov/cia/publications/factbook/index.html>. Accessed on August 1, 2000.

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