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2016 Global Youth Tobacco Survey (GYTS)



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Unit for Health Education and Health Promotion

The Republic of Macedonia Report

**2016 Global Youth Tobacco Survey
(GYTS)**

July, 2016

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Executive summary

Introduction: The World Health Organisation (WHO) and the Centre for Disease Control and Prevention (CDC) based in Atlanta, USA, have developed a school-based Global Youth Tobacco Survey (GYTS) to track tobacco use among young people (13-15), intended to enhance the capacity of countries to design tobacco control programmes.

The purpose of this paper is to present and to ascertain data on young people's tobacco use prevalence in the Republic of Macedonia, on national level and regional levels, including urban, rural regions, and Skopje in order to understand and evaluate the students' attitudes, knowledge and behaviour of students connected to the use of tobacco and its effects on the health, to end smoking, to understand the impact of environmental tobacco smoke, the role of media and advertisement, the approach to tobacco, and the school curriculum, in order to continue the improvement of the measures on tobacco control.

Material and methods: A common methodology, proposed by the Centre for Disease Control and Prevention from Atlanta (USA) was used; including designed sample based on a cluster of selected schools, with proportional involvement. The classes in the selected schools are selected by following a standard protocol for randomisation and all of the students in the selected classes should be capable and eligible for participating in the survey. For the survey a questionnaire consisting of total of 75 questions is used. Part of the questions are standard questions, while the second part are optional questions that allow adaptation based on the requirements of the country and the key indicators for tobacco control. The questionnaires were translated from English language to Macedonian and Albanian language, and the content covers the following themes: use of tobacco (tobacco that is smoked and tobacco that is not smoked), cessation, environmental tobacco smoke, media coverage in terms of messages and advertisements for and against tobacco, access to tobacco for minors, knowledge and personal positions in regards of the use of tobacco. The questionnaire was anonymous and guaranteed confidentiality.

In the Republic of Macedonia, the Institute for Public Health conducted the GYTS for the third time in 2016. The overall student response rate is 86.2%. In total 5,141 students from 74 schools, in grades 8-9 and 1st year high school completed the survey, out of which 4,919 were 13-15 years old. The presented results refer to the data obtained from the students that were 13-15 years old. The results from 2016 are compared to the results from 2002/2003 and 2008.

Results and discussion: The data indicates that 12.4% of the students (14.6% boys and 9.8% girls) use tobacco. In 2016, 7.5% of the students- 9.0% boys and 6.1% girls, have smoked cigarettes in the past 30 days. Compared to 2008 the current smokers prevalence have decreased, which is a result of the significant decline of the number of female smokers (2008- 9.8%, 9.7% boys and 9.8% girls). The percentage of students that in the past 30 days have smoked cigarettes increases as the age increases (in Skopje- 3.6% of 13 years olds, 8.9% of 14 years olds, and 15.5.% of 15 years olds). There is a decrease in the prevalence of students that have ever smoked cigarettes (23.8% in 2016, 26.0% in 2008). The prevalence of everyday smokers is also decreased (2.4% in 2016, and 3.7% in 2008). The prevalence of students that have tried a cigarette under the age of 10 is 18.5% (24.8% boys, 10.6%

girls). 3.9% of the students have answered that they are using electronic cigarettes. 46.2% of the students are exposed to smoke from tobacco in their homes (91.9% in 2002/2003, 67.5% in 2008). There is a decrease in the exposure to tobacco in closed public places (49.8% in 2016, 66% in 2008, 80.2% in 2002/2003). However, 59.7% of the students have seen people smoking in school or in the schoolyard. 83.6% (86.4% in 2008, 86.7% in 2002/2003) from the students in all regions believe that smoking should be banned in all closed public places. Unfortunately, there is an increase in the percentage of students that have claimed that they can freely buy tobacco products in a store, kiosk and other similar places (73.9% in 2016, 65.1% in 2008, 59.6% in 2002/2003). Moreover, 78.2% of the students answered that the stores selling tobacco products did not refuse to sell them tobacco products because of their age, out of which 9.6% have claimed that they can buy by piece. There is a decrease in the exposure of students to the promoting activities of the tobacco industry, however, the percentage of students that have seen tobacco consumption on television, video or movie in the cinema remains high (71.9%). 6 out of 10 students have seen messages against tobacco in the media, but only 32.7% have said the warning messages on the cigarette boxes would make them stop smoking. Compared to 2002/2003 (55.6%) and 2008 (44%) there is a decrease in the percentage of students that have been taught in school about the negative effects of the use of tobacco (37.1%). Only, 22.6% of the students have received any advice/professional help or have been part of a program to help them stop smoking, but only half of the students (54.5% in 2016, 66.2% in 2008, 63.5% in 2002/2003) answered that they want to stop smoking now.

Conclusion: There is a decrease in the prevalence of the use of tobacco and tobacco products in 2016 from students at the age of 13-15, compared to 2002/2003 and 2008, which is due to the measurements undertaken by the country, such as law regulation, ban on the use of tobacco in public places, ban on tobacco promotion and advertisement, increase in the tax and price of cigarettes and measurements to promote cessation of smoking by creating counselling centres as part of the Centres for Public Health. Any future activities should aim to promote healthy life style and strengthen the control of the process for implementation and enforcement of the law regulations in practice in order to decrease the availability of tobacco products, decrease the effect of the tobacco industry and increase the activities in schools to improve the education of students which will focus on the negative effects of tobacco on their health.

Key words: survey, students, tobacco use, smoking prevalence, environmental tobacco smoke, Republic of Macedonia

1. INTRODUCTION

Comprehensive information on tobacco prevention and control relating to young people is not available for most developing countries. To overcome this data gap, the WHO Tobacco Free Initiative and the Office on Smoking and Health of the US Centre for Disease Control and Prevention (OSH/CDC) have developed the Global Youth Tobacco Survey⁽¹⁾, in consultation with a range of countries representing the six WHO regions. The survey is now an important part of the global tobacco surveillance system. The Republic of Macedonia has joined the survey in 2002/2003⁽²⁾, and has conducted it second time in 2008.

The GYTS provides a mechanism by which countries can monitor tobacco use among young people aged 13–15 years and guide the implementation and evaluation of tobacco use prevention and control programmes. It aims to understand and assess students' attitudes, knowledge and behaviour related to tobacco use and its health impact under the headings of cessation, environmental tobacco smoke, media and advertising, access to tobacco for minors and the school curriculum.

The GYTS aims to address the following issues:

- determination of the level of tobacco use, and cigarettes as one form of a tobacco product;
- estimation of the age of initiation of cigarette use;
- estimation of levels of susceptibility for young people to start smoking cigarettes;
- exposure to tobacco advertising;
- identification of key intervening variables, such as attitudes and beliefs about behavioural norms with regards to tobacco use among young people, which can be used in prevention programmes;
- Assessment of the extent to which major prevention programmes are reaching school-based populations and establishment of the subjective opinions of those populations regarding such interventions.

1.1. Tobacco use and legislation in the Republic of Macedonia

Tobacco is cultivated extensively in the Republic of Macedonia. The production of tobacco products is an old and existing tradition. In addition, tobacco is highly available due to substantial import of the product. Legislation includes the following laws:

- Law on tobacco (*Official Gazette of the Republic of Macedonia No. 69/96, 15/1998*)⁽³⁾;
- Law on protection against smoking (*Official Gazette of the Republic of Macedonia No.36/95*)⁽⁴⁾;

- The changes and additions to the law for protection against smoking (Official Gazette of the R. Macedonia No 70/2003,29/04,37/05,2007,103/08,140/08,35/10, 100/11,157/13) ⁽⁴⁾;
- Law on broadcasting (Official Gazette of the Republic of Macedonia No. 20/1997) ⁽⁵⁾;
- Law on food safety and safety of products and materials that come into contact with food (Official Gazette of the Republic of Macedonia No. 54/2002) ⁽⁶⁾;
- The law for excise tax and the changes and additions to the law (Official Gazette of the Republic of Macedonia in 2001, No82/13, No.24/2015, 2016) and the law for trade (2004) also impose regulations on the smoking ⁽⁷⁾;
- Law for tobacco and tobacco products (Official Gazette of the Republic of Macedonia No.24/2006 and the changes and additions to the law for tobacco and tobacco products (Official Gazette of the R. Macedonia No 88/2008, 31/2010, 36/2011, 53/2011,93/2013,99/2013,164/2013,151/2014,193/2015,213/2015,39/2016⁽⁸⁾
- The National Strategy for tobacco control and health promotion and protection of the population 2005-2010 was adopted in 2004. According to The National Tobacco Control Strategy for Provision and Promotion of Health Protection of the Population in The Republic of Macedonia 2005-2010 ⁽⁹⁾, 75% of all deaths are due to cardiovascular diseases and malignant neoplasms. Thus, leading causes of death in the country are associated with smoking. Cigarette smoking is one of the most important risk factors for the health problems of a significant segment of the population. It is a cause of poor health and premature death for many people.
- The project Public Health Capacity Building for Strengthening Tobacco Control in South-Eastern Europe started in 2005⁽¹⁰⁾, while Macedonia signed the WHO Framework Convention on Tobacco Control in 2006. Macedonia also signed the Protocol for elimination of illegal trade with tobacco products.

The main achievements of the country in the control of the tobacco use are:

- Legal measures synchronized with the laws governing tobacco in Europe ⁽¹¹⁾ as well as the WHO Framework Convention on Tobacco Control;
- Signing of the WHO Framework Convention on Tobacco Control ⁽¹²⁾;
- Ban on direct and indirect tobacco products advertisement, ban on the distribution of tobacco products, ban on smoking in health institutions, educational facilities, government facilities, restaurants, cafeterias, offices, theatres and cinemas, and ban on smoking in the means of public transport;
- Strengthening of economic measures on the aspects of production and trading of tobacco products, raising prices and taxes on tobacco products;
- Undertaking broader and more intensive activities towards identifying the legal and illegal trade of tobacco and tobacco products;
- Stricter control of the use of revenue stamps;
- Strengthening the fight against tobacco smuggling;

- Imposing separate taxes on tobacco intended for the public health sector (0.08 EUR or 5 DEN) per pack of cigarettes;
- Introducing a registry for tobacco, tobacco products, manufacturers, distributors, tobacco brands and tobacco products;
- More strictly controlling tobacco import and export;
- Implementation of health promotion activities, including the organization of campaigns, media advertisement with messages against smoking, celebrating every year the World Day against tobacco (31st of May) by organizing lectures, press conferences in collaboration with the WHO Office in the Republic of Macedonia, the Institute for labour Medicine, the Institute for social medicine, Medical Faculty in the University of “St. Cyril and Methodius” in Skopje, etc.;
- 10 counselling centres were opened in the framework of the Centres for Public Health, for cessation of smoking, also functioning are the counselling anti-smoking centres operating in the framework of the Institute for lung diseases and tuberculosis in Skopje;
- For the third time (2002/2003, 2007/2008, 2015/2016) has been conducted the Global Youth Tobacco Survey, in order to monitor the prevalence of users of tobacco among children in the age group 13-15, as well as monitoring the effects of the preventive politics in the country.

The intersectoral approach contributes to a coordinated response to prevent tobacco consumption and to enhance tobacco control. The country participates in the WHO Network of Health Promoting Schools, the Euro Pharm Forum and the European Forum of Medical Associations and implements their aims and recommendations ⁽¹³⁾.

GYTS RM 2002/2003 showed that 1 in 5 (23.6%) students (13-15 years) had ever smoked cigarettes while in 2008 26.0% of the students. 1 in 5 (20%) of these students had first tried smoking under the age of 10 years; 7.7% were current users of cigarettes (they had smoked at least once in the previous 30 days), there is no significant difference by gender and region, 9.8%

(9.7% boys and 9.8% girls) in 2008. Most common was the use of manufactured cigarettes (89.1%). 9 in 10 in 2002/2003 of both those who never smoked and current smokers were exposed to tobacco smoke in their homes. Some 63.8% of current smokers were exposed to tobacco smoke from their best friends in their homes, more than twice as many as those who never smoked (14.7%). There were no significant differences by gender and region. Similarly, 7 in 10 in the age of 13-15 in 2008 were exposed to environmental tobacco smoke in closed public places.

2. THE GLOBAL YOUTH TOBACCO SURVEY – OBJECTIVES AND GOALS

The purpose of this paper is to present and to ascertain data on young people's tobacco use prevalence in the Republic of Macedonia, on national level and regional level, including urban and rural regions, and Skopje. To understand and evaluate the personal positions, knowledge and behaviour of students connected to the use of tobacco and its effects on the health, ending smoking, the effect of the environmental tobacco smoke, media and advertisement, the approach to tobacco and the school curriculum, in order to continue the improvement of the measures on tobacco control.

The data obtained in this survey will be used to make informed decisions, and to help the country to create, implement and evaluate the programs for tobacco control and prevention in order to decrease the prevalence of smoking among the students, as well as their exposure to tobacco smoke in their environment.

3. MATERIAL AND METHODS

3.1. Sample Design

The GYTS is a school-based survey of students in grades 8 and 9 and the 1st year of high school. GYTS uses a standardized methodology for constructing sampling frames, selecting schools and classes, preparing questionnaires, conducting field procedures and processing data. The samples are drawn using a standard protocol and software developed by CDC.

STAGE 1: Selection of Schools

The target population for the GYTS is youth in grades associated with ages 13-15 years. Each country creates a list of schools, which include grades (forms, levels, secondary(s), or standards) associated with these ages. The schools are selected with probability proportional to enrolment size (PPE). This means that large schools are more likely to be selected than small schools.

The number of schools selected is dependent on both statistical and practical considerations. Statistically, the precision of the estimates can be affected by the number of schools selected. Given the same sample size of students, selecting a large number of schools, generally, yields more precise estimates than a sample of fewer schools. With the larger number of schools the average number of students selected per school is reduced; thus reducing the school “cluster” effect.

Practical considerations include:

- 1) timing of the survey -- determining the “best” time for conducting the GYTS will vary by country. The GYTS is now being conducted in countries residing in both the northern and southern hemispheres.
- 2) fieldwork resources -- because fieldwork will last more than two months, the number of available field staff will help determine how many schools can be selected
- 3) other resources -- the larger the sample size, the greater the cost in terms of printing of questionnaires and other supplies

What sample size was selected for the GYTS? Most GYTS select 25, 50 or 100 schools, depending on the statistical precision required, time frame for the fieldwork, and resources available for conducting the survey.

NO replacement or substitution is allowed for schools that do not agree to participate!

STAGE 2: Selection of Classes (Sections) and Students

Classes (Sections) are randomly selected from the selected schools. All students in the selected classes (sections) are eligible for participation in the survey. The number of students interviewed, in most school-based surveys, ranges between 1,500 to 20,000+ students. Why the wide range in size and what factors determine the number to select? Statistically a sample of 1,500 students will yield representative estimates at a fairly precise level ($\pm 5\%$) for any population enrolment size. Sample sizes are increased based on any stratification or over-sampling required for a given study (for example, if the study requires separate urban/rural or region estimates). Increasing the student sample size can be easily accomplished by increasing the number of classes (sections) selected from each school. For example, a sample of 100 schools with 1,500 students would require 1 or 2 classes (sections) from each school (on average). A sample of 100 schools with 3,000 students would require 2 or 3 classes (sections) from each school (on average).

What did we do for the GYTS? Once the sample size is set, the following process is followed. For a student sample of 3,000 completed student interviews with an 80% student response rate, a sample of 3,750 students is required. If 100 schools are selected at 80% participation, then 80 will agree to participate. Thus, $3,750/80 = 47$ students (on average) will be selected per school. This probably means 2 or 3 classes (sections) per school.

Selecting students by class (section) is generally less disruptive to the school than selecting students randomly throughout the school. To survey classes (sections) of students, decide which classes (sections) will be eligible for the survey. These classes (sections) must be classes (sections) in which eligible students in the school are enrolled in one and only one time. Classes (Sections) are selected from a sequentially numbered list of all classes (sections) for each school selected for the survey. Each student must have an equal opportunity of selection.

CDC/OSH recommends conducting the GYTS during the middle of the morning. Homeroom or the early part of the school-day could eliminate those students who arrive at school late. Lunch time should be avoided. Later times of the day become poorer choices as students may leave the building early.

CDC/OSH provide the random numbers for class selection on the School-Level Form.

A two-stage cluster sample design was used to produce representative data for the whole country. At the first stage, schools were selected with probability proportional to enrolment size. Seventy-five schools were selected from three regions: the capital city (Skopje) and urban and rural areas. At the second stage, classes were randomly selected and all students (5141) in the selected classes were eligible to participate in the survey. Student participation is voluntary and anonymous using self-administered data collection procedures. The GYTS sample design produces independent, cross-sectional estimates that are representative of each site. The Ministry of Education and Science provided the list containing all schools in the country. The National Institute for Public Health was responsible for selecting, training and supervising the research team, which were employees in the Institute for Public Health and the regional centres for public health (specialists in Social medicine).

There has been one training workshop, after which the field work was done. The survey procedures were designed to protect the students' privacy through ensuring anonymous and voluntarily participation.

The questionnaires were given out in class. The students marked their answers directly on the answer sheet, which could be scanned by an optical data reader. All members of the research had to submit daily reports to the national coordinator- Prof. Dr. Elena Kjosevska, for assistance in case of non-response, logistics, and job completion. The research team took the responsibility for final editing and packaging of the answer sheets, header sheets, the classroom-level forms and the school-level forms. The packaged documents were sent to the Centre for Disease control and Prevention in Atlanta, in May 2016, where the data scanning and data-file compilation were carried out.

3.2. Data Analysis

A weighting factor was applied to each student record to adjust for non-response and for the varying probabilities of selection. In 74 schools and 306 classes out of 5885 students that were part of the survey, there were number of complete questionnaires is 5141 or 87.4%. One school didn't accept to carry out the survey, asking for the questionnaire to be written in Turkish language. 4919 students were at the age of 13-15. The students' response rate was 86.2%.

Weighting

A weight has been associated with each questionnaire to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of non-response. The weight used for estimation is given by:

$$W = W1 * W2 * f1 * f2 * f3 * f4$$

W1= the inverse of the probability of selecting the school

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

f1 = a school-level non-response adjustment factor calculated by school size category (small, medium, large)

f2 = a class adjustment factor calculated by school

f3 = a student-level nonresponse adjustment factor calculated by class

f4 = a post stratification adjustment factor calculated by gender and grade

3.3. Questionnaire

The questionnaire contains 75 multiple-choice questions. The questionnaire was translated from English to Macedonian and Albanian. The core questions focused on seven topics:

- Smoking prevalence

- Access and availability to tobacco products
- Global youth tobacco cessation
- Knowledge and attitudes
- Tobacco-related school curriculum, youth anti-tobacco awareness
- Media and advertising, indirect pro-tobacco advertising, and
- Environmental tobacco smoke – Second-hand Smoke Exposure.

3.4. Definitions of Indicators:

Current cigarette smoking	Students who smoked cigarettes at least once in the previous 30 days
Current use of tobacco products other than cigarettes	Students who used tobacco products other than cigarettes on at least 1 day during the month preceding the survey
Daily smokers	Students who smoked cigarettes 20 or more days during the month preceding the survey
Never smokers and ever smokers	Students who have never smoked or those who have smoked at some time in their lives
Exposure to second-hand tobacco smoke (SHS) and support for ban on smoking in public places Second-hand tobacco smoke or environmental tobacco smoke is a combination of smoke from a burning cigarette and exhaled smoke from a smoker. This substance is an involuntarily inhaled mix of compounds that causes or contributes to a wide range of adverse health effects, including cancer, cardiovascular diseases, respiratory infections, adverse reproductive effects, and asthma. ^(16,17)	<ul style="list-style-type: none"> • Students who reported being exposed to second hand tobacco smoke at home during the 7 days preceding the survey • Students who reported being exposed to second hand tobacco smoke in public places during the 7 days preceding the survey • Students who reported that they support a ban on smoking in public places
Susceptible to tobacco use initiation	<p>Students who have never smoked and whose response was anything but “definitely no” to both of the following questions:</p> <ul style="list-style-type: none"> • If your best friend offered you a cigarette, would you smoke it? • Do you think you will try smoking a cigarette in the next year?

3.5. Limitations

The findings in this report are subject to at least three limitations. First, the survey is not representative of all youths aged 13-15 years, because only students who attend regular public schools were involved. Second, this data apply only to youths who were in school on the day of the survey and who completed the survey. However, student response rate was high, suggesting that bias attributable to absence or nonresponse was limited. Finally, data was based on the self-report of students, who might underreport or over report their behaviours or attitudes.

4. RESULTS

A total of 4919 students at the ages of 13-15 participated in the R. Macedonia GYTS: 2471 were boys, 2440 were girls, and 8 didn't indicate their gender at the age 13-15. The number of participants divided in age groups were as follows: 13 yrs.- 1483; 14 yrs.- 1862; 15 yrs. – 1574.

50.2% were boys from the total number of students that have stated their gender. Out of the total 5141 students that were sampled, 1665 were from Skopje (1587 at the age of 13-15), 1835 were from the urban regions (1727 at the age of 13-15), and 1641 from the rural regions (1605 at the age of 13-15).

4.1. Tobacco use prevalence in 2002, 2008 and 2016

The prevalence of students that have used tobacco, until the moment of the survey, is 33.0%, out of which 36.5% boys and 29.2% girls. From those students that have answered that they have used tobacco, 30.6% smoked tobacco (23.8% smoked cigarettes) and 4% used another type of tobacco that is not smoked. 4 in 10 students have used an electronic cigarette in the past 30 days (3.9%, 5.7% boys and 1.9% girls). 1 in 10 students have smoked tobacco in the past 30 days (10.9%) out of which 13.1% boys and 8.4% girls. 1 in 4 (23.8%) from the total number of students have ever smoked cigarettes (Table 1). There is no significant difference between the number of boys (25.6%) and girls (22.0%) that have ever smoked a cigarette.

Table 1: Prevalence – MACEDONIA 2002/2003, 2008 and 2016 (13-15 Years ONLY)

Prevalence	2002/2003			2008			2016		
	Total	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl
Ever smoked cigarettes	23,6 (18,5-29,5)	26,3 (21,2-32,1)	21,0 (15,4-28,0)	26,0 (21,6-30,8)	27,7 (23,3-32,5)	24,2 (19,2-29,9)	23,8 (20,3-27,8)	25,6 (21,6-30,1)	22,0 (18,6-25,9)
Ever Smokers, first smoked cigarettes before age 10	19,6 (14,8-25,5)	22,3 (15,9-30,5)	16,7 (11,3-23,9)	16,3 (12,8-20,5)	19,7 (14,7-25,7)	12,6 (8,9-17,5)	18,5 (14,7-22,9)	24,8 (19,6-31,0)	10,6 (7,3-15,2)
Current cigarette smoker	7,7 (5,1-11,4)	8,5 (5,3-13,2)	6,8 (4,2-10,6)	9,8 (7,4-12,7)	9,7 (7,3-12,9)	9,8 (7,2-13,1)	7,6 (5,9-9,7)	9,0 (6,9-11,6)	6,1 (4,6-8,2)
Never smokers likely to initiate smoking in the next year	16,3 (13,2-19,9)	14,4 (11,2-18,3)	17,7 (13,5-23,0)	16,7 (15,0-18,5)	15,4 (13,4-17,7)	17,9 (15,5-20,5)	14,2 (12,8-15,7)	13,0 (11,1-15,2)	15,2 (13,4-17,2)

Current cigarette smokers rate is from 7.7% in 2002/2003, 9.8% in 2008 to 7.6% in 2016, yet the difference is not significant. The prevalence among the boys and girls is oscillating, but the changes are more prominent among the girls where the prevalence was 6.8% in 2002/2003, 9.8% in 2008 to 6.1% in 2016. There is no significant differences between the genders. 18.5% of the students included in the survey in 2016 have tried a cigarette for the first time before the age of 10 (19.6% in 2002/2003 and 16.3% in 2008).

Current cigarettes smokers did not differ by region, but was highest in Skopje (10.0 %) and lowest in urban areas (6.7%) (Table 2).

Table 2. Students who currently, or had ever, smoked cigarettes, 2008 and 2016 (%) (13-15 Years ONLY)

Category	2008			2016		
	Students who had ever smoked cigarettes, even one or two puffs	Students who had ever smoked cigarettes who started under the age of 10 years	Current cigarette-smokers (total)	Students who had ever smoked cigarettes, even one or two puffs	Students who had ever smoked cigarettes who started under the age of 10 years	Current cigarette-smokers (total)
Total	26,0 (21,6 - 30,8)	16,3 (12,8 - 20,5)	9,8 (7,4 - 12,7)	23,8 (20,3 - 27,8)	18,5 (14,7 - 22,9)	7,6 (5,9 - 9,7)
SEX						
Boys	27,7 (23,3 - 32,5)	19,7 (14,7 - 25,7)	9,7 (7,3 - 12,9)	25,6 (21,6 - 30,1)	24,8 (19,6 - 31,0)	9,0 (6,9 - 11,6)
Girls	24,2 (19,2 - 29,9)	12,6 (8,9 - 17,5)	9,8 (7,2 - 13,1)	22,0 (18,6 - 25,9)	10,6 (7,3 - 15,2)	6,1 (4,6 - 8,2)
REGION						
Urban	23,8 (16,6 - 33,0)	15,7 (9,4 - 25,0)	9,4 (5,5 - 15,6)	23,2 (17,2 - 30,6)	16,1 (11,0 - 22,8)	6,7 (4,0 - 11,1)
Rural	22,4 (16,3 - 30,1)	19,8 (16,0 - 24,2)	6,8 (4,4 - 10,5)	19,3 (15,2 - 24,2)	30,7 (23,0 - 39,7)	6,8 (5,2 - 8,9)
Skopje	34,5 (28,9 - 40,6)	15,1 (11,5 - 19,7)	13,6 (10,4 - 17,5)	28,9 (22,6 - 36,1)	15,4 (9,8 - 23,5)	10,0 (7,1 - 13,8)

4.2. Environmental tobacco smoke (Second-hand smoke – SHS)

Overall 91.9% in 2002/2003 of students lived in a home where others have smoked in their presence (Table 3). In 2008, almost 7 in 10 students were exposed to smoking at their homes, a significant decrease from the more than 9 in 10 exposed in 2002/2003. The general trend showing a decrease continues in 2016, where 5 in 10 students were exposed to cigarette smoke in their home, meaning 46.2% lived in a home where others smoked in their presence. 49.8% in 2016 were exposed to smoking in public places.

This shows significant decrease compared to 2008 with 66.0%, and even more significant decrease compared to 2002/2003 when 80.2% of the students have declared that they were exposed to smoke at public places. Similarly the exposure of boys to smoke in public places has significantly decreased (79.8% in 2002/2003, 63.7% in 2008, 46.4% in 2016) and for the girls (80.6% in 2002/2003, 68.3% in 2008, 53.5% in 2016). Exposure to SHS is a significant health risk for non-smokers and smokers, thus reduction of SHS exposure should be a primary component of national comprehensive tobacco control programmes.

Table 3: Factors influencing tobacco use – MACEDONIA 2002/2003, 2008 and 2016 (13-15 Years ONLY)

Factors	2002/2003			2008			2016		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
All or most best friends smoke	13,1 (10,0-16,9)	12,8 (9,2-17,6)	13,3 (9,9-17,6)	14,6 (11,9-17,8)	14,4 (11,6-17,8)	14,8 (11,7-18,4)	10,8 (8,8-13,1)	10,9 (8,8-13,4)	10,5 (8,3-13,3)
Exposed to smoke at home	91,9 (90,2-93,2)	90,7 (88,1-92,7)	92,9 (90,7-94,6)	67,5 (64,9-70,1)	64,7 (61,6-67,6)	70,5 (67,1-73,6)	46,2 (43,7-48,6)	43,0 (40,3-45,7)	49,7 (46,5-52,8)
Exposed to smoke in public places	80,2 (76,9-83,0)	79,8 (76,0-83,1)	80,6 (76,9-83,8)	66,0 (62,3-69,5)	63,7 (59,5-67,7)	68,3 (63,9-72,4)	49,8 (46,3-53,3)	46,4 (42,6-50,3)	53,5 (49,6-57,3)
In favor of banning smoking in public places	86,7 (82,8-89,7)	85,1 (80,8-88,6)	88,1 (84,0-91,3)	86,4 (84,1-88,5)	85,4 (82,0-88,2)	87,6 (85,5-89,4)	83,6 (80,9-86,0)	82,3 (78,8-85,3)	85,2 (82,4-87,5)

Overall 46.3% in 2016 of students from Skopje were exposed to smoke from others at home and that shows a significant decrease compared to 2008 when 71.4% were exposed (Table 4).

Of those living in rural places 80.8% in 2016, thought that smoking should be banned in public places, however, a negative finding is the fact that this percentage is decreasing compared to 2008 when 90.9% of the students believed that smoking should be banned in public places.

In the urban areas and Skopje in 2016 compared to 2008 there is no significant difference in the percentage of students that thought smoking should be banned in public places. There is no significant difference between the genders. 68.5% of the students in 2016 thought that the cigarette smoke is harmful for them, while in 2008 this percentage was 73.7%. There is no significant difference between the regions.

Table 4. Students and environmental tobacco smoke, 2008 and 2016(%)(13-15 Years ONLY)

Category	2008				2016			
	Students who:				Students who:			
	Were exposed to smoke from others		Thought smoking should be banned from public places	Definitely thought smoke from others was harmful to them	Were exposed to smoke from others		Thought smoking should be banned from public places	Definitely thought smoke from others was harmful to them
	at home	in public places			at home	in public places		
Total	67,5 (64,9 - 70,1)	66,0 (62,3 - 69,5)	86,4 (84,1 - 88,5)	73,7 (72,0 - 75,3)	46,2 (43,7 - 48,6)	49,8 (46,3 - 53,3)	83,6 (80,9 - 86,0)	68,5 (66,1 - 70,8)
Region								
Urban	66,8 (61,6 - 71,6)	66,1 (59,0 - 72,5)	86,4 (82,0 - 89,9)	74,2 (71,4-76,9)	49,0 (44,8 - 53,2)	52,9 (46,6- 59,0)	85,4 (80,6 - 89,1)	67,8 (63,7 - 71,6)
Rural	65,4 (62,5 - 68,2)	60,7 (57,3 - 64,0)	90,9 (89,1 - 92,4)	73,4 (70,0-76,5)	39,9 (35,2 - 44,8)	42,8 (36,9 - 48,8)	80,8 (75,6 - 85,1)	72,1 (66,5 - 75,4)
Skopje	71,4 (68,9 - 73,8)	71,1 (66,2 - 75,6)	81,8 (77,3 - 85,7)	72,8 (70,5-75,0)	46,3 (41,8 - 50,8)	50,0 (43,6 - 56,4)	82,7 (78,1 - 86,4)	67,6 (63,5 - 71,5)

4.3. Access and Availability – Current Smokers

The number of social smokers (students who smoke at social events) in 2016 (10.6%) has decreased significantly compared to 2008 (40.8%), while the number of students who smoke on the street, in cafes, park and shopping malls has increased from 20.8% in 2008 to 30.8% in 2016 (Table 5).

Table 5. Select besuzanahaviours of current smokers – MACEDONIA 2008 and 2016 (13-15 Years ONLY)

	2008			2016		
	Percent of current smokers who usually smoke at social events	Percent of current smokers who usually smoke in public places (e.g. parks, shopping centers, street corners)	Percent current smokers who usually buy their tobacco in a store	Percent of current smokers who usually smoke at social events	Percent of current smokers who usually smoke in public places (e.g. parks, shopping centers, street corners)	Percent current smokers who usually buy their tobacco in a store
Total	40,8 (32,8 - 49,4)	20,8 (15,4 - 27,4)	65,1 (57,8 - 71,7)	10,6 (6,4 - 17,0)	30,8 (25,3 - 37,0)	73,9 (67,0 - 79,9)
Boys	36,7 (24,2 - 51,3)	25,1 (18,1 - 33,7)	72,9 (62,8 - 81,1)	11,4 (5,9 - 20,7)	31,7 (22,1 - 43,2)	74,0 (65,1 - 81,3)
Girls	44,7 (35,5 - 54,3)	16,6 (10,9 - 24,3)	57,5 (47,1 - 67,2)	8,9 (3,8 - 19,3)	29,8 (23,1 - 37,4)	73,9 (62,0 - 83,0)

In 2008 61.5% of the current smokers were buying cigarettes in the stores, while in 2016 that number is 73.9%. Out of those, 81.4% in 2008 and 78.2% in 2016 weren't refused to be served due to their age (Table 6). The percentage of free cigarette offers from the cigarette companies is decreasing- in 2002/2003 was 9.7%, in 2008 was 10.4%, while in 2016 it was 6.6%.

Table 6. Student's access to cigarettes – MACEDONIA 2002/2003, 2008, 2016 (13-15 Years ONLY)

Factors	2002/2003			2008			2016		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Current smokers who usually buy their cigarettes in a store were not refused purchase because of their age	73,0 (59,8-83,0)	67,0 (50,9-80,0)	83,1 (60,3-94,1)*	81,4 (72,2-88,1)	77,6 (66,5-85,8)	85,9 (71,2-93,7)	78,2 (71,1-83,9)	77,4 (69,4-83,8)	79,3 (68,3-87,2)
Ever offered a "free" cigarette by a cigarette company representative	9,7 (8,1-11,6)	11,0 (8,5-14,1)	8,2 (6,6-10,2)	10,4 (8,7-12,4)	12,2 (10,0-15,0)	8,4 (6,7-10,5)	6,6 (5,6-7,8)	8,4 (6,7-10,5)	4,6 (3,8-5,6)

4.4. School curriculum

At the question "Were you taught, during this school year, in any classes about the dangers of smoking?", 37.1% of students have answered positively which means less compared to the data from 2002/2003 and 2008. (Table 7) Two thirds of the students haven't received any information in school within the framework of the school curriculum about the negative effects of tobacco consumption on their health.

Table 7. Smoking and the school curriculum, MACEDONIA, 2002/2003, 2008, 2016 (13-15 Years ONLY)

Factors	2002/2003			2008			2016		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
SCHOOL During this school year, were taught in any classes about the dangers of smoking	55,6 (51,7-59,4)	55,3 (50,7-59,9)	55,8 (51,4-60,2)	44,0 (39,7-48,4)	43,5 (39,4-47,8)	44,6 (39,5-49,9)	37,1 (33,4-40,9)	37,5 (34,4-40,6)	36,6 (31,8-41,7)

4.5. Media and Advertising

Over 9 in 10 of the respondents had seen antismoking messages in the media in 2002/2003 and 2008, but it is significant to note that this number has decreased to 6 in 10 students in 2016.

There is a significant decrease in the percentage of students, from 94.5% in 2002/2003 to 71.9% in 2016, that in the past month have seen people consuming tobacco on television, video or movies (Table 8).

More than 4 in 10 students in 2016 have seen advertisement for tobacco products at selling points. There is no significant difference between the genders.

In 2016 total of 17.5% of the students had an object (T-shirt, pen, backpack, etc) with the cigarette brand logo on it, which shows a significant decrease when compared to 24.1% in 2008 and 31.8% in 2002/2003.

Percentage of students having an object with the cigarette brand logo on it decreased among boys from 32.3% in 2002/2003 to 20.1% in 2016 and among the girls from 31.3% in 2002/2003 to 14.6% in 2016.

Table 8. Media and advertising, MACEDONIA, 2002/2003, 2008 and 2016 (13-15 Years ONLY)

Factors	2002/2003			2008			2016		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
During the past month saw any anti-smoking media messages	94,7 (93,3-95,8)	94,3 (92,0-95,9)	95,0 (92,8-96,6)	92,4 (91,0-93,5)	92,5 (90,7-93,9)	92,3 (90,4-93,8)	57,9 (55,6-60,1)	57,6 (54,7-60,4)	58,1 (54,8-61,2)
During the past month saw people consuming tobacco on television, video or movies	94,5 (93,0-95,8)	94,4 (92,3-96,0)	94,7 (92,6-96,2)	92,9 (91,2-94,3)	92,9 (90,9-94,5)	92,9 (90,5-94,7)	71,9 (69,9-73,8)	73,5 (70,9-75,9)	70,2 (67,4-72,9)
During the past month saw any advertisement for cigarettes at selling points	-	-	-	-	-	-	42,6 (40,7-44,7)	45,5 (42,5-48,5)	39,6 (36,6-42,6)
Have an object (t-shirt, pen, backpack, etc) with a cigarette brand logo on it	31,8 (28,7-35,2)	32,3 (28,2-36,8)	31,3 (27,6-35,4)	24,1 (22,5-25,7)	26,5 (24,2-28,9)	21,5 (19,5-23,6)	17,5 (15,6-19,4)	20,1 (17,6-22,8)	14,6 (12,6-16,8)

4.6. Cessation – Current Smokers

In 2016 around 50% of the current smokers said that they want to stop smoking. It is important to note that this shows a decrease in the percentage of current smokers that want to stop smoking compared to 2008 (66.2%) and in 2002/2003 (63.5%) (Table 9). There is no significant differences between boys and girls in terms of their desire to stop smoking, with the difference that among the girls there is continuous decline in the percentage of girls that want to stop smoking, while among the boys this percentage is oscillating. More than 6 in 10 current smokers have tried to stop smoking during the past year. The number of current smokers that have tried to stop smoking has decreased compared to 2002/2003 and 2008. In 2016 and 2002/2003 more than 8 in 10 smokers believe that they can stop smoking if they wish to do so, while in 2008 the number of smokers that shares this idea is significantly less with 4 in 10 smokers. Only 22.6% of the current smokers have obtained any help or advice on how to stop smoking from a program or professionals. There is no significant difference between the genders.

Table 9. Cessation – Current Smokers, MACEDONIA, 2002/2003 ,2008 and 2016 (13-15 Years ONLY)

Factors	2002/2003			2008			2016		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
CESSATION Current smokers who have tried to stop smoking in the past 12 months	78,4 (70,0-85,0)	74,5 (62,6-83,6)	83,7 (62,6-94,1)	77,5 (70,4-83,3)	79,2 (70,4-85,9)	75,6 (64,3-84,2)	63,8 (57,4-69,8)	64,9 (56,2-72,7)	62,0 (53,6-69,7)
Current smokers who want to stop smoking now	63,5 (54,4-71,8)	58,6 (48,3-68,1)	71,1 (52,9-84,3)	66,2 (58,4-73,1)	65,7 (57,0-73,4)	66,7 (55,3-76,4)	54,5 (46,1-62,7)	58,4 (48,0-68,1)	48,3 (38,8-57,8)
Current smokers that think they would be able to stop smoking if they wish to do so	88,1 (83,0-91,8)	83,3 (77,5-87,8)	93,9 (79,9-98,4)	38,8 (24,3-55,7)	37,8 (19,6-60,3)	40,4 (20,9-63,5)	82,1 (72,8-88,8)	81,8 (71,2-89,1)	82,6 (72,6-89,5)
Current smokers that have received help or advice from a program or a professional on how to stop smoking	-	-	-	-	-	-	22,6 (17,4-28,7)	22,3 (16,7-29,1)	22,7 (15,3-32,2)

5. DISCUSSION

5.1. Tobacco use prevalence

The results of the Global Youth Tobacco Survey show that patterns of risk behaviour among young people are similar across the three regions surveyed. There is no significant statistical difference between boys and girls in current smoking prevalence. Previous estimates of a doubling of deaths from smoking (from 5 million per year to approximately 10 million per year by 2020) might be an underestimate because of the high prevalence of smoking among young girls compared with adult girls, the high susceptibility of smoking among never smokers, and high level of exposure to second-hand smoke ⁽¹⁴⁾.

The report showed that one third of the students at the ages 13-15 (33.0%) in the period before the survey have used or tried tobacco in any form, but there is an increase in the tobacco use prevalence in the last month from 9% to 12.4%. In the Republic of Macedonia the smoking of cigarettes is widespread among the adolescents (13-15 yrs. olds), even though in 2016 it has decreased compared to 2008 (7.6% vs. 9.8%). However, a significant fact is the decrease in percentage of students that have never smoked cigarettes, but said that they might smoke in the future compared to 2008 (14.2% vs. 16%). In 2008 approximately 1 in 10, boys and girls, were current smokers, so the weighting of these findings were strengthened by the fact that some of the current smokers were already tobacco addicts. 8% of boys and 6% of girls at the age of 15 confirm that they smoke cigarette every day ("Health Behavior of School-aged Children Study" (HBSCM), 2014)⁽¹⁵⁾. 9.9% of students on age of 16, smoke in more than 40 occasions - showed the results from ESPAD Report 2008 (European Survey for Alcohol and Other Drugs Use)⁽¹⁶⁾, but in 2015 10.7% smoked more than 40 times. According to the same research in 2015, for example, the prevalence of students who have ever smoked is 38.4%⁽¹⁷⁾.

These findings might be contributing to a change in cultural traditions and social influences, advertisements from the tobacco industry showing smoking among young girls more acceptable, than extensive marketing by the tobacco industry and associated smoking with independence, stylishness, weight control, power and sophistication. This is more specific for Skopje, where students come from the other regions and they are without parent's and other control, they are also under the stress regarding the new place and conditions of living, big city with lot of challenges. On other side, there are another social factors as poverty, low income, lack of health education and information about the risks of adolescents' health behaviour, during the classes in the schools.

The GYTS also revealed a new pattern of tobacco use among students. As well as smoking cigarettes, they have started to use shisha, electronic cigarettes, cigars, chewing tobacco, snuff, dip and pipes. Considering the novelty of this information, it is a good moment for decision-makers to take appropriate measures to prevent the spread of use of other types of tobacco product.

5.2. Environmental tobacco smoke (Second-hand smoke – SHS)

This survey has shown that the students are exposed to less tobacco smoke in 2016, approximately 50%, compared to 2008 when more than two thirds from all of the students that participated in the survey have been exposed to smoke. However, exposure to smoke from the environment is still high in the homes of the students, as well in the closed public places. The fact that the survey has shown that around 60% of the students have seen someone smoking in the school or the schoolyard is worrying. These findings increase the necessity for constant and mandatory monitoring on the implementation of the law. Full implementation of the principles and obligations contained in the WHO-FCTC will likely limit tobacco use, initiation of smoking, and exposure to second-hand smoke, and will promote cessation. Article 8 from the Convention (WHO-FCTC) identifies tobacco smoke as harmful to public health and calls for parties to protect their population from exposure.

The data shows the positive impact of smoke-free environment on young people, and supports the need to develop and expand programmes, targeting both parents and young people, that address the problem of passive smoking among youngsters in the home. In this sense, peer education could play an important role.

5.3. Access and Availability – Current Smokers

Adolescents seem to have easy access to tobacco products- two thirds (73.9%) of the current smokers of cigarettes declared they were able to purchase cigarettes in stores and 8 in 10 children (4 in 5 in 2008) from those who bought cigarettes were not refused in the store because they were underage. In Skopje the availability is significantly higher than in other areas of the country, despite the fact that the selling of tobacco products to minors is prohibited by law, offering thus to adolescents good possibilities to smoke despite their age and even buy by piece. Again, there is a need for appropriate enforcement of the control on the implementation of the law to find the mechanisms to monitor selling tobacco to minors.

5.4. School curriculum

The current survey has shown that in the Republic of Macedonia the content of the curriculum and teaching styles need to be improved. There is a decrease in the prevalence of children that have answered that they have had classes where the negative effect and the risks connected with smoking have been discussed, or they have discussed the reasons why students at their age smoke, despite the fact that these classes are included in the school curriculum and are mandatory for all students. The percentage in 2016 is 37.1% while in 2002/2003 is 55.6%. Therefore, new forms of education for the teachers should be developed in the framework of the educational process that would encourage and support (by training and/or financial support) in terms of developing and carrying out the teaching

program in which more frequent education of the students about the negative effects of the use of tobacco will be included.

5.5. Media and Advertising

The percentage of students who saw advertisement for cigarettes on billboards and newspapers and magazines decreased between 2002/2003 and 2008. In 2016 there is an evident decrease in the effect the tobacco industry has, through marketing and advertisement of tobacco products on the students. However, despite the total ban on tobacco advertisement, 42.6% of the students have seen advertisements at the stores, 7 in 10 students have seen someone smoking on television, movie, etc. At the same time, there is a decrease in the percentage of students that have seen antismoking or anti-tobacco messages, and only 3 in 10 students believe that warning messages have any effect on the termination of consumption of cigarettes and other tobacco products.

We are also confronted here, of course, with cross country advertising, that cannot be controlled at national level, but that could be coordinated through international treaties like the Framework Convention on Tobacco Control. It is necessary to increase the quantity, and even more important the quality of the anti-smoking advertisements. The results of GYTS call for a deeper analysis of the impact of the anti-tobacco advertising promoted until now.

The youth is also exposed to indirect advertising. 17.5% of students had an object, such as but not limited to T-shirts, with a cigarette logo on it, while 6.6% were offered free cigarettes by a tobacco company representative, even though all forms of advertising are banned by law.

5.6. Cessation – Current Smokers

In the Republic of Macedonia a 60% of the current smokers students expressed their desire to quit smoking in the year the preceded the survey, while 54.5% want to stop smoking immediately. Compared to 2008 when almost 9 in 10 students have received any kind of help or advice on how to stop smoking, in 2016 only 2 in 10 students have received help/advice on how to stop smoking. The explanation could be that in the Republic of Macedonia there is not sufficient information available to the students and the population in general, regarding the 10 counselling centres opened in 2014 by the Centres for Public Health, but yet the number of trained health and education workers in cessation programs is unsatisfactory. There is a clear necessity for expansions of regular professional cessation programmes for children and youth covered by medical insurance that should benefit from the political support of the decision makers in terms of providing greater financial support for these centres and their work in the education of the children and adolescents in terms of cessation of smoking and general use of tobacco.

6. CONCLUSION AND RECOMMENDATIONS

The survey showed that there is a positive trend showing the decreased use of cigarettes and other tobacco products by young people at the age 13-15 in the Republic of Macedonia, which justifies the efforts of the Government to make a significant policy progress regarding the use of tobacco and recommendations from WHO and CDC ^(18,19,20).

The following recommendations could be found useful:

- Educating the public about the dangers of smoking and the second-hand tobacco smoke through **publishing and distribution of health promotion materials**,
- The whole community should be involved in a nationwide antismoking coalition through **debates and media campaigns** involving public figures from culture, sport, music, health, education and nongovernmental organizations;
- **Banning the broadcasting of talk shows, or TV-shows where someone smokes** on television, as well as movies, videos, etc.
- **Implementation of law and the smoking restrictions in public places**, the ban on selling tobacco products to minors, should be more strict and continuously enforced and observed by the responsible Governmental institutions- ministries and inspection services.
- The professional quality of **cessation counselling** should be improved through developing and dissemination of appropriate, comprehensive and integrated guidelines based on scientific evidence and best practices;
- Young smokers should have greater access to cessation programmes through promotion of cessation of tobacco use and **adequate treatment for tobacco dependence**. The Institute for Public Health of Republic of Macedonia should continue to be responsible institution for preparing and implementation of these kinds of programmes together with Centres for Public Health and Centres for Drug Abuse Prevention.
- **Enhancing the network of health promoting schools** in the country **through developing the specific anti-smoking curriculum in the elementary schools; organising competitions in drawing anti-smoking pictures during the school year and other measures of health promotion**.
- Continuing the implementation of the measures for **increasing tax and prices of tobacco and tobacco products** in order to decrease their availability.
- **Substitution of the tobacco fields** with other useful agricultural cultures.
- **Increased control and implementation of punishment measures for breaching the law regulations regarding the illegal production and selling of tobacco, cigarettes and other tobacco products**.
- **Implementation of the survey for prevalence of tobacco use among adults (GATS – Global Adults Tobacco Survey)**

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Employers in the Institute for Public Health and Centres for Public Health
School staff that were enrolled in the study
Students who participated in the survey, etc.

