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HEALTHY LIFESTYLE. PREVENTION

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PREVALENCE OF SMOKING AMONG ADOLESCENTS OF YAKUTSK

DOI 10.25789/YMJ.2019.65.17

ABSTRACT

The article focuses on smoking - one of the most common bad habits spread among the major part of the world’s population. Tobacco use is one of major risk factors for a number of chronic diseases, including cancer, lung and cardiovascular disease. A number of countries had adopted laws restricting tobacco advertisement, establishing a circle of persons who can buy and consume tobacco products as well as regulating smoking areas. It is proved that the respiratory system (larynx, trachea, bronchial tube, lungs) is more affected by regular intake of nicotine. That is why almost every smoker has problems with his lungs, bronchi or trachea. The aim of the research is to study prevalence of smoking among adolescents in Yakutsk. The study was conducted by a representative sample of Yakutsk schoolchildren with the use of a random number generator. 6 schools were selected from the list of all general education institutions of the city. 931 students of grades 8-11 aged 13 to 17 took a voluntary participation in the survey, among which 57,3% are boys, 42,7% are girls respectively. According to the results of the survey, the prevalence of tobacco consumption among schoolchildren in Yakutsk was 41,5%, among which 39,6% are boys, 44% are girls. Proportion of children with experience of smoking by the age 15-17 is 2.6 times higher than the indicators of a group of children aged 13-15, which indicates sustainable formation of tobacco dependence among adolescents of this age. Analysis on number of cigarettes consumed per day revealed that 71% of boys and 65% of girls smoked up to 5 cigarettes per day; 18% of boys and 30% of girls smoked from 5 to 10 cigarettes per day; 5% of children consumed 10 and more than 12 cigarettes respectively. Among occasional smokers 18% of children smoked 5 and more cigarettes per day. To fight against smoking among adolescents integrative approaches are required combining both preventive and special programs using age-appropriate modern methods of rehabilitation.

Keywords: children, adolescents, Yakutsk, Yakutia, smoking, tobacco smoking.

Introduction. According to the World Health Organization (WHO), tobacco smoking claims the lives of nearly 7 million human annually, of which more than 890,000 are passive smokers [8]. According to many authors in recent years, cigarette consumption among adolescents has increased. Thus, the average rate of cigarette consumption for

all countries is 12% boys and 11% girls on average [13].

According to the 2015 WHO report on the global tobacco epidemic, in Europe 19% of women at the age 15 and older consumed tobacco. This indicator is high in comparison with the equivalent figure in other WHO regions - Africa, South-East Asia, the Eastern Mediterranean and the West Pacific region, where it fluctuates within 2-3% [7].

In our country the prevalence of tobacco smoking among different population groups remains high, which poses a serious threat to public health in the near future. According to many authors, on average 65% of men and up to 30% of women consume tobacco, thereby smoking in Russia is the most common bad habit. It should be noted that among young and less educated population of Russia the prevalence of smoking is even higher. Tobacco smoking is one of the main factors in the development of many chronic diseases and related complications which lead to loss of function, disability and death [2, 4, 5, 10].

According to sample social survey, the proportion of smoking children and adolescents is growing in Russia. In Moscow about 40% of boys and 30% of girls smoke, in Yakutsk it is 34 and 40%, in Tula 40 and 32% respectively, in Voronezh is it more than 50% of adolescents. And if 60-70% of children smoke 1-5 cigarettes, the rest smoke 10 and more cigarettes [6]. According to S.Yu. Artamonova in Yakutsk among adolescents consuming tobacco 77,2% of girls and 83,6% of boys are with behavioral disorders and 9,6% of girls and 7,6% of boys have no behavioral disorders.

The impact of smoking on a child's body is a serious problem in pediatrics [17]. Studies by professor S.M. Gavalov (1988) showed that smoking leads to the development of chronic pathology of respiratory organs of adolescents[11]. Even a single cigarette causes functional changes in the lungs of adolescents, it particularly reduces the ability of lungs and chest to expansion [18].

At smoking in the respiratory tract various components of tobacco smoke penetrate: oxide and carbon dioxide, acrylic aldehyde, which act as household irritants. Tobacco smoke causes oxidative stress and stimulate inflammation in both the upper and lower respiratory tracts [14]. Regular nicotine intake primarily harms the respiratory system. First the adolescence experiences shortness of breath under minimal physical activity and then complains about a protracted dry cough and dyspnoea [15].

In Yakutsk over the past decade a study of the prevalence of tobacco use among adolescents had not been conducted.

Purpose: to study of the prevalence of

Table 1

Structure of the interviewed adolescents of Yakutsk by age and sex, n (%)

Group	n	13-14, n (%)	15-17, n (%)	p
Boys	533	220 (41,3)	313 (58,7)	0,922
Girls	398	163 (41)	235 (59)	
Both genders	931	383 (41,1)	548 (58,9)	

Note: p- stands for the achieved level of statistical significance of differences when comparing groups by age structure.

Table 2

Smoking experience of Yakutsk adolescents

Age group	In total	Boys	Girls	p
	n (%)	n (%)	n (%)	
13-14 y.o.	83 (21,7)	51 (23,2)	32 (19,6)	0,443
15-17 y.o.	303 (55,3)	160 (51,1)	143 (60,9)	0,023
13-17 y.o.	386 (41,5)	211 (39,6)	175 (44,0)	0,179

Note: p- the achieved level of statistical significance of differences when comparing girls and boys.

Table 3

Status in relation to smoking at the time of the survey

Smoking status	13-17 y.o.	13-14 y.o.	15-17 y.o.	p
	n (%)	n (%)	n (%)	
Boys N=533				
On a daily basis	17 (3,2)	2 (0,9)	15 (4,8)	<0,001
Occasionally	44 (8,3)	6 (2,7)	38 (12,1)	
Do not smoke at all	472 (88,5)	212 (96,4)	260 (83,1)	
Girls N=398				
On a daily basis	20 (5,0)	4 (2,5)	16 (6,8)	<0,001
Occasionally	45 (11,3)	8 (4,9)	37 (15,7)	
Do not smoke at all	333 (83,7)	151 (92,6)	182 (77,4)	

Note: p- the achieved level of statistical significance of differences when comparing age groups 13-14 and 15-17 years..

Table 4

Experience of daily smoking

Age group	In total	Boys	Girls	p
	n (%)	n (%)	n (%)	
13-14 y.o.	15 (3,9)	7 (3,2)	8 (4,9)	0,389
15-17 y.o.	107 (19,5)	51 (16,3)	56 (23,8)	0,028
13-17 y.o.	122 (13,1)	58 (10,9)	64 (16,1)	0,020
p*	<0,001	<0,001	<0,001	

Note: In the Tabl. 4-6 p- the reached level of statistical significance of differences when comparing groups by gender; p * - when comparing age groups 13-14 and 15-17.

Table 5

Share of children smoked 100 cigarettes

Age group	Both genders	Boys	Girls	p
	n (%)	n (%)	n (%)	
13-14 y.o.	12 (14,5)	5 (9,8)	7 (21,9)	0,128
15-17 y.o.	74 (24,4)	31 (19,4)	43 (30,1)	0,031
13-17 y.o.	86 (22,3)	36 (17,1)	50 (28,6)	0,007
p*	0,053	0,111	0,354	

Table 6

Number of cigarettes smoked by daily and occasional smokers

Age group	In total	Boys	Girls	p
	Me (Q1;Q3)	Me (Q1;Q3)	Me (Q1;Q3)	
Daily smokers				
13-14 y.o.	5,5 (1; 12,5)	15 (10; 20)	3 (1; 5,8)	0,060
15-17 y.o.	3 (3; 7)	3 (3; 5)	4 (3; 10)	0,383
13-17 y.o.	4 (3; 7)	4 (3; 7)	4 (3; 9)	0,963
p*	0,644	0,041	0,267	
Occasional smokers				
13-14 y.o.	2 (2; 3)	1 (0,75; 4)	3 (1; 3)	0,342
15-17 y.o.	3 (1; 4)	3 (1; 4,3)	3 (1; 4,5)	0,759
13-17 y.o.	3 (1; 4)	3 (1; 4)	3 (1; 4)	0,983
p*	0,232	0,213	0,779	

Table 7

Distribution of smokers by number of smoked cigarettes, n (%)

Smokers	Gender	Up to 5 cigarettes	5-10 cigarettes	10 cigarettes and more	p
daily	Boys	12 (70,6)	3 (17,6)	2 (11,8)	0,566
	Girls	13 (65,0)	6 (30,0)	1 (5,0)	
	Both genders	25 (67,6)	9 (24,3)	3 (8,1)	
occasional	Boys	36 (81,8)	7 (15,9)	1 (2,3)	0,587
	Girls	36 (81,8)	8 (18,2)	0 (0)	
	Both genders	72 (81,8)	15 (17,0)	1 (1,1)	

Note: p- the achieved level of statistical significance of differences when comparing gender groups.

smoking among adolescents in Yakutsk.

Materials and methods. The study was conducted on a representative sample of Yakutsk schoolchildren, for which six schools (№№14, 18, 27, 28, 31) had been selected from the list of all the general education institutions using a random number generator.

Students of grades 8-11 were invited to voluntary participation in the study. An anonymous survey involved 931 persons aged 13 to 17. The study used the questionnaire presented in the physician's guide edited by Prof. N.A. Geppe "Prevention of smoking among children and adolescents", designed to estimate the prevalence, causes and motivations of smoking among children and adolescents (2008).

Results and discussion

Age and gender structure of the respondents is presented in Table 1. Among the participants boys slightly outnumber girls (57.3% and 42.7%, respectively), but the age structure statistically did not significantly differ (p = 0.922).

According to the questionnaire, at the age of 13-17 386 (41,5%) of the schoolchildren had a smoking experience (Table 2). Among the middle school students (13-14 y.o.) 21,7% had an experience of smoking. Among boys of this age 23.2% had a smoking experience, among girls - 19,6% (p=0,443). 55.3% of 15-17-year-olds had similar experience (51% among boys and 60.9% among girls, p = 0.023). Thus, at the age 13-17 42% of children had a smoking experience. The share of children with smoking experience increased by 15-17 years in comparison with 13-14 aged children in 2,6 times (p <0,001).

As it can be seen from Table 3, at the time of the survey 3,2% of boys and 5% of girls stated that they smoked daily, 8.3 and 11,3% smoked occasionally, respectively. In the senior age group the share of smokers was statistically higher, both among boys and girls (p <0,001). The presented survey data is lower than the global survey rates (2009) in the Russian Federation where 15,8% of 15-18 y.o. adolescents smoked on a daily basis [3]. Among American girls and boys studying in grades 7-12, 11% of schoolboys were regular smokers [16]. According to Y.E. Mazur et al. in Krasnoyarsk «heavy smokers» were accounted for 12,6%, «occasional smokers» - 5,2% [12]. Among the adolescents of Zabaykalsky Krai, 39.9% were daily smokers [3].

Among the respondents of Yakutsk at the age of 13-17 13.1% are those who ever smoked daily (Table 4). What is more along with the age-specific pattern of the indicator, there has been a high frequency of daily smoking experience among girls aged 15-17 (p=0,028).

To the question "Have you smoked 100 cigarettes in your entire life?" 17% of boys and 29% of girls at the age of 13-17 gave a positive respond (p=0,007). The share of girls statistically was significantly higher in the 15-17 age group (Table 5). In the younger group, due to the small number of observations, the differences were not statistically significant.

When analyzing the number of cigarettes smoked per day it was noted that daily smoking children on average smoked 4 cigarettes per day, occasional smokers - 3 (Table 6).

According to scientists, regardless of number of cigarettes consumed per day, regularly smoking adolescents constitute a risk group who have serious health abnormalities by high school graduation [9].

Among daily smokers 71% of boys and 65% of girls smoked up to 5 cigarettes per day (Table 7). 18% of boys and 30% of girls smoked 5-10 cigarettes per day, 12 and 5% - more than 10 cigarettes, respectively. Among occasional smokers 18% of children smoked 5 or more cigarettes per day.

Conclusion. The study showed the widespread smoking among schoolchildren of Yakutsk. Prevalence of tobacco smoking was 41.5%, while girls smoke more often than boys, 44.0% and 39.6%, respectively. Every day 3.2% of boys and 5% of girls smoke, 8.3% of boys and 11.3% of girls smoke occasionally. Adolescents began to smoke regularly at the age of 13. The proportion of children with smoking experience by the age of 15-17 is 2.6 times higher than that of the group of children aged 13-14, which indicates the steady development of nicotine addiction in adolescents of this age.

Thus, tobacco smoking among adolescents is a social and medico psychological problem. It is during adolescence when cigarettes cause the most harm, along with climatic and ecological conditions serve as risk factors for formation of chronic bronchopulmonary diseases. To reduce the prevalence of smoking among children and adolescents, a competent, science-based program combining both preventive and special methods of rehabilitation is necessary.

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