THE IMPACT OF TOBACCO SMOKING AS A MEDICAL AND SOCIAL FACTOR ON THE REPRODUCTIVE POTENTIAL OF YOUNG PEOPLE

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Abstract
Currently one of the leading risk factors for people’s health is continuing growth of tobacco use. The Russian Federation is in the 3rd place for smoking prevalence, according to The World Health Organization (WHO) estimates. Tobacco use is a serious medical and social problem. Smoking cessation is the most effective measure to prevent the development of a large spectrum of human diseases. The use of tobacco products by young people is an acute problem of the Russian society in recent years as it represents serious hazard to national safety of the country. World experience has shown the most effective and comprehensive ways to fight with smoking. These include not only the enforcement of laws that prohibit smoking in public places, advertising of tobacco products, price and tax measures, but also promotion of healthy lifestyle, help in smoking cessation, as nicotine dependence is manifested at both mental and physical levels. Thus, prevalence of smoking among students has been examined. We identified major arguments that contribute to the estrangement from smoking by young people based on gender. The study showed that the main reason for smoking cessation is associated with concerns of possible occurrences of problems with the reproductive system.

Keywords: tobacco dependence, motivation for smoking cessation, risk factors, human reproduction, students, health

Relevance
An actual problem of modern society is consumption of tobacco products. Smoking is a serious health and social problem not only for the Russian Federation but for the entire world.

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Tobacco smoke is a heterogeneous aerosol, which contains more than 100 toxic or carcinogenic substances. Maintaining the health of the population is an important factor of the state policy. Currently there are more than 1 billion tobacco smokers in the world, that is to say that they constitute about a quarter of the adult population. The amount of tobacco consumption is growing, especially in developing countries, largely due to the marketing of the tobacco industry.

Meanwhile, it has been proved that the use of tobacco products and exposure to tobacco smoke are risk factors for non-smokers because of the development of several serious diseases: such as a large group of cardiovascular diseases and respiratory diseases, including chronic obstructive pulmonary disease (Maccani et al., 2012).

Smoking affects reproductive health of both males and females negatively (Soares et al., 2008; Practice Committee of the American society for reproductive medicine, 2012; Kochetkova et al., 2014; Yao et al. 2016; Hart, 2016).

During the pregnancy negative effects of smoking increase the risk for spontaneous abortion and premature childbirth. Regarding the fetus, it should be noted that nicotine is neurotoxic and causes delayed development of the central nervous system, intrauterine development of the fetus, increases the risk of sudden death of infants during sleep, as well as of many other pathological conditions (American College of obstetricians and gynecologists, 2011).

Thus, smoking is a significant medical and social problem and, in addition to the direct negative health effect, requires large economic costs of the health care system for the treatment of associated diseases.

Syndrome of tobacco dependence is highlighted in the 10th revision of the International classification of diseases (F17.2) as an independent nosological condition, involving mental and behavioural disorders caused by tobacco consumption. At the same time both active and passive smoking are easily modifiable factors, effects of which on one’s own organism and organisms of others may be minimised for everyone.

State of the problem

A global adult population survey on tobacco consumption has shown that the number of smokers among males and females was 60.2% and 21.7%, respectively. In the Russian
Federation, this number was 39.1% among adult population (Global survey of the adult population on tobacco consumption, 2009). A total of 33.8% of people smoke every day (55% of males and 16.3% of females). An average adult smoker smokes 17 cigarettes per day (males – 18, females – 13). The majority of respondents (77%) started smoking before the age of 18, with 50% of cases the first cigarette was smoked between the ages of 11 to 14. A total of 9% of the smokers consumed a few cigarettes a day and a total of 3% of the smokers consumed cigarettes several times per week or month.

It was revealed that among females, the prevalence of daily smoking had increased since the early 1990-s, and reached the level of 15-20% in recent years, and considering females who smoke irregularly, enrolment rates exceed 20% (Krasovskiy, 2011).

Literature review has shown that the prevalence of smoking among females is much lower in developing countries (3.1%) than in developed countries (17.2%), while the number of male smokers is almost the same (32% versus 30.1%). Perhaps this is due to greater fertility, that is to say females are often in a state of pregnancy or breast-feeding, and, probably this fact can also be explained by cultural and national traditions (Hagen et al., 2016; WHO, 2016).

Alarming growth of the incidence among today’s children and adolescents determine the necessity of active detection of adverse factors influencing the formation of deviations in the health status of the younger generation (Osmanov et al., 2012). Young people aged 15-17 years smoke at the ratio of 60% and 40% for males and females, respectively. It is obvious that smoking is less common among females than among males.

In the framework of the “Global Youth Tobacco Survey” (GYTS) implemented at the initiative of WHO, 14,112 pupils of 8-10 forms were examined. More than half of the pupils had already tried smoking, and half of them were smokers (Warren et al., 2008). In the Russian Federation, the problem of smoking control among young people is of extraordinary importance since the Russian Federation occupies a leading place on terms of its prevalence (Mazur et al., 2013).
The purpose of this study was to find out what caused a lower prevalence of smoking among females than among males in Voskresensk city of Moscow region, and how to use this fact in the smoking control.

The study was performed on the basis of a specialized secondary school in the city of Voskresensk.

Materials and methods

The study was conducted among students of the Voskresensk college. The present study included 103 people aged 15 – 20 years, 62 of which were females and 41 were males. All students were divided into two age groups: the first group – aged 15-17 years – 46 persons (44.6%) and the second group included persons at the age of 18-20 years – 57 persons (55.4%).

Data were gathered using anonymous survey. We evaluated the status of smoking, duration and intensity of the dependence, the number of attempts of smoking cessation and reasons for quitting in terms of negative consequences. The results were compared by the age and gender.

Regular smokers were persons who smoked one or more cigarettes per day. Smoking status was defined as follows: never smoked (non-smokers), smoked in the past (quitters) and smokers at the present time. The proportion of ex-smokers and smokers was considered as involvement into smoking, the proportion of current smokers was considered as its prevalence.

Opinion of the respondents on factors in smoking cessation were studied in groups of smokers currently, and quitters. A comparative analysis of differences between groups was performed using Student’s t-test.

Results and their discussion

A sample survey of the students in the city of Voskresensk was conducted. Results of the study showed that over one-third, 38 out of 103 (36.8%), of the students smoked.

It was revealed that the prevalence of smoking among males was three times higher than that among females, reaching 65.0% and 19.3%, respectively (Figure 1). Similar relationships were established among people who quit smoking.
With increasing age, prevalence of smoking rises: in males with 45.4% at the age group of 15-17 and to 65.1% in the group of 18-20 years old persons, and females - with 6.8% at the age of 15-17 and to 26.2% at the age of 18-20. A total of 0.8% of males at age of 15-17 and 1.1% of young males at age of 18-20 and only 0.2% and 0.4% of females accordingly smoked previously.

Among males involvement in smoking increased with the age growth and accounted for 66.0% at the age of 15-17 years and 77.8% at the age of 18-20 years. This value was also elevated for 9.8% of females at the age of 15-17 and it was at maximum of 20.2% at the age of 18-20.

The average age of the onset of smoking is 19.2±7.0 among male former smokers, varying from the ages of 8 to 14. The average age of those who quit smoking is 15.9±1.5 (14-20). The number of cigarettes smoked per day is 8.6±3.9 (1-18). At the same time it was revealed, that former female smokers begin smoking later at the ages of 20.5±4.1 (12-20), and they give up smoking earlier at 13.4±1.5 (13-20). During the day, females smoke fewer cigarettes – 5.92.5(1-10).

Assessment of the age of smoking onset among persons continuing to smoke showed that the highest rates were observed in males aged 8 to 12 (26%) and from 13 to 15 (35%), and in persons over 16–39% (Figure 2); females - from 10 to 12 years old persons - 8.5% and from 13 to 15 years old persons – 19.3%, over 16 years old persons – 72.2% (Figure 3).
Since the average onset age of tobacco consumption is 13-18, it is possible to assume that a significant number of young people is attached to the habit in the years of study or at the beginning of the independent work.

The number of preceding failure attempts to quit smoking is 2-3 for the majority of former smokers. At the same time every third (12.2%) male and one in seven (6.4%) females could give up smoking. Among smokers currently trying to quit smoking there are 54.7% males and 78.7% females, of which more than 2/3 of them made from 1 to 3 attempts. Noteworthy is the fact, that there are three times more people attempting to quit 5 or more times among smokers, compared with former smokers. This fact can be explained by greater severity of nicotine addiction and lack of motivation for smoking cessation among continuing smokers.

About a quarter (25.3%) of all smokers together males and females believe that they can quit smoking on their own. Another quarter (26.2%) does not know if they can quit smoking. Among females current smokers, only one in ten (10.5%) wants to quit, whereas among males-- current smokers, one in five (23.6%) person expressed a desire to continue smoking in the future.

Data analysis of foreign researchers shows, that only 3-5% of those wishing to quit smoking independently can stop smoking. The others need support while quitting smoking (Maksimov et al., 2015). The Russian Federation is on the 3rd place for smoking prevalence. And this problem is very important for the Russian Federation.

Young people begin smoking for different reasons, depending on gender and age. The comparison of the responses of females and males showed that the number of females who started smoking with the aim to look more adult, for pleasure, for “relaxation” or to overcome
social pressure is less in comparison with males (31.7% versus 78.5%). The number of females, who smoke mainly out of curiosity, for company’s sake, to communicate, in connection with the concern about the problem of excess body weight reached 81.9%; and the number of males, who smoke for the same reasons is only 40.7%. But it is obvious that the large majority of them became regular smokers due to the formed psychological and physical nicotine addiction.

The motivations to quit smoking differed depending on the age and gender of the respondents. In the group of females aged 18-20 the main reasons for the cessation of the tobacco products use were the negative influence of smoking on the reproductive health, pregnancy (37.2%) and the health of future children (28.6%) and such hazardous effects of smoking, as possible development of cardiovascular, respiratory and other chronic non-communicable diseases (22.4%).

While the females at the age of 15-17 often pay attention to such negative aspects of smoking as reduced physical performance, bad breath, discoloration of teeth, nausea, fear of becoming unattractive to the opposite gender (68.5% versus 11.8% among 18-20 years old females), and only a lesser part of them pay attention to the negative influence of smoking on reproductive health (21.1%), and other dangerous effects, including chronic diseases (10.4%).

Unlike females, males, regardless of age, are concerned about possible sexual disorders (erectile dysfunction) (19.9%). The males showed lower knowledge on dangers of smoking. They were not aware of its impact on reproductive health (5.3%) and the health of future offspring (4.8%) (Figure 4).

![Figure 4](image)

Figure 4. The number of students who quit smoking due to harmful effects of the tobacco on reproductive health, %.
At the same time, the large majority of males as non-smokers and smokers, and quitters (92.2%) consider, that smoking females are less attractive. Amount of females - non-smokers, smokers and quitters, who prefer non-smoking males, was significantly lower (58.7%).

**Conclusion**

The results of the study give the following conclusions:

1. The prevalence of smoking persons (36.5%) among young people at the age of 15-20 is slightly lower than statistical average in the Russian Federation (39.1% according to the global survey of adult population about tobacco consumption). Obviously these differences are due to the lower tobacco consumption among the interviewed females. Take into account the gender balance, in this study the prevalence of smoking persons among males differs from the general population (the prevalence of smoking persons among female in the Russian Federation is 60.2%).

2. Comparison of gender differences showed that among females the formation of a positive motivations regarding quitting smoking due to the greater concern about their reproductive health and negative effects of this habit is significantly higher.

3. The males constitute the main part of the smokers, and even with critical relation to smoking, they have poorly formed stable negative position to this habit. At the same time it was revealed that the unwillingness of the main part of the students (due to lack of motivation) to stop smoking was rather strong.

4. The intensity of smoking among males is significantly higher than among females as females start of smoking earlier. Moreover, most commonly the initiation of smoking among males occurs at the early school age, whereas among females it occurs at the adolescence.

5. It is obvious that the prevalence of smoking decreases with the age growth, and among females this correlation is more evident, which is associated with higher rating both active and passive smoking.

To date, the prevention of smoking among youth is seen as an important component of the educational process. It contributes to the development of such qualities as the ability
to make responsible decisions, resist pressure from others, to see the benefits of a healthy lifestyle not only for themselves but also for their future children.

The obtained results indicate the need for proper formation of preventive programmes, aimed particularly on adolescents and young people, with the goal of slowing the prevalence of smoking. Taking into account the dominating motivation for smoking among males and among females (mental dependence on the opinions of others, support during stress), it is necessary to teach students of both genders more healthy ways to cope with stress.

When developing programs of tobacco consumption control, it is necessary to consider lack of motivation especially among men. One of the main components of the program must be awareness of the possible consequences of this habit on subsequent generations and the development of motivation to lead healthy lifestyles among young people.

References


