ORGANIZATIONAL MODEL FOR PREVENTION OF SMOKING AMONG YOUNG ADULTS IN VORONEZH: REGIONAL EXPERIENCE

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The issues of damage to health related to the spread of nicotine product consumption are global. At the initiative of the Department of Healthcare Management, Burdenko Voronezh State Medical University, the organizational model of medical measures to overcome nicotine dependence involving formation of the smoking cessation groups among young adults, management and enlightment of the participants on the issues related to damage from nicotine dependence and free provision of the medicines facilitating smoking cessation was implemented. The study was aimed to assess the organizational model effectiveness based on the nicotine cessation rates of young adults. The model participants (42 individuals) were divided into three groups and provided free medicines: tablets containing cytisine in group 1, nicotine sprays in group 2, nicotine patches in group 3. The experiment was conducted for 30 days, during which three follow-up questionnaire surveys were performed. In the experiment, 31.7% of subjects stopped smoking completely, while the total positive effect bringing together those, who ceased smoking, and those, who reduced smoking, was 66.7%. Furthermore, the tablets containing cytisine turned out to be the most effective option. Thus, the study results obtained within the framework of the proposed organizational model can be considered useful in terms of further practical use. It can be recommended to include the model in the target program involving provision of medicines for treatment of nicotine dependence at the expense of the regional budget and attracted funds of enterprises and organizations.

Keywords: smoking prevention, nicotine addiction, youth environment, nicotine replacement therapy, organizational model

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Compliance with ethical standards: the study was approved by the Ethics Committee of the Burdenko Voronezh State Medical University (protocol No. 5 dated 19 September 2023). The informed consent to study participation and the consent to personal data processing were submitted by all subjects.

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ОРГАНИЗАЦИОННАЯ МОДЕЛЬ ПРОФИЛАКТИКИ КУРЕНИЯ В МОЛОДЕЖНОЙ СРЕДЕ Г. ВОРОНЕЖА: РЕГИОНАЛЬНЫЙ ОПЫТ

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Проблемы причинения вреда здоровью, связанные с распространением употребления никотинсодержащих веществ, являются общемировыми. По инициативе кафедры управления в здравоохранении ВГМУ имени Н. Н. Бурденко реализована организационная модель медицинских мероприятий для преодоления никотиновой зависимости, заключающаяся в формировании групп отказа от курения среди молодежи, курации и просвещении участников в вопросах вреда никотиновой зависимости, а также в бесплатном предоставлении медикаментозных средств, облегчающих отказ от никотиновой зависимости. Целью работы было оценить эффективность организационной модели по показателям успешности отказа от употребления никотина среди молодых людей. Участников модели (42 человека) распределили по трем группам и снабдили бесплатными медикаментами: в 1-й группе это были таблетки на основе цитизина, во 2-й группе — никотиновые спреи, а в 3-й группе — никотиновые пластыри. Эксперимент продолжался 30 суток, в течение которых были проведены три контрольных анкетирования. В результате эксперимента 31,7% участников полностью отказались от курения, а общий положительный эффект, объединивший тех, кто отказался полностью, и тех, кто уменьшил объемы курения, составил 66,7%. При этом самым эффективным средством оказались таблетки на основе цитизина. Таким образом, результаты исследования, полученные в рамках предложенной организационной модели, можно признать полезными с точки зрения дальнейшего практического применения. Модель можно рекомендовать для включения в качестве мероприятия целевой программы, предусматривающей представление медикаментов для лечения никотиновой зависимости за счет средств областного бюджета и привлеченных средств предприятий и организаций.

Ключевые слова: профилактика курения, никотиновая зависимость, молодежная среда, никотинзаместительная терапия, организационная модель

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Вклад авторов: И. А. Ульянов — непосредственная курация групп отказа от курения, привлечение грантовой поддержки для реализации, закупка медикаментозных средств и проведение мероприятий для вовлечения добровольцев в эксперимент, участие в разработке организационной модели; Н. Е. Нехаенко, Н. И. Остроушко — разработка организационной модели, методологическое консультирование, административная поддержка; Л. В. Меремьянин — разработка организационной модели, научное консультирование; А. В. Ульянова — непосредственная курация групп отказа от курения, информационное сопровождение эксперимента; Т. Н. Петрова — административная поддержка эксперимента, организация просветительской работы; Ю. А. Шарапова — разработка организационной модели.

Соблюдение этических стандартов: исследование одобрено этическим комитетом ВГМУ имени Н. Н. Бурденко (протокол № 5 от 19 сентября 2023 г.). Все участники подписали добровольное информированное согласие на участие в исследовании и согласие на обработку персональных данных.

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The issues of damage to health related to the spread of tobacco smoking and nicotine product consumption are global [1–3]. Manufacture of such products is a very profitable business. That is why manufacturers are interested in expanding the market segment through the use of marketing schemes and the chemical mechanisms enhancing nicotine dependence. According to the World Health Organization (WHO), tobacco smoking results in 7 million deaths annually, among which more that 6 million cases occur in tobacco smokers and former tobacco smokers and more than 890,000 cases occur in non-smokers exposed to the second-hand tobacco smoke. The tobacco use poses a serious threat to the health of citizens of the Russian Federation (RF) and results in negative medical, demographic, and socioeconomic effects.

Nicotine that causes and maintains addiction is the main component of tobacco [4]. The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) recognizes nicotine dependence resulting from tobacco use as a disease associated with behavioral disorder. Nicotine dependence is a factor contributing to the development of cardiovascular, pulmonary, gastrointestinal tract, nervous, endocrine, and reproductive disorders; all these are a real threat to smokers using not only conventional cigarettes, but also digital tobacco heating devices and vapes [5–7]. According to the data of the International Agency for Research on Cancer (IARC) for the year 2014, tobacco smoking increases the risk of many cancer types, such as lip, oral cavity, pharyngeal, esophageal, gastric, pancreatic, tracheal, bronchial, lung, bladder, kidney and urinary tract cancer, as well as acute myeloid leukemia.

The RF Government decree approved the concept for realization of the state policy on combating consumption of tobacco and other nicotine products [8]. According to the concept, the new options in the form of tobacco heating devices have become widespread along with conventional tobacco products. Thus, the monitoring data show that today the growth of consumption of such type of tobacco products, as digital nicotine delivery systems, is observed, including among children and adolescents. The rate of the use of such type of nicotine products among individuals aged 18–24 years is 19.1%, which is more than 10 times higher compared to other age groups. Furthermore, the monitoring data suggest that the RF residents are adequately informed about the harm prom tobacco use (the majority of smoking respondents (76%) think that smoking causes harm to their health).

According to the polling data acquired by the Russian Public Opinion Research Center (VCIOM), 41% of the country's population were smokers in 2013, while in 2022 as many as 33% of the citizens suffered from nicotine dependence. Moreover, smokers predominate in the age group 25–59 years. However, many authors of scientific papers report growth of the rate of smoking in the youth environment (18–35 years), which is considered to be associated with the growing popularity of vapes and digital tobacco heating devices [9–11]. Thus, according to the scientific literature data, the number of young adult smokers in various regions varies between 25 and 40% [12–15]. For this reason, in the RF the ability of minors to purchase any nicotine products is being consistently limited, and since 2023, additional restrictions on distribution and advertising have come and continue to come into force; penalties for illegal trade of nicotine products are being tightened [16, 17]. Along with the legal and regulatory changes in the healthcare system structure, there are more and more health centers. The activity of such medical and preventive branches is focused on the early diagnosis of chronic disorders and promotion of healthy lifestyle [18, 19].

As for fight against smoking, specialists of the centers provide counseling and give recommendations on smoking cessation using psychotherapeutic methods and medicines [20]. However, to purchase such products, the smoker will have to spend a fairly large amount of money. This creates economic constraints and deters people, especially young adults, from starting treatment.

Considering the above factors, the measures for prevention of diseases in the population are implemented in the Voronezh Region within the framework of the Healthcare national project.

At the initiative of the Department of Healthcare Management at the Burdenko Voronezh State Medical University, including within the framework of the students' educational and research work, the organizational model of medical measures involving formation of the smoking cessation groups among young adults, management and enlightment of the participants on the issues related to damage from nicotine dependence and free provision of the medicines facilitating combating nicotine addiction was developed.

The study was aimed to assess the organizational model effectiveness based on the nicotine cessation rates of young adults.

METHODS

To form experimental groups for modeling, we organized awareness-raising activities on the resources for the youth and 21 face-to-face actions. The information coverage was about 25,000 people; more than 400 people took part in the face-to-face events. In this phase of the project we conducted the public awareness campaign focused on the harm from various smoking options and smoking cessation methods. Young adults were also offered to joing the smoking cessation groups.

Based on the results of the first phase, we formed three groups, 14 individuals per group. The groups included individuals aged 18–28 years, who expressed the desire to quit smoking and had moderate nicotine dependence based on the Fagerstrom Test (score 4 of higher). Furthermore, 41.2% of the experimental subjects used vapes, 23.5% used cigarettes, 11.8% used digital tobacco heating devices, and 23.5 % used various combinations of the above. Among participants, 64.7% were males and 35.3% were females. In this regard, the groups were formed by stratification considering the smoking means and the nicotine dependence severity. We used tablets containing cytisine in group 1, nicotine sprays in group 2, nicotine patches in group 3.

The experiment was conducted for 30 days, during which the subjects were through three questionnaire surveys (on days 2, 15, and 30). The quastionnaires designed by the authors contained questions about the current state of the member of the group: "Do you currently smoke?"; "Have the number of cigarettes smoked or the use of vape decreased?"; "What effect of the medicine used do you experience?"; "Do you experience any side effects of the medicines used?"; "Do you plan to start smoking again?"

Funding of the organizational model (purchase of medicines for further free provision, conducting educational events, installation of banners, and distribution of printed materials) was ensured by the grant of the Federal Agency for Youth Affairs. Medicines were selected based on their popularity and accessibility for purchase in May-June 2023.

The polling results were processed in the StatTech 3.1.8 program (StatTech; Russia) using Pearson's chi-squared (χ^2) test for independent samples and the Wilcoxon test for assessment of the process dynamics with the significance level below 0.05.

Table 1. The number of non-smokers in various phases of the experiment

	Day 2	Day 15	Day 30
Group 1	14	10*	7*
Group 2	14	5	4
Group 3	13	3*	2*
Total	41	16	13

Note: * — the differences between groups are considered significant at $p < 0.05$.

Table 2. The number of individuals, who have reduced consumption of nicotine products (individuals, who do not smoke at all or have reduced the dose) in various phases of the experiment

	Day 2	Day 15	Day 30
Group 1	14	14*	13*
Group 2	14	12	10
Group 3	14	7*	5*
Total	42	33	28

Note: * — the differences between groups are considered significant at $p < 0.05$.

RESULTS

The smoking cessation organizational model effectiveness was assessed based on the indicators reported at the time of follow-up polling. It should be noted that the most prominent effect of the nicotine dependence relief was observed on day 2. This is explained by the fact that the subjects were inspired by the beginning of the experiment, including the awareness-raising activities, and were particularly enthusiastic about fingting against nicotine dependence during the first days. However, some respondents reported the decrease in the desire to stop using nicotine, insufficient effect of medicines, impossibility to fight against the habit and the surrounding smokers. That is why part of the subjects resumed smoking by the last day of the experiment. Given the above, two parameters can be considered the measure of effectiveness in two groups: the number of non-smokers (those who ceased smoking) and the number of individuals, who have reduced the use of vapes/digital tobacco heating devices/cigarettes in the group.

Tables 1 and 2 show that during the experiment 31.7% of participants remained non-smokers by day 30 and the total positive effect bringing together those, who ceased smoking, and those, who reduced smoking, was 66.7%. Assessment of the overall process dynamics using the Wilcoxon test revealed a significant decrease in the number of non-smokers and the subjects, who reduced the dose of nicotine products used, by day 30.

The tablets containing cytosine, using which 50% of the subjects ceased smoking, were the most effective option in terms of smoking cessation, and the total effect was 92.9%. The second place by efficacy was occupied by the nicotine spray with 28.6% of individuals, who ceased smoking, and 71.4% total positive effect. The nicotine patch was the least effective, with 14.3% of individuals, who ceased smoking, and 35.7% positive effect. Significant differences in both parameters were reported for groups 1 and 3 only. It is necessary to increase the number of subjects in each group to reveal the differences between other medicines.

Assessment of the patients' sensations from using various options showed that only 4.7% of the study participants reported no physical effects of the proposed options. Others felt the relief of withdrawal syndrome, however, many of them failed to overcome nicotine dependence due to surrounding smokers and psychological attachment to the smoking process. Two subjects developed addiction to the nicotine spray that manifested itself in the larger and frequent need to use this option.

All the study participants, who remained non-smokers by the end of the experiment, responded negatively to the question: "Do you plan to start smoking again?" Furthermore, 78.5% of the subjects, who reduced the amount they smoked, responded that they would continue their fight against nicotine dependence after the end of the experiment.

DISCUSSION

The fight against nicotine dependence is a very complicated process. Not only drug therapy is important, but also personalized approach, support, and the sense of team. That is why the experiment involving free provision of medicines provided the basis for the organizational model consisting of the awareness-raising activities, support of the group curators, and the opportunity to consult physicians. It was important for us to not just distribute free medicines across young adults, but to support and consult them throughout the entire process of fighting against nicotine dependence. Furthermore, many individuals, who ceased smoking, reported the importance and effectiveness of such comprehensive approach.

The findings showed low effectiveness of using nicotine patches. According to a number of researchers, this is due to the fact that this option cannot compensate for the nicotine depencence psychological aspect [21]. The lack of ritual action in response to the emergence of the desire to smoke did not enable complete suppression of withdrawal syndrome, and the use of tablets and spray takes places at the time when the desire to smoke emerges and is associated with a certain sequence of actions, which to some extent compensates psychological addiction [22].

The subjects had no economic, administrative or other interest to distort information about the smoking cessation process. That is why the questionnaire survey data could be considered reliable enough.

CONCLUSIONS

The organizational model for prevention of smoking in the youth environment can be considered effective, since we have managed to achieve smoking cessation in 31.7% of the young adults taking part in the program through free provision of medicines, awareness-raising acitivities, follow-up and support of the members of the groups. The results of preventive activities and drug support obtained within the framework of the proposed model show signs of effectiveness and can be recommended

for further testing and subsequent practical application with the stage-by-stage scaling. Given the statistically significant data on the results of assessing the effectiveness of the use of medicines for drug support of combating nicotine dependence and the use of nicotine products, it is recommended to prepare information for the Ministry of Health of the Voronezh Region substantiating the feasibility of scaling the measures to ensure expansion of the scope of drug therapy in individuals with nicotine dependence through inclusion of activities in the target program and funding outpatient treatment of individuals with nicotine dependence from the budget of the Voronezh Region.

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