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**СРАВНИТЕЛЬНЫЙ АНАЛИЗ ВЛИЯНИЯ ТРАДИЦИОННЫХ
И ЭЛЕКТРОННЫХ СИГАРЕТ НА ОРГАНИЗМ
(НА ПРИМЕРЕ ОПРОСА СТУДЕНТОВ БГМУ)**

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**COMPARATIVE ANALYSIS OF THE EFFECT OF TRADITIONAL
AND ELECTRONIC CIGARETTES ON THE BODY
(BASED ON THE BSMU STUDENTS SURVEY)**

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Резюме. Опрос 30 студентов БГМУ об их предпочтениях между традиционными и электронными сигаретами показал, что 56% предпочитают электронные сигареты, а остальные 44% выбрали традиционные сигареты из-за их надежности и привычности. Также был проведен сравнительный анализ химического состава, симптомов и механизмов воздействия на организм. По мнению авторов оба продукта вызывают побочные реакции.

Ключевые слова: электронные сигареты, традиционные сигареты, никотин, симптомы, привыкание.

Abstract. A survey of 30 BSMU students on their preferences between traditional and electronic cigarettes showed that 56% preferred e-cigarettes, while the other 44% chose traditional cigarettes due to their reliability and familiarity. Also a comparative analysis of chemical composition, symptoms and mechanisms of action on the body was performed. According to the authors' opinion both products cause adverse reactions.

Keywords: e-cigarettes, traditional cigarettes, nicotine, symptoms, addiction.

Relevance. The e-cigarettes rapid spread among young people, alongside the traditional cigarettes persistent use, makes it highly relevant to study students' preferences and the actual health consequences of both products. Young adults often perceive vaping as the safer alternative, yet objective data on its physiological effects remain limited. Understanding the real impact on the body, the addiction mechanisms and discrepancy between perceived and actual safety is essential for developing effective prevention strategies in universities and society at large.

Aim: to investigate the discrepancy between students' e-cigarettes perceived safety and actual physiological consequences, compared with traditional cigarettes.

Tasks:

1. To quantify the preferences distribution for e-cigarettes versus traditional cigarettes among the BSMU students.
2. To examine the chemical components of both products and their specific pathogenic effects on the respiratory, cardiovascular and nervous systems.
3. To identify the most common adverse symptoms reported by users.

Materials and methods. The Belarusian State Medical University 30 students anonymous survey was carried out. Participants were asked about their preferences between traditional and electronic cigarettes, reasons for their choice, observed symptoms and consequences. In addition, the tobacco smoke and vape aerosol chemical composition comparative analysis was performed based on literature data.

Results and their discussion. According to the data, the majority of participants (56%) prefer e-cigarettes. They believe this option to be less harmful to health and more convenient to use. The remaining 44% choose traditional cigarettes. Interestingly, traditional smoking is more often preferred by people over 20, who say that regular cigarettes are reliable and cannot explode if something goes wrong.

The main reason for choosing e-cigarettes is the tobacco smoke smell absence, which is replaced with pleasant fruit and berry flavours.

Respondents who prefer traditional cigarettes explain their choice by saying that this way of using nicotine is well tested. They also value the aesthetic side of smoking and the ability to more strictly control how much they consume.

A comparative chemical analysis shows that cigarette smoke contains over 7,000 chemicals, including tar, carbon monoxide and formaldehyde, while vape aerosol consists of propylene glycol, glycerin, nicotine and flavourings.

The most common consequences of using vapes are migraines, dryness and sore throat, shortness of breath. Most respondents (70.5%) experience all of these symptoms at once. Some participants have also mentioned withdrawal symptoms and occasional squeezing pain on the chest left side. Symptoms are caused by oily substances from the aerosol collecting in lung tissue cells, which gradually reduce the alveoli surface area available for breathing, increasing the body's need for oxygen and leading to shortness of breath. Headaches occur because nicotine affects the central nervous system: frequent vaping causes sharp fluctuations in blood nicotine level, leading to the narrowing of blood vessels in the brain and migraines.

Among participants who choose traditional cigarettes, 85% report no noticeable negative effects. However, 15% experience chest pain and a cough with sputum. The cough occurs because tobacco smoke damages the bronchi ciliated epithelium [1]. Acute pain behind the chest left side and in the heart area is explained by the fact that nicotine stimulates the adrenaline and noradrenaline release, putting extra strain on the heart muscle.

Both products are addictive, but in different ways. According to the World Health Organization, nicotine addiction can form within just 3 to 5 days of regular use, especially among young people [2].

Traditional cigarettes contain extra natural chemicals – monoamine oxidase inhibitors (MAOIs) – that are present only in tobacco smoke and absent in e-cigarette aerosol. MAOIs block the dopamine natural breakdown in the brain, making the pleasure from smoking stronger and longer-lasting. For this reason, people who quit traditional cigarettes often experience severe mood swings, depression, and intense cravings. Most smokers who try to quit without help return to smoking within a month because of these withdrawal symptoms.

E-cigarettes present a different problem. Vapers tend to take puffs continuously throughout the day since the device never burns out. This leads to much higher daily nicotine intake compared to traditional cigarette users. E-cigarettes with nicotine salts deliver nicotine so smoothly that it is practically impossible to control how much is consumed. The

lack of a natural stopping point means vapers may take hundreds of puffs daily, often subconsciously. Over time, they frequently increase their nicotine strength without even realizing it [3].

Both products cause lasting psychological dependence. The majority of e-cigarette users report thinking about vaping during stress, boredom, or after meals (the same percentage as traditional cigarette smokers).

Conclusions:

1. Among the surveyed BSMU students e-cigarettes are preferred (56%) due to the absence of smell and perceived lower harm.

2. Both products types cause adverse symptoms: vapes - migraines, dry throat and shortness of breath; traditional cigarettes - cough with sputum and chest pain.

3. The e-cigarettes perceived safety does not match the body's actual reactions and the long-term effects of inhaling vape liquids remain unknown. There is no safe alternative, as both products damage health.

Literature

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