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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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THE RELATIONSHIP BETWEEN THE CONDITION OF THE ORAL CAVITY AND THE USE OF TOBACCO PRODUCTS IN DIFFERENT AGE GROUPS

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Abstract.

Understanding the harmful effects of using tobacco products (cigarettes, electronic cigarettes (e-cigarette) or vape, IQOS, hookah, etc.) by various segments of the population is one of the important ways to improve the condition of the tissues of the oral cavity, since smoking is an important risk factor for the occurrence of chronic destructive periodontal diseases.

Aim: The purpose of our work was a study of the relationship between the state of the oral cavity and the use of tobacco products in different age groups based on the conducted questionnaire.

Materials and methods: In order to conduct this research, an anonymous survey was conducted in the form of a Google document among people divided into three age groups: younger (under 21), middle (21-40) and older (over 40) with 1113 participants. In the survey, they answered questions about their lifestyle, the type of tobacco product used, visible changes of oral cavity if they were present.

Results: Studies show that smoking and the use of tobacco products is a fairly common phenomenon in modern society and reflects a direct correlation between the intensity of this habit in people and the development of various pathological conditions of the mucous membranes of the mouth. A significant period of cigarette use, and the accompanying insufficiency of oral hygiene measures increase risk of oral cavity injury. More than 60% answered that they regularly brush their teeth twice a day. At the same time, at least half of all respondents answered that they use dental floss and mouthwashes irregularly, and also visit the dentist only when necessary. Among the first two age groups, it is noted that up to 52% of people consume various sweets and sweet drinks every day, which is a factor that contributes to the appearance of destructive changes in the oral cavity. Similar factors include the lack of an active lifestyle. So, from 30% to 50% in each age group don't have any physical exercise. Only up to 30% of people have up to 3 physical exercises a week or have morning exercise every day.

Conclusions: The most pronounced correlative relationship for severity of changes in oral cavity was revealed between with experience of smoking (how long) – r=0.79, intensity of smoking (r=0.75) and oral hygiene practices (r=0.71). It is necessary to develop new methods of combating the consequences of long-term use of tobacco products, as well as preventing the appearance of uncompensated changes in the mucous membrane of the oral cavity.

Key words. Oral cavity, periodontal tissue, smoking, e-cigarette, survey.

Introduction.

Despite the fact that the level of awareness of the negative impact of smoking cigarettes and other tobacco products, as well as the possible consequences of long-term dependence on the general health of the population not only in Ukraine but also in other countries of the world [1,2], is growing rapidly, smoking remains one of the most widespread addictions all over the world [3,4]. If we talk about numbers, around the world there are about 1.1 billion smokers, and more than 8 million people die every year because of cigarette smoking. In addition, most people who use tobacco products experience symptoms that significantly impair the smoker's quality of life and overall well-being.

Smoking is the source of a variety of oral and systemic diseases, which can only be more pronounced in people who smoke for a long time. The oral cavity, as the first collision zone, is the first to be exposed to toxic cigarette smoke, while in most cases, damage to the structure of soft and hard tissues is not subject to reversible changes [5,6]. The most typical manifestations include various periodontal problems, such as increased pocket depth, alveolar bone loss, and tooth mobility. In addition, the mucous membrane of the mouth can be damaged. Ulcers, bad breath and stains on the teeth are common symptoms that can be found in smokers [7,8]. Last decades are characterized by spreading of electronic cigarettes with harmful influence on oral health also [9,10].

It is also an interesting fact that many epidemiological studies report a close connection between smoking and the occurrence of an infection caused by the yeast genus C. albicans - oral candidiasis [11,12]. Candida albicans can cause acute superficial or deep organ infections in immunocompromised patients. In a healthy person, the epithelial cells of the oral cavity provide the first line of defence against Candida. But localized changes in the covering tissues, which are most often caused by the influence of tobacco smoking, can damage the mucous barrier and cause candidiasis and further damage [13,14].

The most serious manifestation of the deadly harm of using tobacco products is the possible risk of cancerous changes in the oral cavity, which can occur regardless of how long a person smokes. Studies show that about 29.3% of people with established cases of oral cancer chewed tobacco only, 25.5% smoked only, and 42.2% both smoked and used chewing tobacco.

So, smoking can be characterized as one of the main causes of many pathological conditions, many of which can be attributed to the diseases of civilization. It is from the use of tobacco products that many members of our society experience a significant decrease in the standard of living, as well as changes in well-being [15,16].

The purpose of the study is to investigate the trend of smoking prevalence among different age groups and its effect on the tissues of the oral cavity. And also, to evaluate the effects of various means for smoking such as ordinary cigarettes,

electronic cigarettes (e-cigarette) or vape, hookah and IQOS. Depending on the used product and the age of the interviewees, effects of smoking on the human body was analysed.

Materials and Methods.

In order to conduct this research, an anonymous survey was conducted in the form of a Google document among people divided into three age groups: younger (under 21), middle (21-40) and older (over 40) with 1113 participants and number of participants in each age category accordingly: 537, 293, 283 persons. In the survey, they answered questions about their lifestyle, the type of tobacco product used, visible changes of oral cavity if they were present.

Data from University Stomatological Clinic (Kharkiv National Medical University) survey was utilised for the study according published early recommendation. This is a self-completion cross-sectional survey administered in 2023-2024 with out-patients during visits and students at Kharkiv National Medical University. It is undertaken in collaboration with Student society and aims to provide a better understanding of young people's health, wellbeing, and behaviours, with a focus on negative consequences of smocking on health. We used a standardised survey of core questions with additional specific questions: sociodemographic data (age, sex, current educational level); tobacco and E-cigarette use (current habits, frequency, etc.); self-perceived oral health, including number of decayed, filled, and missing teeth; oral hygiene practices, including frequency of brushing, additional aids, type of toothpaste, dental visits, etc.; self-perceived symptoms due to smoking; and self-perceived changes in physiological functions (including physical status, smell, taste, breathing, etc.). The questionnaire comprised close-ended questions adopted from some previous studies [17,18]. Each participant was able to answer the survey once and to edit their answers freely until they chose to submit. By clicking submit it was considered that the student consented to participate in the study. Ethical approval for the study was obtained from the Regional Ethical Review Board at Kharkiv National Medical University in compliance with the Helsinki Declaration.

Statistical processing was performed using the methods of variation statistics. Correspondence of the distribution to the normal distribution was determined by the Shapiro-Wilk's test, which showed that the samples were close to the normal distribution. Correlation between indicators was assessed using Spearman's correlation coefficient (r). The statistical difference between the studied parameters was considered significant at p less than 0.05.

Results.

The results surveys show that the majority of respondents in the younger and older age groups are female, and the middle age group has approximately equal distribution. Most are studying at a university or have already completed higher education. Most popular tobacco products are cigarettes with a filter (about 54%) and electronic cigarettes, IQOS (about 40%). Less used are snuff, puff or chewing tobacco, unfiltered cigarettes and hookah (Table 1).

The third part from all participants notes complaints about changes in the condition of the oral cavity. It is common knowledge that smoking is one of the leading causes of the development of destructive changes that develop in the enamel of the teeth and the mucous of the mouth. Therefore, many people who smoke for a long time notice a change in the colour of their teeth, bad breath, and in worse cases, smoking leads to tooth loss.

Among the most frequent conditions are spots on the teeth, mucous membrane, discoloration of the enamel and a feeling of dry mouth. The reasons and mechanisms of such influence of tobacco products are still debatable. A number of studies prove that the microflora of the gums of people who do not smoke does not differ from those who use nicotine products. Therefore, autoinfection cannot be the cause of periodontal alteration. And it turns out, if the nature of the periodontal lesion is bacterial, then it should be considered an acquired infection.

Among the interviewees, the appearance of bleeding gums and erosions or ulcers of the oral cavity is also noted. Caries is an important pathology noted by many smokers. Its appearance can be due to colonization by various bacteria of the oral cavity, and in combination with insufficient oral hygiene, it causes chronic periodontitis.

Less common changes include periodontitis due to caries, shortness of breath, endocrine changes, pressure fluctuations and asthma attacks. In these cases, smoking is an additional factor aggravating already existing pathological conditions of the body.

Regarding questions about hygiene, more than 60% answered that they regularly brush their teeth twice a day. At the same time, at least half of all respondents answered that they use dental floss and mouthwashes irregularly, and also visit the dentist only when necessary. Among the first two age groups, it is noted that up to 52% of people consume various sweets and sweet drinks every day, which is a factor that contributes to the appearance of destructive changes in the oral cavity.

Similar factors include the lack of an active lifestyle. So, from 30% to 50% in each age group don't have any physical exercises. Only up to 30% of people have up to 3 physical exercises a week or have morning exercise every day. The way of life of each person, his diet, daily routine and habits are of great importance in the development of chronic periodontal diseases.

The environment is very important for understanding the aetiology of destructive changes. Thus, even passive smoking can cause the appearance of the above-mentioned symptoms. Age and duration of smoking are directly proportional to the expressiveness of certain syndromes. Among those who quit smoking, they answered that they had smoked for more than three years before that. More than half belong to the younger age group (58%). That is, starting to smoke at a young age, it turns out that the more a person continues to smoke, the greater the risk of erosive effects of the tissues of the oral cavity.

Smoking is a significant socio-demographic problem in the modern world, as it affects most young people, and sometimes children who have not reached the age of majority, in which the neuroendocrine systems of regulation of important body functions are just beginning to form and mature. Therefore, the effect of nicotine, as the main active substance in tobacco products, can cause both a direct effect on body tissues and indirectly through regulatory systems. And this leads to thoughts

Table 1. *Result of questionnaire, %.*

		under 21	21-40	over 40
Gender	Man	20.1	48.8	23.7
	Woman	78.9	51.2	76.3
	Selected other or didn’t answer	1.0	0	0
Education	Basic secondary education	2.5	2.3	1.2
	I am studying at a university	68.4	20.4	0
	Incomplete higher education	14.5	4.3	4.7
	Full secondary education	9.6	3.6	3.9
	Professional (vocational and technical) education	3.5	4.7	14.5
	Completed higher education	1.5	64.7	75.7
Do you smoke now?	No, but I quit smoking	15.1	45.7	24.3
	No, I didn't smoke before	34.6	9.2	31.2
	So	50.3	45.1	44.5
If the answer is yes, what tobacco products do you use?	Cigarettes with a filter	41.1	47.4	69.0
	Cigarettes without a filter	11.7	12.3	13.8
	Lullaby, snuff, sucking or chewing tobacco	0.9	0	0
	Hookah	1.9	2.3	0
	Electronic cigarettes, IQOS, Sub-systems.	48.9	44.9	35.2
If you quit smoking, how many years did you smoke before?	More than three years	3.1	66.4	88.6
	Two years	4.5	17.0	1.3
	Half year	84.2	0	8.1
	Year	5.7	0	0.8
	Three years	2.5	16.6	1.2
Do you consider yourself a generally healthy person?	No	15.2	10.1	19.3
	So	59.8	62.1	52.2
	It is difficult to answer	25.0	27.8	28.5
If you do not consider yourself a healthy person and smoke, can you complain about one of the conditions listed below?	Stains on the teeth, a change in their colour	0	3.9	9.5
	Gingivitis	2.3	14.7	20.1
	Feeling of dry mouth	7.3	1.4	7.7
	Change in taste	4.3	2.2	4.3
	Bleeding from the gums	3.4	9.2	11.3
	Spots on the mucous membrane of the oral cavity	1.1	3.3	8.4
	Erosions or ulcers of the oral cavity	2.1	1.3	6.2
	Sensation of hairy tongue	0.3	0.6	0.9
	Caries	8.5	14.7	19.2
	Endocrine diseases	1.0	2.3	4.3
	Pressure	1.1	2.3	15.1
	Asthma	0.2	1.9	4.1
	Dyspnea	1.3	1.3	4.5
	Bad eyesight	4.3	4.7	11.2
How often do you brush your teeth?	1 time a day	33.7	29.1	48.3
	More than once a day	59.4	69.9	48.7
	Not regularly	6.3	1.0	3.0
Do you floss or rinse your mouth?	1 time a day	42.3	20.2	11.3
	More than once a day	15.0	2.2	0.5
	Not regularly	42.7	77.6	88.2
How often do you visit the dentist?	Not every year	10.1	10.3	7.3
	Once a year	15.9	17.3	17.1
	Only in case of need	48.3	37.6	49.5
	More often than once a year	25.7	35.0	26.1
How often do you consume sweets or sweet drinks (cola, cider, etc.)?	Once a day	45.4	52.4	38.2
	Once a week	38.2	10.4	10.3
	Rarely	16.4	37.2	51.5
How often do you have physical exercise?	I have training more than 3 times a week	11.4	17.2	10.2
	I have training up to 3 times a week	35.3	24.9	10.8
	I don't have	30.4	45.6	54.8
	I do morning exercise every day	24.5	14.8	26.9

about an unfavourable situation in the future in the perspective of an increase in the number of people with chronic diseases of the mouth and upper respiratory tract.

Among people who quit smoking and smoked for less than 3 years, the presence of certain changes in the state of the oral cavity and teeth is almost not determined, compared to those who smoke for more than 3 years. There is also a direct correlation of a reduction in the risk of chronic diseases of the tissues of the oral cavity with regular visits to the dentist and the use of additional tools for oral hygiene (dental floss, mouthwash).

When comparing the obtained from indicators of the severity of changes in oral cavity and position of survey, the most pronounced correlative relationship was revealed between with experience of smoking (how long) – r=0.79, intensity of smoking (r=0.75) and oral hygiene practices (r=0.71) (Table 2).

Table 2. *Relationship between detected data and condition of oral cavity in smokers (r).*

Data	**Values**
Experience of smoking (how long)	0.79
Intensity of smoking	0.75
Sociodemographic data	0.59
Self-perceived oral health	0,70
Oral hygiene practices	0.71
Self-perceived symptoms due to smoking	0.63
Self-perceived changes in physiological functions	0.54

Discussion.

According to the assessment materials that we received from the respondents during their questionnaire in accordance with the formulated list of questions in the topic of our work, as well as a full analysis of the obtained research results and conducting a correlational comparison of the received answers, it was determined the presence of various manifestations and symptoms of damage to the mucous membrane, which became as a result of long-term use of tobacco products in their various forms (cigarettes, vape, IQOS) with accordance to famous wide involvement and described pathological process in oral cavity of inflammatory [19,20], vascular [21,22], endocrine [23,24] and other origin.

Despite the fact that many respondents are aware of the harm of smoking and its impact on the general condition of not only the mucous membranes of the mouth, teeth, periodontium and gums, but also the respiratory and circulatory systems, many of the respondents (based on a significant number of respondents who smoke for more than a few years) systematically support their addiction to nicotine regardless of theoretically possible or already existing consequences [25,26].

Instead, there is an opinion that the basis of this condition lies in vascular and inflammatory reactions that develop as a result of the direct effect of cigarette smoke. Thus, it was established that nicotine prolongs the healing time of wounds in the mouth [6,27].

Also in support of this theory is the increase in the level of interleukins IL-1 and IL-6 associated with smoking, which leads to a change in the ratio of metal matrix proteinases and elastase with proteolytic properties to protease inhibitors, such as alpha-2-macroglobulin and alpha-1-antitrypsin, in favour of the former [9,28]. This, in turn, complicates the course of chronic periodontitis and increases the resection of bone tissue, which can lead to tooth loss.

As a result of smoking, the acidity of saliva as a protective factor undergoes a shift in the acidic direction, which increases the possibility of damage to the mucous membrane. Behavioural habits can both complicate and facilitate these processes. For example: drinking coffee every morning also lowers the pH of saliva, and drinking water on the contrary [3,29].

It is interesting that among those who smoke electronic cigarettes, the pH level of saliva was lower, and the concentration of protein, calcium and phosphates was higher than similar indicators in those who smoked ordinary cigarettes with a filter. Additional studies on the effects of electronic smoking devices are quite important today, given that they are presented as "more useful" devices [30,31].

In addition to inflammatory and infectious diseases, smoking can facilitate the introduction of various types of fungi into the oral cavity and perioral organs as a result of their colonization. Thus, the tongue, salivary glands, paranasal sinuses, larynx, pharynx, auditory tube can often be affected by cervicofacial actinomycosis [18,32].

Turning to the result, it can also be noted that even the presence of systematic monitoring of the condition of one's oral cavity (in particular, the use of dental floss, as well as brushing teeth more than once a day) does not guarantee protection against the alteration of mucous membranes, which occurs due to constant exposure to tobacco products. Deviations from the norm are observed both in people who note their recent start of using nicotine-containing products, as well as in respondents with long-term addiction [33-35].

The most dangerous result of smoking can be cancer of the oral cavity. Both people who use pure chewing tobacco and those who smoke cigarettes are prone to the appearance of neoplasms. When using both methods of tobacco use, the risk of cancer increases twice to half of all cases. The very risk of developing neoplasia is associated with a polymorphism of the Phe31Ile fragment of a protein called AURKA, which is associated with gene expressionCHAF1A and CHAF1B [36,37].

So, the problem is relevant stable growth of the number of people using tobacco and its derivatives. This situation allows us to define nicotine addiction as one of the diseases of civilization, which is more and more rooted in our society as one of the most common pathologies, which leads to constant processes in the human body through direct contact with tobacco, as well as in the role of a passive smoker. One of possible result is involvement of nervous system [38,39] with necessary performing of rehabilitation measures directed on all tissue [40,41] and pedagogical influence [42].

Another important finding of the present study was the significantly higher proportion of E-cigarette users who had dry mouth and black tongue when compared to nonsmokers [17,43,44]. In this context, medical students and professionals are considered role models for the community and should be at the forefront of fighting dental diseases and the associated deleterious habits [17,45] with implementation of new technological method of medical examination [46,47].

Limitation of our work is connected with performing of survey University Stomatological Clinic with prevalence of students as category who passed questionnaire, that could be turned from real average population data (gender distribution partly). Other limitation of our study is that it is a questionnaire survey, which means that symptoms related to the oral environment are based on subjective assessment. Consequently, it is impossible to undertake an objective evaluation. Consequently, we may inaccurately assess alterations in the oral environment, either underestimating or overestimating their significance. Moreover, due to the nature of this cross-sectional investigation, it is not feasible to establish a definitive cause-and-effect link between smoking and the oral environment. But obtained results are extremely crucial for future scientific background of prophylactic and therapeutically measures devoted for reducing pathological changes in oral cavity.

Conclusion.

Most popular tobacco products are cigarettes with a filter (about 54%) and electronic cigarettes, IQOS (about 40%). The most pronounced correlative relationship for severity of changes in oral cavity was revealed between with experience of smoking (how long) – r=0.79, intensity of smoking (r=0.75) and oral hygiene practices (r=0.71). It is necessary to develop new methods of combating the consequences of long-term use of tobacco products, as well as preventing the appearance of uncompensated changes in the mucous membrane of the oral cavity.

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