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THE IMPACT OF SMOKING ON DISEASES OF THE ORGANS AND SYSTEMS OF THE FEMALE BODY

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ABSTRACT

Aim: To investigate the negative impact of tobacco smoking on women's health.

Materials and Methods: The research involved 100 women who visit beauty salons. The research was conducted in 2020-2022. Research methods: bibliosemantic method, method of system analysis and generalization, medical and sociological method (questionnaire), mathematical and statistical method. The survey was anonymous, conducted according to the authors' questionnaire and carried out with the prior consent of all research participants.

Results: The characteristics of modern tobacco products for women's smoking, the negative impact of smoking tobacco products on the main systems of the body of women were summarized, the level of well-being of women in the process of smoking was found out and the negative consequences of smoking on their health were revealed, the signs of improvement of women's health after their quitting smoking were characterized.

Conclusions: The body of women is more susceptible to the toxic effects of tobacco, the impact of which leads to poisoning of their body and significant negative consequences for all systems and health in general. The female body is more favorable for the development of tobacco addiction. Women's refusal to smoke makes it possible to reduce the risk of developing diseases and improve their health.

KEY WORDS: health, women, smoking, tobacco

INTRODUCTION

Tobacco smoking has more than 500 years of history. Tobacco smoke is a type of air pollution that is hundreds of thousands of times more polluting than any metallurgical or chemical plant, yet people deliberately inhale such air. It is figured up that in an absolutely clean atmosphere, a smoker's body is exposed to such a toxic effect as if he or she were in conditions where pollution is thousands of times higher than any norm. Inhaling tobacco smoke is four times more harmful than car exhaust directly from the exhaust pipe. Tobacco smoke, in addition to a weak drug i. e. nicotine, contains about 200 particularly poisonous substances such as carbon monoxide, benzpyrene (a strong carcinogen) and many others [1, 2]. In recent decades, tobacco has become much more poisonous due to the fact that tobacco leaves are extremely hygroscopic and actively absorb harmful impurities from the air, aerosols, the amount of which is increasing. Such an atmosphere, which is created by a smoker, is not found in any super-polluted industrial center. Tobacco smoking is especially dangerous for the female body. However, until recently, the impact of smoking on the health of the female population was underestimated. Now researchers emphasize the significant differences in the consequences of this addiction for the population of women. It is proved that physiological and psychological characteristics of the female body increase the risk of developing tobacco dependence, because the female body is more sensitive to the toxic effects of tobacco, which leads to poisoning of their body [3].

Tobacco smoking negatively affects all biological systems. In the international classification of diseases referred to as "Mental and Behavioral Disorders Caused by Tobacco Use" even have their own "F17" code [4]. According to statistics, tobacco smoking increases the risk of malignant tumors up to 30%, with 90% of all cases being lung cancer. It is also worth noting that the second most serious disease that occurs in women due to smoking is breast cancer [5].

AIM

The aim is to investigate the negative impact of tobacco smoking on women's health.

MATERIALS AND METHODS

The research was conducted in 2020-2022 at Zhytomyr Medical Institute of Zhytomyr Regional Council and Zhytomyr Ivan Franko State University. The research involved 100 women who visit beauty salons in Kyiv and Zhytomyr.

Research methods: bibliosemantic method, method of system analysis and generalization, medical and sociological method, mathematical and statistical method. The bibliosemantic method was used to conduct an analytical review of scientific information sources. 18 sources on the topic of the article from the scientometric databases PubMed, Scopus, Web of Science Core Collection and others were analyzed. The method of system analysis and generalization was used to analyze scientific information, summarize modern tobacco products for smoking, the negative impact of smoking on the main systems of the body of women, characterize the signs of improvement of women's health after their quitting smoking (accordingto time criterion), discuss the results of the research and formulate conclusions. The medical and sociological method was used to conduct a survey of female visitors to beauty salons. The survey of women was conducted according to the author's questionnaire, which was aimed at finding out their well-being in the process of smoking and the negative impact of smoking on their health. The questionnaire was assessed by the experts in this field (3 professors and 5 associate professors) and was approved by the Academic Council of Zhytomyr Medical Institute of Zhytomyr Regional Council (Protocol No.8 dated 27.08.2020). The survey was anonymous. The mathematical and statistical method was used to process the experimental data obtained.

This research complies with the ethical standards of the Act of Ukraine "On Higher Education" No.1556-VII dated 01.07.2014 and the Letter from the Ministry of Education and Science of Ukraine "On the Academic Plagiarism Prevention" No.1/11-8681 dated 15.08.2018. Also, this research followed the regulations of the World Medical Association Declaration of Helsinki. Informed consent was received from all individuals who took part in this research.

RESULTS

We summarized the characteristics of modern tobacco products for smoking based on the study and processing of a number of literature sources. Cigarettes are industrial tobacco products for smoking, which is a cylinder of cigarette paper filled with tobacco. Cigarettes can be with or without a filter. Cigarillos are smoking tubes rolled from tobacco leaves and filled with cut tobacco. They may contain flavors. They look like thin cigars. Cigars are a tobacco product in the form of a twist of dried tobacco leaves, which has a cylindrical or close to cylindrical shape. Unlike cigarettes, they do not have a paper wrapper and are much larger. Cigarettes (roll-up cigarettes) are tobacco products for smoking, consisting of a paper sleeve filled with tobacco. They are non-industrial products rolled directly by the consumer. Tobacco for smoking pipes is a collective name for some types of tobacco, which are usually used for the manufacture of mixtures and undergo special processing stages for their further use for smoking in a pipe. Specially prepared tobacco leaves (or a mixture of leaves) are hookah tobacco, which should be of a certain consistency, may contain flavors and additives and is used in hookahs. Smokeless tobacco is a collective name for a group of tobacco products intended for use in a way other than smoking i. e. sucking, chewing or sniffing. When smokeless tobacco is used, nicotine enters the bloodstream through the mucous membrane of the nose or mouth. Soda or lime is often added to smokeless tobacco products in order to facilitate the penetration of nicotine into the body. These products may also contain flavors. Tobacco for sucking or chewing (snus or naswar) and tobacco for sniffing (snuff) are used in Ukraine. All of the above tobacco products are regulated by the current legislation of Ukraine.

According to the World Health Organization [1], 1.5 million people die every year from the use of tobacco products. Smoking causes particular harm to the female body. Among women who smoked 26 or more cigarettes a day for 20 years, 80% died of coronary heart disease. In this group, the risk of fatal attacks was 5.4 times higher than among non-smokers. Even one to four cigarettes a day increase the risk of coronary diseases by 12.4 times [6]. Smoking is absolutely unacceptable for pregnant women as it leads to abnormal development of the child, the appearance of anomalies, including genetic ones, premature abortion, etc. in 100% of cases. Passive smoking causes great harm when a non-smoker is forced to inhale air poisoned with tobacco smoke [7].

When smoking, dry distillation and incomplete combustion of dried tobacco leaves occurs, regardless of whether they are used in natural form (rolled into a tube), in a cigarette or in a pipe. During slow combustion, smoke is released, which is an unhomogeneous (heterogeneous) mixture consisting on average of 60% of various gases and 40% of microscopic tar droplets (aerosols). In addition to nitrogen (59%) and oxygen (13.4%), the gas fraction of smoke contains carbon monoxide (IV) (13.6%), carbon monoxide (II) (4%), water vapor (1.2%), hydrogen cyanide (0.1%), nitrogen oxides, acrolein and other substances. The aerosol fraction of the smoke includes water (1.4%), glycerin and alcohols (0.1%), aldehydes and ketones (0.1%), hydrocarbons (0.1%), phenols (0.003%), nicotine (0.002%), etc. [8].

Harmful substances contained in tobacco smoke and affecting the human body are divided into 4 groups according to their main action: 1) carcinogenic substances; 2) irritants; 3) poisonous gases; 4) poisonous alkaloids. Carcinogenic substances include aromatic hydrocarbons, benzpyrene, phenols, organic compounds (nitrosamine, hydrazine, vinyl chloride, toluidine, etc.), inorganic compounds of arsenic and cadmium, radioactive polonium, stannum. Irritants: unsaturated aldehyde i.e. propenal (acrolein), carbon monoxide (II). Poisonous gases are carbon monoxide (II),

hydrogen sulfide, hydrogen cyanide, etc. Poisonous alkaloids consist of 12 in total (nicotine, nornicotine, nicotirine, nicotheine, nicotimine, etc.). Nicotine is one of the most powerful poisons known to us that affect the nervous system. When burning a cigarette, it is destroyed only partially, by about 25%. The nicotine content in the smoke of the main stream of a cigarette is from 0.4 to 3 mg i.e. only 20% of the total amount of nicotine in a cigarette. About 5% remains in the cigarette butt and the remaining 50% gets into the air in the room where people are smoking [9].

The experts [10] claim that physical and psychological dependence on nicotine develops much faster than on alcohol. The main reason for the emergence and development of "tobacco" cough are tar drops that have settled in the lungs. The substances contained in tobacco smoke cause inflammation of the epithelium covering the respiratory tract, which leads to increased release of secretions and mucus associated with coughing up sputum. The massive spread of smoking is one of the main causes of the widespread cardiovascular diseases. It is proved that smokers are 2-3 times more likely to develop heart attack and pre-infarction condition, angina and other heart diseases. Mortality caused by these diseases is much higher in smokers. The life of smokers is 4.6-8.3 years shorter than that of non-smokers, and the reduction in life expectancy depends on the age at which a person started smoking. It is proved that more than 50% of all diseases that cause death of smokers are cardiovascular diseases. More than 80% of patients suffering from chronic gastric and duodenal diseases are heavy smokers. It is proved that smoking has a negative impact on the treatment of ulcers.

Thus, summarizing the data of the literature analysis, we characterized the main consequences of the negative impact of tobacco smoking on women's health (Table 1). Given the above, it was found that women who abuse tobacco smoking have not only the "baggage" of acquired diseases, but also look much older than their peers. This indicates that the woman's body does not have sufficient reserves to counteract the poisonous effects of nicotine, which affects her appearance and health.

Depending on the time, the following health consequences for smokers (active and passive), including women, associated with smoking are distinguished: immediate consequences (shortness of breath, tachycardia, increased blood pressure, etc.); long-term consequences (myocardial infarction, lung cancer, permanent disability, etc.); risks for those present (increased risk of lung cancer and cardiovascular diseases in the wife or husband, etc.). It should be noted that the consumption of tobacco products with low nicotine content or the use of other forms of nicotine does not eliminate these risks.

It is important to point out the negative health consequences of hookah smoking. Hookah does not pass the proper stages of sterilization, which causes the risk of transmission of hepatitis A, tuberculosis, herpes, influenza, etc. The main danger of hookah smoking is fatalities, which occur even among passive smokers.

Table 1. Consequences of the negative impact of tobacco smoking on women's health

System	Characteristics of the impact of smoking
Nervous system	It is characterized by neurotic manifestations in the form of headache, dizziness, increased irritability, decreased working capacity, insomnia and stress.
Cardiovascular system	There is an increase in blood pressure, the development of coronary heart disease, angina, stroke, etc. In addition, blood clotting processes are activated, which leads to thrombosis.
Respiratory system	Systematic exposure of tobacco smoke on the vocal cords results in chronic inflammation (typical for smokers coarsening of the voice, which is especially noticeable in women). Chronic tracheitis and bronchitis, severe asthma attacks, lung cancer develop. Smoking also leads to hypoxia (impaired respiratory function of the blood). There is a tendency to recurrence of respiratory infections.
Digestive system	The following symptoms occur: bad breath, the tongue is covered with a gray coating, increased salivation, heaviness and pain in the pancreas, heartburn, nausea. Nicotine disrupts the process of gastric juice secretion and its acidity. Gastric and duodenal ulcers develop, which are difficult to treat.
Endocrine system	Nicotine negatively affects the endocrine glands that produce hormones and affect metabolism in the body (pituitary gland, thyroid and parathyroid glands, adrenal glands). Smoking enhances the function of the glands, which leads to an acceleration of metabolism.
Reproductive system	Risks of amenorrhea, bleeding, menstrual irregularities, early menopause increase (respectively, such women age faster). Smoking by pregnant women in 100 % of cases leads to abnormal development of the child, the appearance of anomalies, premature abortion, intrauterine death of the fetus. It also negatively affects the health of the child, which is manifested by lagging behind in mental and physical development and infertility among women who smoke.
Sensory organs	Vision: the eyes systematically tear, redden, the edges of the eyelids swell, quickly get tired while reading, flashing and double vision appears, intraocular pressure increases. In addition, chronic inflammation leads to a decrease in visual acuity and even blindness. Hearing: hearing acuity decreases. Taste: the sharpness of taste sensations decreases, often smokers do not distinguish the taste of bitter, sweet, salty, sour.
Appearance	The first to suffer from tobacco smoke is the tooth enamel, which deteriorates and turns yellow, teeth fall out, there is a specific smell from the mouth, gum nutrition is impaired, periodontal disease develops. Nails turn yellow, skin condition deteriorates (gray color, skin elasticity and firmness is lost), early wrinkles appear. In addition, hair becomes dull and loses its shine.

Table 2. Tools and methods to promote women's smoking cessation (n=100, %)

Answer options	Value
You have quit or tried to quit smoking without help	47.9
Nicotine replacement medicines (for example, chewing gum, lozenges or inhaler containing nicotine), other medicines	5.2
Electronic cigarettes or any similar devices	20.8
Support from a doctor or other health care professionals, special services to support smoking cessation	0
Alternative treatments (such as acupuncture or hypnosis)	1
Chewing tobacco (snus) or snuffing tobacco (snuff)	2.1
Smokeless cigarettes (not e-cigarettes)	4.2
Smoking cessation telephone support line	2.1
Online stop smoking support services	1
Other option I have not quit smoking	15.3
I do not smoke	17.4
I have not used anything	2
Desire to become a mother	1
Support of a friend	1
On my own	1
First I switched to electronic cigarettes, and a day later I gave up tobacco altogether	1
The book referred to as "The Easy Way to Quit Smoking"	1
I smoke very rarely, so I did not try to quit smoking	1

To confirm the above conclusions of many scientists on this issue, we conducted an anonymous survey of female visitors to beauty salons in Kyiv and Zhytomyr. It was found that more than half of the respondents (84.0%) have experience of smoking; 25.0% of women smoke systematically, 34.0% smoke periodically, 23.0% do not smoke, and 7.0% have not smoked at all, while 11.0% had smoked before. It was found that 81.0% of all women surveyed are aware of the harmful effects of smoking; 83.0% of respondents have knowledge of the impact of tobacco smoking on the main systems of the human body (cardiovascular, digestive, nervous, reproductive, respiratory, endocrine, etc.); 70.0% of respondents consider their own level of awareness and informedness of the impact of tobacco products on human organs and systems to be sufficient. The results of the survey on self-assessment of female smokers' well-being are shown in Figure 1. According to the data, more than half of the respondents rated their health as "good" – 41.2% or "satisfactory" – 23.7%. Another 23.7% of respondents said that the state of their well-being is "bad", and only 5.2% rated it as "very bad". The results of the survey show that women are aware of the consequences of tobacco smoking, but despite this, they continue to support this addiction.

During the survey, women also had the opportunity to indicate whether they currently have complaints or chronic diseases caused by smoking. The following complaints were identified: cough, headache, high blood pressure, increased pulse rate, sleep problems, increased salivation, irritability, slight shortness of breath, digestive system disorders, as well as nervous tension and psychological problems. Among chronic diseases women mentioned the following:

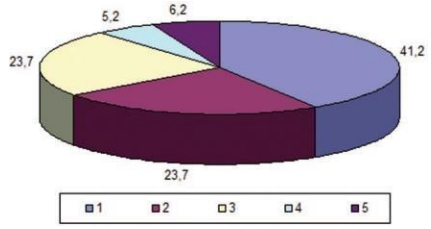

Figure 1. Women's assessment of their own well-being during the smoking period, (n=100, %)

(1 - good condition; 2 - satisfactory; 3 - bad; 4 - very bad; 5 - hard to answer)

respiratory system diseases (chronic bronchitis, tonsillitis, bronchial asthma), cardiovascular diseases (hypertension, vegetative-vascular dystonia). At the same time, a significant proportion of respondents reported no consequences of tobacco smoking.

Table 2 shows the methods and tools used by female smokers to quit tobacco smoking. In this case, respondents could choose several answers or offer their own option. Table 3 demonstrates the characteristic signs of women's health improvement after they quit smoking (by time criterion).

This table confirms that there is no dependence between the smoking experience of a smoker and the state of his or her health after quitting tobacco products.

DISCUSSION

Today, smoking has become a pandemic not only in the medical aspect, but also psychological, economic and social. Tobacco smoking is an acquired vicious habit of

Table 3. Improvement of women's health after quitting smoking (by time criterion)

Time without smoking	Signs of improved health
20 minutes	Heart rate decreases.
12 hours	The level of carbon dioxide in the blood decreases to normal.
From 2 weeks to 3 months	The risk of heart attack decreases, lung function improves.
From 1 to 9 months	Coughing and shortness of breath are reduced.
1 year	The additional risk of cardiovascular diseases is twice less than in smokers.
5 years	The risk of stroke is reduced to the level of a non-smoker.
10 years	The mortality rate from lung cancer is about half that of a smoker. The risk of cancer of the mouth, throat, esophagus, bladder, kidneys and pancreas is reduced.
15 years	The risk of developing pathologies of the cardiovascular system returns to the level of risk of a non-smoker.

inhaling smoke from smoldering dried tobacco leaves. The most important component of tobacco smoke is nicotine. Regular use of nicotine causes tobacco dependence. Prolonged and frequent tobacco smoking causes significant harm to the health of smokers and non-smokers around them. According to statistics, 5.4 million people die annually from tobacco-related diseases; that is, 1 in 10 deaths in the world is caused by the use of tobacco products [1, 6].

A large organized fight against smoking in many countries has led to a decrease in the number of smokers. Nevertheless, regardless of this, the number of smokers among young people and women continues to increase. In parallel, the risk of disease increases not only for smokers themselves, but also for the future generation [11]. Smoking causes great harm to everyone, but especially to the younger generation, whose body is in the process of puberty, so smoking can negatively affect their future children. Smoking is not only a personal problem of each individual separately, but also an acute social problem with which the future of all mankind is connected. Smoking and its impact on the human body are becoming social and medical problems today. It is proved that tobacco smoking is a great danger to health and leads to various diseases that cause premature death. It turns out that lung cancer mortality among smokers is 20 times higher than among non-smokers. In addition, smokers are 13 times more likely to suffer from angina (heart disease) and 10 times more likely to suffer from gastric ulcer [2, 5].

According to the scientists [4, 9], cigarette smoking has immediate and long-term effects on the human body. The immediate effect is a consequence of an increase in the level of adrenaline in the blood and consists in an increase in heart rate by 30%, blood pressure – by 5-10 mm Hg, slowing of peripheral circulation, which causes a decrease in the temperature of the upper and lower extremities. Long-term health effects are associated with resins, which contain 43 carcinogens and cocarcinogens and cause malignant diseases; carbon monoxide and oxidizing gases, which contribute to the development of cardiovascular diseases; irritants and hydrogen cyanide, which cause bronchitis and emphysema [12].

Smoking causes 30% of all cancer deaths and 90% of all lung cancer cases [13]. The increasing prevalence of smoking among women has led to the fact that in some countries lung cancer has overtaken breast cancer as the leading cause of death from oncological diseases in women. There is a chronic irritation of the mucous membrane of the larynx, inflammation of the vocal cords develops, they thicken and coarsen under the influence of tobacco smoke. This leads to a change in voice timbre (rough smoker's voice), which is especially noticeable in young women. Children of smokers have significantly worse immunological indicators and therefore they are more prone to frequent viral and bacterial infections [14].

The experience of many countries that have achieved significant success in reducing morbidity and mortality from chronic non-communicable diseases has proved that reducing the prevalence of smoking has a significant positive impact on health indicators [15]. The results obtained extend the findings of many scientists [16-18].

CONCLUSIONS

It was found that the problem of tobacco products consumption by women is relevant and requires attention, because their body is more susceptible to the toxic effects of tobacco, which leads to serious consequences for women's health. Women who abuse tobacco smoking not only have a number of acquired diseases, but also look much older than their peers. This indicates that the woman's body does not have sufficient reserves to counteract the poisonous effects of nicotine, which affects her appearance and health. There is no correlation between a woman's smoking experience and her health after quitting tobacco products. That is, stopping smoking at any time, regardless of smoking experience, will not only reduce the risk of developing diseases, but can also return the health of a former smoker to the level of a person who has never smoked. It is also worth noting that a conscious attitude to health is a real factor that will contribute to improving the health of not only women, but also the nation as a whole.

Prospects for further research are aimed at identifying the age dynamics of health indicators of women who abuse smoking.

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A - Research concept and design, B - Collection and/or assembly of data,C - Data analysis and interpretation, D - Writing the article, E - Critical review of the article, F - Final approval of article