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VAPING AND JUULING
E-CIGARETTES SMOKING PHENOMENON BY YOUNG PEOPLE

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Summary. The modern generation is often called „instant", which is characterized by the need for immediate gratification. In this world of young people, smoking would not be popular if not for technological innovations that introduced e-cigarettes to a new dimension of creating your own image, relaxation and spending free time.
The aim of the article is to present the issues related to smoking e-cigarettes by young people. First, a brief history about the e-cigarette concept will be presented, along with the phenomenon of popularity gained by a new generation of instagrammable e-cigarettes, the so-called Pods. Then, issues related to adolescents' e-cigarettes use by will be described, such as: frequency, health effects and effectiveness of nicotine replacement therapy. Finally, the author attempts to characterize e-cigarette users.
Key words: e-cigarettes, vaping, juuling, smoking, adolescents

Introduction

The present times are characterized by a tremendous pace of change. As a result of rapid development, more and more interesting technological innovations appear. Psychoactive substances and the ways of taking them are also changing. When walking around the city, it's hard not to notice young people smoking e-cigarettes and blowing clouds of white smoke. Due to the fact that the e-cigarette is an electronic tool, it arouses particularly great interest among young people for whom using it has become a new fashion, and even a way of spending free time. It can be said that a kind of „vaping culture" has already developed. The Oxford Dictionary even named „vape" as the word of the year 2014. There has been a significant

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increase in the use of electronic cigarettes in recent years. This raises widespread anxiety and raises many questions. What are e-cigarettes? Are they actually safer than traditional cigarettes? Are they safe for young people, or are they just another idea of the tobacco industry to attract new customers?

The aim of the article is to present the issues related to smoking e-cigarettes by young people. First, a brief history about the e-cigarette concept will be presented, along with the phenomenon of popularity gained by a new generation of instagrammable e-cigarettes, the so-called Pods. Then, issues related to adolescents' e-cigarettes use by will be described, such as: frequency, health effects and effectiveness of nicotine replacement therapy. Finally, the author attempts to characterize e-cigarette users.

Health education of children and adolescents is an important element of general psychological actions. Responsibility for the course lies with a wide group of educators. The article is a source of reliable knowledge on the subject of e-smoking, which will facilitate the work of both psychologists implementing prevention programs and specialists in addiction psychotherapy. For scientists, the article presents research problems related to the development of social and subjective skills in the field of shaping and changing beliefs and attitudes related to the use of e-cigarettes.

A brief history of e-cigarettes

Work on e-cigarettes began in the 1960s. The tobacco company Philip Morris has implemented two cigarette designs, characterized by the taste of tobacco, as a result of which no smoke is produced. They produced 83% less carcinogenic compounds than traditional cigarettes, but still contained carbon dioxide and nicotine (Brewczyńska et al., 2015). Against the background of the growing awareness of health risks caused by smoking, e-cigarettes as known today were developed by the Chinese pharmacist Hon Link in 2003 (Kozieł, Karwowski, 2017). They were created as an alternative to tobacco products. They were to be used in nicotine replacement therapy and help maintain habits such as smoking in times of stress, after a meal or during social gatherings (Ślęzak, Nadolny, Synoweć, 2017).

E-cigarettes are electronic devices used to deliver nicotine by inhalation. Currently, they are available in various shapes that do not resemble a traditional cigarette. Their structure, however, remains the same. They consist of: a cartridge (replaceable liquid container), an atomizer (space for a heater) and a power source (battery). E-cigarettes do not burn tobacco. The fluid, which most often contains nicotine, is heated and turns into steam, which is then inhaled with air (Borkowska, 2016).

The first devices resembled classic cigarettes. The producers assumed that they would be intended for smokers who wanted to quit the addiction, so they tried to make them as similar to the original as possible. In 2012–2015, the most popular e-cigarettes resembled pens. There were models that were filled up with disposable

cartridges, but this solution did not catch on very well. Models consisting of a reusable atomizer, which had to be refilled with a liquid, i.e. an aromatized liquid, containing (or not) nicotine, gained a much larger group of supporters.

At some point, electronic Mods that usually resemble tubes or boxes (so-called boxes) became very popular. This type of e-cigarette has replaceable batteries and requires charging in an external adapter. Boxes are nothing like traditional cigarettes. They do not have the shape of a slender pen – they consist of a thick, rectangular shaft with a thread on one side into which a cylindrical atomizer is screwed. They are heavy and look magnificent, so many people wear them around their necks.

Pod e-cigarettes – a disturbing increase in popularity

The modern generation of youth is brought up in a world where smoking is no longer fashionable or popular. Young people probably would not reach for nicotine if there were not the attractive form of e-cigarettes. They interested not only smokers, but also young non-smokers, precisely because these products were treated as an interesting gadget, a technological novelty (Dembińska, 2019). A device called JUUL contributed to this.

The fashion for „juuling" is fueled by influencers. Advertising focused on social media creates pods as trends and a nonchalant addition to the image. Young people praise these devices that they „give a good kick". This is due to the high nicotine content in the cartridges. While other e-cigarettes usually contain about 6–30 mg/ml, JUUL has as much as 59 mg/ml. JUUL Labs informs that each capsule is equivalent to one pack of traditional cigarettes or 200 puffs. In the European Union, most JUUL feeds contain a lower concentration of nicotine than in the USA, i.e. 20 mg/ml by weight, but their online purchase is not a major problem (Leavens et al., 2020). In the US, „juuling" has become a real plague of teenagers. Over 20% of high school students and 5% of primary school students smoke JUUL, and the number of people using e-cigarettes in just one year (2017–2018) increased by 50–70% (Dembińska, 2019; Hwang, 2020; Jackson et al., 2020).

These instagrammable e-cigarettes have attracted American youth to such an extent that the phenomenon of e-smoking has become an epidemic in the USA and is treated as one of the main problems of public health (Cristello, Sutherland, Trucco, 2020; Hwang, 2020; McCabe et al., 2020). Among Polish teenagers Pods are gaining more and more popularity. Why? They look very discreet, like an ordinary flash drive and, above all, they are perfect for school conditions.

E-cigarettes and the law

In the amendment to the act of November 9, 1995. on health protection against the consequences of using tobacco and tobacco products, e-cigarettes are treated

on an equal with traditional cigarettes (DzU 2016.1331). Under the new regulations, smoking e-cigarettes, similarly to traditional tobacco, is prohibited in public places, such as bus stops, schools or hospitals. According to the amendment, it is forbidden to make available and sell electronic cigarettes and liquid containers to persons under 18 years of age. It is also forbidden to advertise and promote e-cigarettes and refill containers. Despite the introduced regulations, online sales are still booming. Most e-shops register their business outside Poland. To make it harder for law enforcement authorities to identify what they actually do, they change the names of the products they offer. And so the e-cigarette becomes, for example, a vaporizer. In practice, the regulations turn out to be dead and sellers are not deterred by even heavy fines.

The prevalence of e-cigarette smoking in the world by young people

E-cigarettes are gaining more and more popularity around the world, especially among American youth. In the last two decades, there has been a decrease in traditional smoking among students from 30% in 2000 to 6% in 2019. At the same time, the percentage of young people using e-cigarettes has increased. In 2011, it was only 1%, while 2019 was characterized by smoking at the level of 28% (King, 2020). Extensive studies of 580 high schools found that one in four teenagers had used an e-cigarette in the last 30 days (McCabe et al., 2020). Other analyzes confirm the scale of the phenomenon. Hwang (2020) publishes data for 2018, mentioning „e-smoking" by 20.8% of middle school students. Elsewhere, 16% of eighth graders and 31% of first-year high school students report e-cigarette use (Cristello, Sutherland, Trucco, 2020).

Experts see the phenomenon of increased consumption in targeted marketing. It has been shown that teenagers' exposure to e-cigarette advertisements only increased by 256% in 2011–2013 (Hwang, 2020). E-cigarettes, the main ingredient of which is nicotine salt, have become the current trend. It is made by mixing a nicotine base or extract with various types of acids. Manufacturers praise these products, saying that such a mixture reduces the unpleasant feeling in the mouth and reduces the „hard hit" in the throat. Pod cartridges based on nicotine salts offer the possibility of intensifying inhalation, which increases the addictive potential, and inhaling too much nicotine exposes you to intoxication (King, 2020). Research on JUUL users has exposed the ignorance of American youth. Only 1/3 of users were aware that their cigarettes contain nicotine (Leavens et al., 2020).

The prevalence of e-cigarette smoking in Poland by young people

In Poland, e-cigarettes appeared in 2006, but the real expansion of these products on our market took place in 2008–2009. The largest number of e-cigarette trading companies was established then (Borkowska, 2016).

The first study on the use of e-cigarettes, conducted in 2011 on a group of over 2,000 Polish students indicated that 23% of students aged 15–19 have smoked an electronic cigarette at least once in their life, and 8.2% have used it regularly (Goniewicz, Zielińska-Danch, 2012). A comparative study conducted in 2013–2014 showed a significant increase in the number of young e-cigarette users, 30% of the respondents declared that they smoke regularly (Goniewicz et al., 2014).

The Public Opinion Research Center publishes that the use of electronic cigarettes is age dependent. According to the research of this center, in 2019 only 2% of Poles smoked regularly. An additional 1% of the population declared occasional use of an e-cigarette. It is completely different among young people, under 24, as many as 14% of people smoke e-cigarettes (CBOS, 2019).

Data from the Chief Sanitary Inspectorate for 2019 show even greater numbers. The percentage of Poles who smoke traditional cigarettes decreased from 31% in 2011 to 21% in 2019. At the same time, the number of teenagers who smoke e-cigarettes regularly has increased sixfold. We are talking about 30% of students aged 15–19 (GIS, 2019).

Characteristics of e-cigarette users

Social analysis and research reveal the beliefs and motivations of young people who use e-cigarettes. It turns out that the most common motive behind e-smoking is the desire to try out a technological novelty. Many teenagers treat the possession of e-cigarettes as a reason to be proud and a source of self-presentation. Adolescence is a period of rebellion against the parents' daily routine and authority, it is primarily a desire to seek new impressions. Electronic cigarettes perfectly meet these needs, which are carefully used by marketers, designing a modern design that increases their attractiveness for the user and promoting it in social media. The vape world has its own groups on Facebook and YouTube channels, in which well-known influencers oppose the policy of regulating the availability of e-cigarettes among young people. They encourage you to read articles such as „E-cigarettes – facts and fiction". Scientific research is cited that, in fact, sounds like a promise to achieve a specific effect.

Interviews with smokers revealed five areas important for decision making. The most common reasons for using an e-cigarette were: sensations and taste, social benefits, hobbies, a sense of personal identity and the desire to differentiate from traditional smokers (Nowak, Jorres, Ruther, 2014; Borkowska, 2016). On the other hand, other studies indicate the low cost of using electronic cigarettes, the availability of many flavors and a promise to quit the addiction (Korzeniowska, Cieślewicz, Jabłecka, 2014; GIS, 2019). In a short time, e-cigarettes gained fame as a quit smoking product and as a „healthier" alternative to traditional cigarettes (Arnold, 2014).

E-smoking is perceived by young people as safer than smoking traditional cigarettes and as an attractive behawior, 68% of them share this opinion (CBOS, 2019).

Elsewhere, it is mentioned as much as 88% of the respondents (Korzeniowska, Cieślewicz, Jabłecka, 2014). This weakens pro-health beliefs and fears of addiction. It has been shown that positive expectations regarding the performance of e-cigarettes are associated with their subsequent use (Harrell et al., 2015).

Research tracking posts on Twitter and YouTube suggests that adolescents are more likely to use e-cigarettes with a modern design. The ability to hide them from teachers is the main element of their attractiveness. The places where they smoke most often are: school restrooms (75.1%), school playgrounds (52.2%), classrooms (45.7%) and corridors (38.8%). JUUL devices or other Pods are popular among over 70% of American youth (Jackson et al., 2020). On Polish forums, you can easily find posts encouraging to buy and information about the possibility of buying them.

Interesting conclusions regarding the reasons for using e-cigarettes can be found in the studies by Etter and Bullen (2011). Most of the respondents stated that the e-cigarette helped them quit smoking or significantly reduced it (over 90% of respondents). The reasons why people used an electronic cigarette are primarily: the belief that it is less toxic than a traditional cigarette (84% of respondents), the desire to cope with tobacco craving (79%), as well as withdrawal symptoms (67%), quit smoking or prevent relapse (77%), economic considerations – vaping is cheaper than smoking (57%), and dealing with situations where traditional smoking is prohibited (39%). These results clearly show that test subjects often used e-cigarettes to deal with addiction to traditional cigarettes.

Health effects of smoking electronic cigarettes

Advertisements for e-cigarettes are aimed at creating their image as harmless to health. In relation to smokers, a separate message is sent: „thanks to e-cigarettes you will break the addiction". Although e-smoking appears to be much less harmful than traditional cigarette smoking, research into their effectiveness and health effects is inconclusive and the long-term impact of their use is still unknown. The information so far regarding their safety is based on little scientific research. So what is the current state of knowledge?

The main ingredient of e-cigarettes is nicotine, a psychoactive substance with strong addictive properties. Although it is not carcinogenic itself, it can act as a tumor activator. Nicotine is also one of the main risk factors for heart disease and is harmful, especially in adolescents (Stępniowska et al., 2017; Ślęzak, Nadolny, Synoweć, 2017).

A teenager's brain is different from an adult's brain because it is in the process of development. It develops until around the age of 25, hence adolescents are particularly exposed to the harmful effects of nicotine, which can affect areas responsible for the regulation of attention, learning, mood and impulse control (Hwang, 2020).

Moreover, nicotine is highly addictive, which may predispose adolescents to smoke in the future. Bariington-Trimis and colleagues (2016), when examining stu-

dents, found that students who smoked e-cigarettes were 6 times more likely to use regular cigarettes later. Increasingly, it is raised that e-smoking plays an important role in the future use of traditional cigarettes and nicotine addiction. However, there is no clear answer here. In the literature, we can find studies that contradict the thesis that vaping is a „gate" to smoking traditional cigarettes. Interviews with people who used e-cigarettes eight years ago did not show that they are a significant predictor of conventional smoking (Selya et al., 2017). It remains unclear whether ‚e-smoking' is attracting a whole new population of users who would have become traditional cigarette smokers anyway if e-cigarettes had not been developed.

Although some studies indicate that the use of e-cigarettes may be safer than the use of traditional cigarettes, in the case of adolescents, the nicotine contained in the electronic devices may damage structures in the brain responsible for regulating emotions, making them vulnerable to addiction (Korzeniowska, Cieślewicz, Jabłecka, 2014; Stępniowska et al., 2017). According to the WHO and the American Psychiatric Association, the addictive potential of nicotine is comparable to that of drugs or alcohol.

Nicotine activates the sympathetic nervous system, which causes an increased release of neurotransmitters such as adrenaline and noradrenaline. This results in vasoconstriction, an increase in heart rate and an increase in blood pressure. Such action leads to diseases of the cardiovascular system (Stępniowska et al., 2017).

E-cigarettes may have other respiratory consequences for young users. McConnell and collegues (2016) found that e-cigarette use among adolescents causes effects such as: coughing, increased phlegm production, and bronchitis.

Analyzes of the chemical composition and harmfulness of the liquid/aerosol inhaled by the e-smoker allowed for obtaining valuable information. Compared to traditional cigarettes, the level of detected toxic compounds was 9 to 450 times lower in an e-cigarette spray. The main ingredients of both the liquid and the vapor were propylene glycol and glycerin. Flavoring was less than .1%. The emission of particulate matter PM (which may contain, among others, polycyclic aromatic hydrocarbons, heavy metals, etc.) was higher in the traditional cigarette than in the e-cigarette. Nitrosamines specific to tobacco smoke (NNN, NNK), diethylene glycol and pollutants specific to tobacco smoke (e.g. cotinine, anabazine, etc.) were found in the cartridges (Knoll-Michałowska, Petrykowska, Puchalski, 2014).

There are also harmful substances in a vapor/mist of electronic devices. Their amount and concentration are much lower than in traditional cigarette smoke. These are two compounds from the group of aldehydes that have been proven to be carcinogenic: formaldehyde and acetaldehyde (Ślęzak, Nadolny, Synoweć, 2017).

Scientific studies on the short-term impact of e-cigarette use on human health do not indicate their physiological effects. It was observed: no changes in heart rate, levels of carbon monoxide and plasma nicotine levels, no changes in peripheral blood counts, no changes in lung and heart function, no increase in inflammatory markers (Vansickel et al., 2010; Flouris et al., 2012; 2013; Arnold, 2014).

The above data show that e-cigarettes deliver over 25 times less carcinogens than traditional tobacco products. For this reason, they are recommended to people addicted to nicotine, who find it difficult to give up addiction. In this situation, the e-cigarette reduces the risk of cancer and is used in nicotine replacement therapy (NRT) (Stępniowska et al., 2017; Ślęzak, Nadolny, Synoweć, 2017). Caponnetto and colleagues (2013) proved the effectiveness of a 12-week therapy with the use of e-cigarettes. After completing the treatment, 22.3% of people reduced the number of cigarettes smoked on average from 21 to 14 cigarettes a day, and 10.7% completely stopped smoking. In other studies, information was found that after this type of therapy, 32% of respondents reduced the number of cigarettes smoked by more than a half, and 22.5% quit smoking (Polosa et al., 2014). Other researchers in nicotine replacement therapy are showing convergent promising results. As with traditional cigarettes, these devices offer the possibility of puffing and holding the cigarette in your hand. This satisfies addiction-related behavioral habits, such as smoking after eating, etc. (Palazzolo, 2013; Nowak, Jorres, Ruther, 2014).

Conclusion

Even 50 years ago, the opinions about traditional cigarettes were favorable. They were both a symbol of equality and status, recommended by doctors, and many people built their image on them. This image of theirs lasted until the end of the 1980s. Only later did scientific research confirming their harmfulness appear, and a gradual change in their perception took place in the public awareness.

The open system of e-cigarette liquids allows users to add psychoactive substances to their warmers, e.g. THC, mephedrone, cocaine, methamphetamine and more. Canadian research on a group of young people aged 15–19 showed that 38.2% of „e-smokers" additionally smoked traditional cigarettes. Double smokers are also more likely to use marijuana and other drugs (Azagba, 2018; Aleyan et al., 2020). The challenge for scientists is to estimate the long-term health effects of e-cigarette use.

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VAPING I JUULING
ZJAWISKO PALENIA E-PAPIEROSÓW PRZEZ MŁODYCH LUDZI

Streszczenie. Współcześni nastolatkowie często określani są mianem „pokolenia instant", którego charakterystyczną cechą jest potrzeba natychmiastowej gratyfikacji. W dzisiejszym świecie palenie wśród młodych osób nie byłoby popularne, gdyby nie innowacje technologiczne, które wprowadziły e-papierosy w nowy wymiar kreowania własnego wizerunku, relaksu i spędzania wolnego czasu.
Celem artykułu jest przedstawienie zagadnień związanych z paleniem e-papierosów przez młodzież. W pierwszej kolejności zostanie przedstawiona krótka historia dotycząca koncepcji e-papierosów oraz fenomen popularności, jaką zyskała nowa generacja instagramowalnych e-papierosów. Następnie omówione zostaną zagadnienia związane z używaniem e-papierosów, takie jak: częstotliwość, skutki zdrowotne i skuteczność nikotynowej terapii zastępczej. Na koniec autor podejmuje próbę scharakteryzowania użytkowników e-papierosów.
Słowa kluczowe: e-papierosy, vaping, juuling, palenie, młodzież

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