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RESEARCH ARTICLE/ARAŞTIRMA MAKALESİ

An analysis of media news on electronic cigarettes, the popular addiction of recent years

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Abstract

Objective: The use of electronic cigarettes (e-cigarettes), which are promoted as tobacco-free cigarettes, is becoming increasingly widespread due to the perception that they are safer and more economical than regular cigarettes, that they reduce the desire to smoke or make it easier to quit smoking. E-cigarettes target especially children and young people through both traditional print and visual media as well as social media. The aim of this study is to analyze the media news on e-cigarettes in Türkiye in the last five years.

Material-Method: The web pages of major news agencies in Türkiye are scanned using the keywords 'electronic cigarette', 'e-cigarette', 'electronic cigarette addiction', 'e-cigarette addiction'. The news articles published between 2019 and 2024 are evaluated according to years, agencies, topics and content. For descriptive statistics, frequency (n) and percentage (%) representation is used.

Findings: In the period between 2019 and 2024, 131 original news articles published in the news agencies were identified. A total of 31.0% of the news articles were published in 2023 and 35.9% were under health and life topics. While the rate of news reflecting expert opinions on the health risks and harmful effects of e-cigarettes is 48.1%, 33.6% of the news is about the efforts of law enforcement forces to combat e-cigarette smuggling.

Conclusion: Studies have shown that when individuals have limited knowledge and experience or are uncertain about e-cigarettes, they are more susceptible to the content in the media. Regular exposure to this content may normalize perceptions about e-cigarette use, while some news content may be misleading. In this respect, it is thought that the news in the media containing accurate and complete information will enable the society to be informed and aware about e-cigarettes and will positively influence public support for public health policies and legislation.

Keywords: Electronic Cigarette, E-Cigarette, Electronic Cigarette Addiction, E-Cigarette Addiction, Addiction

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1. INTRODUCTION

Tobacco and tobacco products are highly addictive due to the nicotine they contain (World Health Organization [WHO], n.d.a; U.S. Food & Drug Administration [FDA], n.d.). Tobacco products can be smoked or smokeless. Tobacco smoking refers to inhaling the smoke produced by burning the dried or cured leaves of the tobacco plant and allows the biochemically active compounds released, such as nicotine, to be absorbed through the lungs. Smoked tobacco products generate second-hand smoke and include cigarettes, cigars, cigarillos, roll-your-own tobacco, pipe/waterpipe tobacco, bidis and kreteks. Smokeless tobacco products, i.e. snuff and chewing tobacco, are consumed through the nose or mouth, without burning or combustion (Shafey et al., 2009; European Commission, n.d.; WHO, 2023a).

Globally 1.245 billion people aged 15 years and over are tobacco users, with a prevalence of 20.9% in 2022 (WHO, 2024b). Cigarettes are the most common tobacco product used worldwide (WHO, 2023a; Shafey et al., 2009). In 2022, 89% of tobacco users were cigarette smokers with a current prevalence of 15.0% among all persons aged 15 years and over (WHO, 2024b). Tobacco use, be it inhaled, sniffed, sucked, or chewed, is harmful with no safe level of exposure (WHO, 2023a; Shafey et al., 2009). More than 8 million people die annually from tobacco use (WHO, n.d.a). More than 7 million of those deaths are the result of direct tobacco use while around 1.3 million are non-smokers who are exposed to second-hand smoke (WHO, 2023a; WHO, n.d.a). Tobacco use is also a major risk factor for cardiovascular and respiratory diseases, over 20 different types or subtypes of cancer, and many other debilitating health conditions (WHO, n.d.a); therefore, is a major avoidable cause of non-communicable diseases (Jerzyński & Stimson, 2023).

The World Health Organization (WHO), therefore, calls tobacco use an epidemic and one of the biggest public health threats the world has ever faced (WHO, n.d.a). In response to the globalization of this epidemic, facilitated through trade liberalization, direct foreign investment, global marketing, transnational tobacco advertising, promotion and sponsorship, and the international movement of contraband and counterfeit cigarettes, the World Health Assembly adopted the WHO Framework Convention on Tobacco Control (FCTC) on 21 May 2003 as the first international treaty which has been rapidly and widely embraced (WHO, 2003; WHO, n.d.b).

However, the tobacco industry was quick to promote other nicotine-containing products as an alternative to cigarettes (European Lung Foundation [ELF], 2020). Electronic cigarettes (e-cigarettes), devices that deliver vaporized nicotine without combusting tobacco, entered the global tobacco and nicotine market between 2003 and 2008 promoted as a safer alternative to cigarettes (WHO, 2023b; Cahn & Siegel, 2011; Berridge et al., 2023).

The early pioneer of e-cigarettes was developed in 1963 by Herbert A. Gilbert. His patent application was for *"a smokeless non tobacco cigarette … to provide a safe and harmless means for and method of smoking by replacing burning tobacco and paper with heated, moist, flavored air; or by inhaling warm medication into the lungs in case of a respiratory ailment under direction of a physician"* (Gilbert, 1965). In 2003, the e-cigarette in its current form was developed by the Chinese pharmacist Hon Lik. His patent application described an electronic atomization cigarette "*that functions as substitutes for quitting smoking and cigarette substitutes"* (Hon, 2013).

E-cigarettes, unlike traditional cigarettes, do not contain tobacco (ELF, 2020; WHO, 2024a; WHO, 2020). They are battery-operated devices that heat a liquid solution, also called e-liquid, which turns into an nonaquous vapor for the user to inhale (ELF, 2020; U.S. Department of Health and Human Services [HSS], 2016; WHO, 2024a; Lichtenberg, 2017; Marques et al., 2021). The e-liquids may or may not contain nicotine and are referred to as electronic nicotine delivery system (ENDS) and electronic non-nicotine delivery systems (ENNDS) respectively (WHO, 2024a; WHO, 2020).

Following the introduction of the e-cigarette to the Chinese market in 2004 and the United States (U.S.) market in 2007 (HSS, 2016; Lichtenberg, 2017), the major multinational tobacco companies had entered the e-cigarette market by 2013 (Grana et al., 2014); and as e-cigarettes have become widely available, their use has increased rapidly worldwide (Rom et al., 2015; Drummond & Upson, 2014). In 2021, the global number of e-cigarette users was estimated at 81.9 million, which shows a significant growth from 58.1 m in 2018. Although the number of users are the highest in European and Americas regions of WHO (20.1 m and 16.8 m respectively) and lowest in Africa (5.6 m); the prevalence is the highest in European and the Eastern Mediterranean region with 2.3% each and lowest in Southeast Asia with 0.7% (Jerzyński & Stimson, 2023).

E-cigarettes are being promoted and marketed through various channels, including mass media, be it visual, print or digital, social media platforms and other forms of internet marketing, which has contributed to the increase in e-cigarette use by both adults and youth (Grana et al., 2014; HSS, 2016). Around 30–50% of e-cigarette sales are estimated to occur over the internet (Lichtenberg, 2017). The pervasive marketing of e-cigarettes has fostered positive (mis)perceptions about e-cigarettes, portraying them as appealing, healthy alternatives, and heightened the intentions to use, particularly among youth (Smith & Hilton, 2023; Lazard, 2021). Studies reveal that adolescents and young people are being exposed to e-cigarette advertising on at least one type of media with an average number of five (Wang et al., 2019; Pettigrew et al., 2023). Even brief exposure to e-cigarette content on social media has been associated with heightened intentions to use these products and more favorable attitudes towards vaping (WHO, 2024a). Notably, exposure to e-cigarette marketing on platforms like Instagram has been linked to increased experimentation and continued use among adolescents (Lazard, 2021).

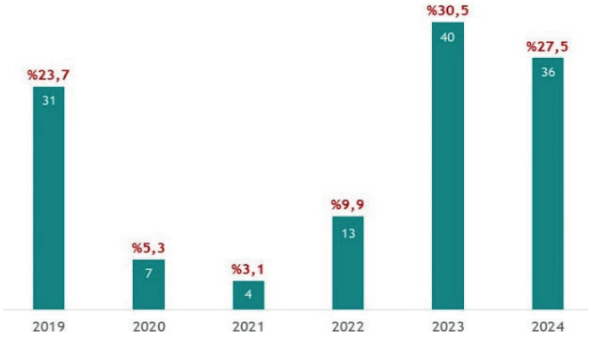
2. MATERIAL-METHOD

This study aims to examine the media coverage of e-cigarettes in Türkiye over the past five years. As online news is a major source of news reporting, an online search was conducted to identify the news on e-cigarettes in national newspapers. It was found that the same news appeared in different newspapers, originating from the same news agencies. In order to prevent duplication, it was decided to screen the websites of the news agencies which were identified during the initial search as Demirören News Agency (DHA), Anadolu Agency (AA), İhlas News Agency (İHA), BBC News Türkçe, Euronews, and ANKA News Agency. The websites of these six news agencies were searched retrospectively for news on electronic cigarettes by using the keywords 'electronic cigarette', 'e-cigarette', 'electronic cigarette addiction', and 'e-cigarette addiction'. The analysis was carried out for the 5 -year period of January 1, 2019 to May 12, 2024. All news mentioning e-cigarettes were included and news that were duplicate and in video/audio format were excluded. The news published in this period were evaluated according to the years published, news agencies that distribute the news, the topics they were published under and the visual and written content of the news. For descriptive statistics, frequency (n) and percentage (%) representation was used.

3. FINDINGS

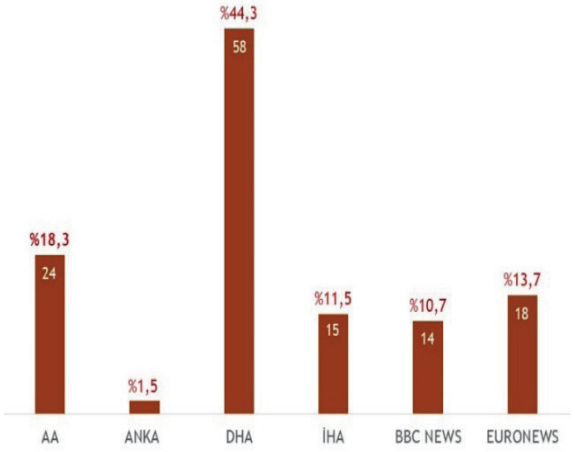
In the time period between January 1, 2019 and May 12, 2024, a total of 131 original news articles published by the news agencies were identified. E-cigarettes received a coverage of 31 news articles in 2019, which dropped drastically in 2020 and 2021 (7 and 4 news articles respectively), most probably due to the Covid-19 pandemic. Coverage started rising in 2022, and continued its rise, reaching to a total of 36 news articles in the first four months of 2024. Of the 131 news, 40 (31.0%) was published in 2023 (Figure 1).

Figure 1. Distribution of news by years



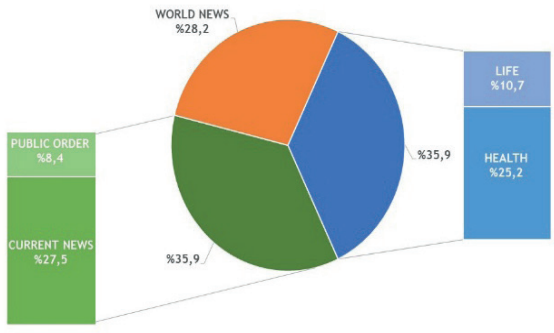
A total of 58 (44.3%) news was published by Demirören News Agency, followed by 24 (18.3%) news by Anadolu Agency and 18 (13.7%) by Euronews (Figure 2).

Figure 2. Distribution of news by news agencies



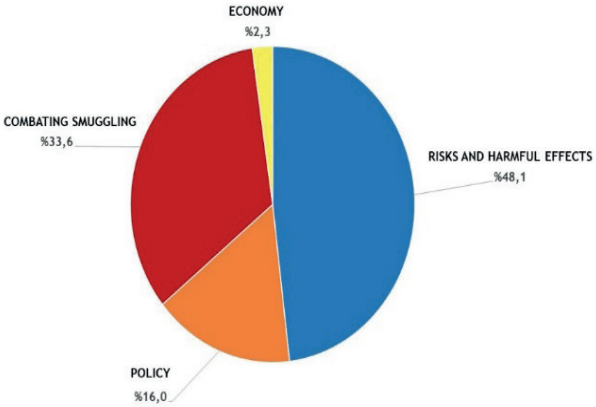
Regarding the topics that cover the news, 33 (25.2%) news was published under the topic of "health"; 14 (10.7%) under "life"; 11 (8.4%) under "public order"; 36 (27.5%) under "current news"; and 37 (28.2%) under "world news" (Figure 3).

Figure 3. Distribution of news by topics



A total of 63 (48.1%) news reflected on the health risks and harmful effects of e-cigarettes; 21 (16.0%) mentioned about national/international policies/regulations to control and prevent e-cigarette use; 3 (2.3%) indicated its economic reflections, while 44 (33.6%) news was about the efforts of law enforcement to combat e-cigarette smuggling (Figure 4).

Figure 4. Distribution of news by content



As for the headlines of the news,

30 (22.9%) headlines were about the health problems associated with e-cigarette:

> *"Electronic cigarette increases the risk of heart attack" (Anadolu Agency, 2019).*

> *"Electronic cigarettes can cause male infertility" (Demirören News Agency, 2024).*

11 (8.4%) headlines mentioned its impact on young people:

> *"Electronic cigarettes increased smoking rate among young people" (İhlas News Agency, 2024).*

> *"Young people who vape may be exposed to lead and uranium" (Anadolu Agency, 2024).*

6 (4.6%) headlines emphasized that e-cigarettes are addictive and are not an alternative to quit smoking:

> *"Vaping is not an alternative to smoking cessation" (Demirören News Agency, 2019).*

> *"World Health Organization: Electronic cigarettes don't make you quit smoking and are bad for your health" (Euronews, 2019).*

21 (16%) headlines focused on the national and international policies by governments towards controlling e-cigarette use:

"Australia bans electronic cigarettes: Threat to public health" (BBC News Türkçe, 2023).

"Flavored electronic cigarettes to be banned in the Netherlands" (BBC News Türkçe, 2020).

The analysis of the news texts revealed that 53 (40.5%) news articles discussed the health risks and medical problems associated with e-cigarette use, while another 53 (40.5%) referred to the rising prevalence of e-cigarette use among adolescents and young adults. Furthermore, 44 (33.6%) news articles mentioned the content of e-liquids and vapours and 26 (19.8%) mentioned the flavours utilized in e-cigarettes; 28 (21.4%) addressed the controversial use of e-cigarettes as a smoking cessation tool; and 12 (9.2%) highlighted the addictive nature of e-cigarettes.

All but one of the news displayed a negative attitude towards e-cigarettes. The only news with a rather neutral attitude was dated 27.06.2019, published by BBC News with the headline "How safe are electronic cigarettes?". It contains somehow misleading information that the nicotine, e-liquid and vapor of e-cigarettes are less harmful than traditional cigarettes, concluding that "*At the moment it is too early to know the full potential health effects of electronic cigarettes, but experts agree that they will be much lower than regular cigarettes*." (https://www.bbc.com/turkce/haberler-dunya-48781320).

4. DISCUSSION

This study aimed to examine the media coverage of e-cigarettes in Türkiye over the past five years. In recent years, e-cigarettes have garnered significant attention in media discourse. Their emergence in the market, impact on the tobacco industry, contentious role in smoking cessation, and rising prevalence among adolescents have made them a subject of widespread public interest (Yates et al., 2015; Rooke and Amos, 2014; Wackowski et al., 2019).

The findings of our study revealed that the number of the news increased annually from a total of 31 news in 2019 to 36 news in the first four months of 2024, with the exception of 2020 and 2021 when news regarding Covid-19 pandemic erupted. The news media plays a crucial role in influencing public opinion on e-cigarettes, especially considering that approximately 80% of the population seeks health information through internet and digital platforms, often relying more on these sources than on healthcare professionals (Payne et al., 2016; Ngoma et al., 2023; Sumayyia et al., 2019; Swoboda et al., 2019; Chu et al., 2017; Parija et al., 2020; Rooke & Amos, 2014). Given this reliance, media coverage of tobacco products, including e-cigarettes, is significant as it shapes public awareness and perceptions of their relevance and the necessity of regulatory measures. Moreover, such coverage informs the public about the potential risks and benefits associated with these products, thereby influencing public perceptions and intentions regarding their use (Tan et al., 2017; Wackowski et al., 2017).

Concerns regarding the representation of e-cigarettes in both traditional and social media have spurred studies on the topic (Payne et al., 2016); and many studies have established the association between the promotion of e-cigarettes through diverse media channels and heightened favorable attitudes and increased intentions to use e-cigarettes, especially among young people (Smith & Hilton, 2023).

The findings of our study showed that of the 131 news in the last five years, all but one presented a negative approach towards e-cigarettes, both in their headlines and also in their texts. Tan et al. (2017) found that participants exposed to negative e-cigarette news headlines exhibited heightened beliefs concerning harms and diminished beliefs regarding benefits of e-cigarettes in comparison to those exposed to positive headlines. Wackowski et al. (2018) indicated that news stories about e-cigarettes more frequently emphasize potential risks rather than potential benefits such as harm reduction. News coverage has also been implicated in influencing public perceptions regarding the comparative harm of e-cigarettes versus traditional cigarettes, as shown by Majeed et al. (2017), who have found that the percentage of adults perceiving e-cigarettes to be as harmful as or more harmful than cigarettes rose from 13% in 2012 to 40% in 2015 in the U.S.

Bigwanto et al. (2023) found that the news articles

presenting favorable perspectives on e-cigarettes outnumbered those with negative viewpoints, and health impact, regulation, taxation, and their role as smoking cessation tools to be the most frequently reported topics in Indonesia; Burton et al. (2023) revealed that reports of e-cigarette related fatalities and severe illnesses in the U.S. have altered the perspective of Australian mass media articles from favorable (48.0%) to unfavorable (54.0%); and Kang et al. (2021) found that the news coverage of e-cigarettes in the U.S. and United Kingdom emphasized the reduced harm of e-cigarettes compared to combustible cigarettes, whereas Korean news highlighted the ingredients of e-cigarettes.

Our study identified the themes of the media news in Türkiye in the last five years as the health risks and harmful effects of e-cigarettes; the economic reflections of e-cigarettes; national/international policies/regulations to control and prevent e-cigarette use; and the efforts of law enforcement to combat e-cigarette smuggling. Lyu et al. (2021) identified the seven prominent themes in the Chinese newspapers while reporting of e-cigarettes as the health impact, usage, smoking cessation, youth, regulation, industry development, and description of e-cigarettes; whereas Rooke & Amos (2014) pinpointed getting around smoke-free legislation, risk and uncertainty; healthier choice, celebrity use, and price to be the emerging themes in newspaper coverage in the UK and Scotland.

Relying on social and/or mass media for information regarding e-cigarettes presents challenges. Exposure to such information can normalize perceptions that e-cigarette use is prevalent and harmless, potentially enhancing their appeal and perceived advantages, thus fostering positive social norms. Media may disseminate misinformation by portraying e-cigarettes as substitutes for conventional cigarettes, linking them with claims of appetite suppression, therapeutic effects, and healthy lifestyles, despite lacking empirical validation. The portrayal of e-cigarettes in media can also influence public attitudes toward public health policies and legislation (Burton et al., 2023). While our study did not directly investigate the impact of e-cigarette news on individuals, it may provide valuable insights for future research.

Several factors have been identified for the growing use of e-cigarettes. They are perceived as a less harmful, cheaper and more socially acceptable alternative to conventional cigarettes, to deal with situations where smoking was prohibited, and even as a smoking cessation aid (Peralta & Guntur, 2014; Etter & Bullen, 2011; Johar, 2016; Marques et al., 2021; Temourian et al., 2022). Some studies have found that e-cigarettes were more effective for smoking cessation than nicotine-replacement therapy while providing the physical experience of inhalation (Hajek et al., 2019; Benowitz, 2020; Lindson et al., 2024). England is the first country to prescribe medicinally-licensed e-cigarettes (Department of Health and Social Care, 2021), and The National Health Service (NHS) recommends e-cigarettes as an effective tool for adults to support quitting smoking and staying smoke-free (NHS, 2022; King's College Hospital, 2022). The FDA, however, has approved no e-cigarette product as a cessation aid to date, despite stating that certain e-cigarettes may help adults to quit or significantly reduce smoking (Temourian et al., 2022; FDA, 2023). It is stated that "the immediate toxic effects of e-cigarettes far outweigh those of conventional cigarettes", therefore e-cigarettes do not present a "benign alternative" (Brown et al., 2021).

The findings of our study revealed that 4.6% of the news emphasized in their headlines that e-cigarettes were not an alternative to quit smoking and 21.4% of the news addressed the controversial use of e-cigarettes as a smoking cessation tool in their texts. Studies have also found that most individuals were unsuccessful to quit cigarette smoking and instead switched to dual use of cigarettes and e-cigarettes (Caraballo et al., 2017; Wang et al., 2021). In 2021, 29.4% of adults in the U.S. were dual users. Dual use was more common among older adults aged 45 years and older of whom 42.7% reported both vaping and smoking cigarettes (Centers for Disease Control and Prevention [CDC], 2023). A recent study found that 4.0% of the sample were dual users, of whom 2.5% were characterized as experimental dual users, and 1.5% were established dual users; and 1.1%

were exclusive e-cigarette users, of whom 0.4% were experimental e-cigarette users, and 0.7% were established e-cigarette users. Exclusive established e-cigarette users were less likely to transition to exclusive cigarette smoking, and established dual users were more likely to remain so (Wei et al, 2020).

Our study found that 33.6% of the news mentioned the content of e-liquids and vapors. There is an ongoing debate regarding the use and efficacy of e-cigarettes in harm reduction, smoking reduction or cessation, and their impact on the health of the users as well as on those passively exposed to the vapor due to limited evidence (Drummond & Upson, 2014; Jensen et al., 2015; Marques et al., 2021). Various chemical substances have been identified in e-liquids, aerosols and environmental emissions. The e-liquids contain propylene glycol and/or glycerol, nicotine, and flavorant chemicals (ELF, 2020; HSS, 2016; Jensen et al., 2015; Krüsemann et al., 2021), and the vapor has been shown to contain lead, cadmium, nickel, formaldehyde, and acetaldehyde among other chemicals (Lichtenberg, 2017; FDA, 2023; Johar, 2016; Jensen et al., 2015; Krüsemann et al., 2021). Although it has been claimed that e-cigarette aerosols contain fewer compounds and at significantly lower concentrations than cigarette smoke (Margham et al., 2021); it has also been found that e-liquid and aerosol samples demonstrate distinct analyte profiles, such that e-liquid profiles produced upwards of sixty four compounds whereas aerosol profiles produced upwards of eighty two compounds that were never present in the solutions (Herrington & Myers, 2015), implicating that the heating process itself can lead to the formation of new compounds of questionable toxicity (Marques et al., 2021; Jensen et al., 2015).

The long-term health effects of e-cigarette use are not entirely acknowledged; yet, the exposure to toxic substances and carcinogens they generate are known to cause cancer; increase the risk of cardiovascular and respiratory disorders as well as nervous-system problems (WHO, 2024a; WHO, 2023a; Johar, 2016; Peralta & Guntur, 2014; Vandelaer, 2023; Feeney et al., 2022). Our study found that 48.1% of the news reflected on the health risks and harmful effects of e-cigarettes; 22.9% of the news had the health problems associated with e-cigarette in their headlines and 40.5% of the news discussed the health risks and medical problems associated with e-cigarette use in their texts.

Our study showed that the news referred to the rising prevalence of e-cigarette use among adolescents and young adults, both in their headlines and in their texts (8.4% and 40.5% of the news, respectively). Studies show that e-cigarette use is increasing among young people (Kaleta et al, 2016; Puteh et al., 2018; Birdsey et al., 2023; Yoong et al., 2021; Song et al., 2023). A recent systematic review and meta-analysis found the global prevalence of e-cigarette in younger individuals as 16.8% in the 'ever' and 4.8% in the 'current' modes of e-cigarette use (Salari et al., 2024). In the U.S., 36.8% of high school students and 49.0% of middle school students were dual users of e-cigarettes along with other tobacco products in 2020 (Wang et al, 2021b). E-cigarette use among adults rose to 4.5% in 2021 from 3.7% in 2020 (Cornelius. et al., 2021). 30.3% of adults and 61.4% of young adults aged 18-24 were 'never-smoker' e-cigarette users (CDC, 2023). In 2023, e-cigarettes were the most commonly used tobacco product among middle and high school students in the U.S., such that 2.1 million (7.7%) students, of whom 550.000 (4.6%) were middle school and 1.56 million (10.0%) were high school students, currently used e-cigarettes (Birdsey et al., 2023). In Türkiye, different studies found the prevalence of e-cigarette use among university students to vary between 0.6% and 43.1% (Doğan et al., 2018; Özpulat & Öztaş, 2020; Sayılı et al., 2020; Saçlı, 2019; Çıtıl & Çolak, 2021). Among young people, curiosity, better taste and smell were the most commonly reported reasons for e-cigarette use besides the perception that e-cigarettes are less harmful, more acceptable and convenient (Zhao et al., 2023; Wang et al., 2019; Australian Institute of Health and Welfare, 2024; Thoonen & Jongenelis, 2024; Temourian et al., 2022). Currently, 88 countries lack minimum age restrictions for purchasing e-cigarettes, and 74 countries lack regulatory frameworks for these potentially harmful products. This unrestricted

availability of e-cigarettes as consumer goods and their targeted marketing towards youth raises global concerns (WHO, 2024a).

The findings of our study revealed that 19.8% of the news mentioned the flavors utilized in e-cigarettes. The variety of e-liquid flavors exceed 16.000 (WHO, 2024a; Ma et al., 2022; Lichtenberg, 2017) and flavorings are shown to make an average of 63% of the total number of ingredients within one e-liquid, candy flavored ones having the highest percentage with 75% (Krüsemann et al., 2021). Flavors are shown to add to the attractiveness and popularity of e-cigarettes; and stimulate use among all types of users (Havermans et al., 2021; Krüsemann et al., 2021; Marques et al., 2021; Temourian et al., 2022; Thoonen & Jongenelis, 2024) leading to greater satisfaction compared to non-flavored e-cigarettes (Landry et al., 2019; Groom et al., 2020). Flavor has been a common reason for initiation as well as continuing use of e-cigarettes, especially for adolescents and young people, who prefer particularly fruit, dessert/pastry/bakery, candy/chocolate/sweet and mint flavors other than tobacco (Landry et al., 2019; Groom et al., 2020; Wang et al., 2021b; Wang et al., 2019; Farsalinos et al., 2023).

5. CONCLUSION

Studies have shown that individuals with limited or ambivalent knowledge and experience about e-cigarettes are particularly susceptible to media influence and that opinions about e-cigarettes are less likely to be influenced by personal experience, but more likely by media discussion. Even brief exposure to e-cigarette content on both the traditional and social media is associated with more positive attitudes and increased intention to use e-cigarettes. Regular exposure to such content has the potential to normalize perceptions of e-cigarette use, although certain news items may contain misleading information. In this respect, it is important for news coverage of e-cigarettes to be accurate, balanced, objective and comprehensive, providing a diverse yet objective spectrum of perspectives and sources in order to inform the public and enhance awareness about e-cigarettes, thereby potentially fostering greater public endorsement of public health policies and legislation.

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