



Anti-smoking programmes in dentistry: A comparative analysis of approaches in Ukraine and the EU countries

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Abstract. The aim of the study was to compare approaches to tobacco smoking prevention in dental practice in Ukraine and the European Union countries. The study was carried out as an analytical review of the literature with elements of comparative analysis, within which 38 sources were processed for the period 2005-2026; the analysis studied the dental consequences of tobacco smoking and approaches to preventive counselling, the practices of Ukraine and the European Union countries were compared, and the generalisation formulated common features, differences, and directions for adapting European experience. The analysis of the sources showed that tobacco smoking and the use of alternative nicotine products are associated with a complex of dental changes that include periodontal tissues, oral mucosa, oral hygiene status, dental hard tissues and restorative materials. It was found that dental practice has a preventive potential for early detection of tobacco use, brief counselling and support for smoking cessation, however, the level of formalisation of such interventions is uneven. In Ukraine, the general regulatory framework for tobacco control is more clearly presented, while in the European Union countries, professional guidelines, educational support and structured counselling models are more clearly traced. It was determined that the most realistic directions for adapting European experience to Ukrainian dental practice are standardisation of preventive counselling, routine assessment of tobacco status, professional training of dentists and implementation of brief clinical algorithms. The results confirmed the feasibility of integrating anti-smoking interventions into routine dental practice and adapting structured European approaches to the Ukrainian context. The obtained data can be used by dentists, teachers of higher medical education institutions, health care organisers, developers of clinical recommendations and postgraduate training programmes to improve preventive counselling, professional algorithms of actions and organisation of anti-smoking interventions in dental care

Keywords: tobacco; nicotine; periodontium; oral cavity; preventive counselling; tobacco smoking; alternative nicotine products

Introduction

Tobacco smoking remains a common behavioural factor that is directly associated with damage to oral tissues, worsening of dental diseases and reduced treatment effectiveness. According to the World Health Organisation (WHO), in 2024, 24.1% of adults in the European Region used tobacco, which corresponded to 173 million people [1]. In Ukraine, in 2024, the prevalence of cigarette smoking among the adult population was 17.8%, and the total current use of tobacco and nicotine products reached 26.0%, including 5.3% of e-cigarette users and

2.6% of consumers of heated tobacco products [2]. Under such conditions, insufficient integration of anti-smoking approaches into dental care can lead to late detection of tobacco-associated changes, progression of periodontal pathology, deterioration of dental hard tissues and oral mucosa, reduced effectiveness of therapeutic and preventive measures, and an increase in the frequency of repeated clinical interventions.

The impact of smoking on the oral cavity is manifested both in the formation of periodontal lesions and in broad-

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er changes in dental status. As shown by I.S. Lisetska & M.M. Rozhko [3], smoking is associated with an increased risk of periodontal tissue diseases. The authors found that tobacco exposure is accompanied by impaired microcirculation, changes in vascular response, weakening of local tissue resistance and an increase in the frequency of periodontal lesions, which contributes to the chronicity of the pathological process. In the work of N.B. Kuzniak *et al.* [4], the authors investigated the structure and prevalence of periodontal tissue diseases in smokers who used tobacco heating devices. The results showed that the use of such devices does not eliminate periodontal risk, but is associated with an increased frequency of periodontal tissue lesions and variability of the clinical forms. The impact of alternative nicotine products on objective and subjective indicators of oral health was studied by L.S. Kryvenko *et al.* [5]. Scientists proved that alternative nicotine products are also accompanied by negative changes in dental status, which confirms the harmful effects not only of traditional nicotine consumption, but also of modified nicotine.

Clinical and hygienic changes in tobacco use vary in severity depending on the type of product consumed, the age of patients, and behavioural characteristics of oral care. In the article by B. Kravchenko [6], the incidence of dental caries, the number of extracted and filled teeth, and hygiene indices in different groups of smokers were compared. The results of the study showed that the nature of dental disorders depends on the type of product consumed: cigarette smokers had the highest values of the index of carious, filled, and extracted teeth, users of tobacco heating systems had the most pronounced accumulation of soft plaque and tartar, and smokeless tobacco users had the highest rates of gingivitis. The state of oral hygiene and the level of sanitary and hygienic knowledge in adolescents and young adults who smoke were analysed by I.S. Lisetska & M.M. Rozhko [7]. Scientists found that the combination of poor oral hygiene with insufficient preventive awareness contributes to the accumulation of dental plaque, increased inflammatory changes in periodontal tissues and an increased likelihood of progression of dental pathology at a young age. In the study of O.M. Boychenko *et al.* [8], the prevalence of dental diseases in young people was characterised. The authors identified the frequency of pathology of dental hard tissues and inflammatory periodontal lesions, which gives grounds to consider young age as a period of increased sensitivity to the action of adverse behavioural factors.

The use of electronic cigarettes and heated tobacco products expands the range of dental problems, since the impact covers not only periodontal status, but also the conditions of clinical management of patients and the condition of dental hard tissues. Ya.T. Vasylyshyn [9] investigated the condition of periodontal tissues in young people who used electronic devices for smoking. As a result, it was found that the use of such devices is accompanied by a deterioration in periodontal indicators, and with an increase in the duration of the use, the severity of pathological changes increases. Dental and anaesthetic problems

in nicotine-dependent individuals were summarised by O.V. Kravets *et al.* [10]. The authors showed that nicotine addiction is combined not only with damage to the organs and tissues of the oral cavity, but also with complications in the clinical management of patients, in particular during anaesthetic support of dental interventions. The effect of cigarette smoke and aerosol from heating tobacco on the colour stability of hard tooth tissues and restorative materials was studied by F. Zanetti *et al.* [11]. The researchers proved that both types of aerosol loading worsen the colour stability of enamel, dentin and composite materials, which expands the understanding of the dental consequences of tobacco exposure from the periodontal level to aesthetic and restorative aspects.

Despite the existence of works devoted to the dental consequences of smoking and the use of alternative nicotine products, information on preventive and advisory practices in dentistry, taking into account the differences between Ukraine and the countries of the European Union (EU), remains insufficiently systematised. The aim of the study was to identify and study the features of anti-smoking approaches in dentistry in Ukraine and the EU countries. The objectives of the study were as follows: to analyse the dental consequences of smoking and the use of alternative nicotine products as a basis for anti-smoking interventions; to generalise approaches to prevention, counselling and reducing tobacco exposure in dental practice in Ukraine and the EU countries; to identify common features, differences, and directions for adapting European experience to Ukrainian dental practice.

Materials and Methods

The study was conducted as an analytical review of the literature with elements of comparative analysis. The subject of the study was approaches to the prevention of smoking in dental practice, forms of the implementation at the clinical, organisational and preventive levels, as well as the features of the integration of anti-smoking interventions into dental care in Ukraine and the EU. The element of comparison was not individual countries of the European Union, but regulatory and professional approaches common in EU countries. The choice of such a comparison format was due to the need to compare the Ukrainian experience with models characterised by a higher degree of legal regulation, professional standardisation of preventive counselling and institutionalisation of the participation of the dentist in smoking cessation.

The search for sources was carried out in scientometric and bibliographic databases (PubMed, Scopus, Web of Science, Google Scholar) in Ukrainian and English using the following keywords and search queries: “tobacco smoking and dentistry”, “tobacco prevention in dentistry”, “anti-smoking approaches in dental practice”, “smoking and periodontitis”, “electronic cigarettes and oral health”, “smoking cessation in dentistry”, “tobacco prevention in dental practice”, “dentist-delivered smoking cessation”, “smoking and periodontal disease”, “heated tobacco products and oral

health”, “e-cigarettes and oral health”, “anti-smoking interventions in dental care”. The review included publications that were relevant to the research topic, contained data on the dental consequences of tobacco smoking or alternative nicotine use, covered preventive, advisory or organisational approaches in dentistry, were published in Ukrainian or English, and had full text in open or institutional access. Exclusion criteria were duplicate entries, publications without a clear connection to dental practice, sources without available full text, short abstracts without sufficient description of the results, and materials that considered tobacco smoking without analysing the dental context.

In addition to scientific publications, the analysis included the official WHO analytical report for 2020, dedicated to assessing the state of tobacco control in Ukraine and the possibilities for its further development [12], the current Law of Ukraine No. 2899-IV [13], which regulated measures to prevent and reduce the use of tobacco products and the harmful effects on the health of the population, the Council of the European Union recommendation document [14] on an environment free of tobacco smoke and aerosols, as well as professional documents of the FDI World Dental Federation [15; 16], which defined approaches to smoking cessation in dental practice and the role of the dentist in such an intervention. The selection of sources was carried out in three stages: at the first stage, a search, and initial extraction of records by keywords were carried out; at the second stage, the title, annotation, and relevance to the topic were assessed; in the third – analysis of full texts and final formation of the corpus of sources for the review. The selection was carried out by two reviewers with higher medical education and experience in preparing scientific review publications in the field of dentistry and public health; agreement on controversial positions was achieved through repeated independent review and discussion until consensus was reached. The final review included 38 sources published during 2005 – January 2026.

The work used a complex of general theoretical methods of cognition, which ensured consistent processing and interpretation of the selected sources. The analysis studied the dental consequences of smoking [17-19] and the use of alternative nicotine products [20-22], the content and forms of preventive counselling in dentistry [23; 24], features of dentist participation in smoking cessation [25-27], as well as ways of implementing anti-smoking interventions in routine dental care [28; 29]. The synthesis method was used to combine disparate information into a holistic view of the structure of anti-smoking approaches in dental practice, including clinical, preventive and organisational components. The comparison was used to compare approaches to tobacco prevention in dentistry, represented in Ukraine by regulatory, preventive and informational and clinically oriented, but less formalised approaches to dentist participation in anti-smoking counselling [12; 30], and in the European professional space – by regulatory and recommendation, professionally standardised, structured clinical counselling and integrated approaches [14-16].

The comparison was carried out according to the criteria of regulatory support for anti-smoking measures, professional regulation of the participation of the dentist in smoking cessation, forms, and level of standardisation of preventive counselling, as well as the degree of integration of anti-smoking interventions into routine dental care. The abstraction method made it possible to identify the most representative features of anti-smoking practices, which were important for comparative assessment. The generalisation method was used to formulate final provisions on common features, differences, limitations and promising directions of adapting European experience to dental practice in Ukraine.

Results and Discussion

Dental consequences of tobacco smoking and the use of alternative nicotine products. The dental dimension of tobacco smoking is determined by the fact that tobacco use affects not only the general state of health, but also the structures of the oral cavity, the course of inflammatory processes, oral hygiene status, aesthetic characteristics of teeth and long-term results of restorative treatment. The analysis showed that conventional cigarette smoking, e-cigarette use and heated tobacco products were considered factors that could change the clinical course of dental pathology, rather than merely accompany it [20; 22]. That is why the study of the dental consequences of tobacco and nicotine consumption is a necessary prerequisite for substantiating anti-smoking interventions in dental practice.

Periodontal disorders are one of the main dental consequences of tobacco smoking. The analysis revealed that smoking is associated with a deterioration in periodontal status, an increase in the frequency of periodontal tissue lesions and a less favourable course of the inflammatory process [31; 32]. Such changes indicate that tobacco exposure affects not only the occurrence of periodontal pathology, but also its clinical dynamics, deepening structural and functional disorders in periodontal tissues. It was also found that the relationship between smoking, periodontal pathology and other systemic disorders is multicomponent, since periodontal damage is combined with broader negative effects of tobacco exposure on the body [19]. This makes it possible to interpret periodontal changes not as a local isolated process, but as a component of the complex pathological impact of tobacco smoking. Separately, it was observed that the use of tobacco heating systems does not eliminate the risk of periodontal changes, but only changes the format of tobacco exposure [31; 32]. Such results are consistent with the work of P.J. Ford & A.M. Rich [17], in which tobacco smoking was presented as a factor in a wide range of oral lesions, including periodontal diseases. Similarly, D.A. Apatzidou [18] emphasised that the role of smoking is not only related to the development of periodontal disease, but also to the outcomes of dental treatment, in particular implant therapy, which expands the clinical understanding of tobacco exposure from an etiological factor to a predictor of the course and prognosis of treatment.

Deterioration of oral hygiene is one of the most reproducible dental consequences of tobacco exposure. Smoking was associated with poorer oral hygiene, a higher likelihood of gingival inflammation, and a general deterioration in dental status, suggesting a combination of clinical and behavioural risk factors [33]. The analysis demonstrated that adverse dental manifestations associated with tobacco smoking are recorded not only in adults, but also in adolescents and young adults (up to 18 years of age), i.e., at the stage of early formation of stable behavioural patterns [34]. This gives grounds to consider young age as a period in which tobacco exposure is already reflected in the clinical condition of the oral cavity. In addition, it was shown that the level of patients' awareness of the consequences of smoking for the oral cavity and attitudes towards quitting smoking are directly related to the preventive capabilities of the dental appointment [35]. In this context, S. Gajendra *et al.* [26] emphasised that the detection of such changes during a dental appointment creates grounds for early counselling and involvement of the dentist in supporting smoking cessation. Thus, hygiene violations, early appearance of adverse dental changes and insufficient preventive awareness form an interconnected clinical and preventive complex that enhances the need for early dental intervention.

A separate area of analysis covered the dental consequences of using alternative nicotine products. The analysis of sources showed that electronic cigarettes and vaping are associated with changes in oral status, in particular with changes in the oral mucosa, xerostomia, and potential deterioration of periodontal status [21; 36]. This indicates that the effect of new nicotine products extends simultaneously to several aspects of oral health and is not reduced to an isolated local effect. It was also found that the systematic data do not provide grounds to interpret electronic cigarettes and heated tobacco products as safe for dental health [22]. Therefore, it is advisable to consider electronic cigarettes and heated tobacco products not as a neutral replacement

for traditional smoking, but as another format of nicotine exposure with its own spectrum of clinical consequences. Along with this, it was emphasised that the clinical assessment of new nicotine products should take into account not only short-term effects, but also potential long-term changes in oral tissues [20; 22]. Similarly, O. Bilynskyi *et al.* [37] concluded that electronic nicotine delivery systems have an adverse effect on the oral cavity, which confirms the need to consider these systems as a separate dental risk factor, and not as a safe alternative to traditional smoking. Therefore, during a dental examination, the use of electronic cigarettes and heated tobacco products requires separate clinical consideration when assessing the state of oral tissues and planning preventive counselling.

Changes in dental hard tissues and restorative materials are also among the dental consequences of tobacco exposure. Electronic cigarettes and heated tobacco products affect the colour parameters of teeth, changing the aesthetic characteristics and potentially worsening the appearance of the dentition [38]. This indicates that the effect of new nicotine products extends not only to soft tissues and inflammatory processes, but also to indicators that are important for the aesthetic assessment of dental status. The impact of traditional smoking and new tobacco products on materials manufactured using computer-aided design and computer-aided milling technologies was also found, indicating the possibility of changing the properties during use [39]. Similarly, K.F. Iruša *et al.* [21] pointed out that the assessment of the consequences of using electronic cigarettes should include not only pathological changes in the tissues of the oral cavity, but also clinical aspects that may affect the results of dental interventions. Therefore, tobacco and nicotine exposure should be considered as a factor that can affect not only the development of dental pathology, but also the long-term aesthetic and functional prognosis of restorative treatment. To summarise the dental consequences of smoking and the use of alternative nicotine products, these consequences are presented in Table 1.

Table 1. Tobacco exposure factors and dental manifestations

Factors	Manifestations (consequences)
Traditional tobacco smoking	deterioration of periodontal status, higher frequency of periodontal tissue lesions, less favourable course of periodontal pathology
Use of electronic cigarettes, vaping, and heated tobacco products	changes in the oral mucosa, xerostomia, potential deterioration of periodontal health
Tobacco and nicotine exposure as a factor in oral hygiene disorders	worse oral hygiene indicators, signs of gingivitis, general deterioration of dental status
Tobacco and nicotine exposure as a factor in aesthetic and material-related changes	changes in tooth colour parameters, deterioration of aesthetic characteristics of restorations, impact on the properties of dental materials

Source: compiled by the author based on C. Schwarz *et al.* [19], D. Cichońska *et al.* [20], N. Camoni *et al.* [22], I.D. Kiun [31], I. Mišković *et al.* [32], A. Beklen *et al.* [33], D. Olczak-Kowalczyk *et al.* [34], A.B. More *et al.* [35], S. Niemczyk *et al.* [36], S. Gupta *et al.* [38], F. Makkeyah *et al.* [39], P.M. Duarte *et al.* [40]

The data in Table 1 showed that the dental manifestations of tobacco and alternative nicotine exposure are multilevel in nature and are not limited to periodontal pathology. The most consistent sources trace changes in

periodontal tissues, but alongside these changes, there are disturbances in oral hygiene status, changes in the mucous membrane, as well as aesthetic and material effects. This means that the patient's tobacco status should be taken into

account during a dental examination as a clinically significant factor that affects the course of the disease, the choice of treatment tactics and the prognosis of its results. Thus, the results showed that smoking and the use of alternative nicotine products form a complex of dental changes that has not only diagnostic but also preventive significance. This justifies the feasibility of integrating preventive counselling and anti-smoking interventions into dental practice.

Preventive counselling and dentist participation in smoking cessation. Preventive counselling in dentistry is considered one of the areas of reducing tobacco exposure, since the dental appointment combines the possibilities of detecting tobacco consumption and assessing its consequences for the oral cavity. Direct contact with the patient makes it possible to link the detected dental changes with tobacco exposure and use this as a basis for motivation to quit smoking. In this regard, the participation of the dentist includes informing about the risks, brief preventive interventions, supporting behavioural changes and integrating anti-smoking practices into routine dental care. In preventive counselling in dentistry, it is advisable to distinguish several interrelated approaches: screening and identification, informational and motivational, brief structured intervention, guidance, and support and integrated routine. This classification reflects the sequence of actions of the dentist – from identifying the patient's tobacco status to primary behavioural support and organising further care.

Dental practice provides the conditions for early detection of tobacco use and preventive counselling, as it is during the examination that the effects of smoking on the tissues of the oral cavity can be visualised. The analysis of sources showed that the dental office is considered a suitable environment for brief anti-smoking interventions, motivational talk and referral of the patient to further care [25; 27]. The participation of the dentist in smoking cessation is associated not only with a preventive but also with a clinical function, since the discussion of tobacco status is integrated into the assessment of dental health [23]. This means that counselling in dentistry is considered as part of the professional interaction with the patient, and not as an activity external to the treatment. In this context, R. Holliday *et al.* [41] showed that the effectiveness of the dentist's advice depends on how it is perceived by the patient within the clinical interaction. Therefore, the participation of the dentist in smoking cessation has an informational and communicative-motivational dimension. Within the proposed classification, this stage corresponds to the screening-identification approach, in which the dentist detects the fact of tobacco consumption, records its connection with the clinical condition of the oral cavity and transfers the topic of smoking from an optional discussion to the level of a clinically significant parameter.

The content of preventive counselling in dentistry includes several sequential actions: detecting the fact of tobacco consumption, briefly informing about the risks to the oral cavity, assessing the patient's readiness for change and providing initial motivational support [23; 27]. It was

found that the effectiveness of such counselling increases when the dentist's recommendation is specific, tied to the identified clinical changes and understandable to the patient [25]. In addition, it was found that the preventive potential of the counselling increases if the topic of smoking is systematically raised, rather than its episodic mention [27]. A comparison of these data is consistent with the conclusions of B.W. Chaffee *et al.* [24] that dental counselling should cover a wider range of nicotine and behavioural risks, and therefore requires a clear communicative structure. Preventive counselling in dentistry is a structured process, the effectiveness of which depends on the content of the message, the way it is presented and the connection to the clinical situation. This segment corresponds to the information-motivational approach, the essence of which is to provide the patient with a brief, clinically relevant and personalised message about the consequences of smoking for the oral cavity and the benefits of quitting smoking.

A separate area of research concerns briefs anti-smoking interventions that can be implemented directly into routine dental care. It was established that brief intervention models involve the detection of smoking, brief advice on quitting, recording readiness for change and offering additional support or referral [28]. The use of such a tool in public dental services is practically feasible and does not require a radical restructuring of the usual appointment [28]. In dental research protocols, there is a tendency to compare very brief counselling with extended intervention models, indicating the development of this direction from the general idea of counselling to the testing of specific formats of care [29]. In this regard, J.A. Alblowi & H. Mohamed [23] actually confirmed that brief advice is clinically appropriate if it is embedded in standard patient interactions. In contrast, J. Byakodi [27] considered brief intervention as a basic professional tool capable of initiating further smoking cessation even in the limited time of the dental appointment. Therefore, brief anti-smoking interventions have not only conceptual but also practical applicability in dentistry. The above provisions correspond to a brief structured intervention approach, which includes four basic components: identification of tobacco use, brief clear advice to stop smoking, assessment of the patient's readiness for change, and provision of initial support or referral. This approach is the most suitable for routine dental practice, as it does not require a long time, a separate consultation visit, or a specially created infrastructure.

The analysis of sources showed that the effectiveness of the dentist's participation in smoking cessation depends on the motivational component of the counselling. Linking the advice to the patient's real dental status, visual changes in the oral cavity and the prognosis of treatment increases the persuasiveness of the intervention [25]. It was observed that the dental appointment has the potential to influence the patient's attitude towards smoking, precisely by demonstrating the direct consequences of tobacco exposure for oral health [27]. The participation of the dentist is interpreted as a form of primary behavioural support, and not

only informing about the harms [25]. Similarly, S. Rajput *et al.* [42] established that counselling on smoking cessation is part of the professional tasks of the dentist and requires practical readiness to implement it in everyday clinical work. At this stage, preventive counselling takes on the characteristics of a guidance-supportive approach, as the dentist not only informs the patient, but also initiates further movement towards behaviour change by supporting the intention to quit smoking, re-raising the topic during subsequent visits, or referring to other available forms of care.

Along with the possibilities of implementation, the literature also highlighted barriers to the implementation of such practices. It was found that these include insufficient training of dentists, uncertainty about the dentist's own role, limited appointment times, lack of established algorithms, and insufficient inclusion of this topic in professional education. Gaps in knowledge and skills are already evident at the undergraduate level, which may further reduce the dentist's readiness for behavioural counselling [43]. With the availability of a short-standardised tool and organisational support, these barriers can be partially overcome [28]. In this context, A. Beklen *et al.* [33] linked the assessment of oral health with the issue of supporting smoking cessation, which indicates the possibility of integrating this practice into clinical interaction. Thus, the barriers are educational and organisational in nature, but do not exclude the real implementation of anti-smoking counselling in dentistry. From a practical point of view, the most realistic approach for Ukrainian dental care is an integrated routine approach, in which preventive counselling is not separated into an independent resource-intensive service, but is built into a standard dental appointment. Given the organisational limitations of the health care system, it is advisable to use very brief standardised interventions that can be implemented without significantly increasing the duration of the visit. Given the staffing constraints and the unequal level of training of dentists, the implementation of short action algorithms, templates for recording the patient's smoking status, and targeted training modules in undergraduate and postgraduate education is of paramount importance. Given resource constraints, a more realistic implementation model is a phased approach that does not require the creation of separate offices or dedicated services in dental facilities, but involves routine inquiry about smoking status, brief personalised advice, and, if necessary, referral to a family doctor or other available smoking cessation support services. This is the adaptation model that combines clinical feasibility, organisational feasibility, and relatively low resource cost.

Thus, a review of the literature suggests that preventive counselling in dental practice includes tobacco use screening, brief structured interventions, motivational support, and the possibility of further referral. Dentist participation in smoking cessation is based on clinical feasibility, communicative readiness, and the availability of organisational conditions for such activities. The generalised classification of approaches to preventive counselling in dentistry

includes screening and identification, informational and motivational, brief structured intervention, guidance and support, and integrated routine approaches. This makes it possible to consider dental practice as a real tool for reducing tobacco exposure, provided that it is professionally regulated and standardised intervention models are implemented. For Ukrainian practice, the most appropriate is the phased implementation of integrated brief counselling models, adapted to the limitations of the appointment time, the level of personnel training, and the available resources of the health care system.

Comparative characteristics of approaches in Ukraine and EU countries. Approaches to tobacco prevention in dental practice in Ukraine and the EU differ in the level of regulatory support, professional regulation and the degree of inclusion of the dentist in the process of smoking cessation. These differences are traced in the forms of preventive counselling, the nature of professional recommendations, approaches to limiting tobacco and nicotine products, as well as in the level of integration of anti-smoking interventions into routine dental care. The comparative analysis showed that between Ukrainian practice and the approaches presented in the European professional space, there are differences in regulatory support, professional regulation of the role of the dentist, forms of preventive counselling and the level of integration of anti-smoking interventions into routine dental care. That is why a comparison of Ukrainian and European experience is necessary to identify common features, differences, and practices that may be relevant for dental prevention.

The results of the analysis showed that in Ukraine, the regulatory framework for tobacco control is available and sufficiently clearly formulated at the national level. This was observed both in the World Health Organisation report on the assessment of the state of tobacco control in Ukraine and in the current legislation regulating measures to prevent and reduce the use of tobacco products and the harmful effects on the health of the population [12; 13]. This regulatory framework is primarily focused on the regulation of tobacco products, limiting the use and protecting the population from smoke exposure, and not on the detailed implementation of dental-oriented anti-smoking practices. This coincides with the conclusions of I. Demchenko & P. Vasylykivskiy [30] that in Ukraine there are already mechanisms to assist individuals who want to quit smoking, but these mechanisms need a clearer connection with clinical environments, in particular dental ones. A. Skipalskiy *et al.* [44] considered the Ukrainian context as one in which tobacco control is developing under the influence of complex external circumstances, which further complicates the stable implementation of preventive practices. Thus, in Ukraine, the normative field is more pronounced than the level of dental operationalisation of anti-smoking interventions. Thus, the Ukrainian context is more characterised by regulatory and general preventive approaches, while the clinical integration of the dentist into the system of assistance for smoking cessation remains less formalised.

In contrast, sources related to the European professional space show a higher level of combination of regulatory and professional regulation. It was found that the EU Council recommendation document on smoke-free environments and aerosols reflects the desire to extend control not only to traditional smoking, but also to new formats of tobacco and nicotine consumption [14]. The professional documents of the World Dental Federation explicitly define the role of dental professionals in smoking cessation and offer guidelines for integrating relevant interventions into practice [15; 16]. This means that in the European space, the dentist is considered not only as a specialist who records the dental consequences of smoking, but as a formalised participant in preventive intervention. In this context, D. Gurung *et al.* [45] consistently emphasised that the dental professional has professional grounds for systematic participation in the anti-smoking system. Similarly, H. Bendotti *et al.* [28] showed that brief interventions can already be built into public dental services as a routine tool. Therefore, the formalisation of the dentist's role at the interface of professional recommendation and organisational implementation is more characteristic of the European professional space. Thus, the normative-recommended, professionally standardised and integrated clinical approaches to anti-smoking interventions in dentistry are more clearly presented in the European space.

A comparison of forms of preventive counselling showed that in the Ukrainian context these forms are mostly described as a promising or necessary direction, while in European sources – as an already structured tool of clinical practice. In the analysed Ukrainian materials, the emphasis is on general promotion of smoking cessation, informing the population and strengthening the preventive component of health care [30; 46]. In contrast, in sources reflecting European professional experience, very brief counselling, short clinical algorithms, assessment of the patient's readiness for change and the connection of counselling with routine dental appointments were more clearly traced [28; 29]. This difference is fundamental, as it indicates not only a different level of description of practices, but also a different degree of the institutional maturity. J.A. Alblowi & H. Mohamed [23] showed that the

perception of tobacco counselling by dentists is already part of the plane of professional self-identification. In contrast, S. Rajput *et al.* [42] demonstrated that even with awareness of the dentist's role, the practical implementation of counselling depends on the readiness of the specialist, that is, on the transition from declarative recognition to real practice. Thus, the main difference is that in the European space, counselling is more often presented as an algorithmised practice, and in the Ukrainian space – as a less formalised direction of prevention. In agreement with this conclusion with the previously presented classification of approaches to preventive counselling, it can be stated that in Ukrainian practice, screening-identification and general information-motivational components prevail, while in the European professional space, brief structured intervention, guidance-support and integrated routine approaches are more clearly represented.

The comparative analysis also revealed a difference in the degree of professional training and educational support of anti-smoking interventions. In the European academic environment, dental students' knowledge about smoking, the attitude towards smoking cessation programmes and the effectiveness of special training modules are separately considered [47; 48]. This indicates the inclusion of the topic of smoking cessation in the educational and professional discourse. In works related to Ukraine, the emphasis is more often on general mechanisms of assistance and preventive awareness of patients than on the formal training of dentists in anti-smoking counselling [30; 46]. This coincides with the results of S.E. Vollath *et al.* [47], who showed that a specially designed training module can improve the readiness of future dentists to help with smoking cessation. Similarly, C. Bauer-Kemeny *et al.* [49] found that the level of knowledge about the risks of smoking and its prevention among dental students is insufficient and requires targeted educational reinforcement. So, another difference between Ukraine and the European professional space is that in the European environment the problem is more often institutionalised already at the stage of professional training, while in Ukraine it is more represented in the plane of general prevention and information. The differences between anti-smoking approaches in Ukraine and the EU are summarised in Table 2.

Table 2. Comparative characteristics of anti-smoking approaches in dentistry

Criterion of comparison	Ukraine	European professional space
Regulatory support	there is a national legal framework for tobacco control; emphasis on regulating tobacco use and protecting the population	supranational guidance documents on smoke-free and aerosol-free environments are available
Dentistry-specific professional guidelines	limitedly represented, the general preventive context prevails	specialised professional guidelines for dentists are available
Forms of preventive counselling	less formalised, more often described as a necessary direction of development	more structured; brief interventions, very brief counselling algorithms, clinical referral models are used
Role of the dentist in smoking cessation	justified by clinical feasibility and preventive potential	formalised as a professional function of the dental professional

Continued Table 2

Criterion of comparison	Ukraine	European professional space
Educational integration	less pronounced	separately researched and supported through training modules and assessment of student training

Source: compiled by the author based on World Health Organisation [12], Law of Ukraine No. 2899-IV [13], Council of the European Union [14], FDI World Dental Federation [15; 16], J.A. Alblowi & H. Mohamed [23], H. Bendotti *et al.* [28], R. Holliday *et al.* [29], I. Demchenko & P. Vasylykivskyi [30], D. Gurung *et al.* [45], S.E. Vollath *et al.* [47], E. Rodakowska *et al.* [48], C. Bauer-Kemeny *et al.* [49]

The data in Table 2 showed that the differences between Ukraine and the European professional space are most clearly visible in the level of dental operationalisation of anti-smoking approaches. In Ukraine, the regulatory framework of the general anti-tobacco policy is well presented, but dental intervention models are described less formally. In the European professional space, along with regulatory recommendations, professional and educational reinforcement of the dentist's role is observed, and brief anti-smoking interventions are more often presented as routinely suitable. This indicates a higher degree of integration of the dentist into the process of smoking cessation in the European professional space. Thus, the comparative analysis showed that the common orientation towards reducing the tobacco exposure is implemented in Ukraine and the European professional space in different ways. For Ukrainian dental practice, the most realistic is the gradual adaptation of individual elements of European experience, primarily brief clinical interventions, professional algorithms of dentist actions and educational support for the implementation.

The limitations of Ukrainian practice and directions for adapting European experience. The analysis showed that the main limitations of Ukrainian practice in the field of anti-smoking interventions in dentistry are associated with insufficient standardisation of preventive counselling, limited formalisation of the dentist's role, and weak integration of such interventions into routine clinical care. There are no clear algorithms for brief counselling, standardised recording of the patient's tobacco status, and defined routing of individuals who need help in quitting smoking. This indicates that the dental office in Ukraine is viewed as a potential, rather than an institutionally established, environment for preventive intervention. This situation reduces the reproducibility of anti-smoking practices in the dentist's daily work and increases the dependence of the implementation on the individual initiative of the specialist. Additionally, the implementation of such approaches is complicated by organisational, personnel, and resource limitations of the health care system, which reduces the possibility of direct transfer of developed European models to domestic dental practice. Organisational constraints include the lack of standardised action algorithms, insufficient formalisation of patient routing, and weak integration of anti-smoking counselling into the standard clinical route. Staffing constraints are manifested in the uneven level of training of dentists in brief behavioural intervention, the deficit of

communication skills in motivational counselling, and uncertainty in the own professional role. Resource constraints are associated with the lack of time within the framework of a regular appointment, the absence of a separate infrastructure for specialised care, and the need to implement new elements of prevention without significantly increasing the burden on the existing dental service.

One of the most notable constraints is the lack of standardisation of preventive counselling in everyday dental work. In the Ukrainian context, a general understanding of the feasibility of helping people who want to quit smoking prevails, but clear clinical steps that the dentist should perform during each appointment are less often described [30]. This situation reduces the reproducibility of preventive practice, since the effectiveness of the intervention begins to depend on the individual initiative of a particular doctor, and not on an established professional algorithm. In the European professional space, on the contrary, there is a tendency to use more structured models – very brief counselling, short clinical algorithms, assessment of the patient's readiness for change and further guidance [15; 28]. It is such algorithmisation that creates the conditions for preventive counselling to become not a random element of the appointment, but its expected component. Given the organisational limitations of Ukrainian practice, the most realistic is the implementation of short standardised algorithms suitable for use during each dental appointment without complex restructuring of the clinical process.

Another limitation of Ukrainian practice is the insufficient formalisation of the role of the dentist as a participant in helping to quit smoking. The emphasis is on general mechanisms for supporting people who want to quit smoking, or on the level of preventive awareness of patients [30; 46]. However, the professional role of the dentist as a specialist who should not only record the consequences of tobacco use, but also initiate behavioural intervention, is not clearly described. In the documents of the World Dental Federation, this role is better defined: the dental worker is considered as a subject of early detection of tobacco use, brief counselling, motivation to quit and inclusion of the patient in the further path of care [15; 16]. This creates an important guideline for Ukraine: the adaptation of European experience should begin not only with individual counselling techniques, but with a clear professional recognition that anti-smoking intervention is part of the dentist's tasks. In practical terms, this means the need for regulatory and organisational consolidation of the minimum scope of

actions of the dentist: routine inquiry about tobacco status, brief advice on smoking cessation and, if necessary, basic referral of the patient to further care.

The educational component also remains a deterrent. The comparison showed that in the European academic environment, the topic of smoking cessation is integrated at the undergraduate and postgraduate levels, where the knowledge of dental students, the attitude to anti-smoking programmes and the results of special training modules are studied separately [47; 49]. This indicates the institutionalisation of the topic even before the young specialist enters independent practice. In Ukrainian publications, the educational aspect is less evident, which indicates the limited preparedness of the dentist to confidently conduct anti-smoking counselling. In this regard, the most realistic areas of adaptation are the inclusion of the topic of tobacco counselling in dentist training programmes, cycles of continuous professional development and internal clinical training. Such a solution is practically achievable, since it does not require a radical restructuring of the dental care system, but it can change the level of readiness of specialists for intervention. Given staffing constraints, priority is given to short training modules, typical counselling scenarios, internal protocols and postgraduate educational formats aimed at developing basic competencies: identifying tobacco status, briefly explaining dental risks, assessing patient readiness for change and providing basic referrals. This approach is important in conditions where dentists work in different organisational circumstances, have different previous experience and cannot always undergo long-term specialised training.

The issue of routine integration of anti-smoking interventions into dental practice also requires attention. Based on a comparison of Ukrainian and European experience, it can be argued that one of the most realistic steps for Ukraine is to include an assessment of tobacco status in a standard patient survey. Such an action is technically not difficult, but has high practical value, since it moves the problem from the level of an optional conversation to the level of a mandatory clinical parameter. The next step could be a short-standardised counselling tied to specific dental changes identified during the examination. The advantage of this approach is that it uses the existing clinical situation as an argument for motivating the patient and does not require a separate long visit. Further implementation may include the development of local algorithms for referring the patient to a family doctor, addiction treatment specialist, or appropriate smoking cessation support programmes. It is this kind of phased integration that seems more realistic for Ukrainian practice than an attempt to introduce comprehensive multi-component models all at once. Given resource constraints, it is important that such a model does not require the creation of separate offices, additional staff, or specialised infrastructure, but can be implemented within the existing clinical practice. That is why the most appropriate model for Ukrainian dental practice is a resource-saving implementation model that combines standardised inquiry about tobacco status, brief personalised advice, recording the answer in clinical documentation, and a simple mechanism for further referral. A flowchart is presented to summarise the logic of adapting European experience to Ukrainian dental practice (Fig. 1).

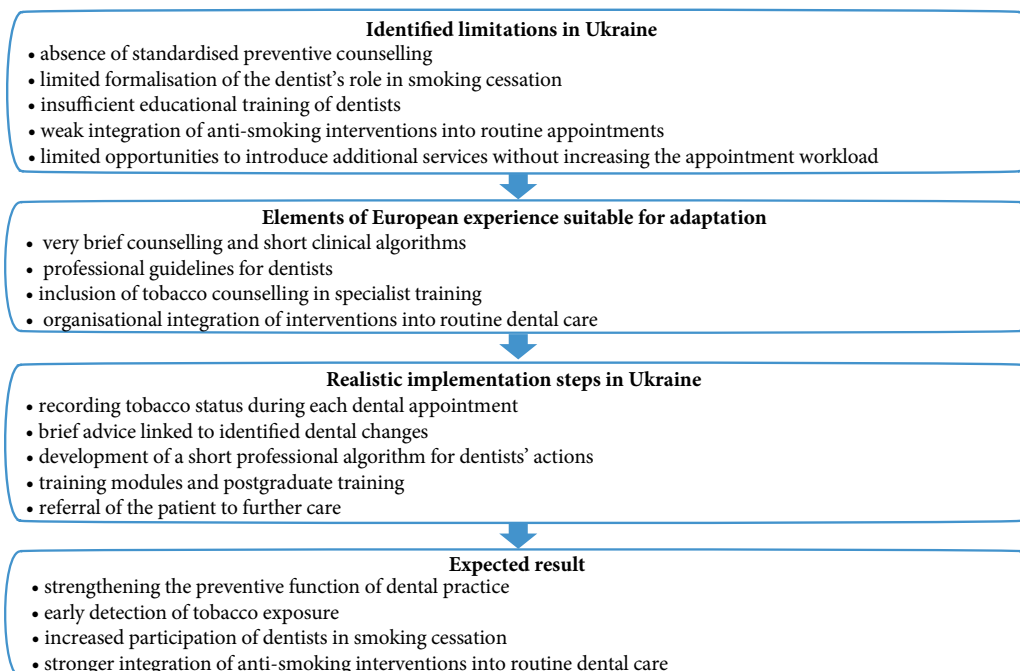


Figure 1. Step-by-step adaptation of the European standard in Ukrainian dentistry

Source: compiled by the author based on World Health Organisation [12], Law of Ukraine No. 2899-IV [13], Council of the European Union [14], FDI World Dental Federation [15; 16]

The above flowchart shows that the adaptation of European experience does not require mechanical transfer of all models in an unchanged form. A more appropriate step-by-step approach is one that first eliminates the most obvious gaps: the lack of a standardised question on tobacco status, the lack of short action algorithms and insufficient training of dentists. After that, elements of routing, postgraduate training and professional regulation can be expanded. Such a sequence is realistic for the Ukrainian context, as it combines clinical feasibility with organisational feasibility. The practical value of this model is that each subsequent stage can be implemented without a critical increase in the load on dental appointment and without the need for significant additional resources. Thus, the adaptation of individual European approaches can become practically achievable by strengthening the preventive function of dentistry in Ukraine and increasing the role of the dentist in the system of assistance for smoking cessation.

In general, the results of the analysis showed that smoking and the use of alternative nicotine products have a multi-vector negative impact on the condition of the oral cavity, covering periodontal tissues, mucous membrane, oral hygiene status, dental hard tissues and the results of restorative treatment. It was established that dental practice has real potential for early detection of tobacco consumption, preventive counselling and support for smoking cessation, however, the level of formalisation of such interventions in Ukraine remains lower than in the European professional space. This gave grounds to consider the standardisation of short clinical interventions, routine assessment of tobacco status, professional training of dentists and adaptation of relevant European models as the most realistic directions for strengthening the preventive function of dentistry. Taking into account the organisational, personnel and resource limitations of the health care system, such changes should be implemented in stages, starting with those solutions that can be integrated into everyday dental practice without structural complications.

Conclusions

The results of the analysis showed that smoking and the use of alternative nicotine products are associated with a complex of dental changes that include periodontal tissues, oral mucosa, oral hygiene status, dental hard tissues and restorative materials. The most consistent link between smoking and worsening periodontal status, a higher incidence of periodontal tissue lesions and an unfavourable course of the inflammatory process, was observed in the sources. It was shown that electronic cigarettes, vaping, and heated

tobacco products do not eliminate dental risk, but form a different format of nicotine exposure, which is also accompanied by changes in oral health. Preventive counselling in dental practice includes identifying tobacco status, brief advice on smoking cessation, assessing the patient's readiness for change and further support or referral. It was established that the dental office is a suitable environment for anti-smoking interventions, since clinical changes in the oral cavity enhance the persuasiveness of the preventive message. At the same time, the implementation of such approaches depends on the training of the dentist, the availability of clear algorithms of actions and communicative readiness for behavioural support of the patient.

The comparative analysis showed that Ukraine and the EU countries have a common orientation towards reducing the tobacco exposure, but differ in the level of inclusion of dentistry in this policy. In Ukraine, the general regulatory framework of tobacco control is well presented, however, dental intervention models are less formalised. In the European professional space, along with regulatory recommendations, professional guidelines, educational support and more structured models of brief counselling are observed. This gives grounds to consider the standardisation of preventive counselling, routine assessment of tobacco status, professional training of dentists, development of clinical algorithms and phased integration of anti-smoking interventions taking into account organisational, personnel and resource constraints as realistic directions for adapting European experience to Ukrainian dental practice.

The limitations of the study were that its conclusions were formed on the basis of theoretical generalisation of scientific, normative and analytical sources without involving its own empirical data, which limited the possibility of directly assessing the effectiveness of anti-smoking interventions in real dental practice. Further research should be associated with conducting empirical work aimed at assessing the effectiveness of standardised preventive counselling, brief anti-smoking interventions and patient routing models in routine dental practice in Ukraine.

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Conflict of Interest

None.

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Антисмокінгові програми в стоматології: порівняльний аналіз підходів України та країн ЄС

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Анотація. Мета дослідження полягала у порівнянні підходів до профілактики тютюнопаління в стоматологічній практиці України та держав Європейського Союзу. Дослідження було виконано як аналітичний огляд літератури з елементами порівняльного аналізу, у межах якого було опрацьовано 38 джерел за період 2005-2026 років; за допомогою аналізу вивчали стоматологічні наслідки тютюнопаління та підходи до профілактичного консультування, за допомогою порівняння зіставляли практики України і держав Європейського Союзу, а за допомогою узагальнення формулювали спільні риси, відмінності та напрями адаптації європейського досвіду. Аналіз джерел засвідчив, що тютюнопаління та використання альтернативних нікотинових продуктів пов'язані з комплексом стоматологічних змін, які охоплюють тканини пародонту, слизову оболонку порожнини рота, гігієнічний статус, тверді тканини зубів і реставраційні матеріали. Встановлено, що стоматологічна практика має профілактичний потенціал для раннього виявлення тютюнового споживання, короткого консультування та підтримки відмови від куріння, однак рівень формалізації таких втручань є нерівномірним. В Україні чіткіше представлений загальний нормативно-правовий каркас тютюнового контролю, тоді як у державах Європейського Союзу більш виразно простежуються професійні настанови, освітня підтримка та структуровані моделі консультування. Визначено, що найреалістичнішими напрямками адаптації європейського досвіду до української стоматологічної практики є стандартизація профілактичного консультування, рутинна оцінка тютюнового статусу, професійна підготовка стоматологів і впровадження коротких клінічних алгоритмів. Одержані результати підтвердили доцільність інтеграції антисмокінгових втручань у рутинну стоматологічну практику та адаптації структурованих європейських підходів до українського контексту. Отримані дані можуть бути використані стоматологами, викладачами закладів вищої медичної освіти, організаторами охорони здоров'я, розробниками клінічних рекомендацій і програм післядипломної підготовки для вдосконалення профілактичного консультування, професійних алгоритмів дій та організації антисмокінгових втручань у стоматологічній допомозі

Ключові слова: тютюн; нікотин; пародонт; порожнина рота; профілактичне консультування; тютюнопаління; альтернативні форми паління