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Tobacco smoking among dentists in Poland

Tomasz Konopka [a], Anna Lella [b,*], Anna Stankiewicz-Szałapska [c], Jan Zapała [d]

[a] Department of Periodontology, Wrocław Medical University, Poland
[b] Private Practice in Olsztyn, Poland
[c] Department of General Dentistry, Medical University of Lodz, Poland
[d] Department of Maxillofacial Surgery, Jagiellonian University Medical College, Kraków, Poland

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ABSTRACT

Introduction: Nicotine dependence is a reversible risk factor of numerous oral cavity diseases. Dentist should be non-smoking and have knowledge on diagnosis and treatment of nicotine addiction.

Aim: The aim of this survey is the assessment of prevalence of nicotine dependence among Polish dentists, factors associated with this addiction and knowledge on minimal anti-nicotine intervention acquired during pre- and post-graduate training.

Material and methods: From October 2013 to March 2014 during 5 dental conferences dental practitioners (881 persons) were given anonymous proprietary questionnaires on nicotine use. 544 questionnaires were qualified for analysis, response rate 61.7%.

Results: Group of active nicotine users consisted of 72 persons (13.2% of respondents). The average duration of smoking was 20 years and number of cigarettes smoked daily was 15. Median level of nicotine dependence score 5 and predominance of scores in the range of 4-6 on Fagerström test indicate that most frequent was moderate dependence. As many as 44.4% of dentists in this group had no attempts to quit the addiction. Non-smokers prevailed among women, pedodontists and younger practitioners. Active nicotine users prevailed in dentists above 44 years of age, male, dental surgeons and maxillofacial surgeons. Up to 397 (73%) respondents declared they were never acquainted with the basis for minimal anti-nicotine intervention.

Conclusions: The prevalence of nicotine addiction among Polish dentists is lower by 10% compared to the general population, although in relation to current foreign studies its the average level. Main factors associated with active nicotine use in this occupational group include male gender, increasing age and surgical dental specialties. It should be intended to reduce number of nicotine users among Polish dentists by 5%. For this purpose professional anti-nicotine knowledge should be disseminated more.

* *Correspondence to:* Warmińsko-Mazurska Izba Lekarska w Olsztynie, Żołnierska 16c, 10-561 Olsztyn, Poland. Tel.: +4889 539 19 29.
E-mail address: wmil@wmil.olsztyn.pl (A. Lella).

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1. Introduction

In 2015 World Health Organization assessed that tobacco use kills an estimate of 6 million people worldwide each year, with over 5 million in direct consequence of nicotine use and more than 600 thousand as the result of second-hand smoke exposure.[1] Besides well-known general complications smoking is also an independent risk factor of pathologies in the area of interest of dentists–oral cancer and precancerous lesions of oral mucosa, peridontitis, periimplantitis, halitosis and birth defects, e.g. cleft lip and cleft palate. According to Association for Dental Education in Europe (ADEE) recommendations dental school graduate curriculum should include the ability to diagnose and treat nicotine dependence.[2] World Dental Federation (FDI) recommends that continuing education programs include elements of tobacco use control. FDI emphasizes that assistance in nicotine dependence recovery is one of the responsibilities of a dentist, a part of a dental practice.[3] In order to credibly perform minimal anti-nicotine intervention, the dentist must be free from this addiction themselves.

According to data of European Commission of February and March 2012 the average percentage of nicotine users over the age of 15 years for the 27 EU countries was 28%. The highest percentage was noted in Greece (40%), Bulgaria and Lithuania (36%), Austria and Spain (33%) and Poland and Hungary (31%), while the lowest in Sweden (13%) and Portugal and Slovakia (23%).[3] According to these reports the most active smokers in Europe are men (32% vs. 24%), people aged 25 to 39 years (37%) and unemployed (49%). The most recent point of reference for our observations were the results of national study conducted on a sample of 21 756 Poles over the age of 18 included in Social Diagnosis 2015.[4] These results suggest that the current percentage of active nicotine users in Poland is 24.4% (it diminished by 25.7% in relation to 2000). Groups of adult Poles who smoke cigarettes most often include: men (31.1% vs. 17.8%), people aged 45 to 59 years (31.8%), residents of West Pomeranian (31.6%) and Lower Silesian voivodeship (29.7%), with basic vocational education (31.4%) and unemployed (37.3%).[4] Occupations most strongly correlated with active nicotine use are auxiliary mining and construction workers (60.2%) and construction workers (46.3%), while most weakly correlated are financial specialists (11.5%) and primary school teachers (10.6%); percentage of smoking general practitioners, dentists and veterinarians was 23.6%.[4] Percentage of active nicotine users among students in their final year of medicine in 2012 in Poznan was 12%,[5] and among students of all years of dental medicine in 2010 in Cracow 8.4%.[6] Despite continuous decrease of the percentage of daily nicotine use among Polish students of medical faculties, it remains much higher than the one noted in the end of 90s in US medical students, which ranged between 2% and 3%.[7]

2. Aim

The aim of this article is to present the results of the survey and evaluate the prevalence of nicotine use among Polish dentists and attempt to identify factors most strongly associated with this addiction. Evaluation also included dissemination of knowledge on minimal anti-nicotine intervention acquired during pre- and post-graduate training.

3. Material and methods

From October 2013 to March 2014 during 5 dental conferences organized by regional medical chambers or Polish Dental Association in Warsaw, Szczecin, Wroclaw and Lodz all dental practitioners (881 persons) were given anonymous proprietary questionnaire on nicotine use. In the general part of the survey dentists entered their age, voivodeship of residence, number of years of practice, specialty (in case of several asked to select one) or general practice (specialty in general dentistry, lack of specialty or during specialization) or post-graduate internship. In the detailed part respondents answered the question ''Was I learned how to professionally treat nicotine dependency'' by selecting one of four options (No – 0; Yes, at the university during studies – 1; Yes, as a part of postgraduate training – 2; Yes, individually – 3). Next they chose one of three options and possibly gave further details:

- ''I have never smoked tobacco'' (adopted and quoted WHO definition: never smoked a cigarette or smoked fewer than 100 cigarettes in the entire lifetime);
- ''I smoked in the past'' (smoked at least 1 cigarette per day but currently do not smoke and the period of abstinence is more than 365 days) – including data: period of active smoking in years, average number of cigarettes per day, duration of abstinence in years, number of attempts to quit, reasons to quit;
- ''I currently smoke'' (at least 1 cigarette per day for at least 6 months) or do not smoke and the period of abstinence is shorter than 365 days – including data: period of active smoking in years, average number of cigarettes per day, questions from Fagerström test[8] determining nicotine dependency on a scale from 0 to 10, number of attempts to quit, undertaken forms of nicotine addiction treatment.

Only questionnaires containing clear answers to all of the questions were qualified for analysis. There was a total of 544 questionnaires, response rate was thus 61.7%. Prevalence of nicotine dependency was estimated in the following age groups: 23–34 years, 35–44 years, 45–59 years and 60 and above years. The following subgroups were separated: periodontists, preventive dentistry and endodontics specialists, prosthodontists, orthodontics, pediatric dentists, dental and maxillofacial surgeons, general dentists (lack of specialty or during specialization training, specialty in general dentistry) and interns. For former and current smokers pack-year value was calculated and quit attempts were evaluated (professional or not). The intensity of nicotine addiction in the group of active smokers was estimated with the use of Fagerström test.

In statistical analysis Pearson's test, nonparametric Spearman correlation and logistic regression were used. Statistically significant were results with $P \leq 0.05$. Statistica 12 software was used.

4. Results

General demographic characteristics of dentists are presented in Table 1. Notable is the significant majority of women in the study, resulting from constant feminization of this profession. In the survey there were no dentists from Subcarpathia and Kuyavian-Pomeranian voivodeship and number of dentists from Holy Cross, Greater Poland, Lublin and Lubus voivodeship was very low. Half of the respondents were specialists, the other half general practice dentists and interns. Group of active nicotine users consisted of 72 persons, which constituted 13.2% of all dentists in the study. Characteristics of nicotine use in this group was summarized in Table 2. The average duration of smoking was 20 years and number of cigarettes smoked daily was 15. Median level of nicotine dependence score 5 and predominance of scores in the range of 4–6 on Fagerström test indicate that most frequent was moderate dependence. As many as 44.4% of dentists in this group had no attempts to quit the addiction, while the others had 124 such attempts, only 40 of which (32.3%) was considered professional.

Tables 3 and 4 present characteristics of dentists classified as non-smoker, former smokers and current smokers in relation to gender, age and specialty. It was demonstrated that non-smokers predominated among women while active smokers among men. In the youngest study group (24–34 years) lack of nicotine dependency was observed significantly more often. On the other hand, active nicotine users prevailed in dentists above 44 years of age. Two extreme dental specialties in relation to the presence of nicotine addiction were pediatric dentistry and maxillofacial surgery. Pedodontists significantly more frequently never smoked, while surgeons significantly more often were active smokers. Up to 397 (73%) of the respondents declared they were never acquainted with the basis for minimal anti-nicotine intervention. Noticeable was the inverse correlation between work experience and professional knowledge of the subject (Table 5).

Table 1 – General characteristics of dentists participating in the study.

Subgroup	Females	Males	Total
All	361 (66.4%)	183 (33.6%)	544 (100%)
Age group			
23–34	138 (38.2%)	65 (35.5%)	203 (37.3%)
35–44	99 (27.4%)	54 (29.5%)	153 (28.1%)
45–59	97 (26.9%)	46 (25.1%)	143 (26.2%)
≥60	27 (7.5%)	18 (9.8%)	45 (8.3%)
Place of residence			
Lower Silesian	59	22	81 (14.9%)
Lublin	6	4	10 (1.8%)
Lubus	7	4	11 (2.0%)
Lodz	77	42	119 (21.8%)
Lesser Poland	12	20	32 (5.9%)
Masovian	31	12	43 (7.8%)
Opole	13	11	24 (4.4%)
Podlasie	10	7	17 (3.1%)
Pomeranian	9	9	18 (3.3%)
Silesian	16	7	23 (4.2%)
Holy Cross	3	1	4 (0.7%)
Warmian-Masurian	41	11	52 (9.5%)
Greater Poland	4	1	5 (0.9%)
West Pomeranian	73	32	105 (19.3%)
Specialty			
Periodontists	27	10	37 (6.8%)
Preventive dentistry	29	6	35 (6.4%)
Prosthetists	29	23	52 (9.5%)
Orthodontists	31	12	43 (7.9%)
Pediatric dentists	35	13	48 (8.8%)
Dental and maxillofacial surgery	21	36	57 (10.5%)
General practitioners	150	60	210 (38.6%)
Interns	39	23	62 (11.4%)

Table 2 – Characteristics of active nicotine users among dentists (*n* = 72).

Smoking behavior	Number (%)	Median (range)
Number of cigarettes per day		
Up to 10	27 (37.5%)	15 (5–40)
11–20	36 (50%)	
>20	9 (12.5%)	
Smoking duration (years)		
<10	16 (22.2%)	20 (1–45)
10–20	25 (34.7%)	
>20	31 (43%)	
Pack-years		
<10	30 (41.6%)	14.25 (0.5–50)
10–20	17 (23.6%)	
>20	25 (34.7%)	
Fagerström test		
0–3	26 (36.1%)	5 (1–10)
4–6	28 (38.8%)	
7–10	18 (25%)	
Number of quit attempts		
0	32 (44.4%)	1 (0–15)
1–2	23 (31.9%)	
>2	17 (23.6%)	
Quit attempts		
Unprofessional	84 (67.7%)	1 (0–15)
Professional	40 (32.3%)	0 (0–4)

Table 3 – Distribution of non-smokers, former smokers and current smokers among dentists in relation to gender and age.

Group	Non-smokers (*n* = 398)	Former smokers (*n* = 74)	Smokers (*n* = 72)
Gender			
Females	280 (77.6%)*	43 (11.9%)	38 (10.5%)
Males	118 (64.5%)	31 (16.9%)	34 (18.6%)**
Age			
23–34	168 (82.7%)***	21 (10.3%)	14 (6.9%)
35–44	109 (71.2%)	23 (15%)	21 (13.7%)
45–59	93 (65%)	22 (15.4%)	28 (19.6%)
≥60	28 (62.2%)	8 (17.7%)	9 (20%)

Comments: *P = 0.011; ** P = 0.008; *** P = 0.001.

Table 4 – Distribution of non-smokers, former smokers and current smokers among dentists in relation to specialty.

Group	Non-smokers	Former smokers	Smokers
Periodontists	26 (70.2%)	7 (18.9%)	4 (10.8%)
Preventive dentistry	27 (77.1%)	3 (8.6%)	5 (14.3%)
Prosthetists	33 (63.5%)	11 (21.1%)	8 (15.4%)
Orthodontists	35 (81.4%)	5 (11.6%)	3 (7%)
Pediatric dentists	44 (91.6%)*	2 (4.2%)	2 (4.2%)
Dental and maxillofacial surgery	18 (31.6%)	13 (22.8%)	26 (45.6%)**
General practitioners	162 (77.1%)	28 (13.3%)	20 (9.5%)
Interns	53 (85.5%)	5 (8%)	4 (6.5%)

Comments: * $P = 0.024$; ** $P = 0.000$.

Only 88 dentists (16.1%) acquired basic knowledge on anti-nicotine management during studies (the highest percentage was 33.9% in interns) or specialization training, 59 dentists (10.8%) gained this knowledge as a part of self-education. The highest percentage of respondents who declared professional anti-nicotine knowledge was among periodontists (67.5%), and the lowest in general practitioners (14.7%). Noticeable was statistically significant correlation between knowledge on dealing with nicotine dependence and number of professional quit attempts (Table 5). However, there was no relationship between knowledge on anti-nicotine management and addiction indicators (pack-years and level of nicotine dependence in Fagerström test) and in the group of former smokers between anti-smoking knowledge and number of quit attempts and abstinence period.

For the assessment of the influence of several variables on the prevalence of active smoking among Polish dentists logistic regression model was suggested, in which independent variables included age, gender, anti-nicotine education and various specialties with codes and sample size. This model showed very high chi-square goodness of fit equal to 139.77, $P \leq 0.001$. It was demonstrated that male gender increases probability of active smoking by 80%, each year of life increases this risk by 4.6%, and having professional knowledge on nicotine dependence is also significantly associated with the incidence of this addiction (Table 6).

In Table 7 the prevalence of smoking among dentists was compared to the general population in 9 countries in which in the last decade the prevalence of the addiction in this profession was assessed in surveys.[4,9–20]

Table 5 – Co-variableness of groups of smokers and former smokers in dentists.

Variable	R value	P value
Number of work years and way of teaching (for the whole group)	**−0.16**	**0.001**
Number of work years and pack-years	**0.61**	**<0.000**
Number of work years and Fagerström test (for smokers)	0.2	NS
Anti-nicotine education and pack-years	−0.15	NS
Anti-nicotine education and Fagerström test (for smokers)	−0.13	NS
Anti-nicotine education and total number of quit attempts	0.08	NS
Anti-nicotine education and number of professional quit attempts	**0.35**	**<0.000**
Anti-nicotine education and abstinence period (for former smokers)	−0.21	NS
Number of quit attempts and abstinence period (for former smokers)	−0.2	NS

Comments: bold indicates significant values.

Table 6 – Factors associated with current nicotine use in Polish dentists.

Factors	OR	95% CI	P value
Age (per 1 year)	1.046	1.036–1.056	<0.000
Gender			
Female	1.00		<0.000
Male	1.80	1.45–2.25	
Anti-smoking education			
No	1.00		<0.000
Yes	1.26	1.13–1.40	

5. Discussion

The rate of questionnaire return in the study was lower than in Japan (78.2%),[18] Norway and the United Kingdom (68.0%)[9,12] and in Korea (67.2%),[17] but it was higher than in the US (44.5%)[14] and Spain (14.2%).[16] This shows the average interest in individual's nicotine dependence among Polish dentists. The occurrence of 13.2% of daily nicotine users among Polish dentists is higher than in the US, Norway, Spain and Hungary, while it is significantly lower than in the UK, Brazil, Korea and Japan. In comparison with 8 other countries Poland was ranked fifth in this regard (Table 7). The highest percentage of

Table 7 – Smoking prevalence among dentists and general adult population in different countries in the last decade.

Country and year of analysis	Dentists				General population			
	All	Male	Female	Ref.	All	Male	Female	Ref.
Norway 2002	855 – 6.9%	n.d.	n.d.	9	2000 – 32%	n.d.	n.d.	10
Brazil 2004	446 – 22%	n.d.	n.d.	11	2004 – 32%	n.d.	n.d.	11
UK 2004	502 – 18.1%	20.5%	16.2%	12	2005 – 20 400 – 25%	26%	23%	13
US 2004	391 – 5.8%	n.d.	n.d.	14	2005 – 31 428 – 20.9%	23.9%	18.1%	15
Spain 2006	538 – 9.7%	9.8%	9.4%	16	2006 – 30%	34.5%	24.3%	16
Korea 2008	1 443–24.6%	29.8%	1.1%	17	2008 – 23%	42%	3.6%	17
Japan 2008	739 – 25.2%	27.1%	3.4%	18	2007 – 24.1%	39.4%	11%	18
Hungary 2011	130 – 10.7%	n.d.	n.d.	19	2007 – 2 702 – 29.9%	34.6%	25.3%	20
Poland 2014	544 – 13.2%	18.6%	10.5%		2015 – 21 756 – 24.4%	31.1%	17.8%	4

active smokers in Japan and Korea is partly due to the fact that this profession is strongly masculinity and the addiction rarely occurs in women in these countries. Perhaps these factors explain higher percentage of nicotine users among dentists in Korea and Japan than in general population. For the remaining 6 countries noticeable is much lower percentage of tobacco smokers among dentists in comparison to general population–in Poland the difference is 11.2% (12.5% in male, 7.3% in female). This difference is much higher in Americans (15.1%), Hungarians (19.2%), Spaniards (20.3%) and Norwegians (25.1%). In case of gender the largest difference in favor of non-smoking dentists is seen in Spanish men (24.7%).

In the twenty-first century there is a noticeable decrease in nicotine users in all the analyzed groups of respondents, therefore comparison of nicotine status over a decade and more years is reasonable only in order to assess the trend. In the general population of Poles daily nicotine use in the decade of 2005–2015 decreased from 29.3% to 24.4% (decrease by 16.7%).[4] In 1999 among general practitioners 33% of men and 15.0% of women were active smokers,[21] in 2011 the percentage of smokers among all doctors was 22.8%.[22] It is still a high percentage given the data in American general practitioners, in whom the percentage of nicotine users decreased from 2.2% in 2003 to 2.0% in 2011 (decrease by 9.7%).[23] Among American dentists everyday smokers constitute approximately 6% and this status in 1992–2004 did not improve.[14,24] Better statistics were reported in Australian dentists (in the period 1994–2005 decrease from 6% to 4%) and Finland dentists (in the period from 1991 to 2000 decrease from 11% to 3%).[24] The only observation on nicotine dependence in dentists available in Polish literature is from 2006 and it was a survey conducted in 405 participants of the conference in Poznan.[25] Nicotine use was present in 12.4% of the respondents (16.1% of men and 11.7% of women). Comparison of these observations to author's own studies demonstrates that number of smokers among dentists dose not reduce.

Polish dentist as a nicotine user smokes an average of 15.0 cigarettes per day for 20 years. Active exposure to tobacco smoke expressed by median pack-years is 14.3 and the degree of nicotine dependence is moderate, but it requires implementation of pharmacotherapy. As many as 44% of these persons have never attempted to quit the addiction. In comparison, Korean nicotine dependent dentist also smokes an average of 15.0 cigarettes per day, but the median number of years of smoking is lower – 10.[17] Brazilian nicotine dependent dentist smokes an average of 11.5 cigarettes per day.[11]

Smoking in each of the analyzed groups is strictly associated with male gender, although in numerous countries an increase of nicotine addiction in women is currently observed. In general Polish population in 2000 the percentage of smokers among men was higher by 20.6%, in 2015 it was 13.3%.[4] In recent English 2009 National Adult Dental Health Survey higher percentage of smoking women was observed.[26] Among current and former smokers in dentists in Poland and other countries (Korea, Japan, Brazil) predominant are men (Table 7). Reduction of the predominance of percentage of smoking male dentists is seen in Spain, where it was only 0.4%.[16] Comparison of the proportion of active smoking among Polish dental medicine students[6] and young dental professionals (below 35 years of age) in author's studies demonstrates that that in both groups daily nicotine use is similar and is in the range 7–8%. Over the years of professional work active exposure to nicotine increases (significant correlation between work years and pack-years). Most frequently former or current smokers dentists are above 45 years of age. This observation may be interpreted positively as lack of influence of the beginning of professional work on the decision of starting smoking. On the other hand, however, high percentage of dentists who have already started smoking do not quit, thus the addiction perpetuates and possibility of nicotine-related diseases increases and the overall percentage of professionally active dentists does not yet decrease. Similar correlation of active smoking with age is observed in Brazilian dentists, in whom the highest percentage of smokers is above 40 years of age[11] and in Australian dentists above 60 years of age.[27] Differently, peak nicotine addiction in relation to age is seen in Korea,[17] where the highest percentage of smokers (37.9%) is noted in male dentists aged 30–39 years, in Japan,[18] where the highest percentage of smokers (34.1%) is noted in male dentists aged 30–39 years and in Spain[16] – the highest percentage (32.4%) of male dentists aged 35–44 years. In these countries nicotine dependency is most common in young dental professionals and then significantly reduces. This may be affected by stronger than in other countries social pressure on healthy lifestyle in the middle age and more effective treatment of this addiction.

Author's studies demonstrate that Polish dentists smoke significantly less frequently than general practitioners (13.2% vs. 22.8%). This is definitely influenced by feminization of dental profession in Poland (75.8% versus 57.4% of female general practitioners).[28] This is a frequent, although not spectacular, international regularity,[24] e.g. in Spain percentage of everyday and occasional smokers in comparison with general practitioners is lower by only 2.3% (22.2% vs. 24.5%).[16] In contrast, in the US the percentage of active nicotine users among dentists is significantly higher than among primary care physicians (5.8% vs. 1.7%)[14] and in Japan, where it is one of the highest among medical specialties.[18] Analysis of correlation between the type of medical specialty and active nicotine use demonstrates that most frequently this addiction occurs in surgical specialties performed more often by men, e.g. in Japan in 2004 most frequently in gynecologists, urologists and surgeons, least frequently in pulmonologists.[29] Also in Polish surgical and obstetrics-gynecology departments percentage of tobacco smokers in 2011 was 31.4%.[30] This pattern is confirmed in author's studies in dental specialties–by far the highest percentage (68.4%) of current and former smokers was observed in dental and maxillofacial surgeons. In the available literature no analyses of the prevalence of nicotine use in dental specialists in other countries were found.

Despite the introduction of the issue of minimal anti-nicotine intervention in dental medicine education program in 2010, the percentage of respondent who do not know the rules of professional anti-nicotine management is still very high. Worst of all, even declared knowledge of this subject did not imply the improvement of nicotine status among dentists, e.g. of the total number of 311 quit attempts only 53 (17%) were considered professional, while it was more often undertaken by current than former smokers (32.3% vs. 6.9%), the level of anti-nicotine education did not correlate with addiction

indicators and number of quit attempts, and in former smokers number of quit attempts did not correlate with the length of abstinence period. The only two positive conclusions include the highest percentage of persons with anti-nicotine knowledge in dentists youngest in experience and correlation between this declared knowledge with number of professional quit attempts in current and former smokers. It is however hard to believe that the vast majority of Polish dentists can professionally affect nicotine behaviors of their patients. Dental clinic is the most frequently visited doctor's office by adolescents and thus the role of dentist in the prevention of smoking and treatment of nicotine dependence is very important. Since the mid-90s in numerous countries attempts to use a dental visit for professional and routine anti-smoking intervention were undertaken. Already in 2002 during survey conducted in English general dental practitioners 64% of respondents declared giving regular or permanent advice on smoking cessation, 37% implemented nicotine replacement therapy, and 37% was prepared for professional support during smoking cessation of their patients.[31] On the other hand, during a survey conducted in the US in 2003–2004 recommendations of the gold standard of professional anti-smoking intervention ''5 A's'' were implemented by the following percentage of dentists: asks if patients smoke – 89.7%, advises smokers to stop smoking – 70.6%, assesses smokers if interested in quitting – 52.2%, assists smokers to quit – 34.1% (discusses medication – 22.6%) and arranges follow-up – 5.1%.[14] Currently, a simple medical advice given in the dental office according to ''5 A's'' protocol, nicotine replacement therapy and general pharmacotherapy (bupropion, varenicline) are recommended as separate forms or in combinations.[32]

Logistic regression model for being a smoker in Polish general adult population systematizes relevant variables associated with it in connection strength order.[4] Important factors that the most increase likelihood of being a smoker include in order: male gender, age from 60 to 64 years, unemployment, high level of stress, being divorced and working in the private sector. Such analysis conducted for nicotine dependency in Japanese general practitioners demonstrates the following important factors: male gender, at least eight on-call duties per month, drinking alcohol every day and increasing number of working hours per day.[33,34] On the other hand, well adapted own model of logistic regression demonstrates that among Polish dentists probability of being everyday smoker is significantly associated with male gender, anti-nicotine knowledge and increasing age. Presence of anti-nicotine education in this model may be interpreted as interest in individual's addiction and possibilities of quitting with lack of willingness or inability to use in practice principles of nicotine dependence treatment.

Author's survey has several limitations. First, surveying physicians during scientific conferences was a rare way to gather information.[24] In the above cited studies such methodology of data collection was used only twice.[19,25] The most common way of polling was by mail (to members of scientific societies or professional organizations)[9,12,16,17,26,27,29,31] in 29 of 33 international studies on smoking among dentists in the years from 1979 to 2005.[24] Dentist were also surveyed in their randomly selected work places,[11,18,30] by phone (in 2 of 33 studies from 1979–2005)[24] and through a combination of mail invitation and phone interview.[14] Adopting own methodology of survey on conferences led to a second limitation which is incomplete representation of Polish dentists in the study group. In relation to characteristics of the general dentists population in Poland in the study group there was overrepresentation of men (33.6% vs. 24.2%), overrepresentation of age group 23–34 years (37.2% vs. 25.2%) and understimation of age group 60 years and older (8.3% vs. 19.6%), overrepresentation of specialists (50% vs. 18%) and unrepresentative number of dentists from 6 out of 16 voivodeships. Third limitation is discrepancy of the adopted definition of non-smoker, former smoker, current smoker and abstinence period. WHO definition of a non-smoker adopted in author's study was used only in two above cited studies.[14,18] In other occasional smoker was also distinguished,[11,16] these terms were defined differently[9,17] or were not defined at all.[12,19,25]

6. Conclusions

1. These studies are the first attempt to estimate the scale of nicotine use among Polish dentists on such an extent. Although the prevalence of this addiction among dentists is lower by 10% compared to the general population, in relation to current foreign studies its the average level.
2. Main factors associated with active nicotine use in this occupational group include male gender, increasing age and surgical dental specialties.
3. It should be intended to reduce number of nicotine users among Polish dentists by 5% and among dental medicine students at least by 3% within a decade.
4. For this purpose, knowledge on the minimal anti-nicotine intervention and treatment of nicotine dependence should be disseminated more (enforcement of this knowledge during studies and Dentists Final Examination, introduction of this issue to all dental specialties, introduction of mandatory one-day course in dental surgery and maxillofacial surgery specialty program, organizing practical training as part of continuing postgraduate education of dentists).
5. It is necessary to brake the barrier of non-smoking dentist taking full responsibility for nicotine status of their patients.

Conflict of interest

None declared.

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