



APPLICATION OF PHOTOGRAPHY IN DENTAL PRACTICE

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ABSTRACT

Purpose: The aim of the study is to determine the extent of the use of photography by dentists for the needs of everyday practice.

Material and methods: The survey was conducted among 254 dentists practicing in Sofia, 64 (25.2%) - men and 190 (74.8%) - women. The average age of respondents is 43.21 years. Questionnaire was developed, consisting of 9 questions, divided into two parts. The first part covers questions about the nature of the dental practice of respondent doctor. The second part includes questions about the use of photography for the purpose of daily practice.

Results: Astatistical data processing is made. The average values of the responses received by groups of questions are analyzed. The factors that affect the use of dental photography were defined. The results show that from all of the surveyed persons, 82 (32.28%) people use photography for dental practice and 172 (67.72%) dentists do not to apply this method in their daily work. It was found that the reasons for not using the photography by dentists are: fear of cross-infection - 4 persons (1.57%); lack of need to use photography - 14 persons (5.51%); lack of interest - 18 persons (7.09%); cost of clinical time - 24 persons (9.45%); additional training - 58 (22.83%); expensive investment - 98 persons (38.58%).

Conclusion: The extent and reasons for use of photography for the dental practice were found. The factors that are relevant to the use of dental photography by dentists were investigated.

Key words: dental photography, survey

The main purpose of photography in dentistry is the registration of clinical information in the oral cavity. [1] It also finds application for the purposes of dento legal documentation to improve the learning process, communication and dental marketing. [2] The most common reasons for using photography in clinical dental practice are: [3, 4, 5, 6, 7, 8]

- Documentation
- Medico-legal purposes
- Diagnosis, clinical assessment and treatment planning
- Training and motivation of the patient
- Facilitation of communication with the patient, labo-

ratory, colleagues, insurance companies

- Staff training
- Academic and educational purposes
- Marketing

These applications improve the status of the dental practice as well as the quality of work and services. [9] The rapid spread of photography in everyday dental work is a result of the development of digital photography, which shifts the classic 35 mm film photography. [10] Digital photography has many advantages over conventional one - instant and easy access to the photos on a computer, possibility to evaluate and repeat the incorrect images at the same visit, no expenses for film and its processing, easy communication via email and secure storage of images without the danger of fading film or plate. [11] These advantages of digital photography are the basis of the changed approach in the way of collecting diagnostic data, training and assessment of clinical cases.

It is necessary to capture the full range of intra- and extraoral images of each specific patient before and after treatment and if necessary to make a video of performed procedures. [12]

In a study conducted in 2002 in the UK was found that dental photography is used by 36% of surveyed dentists, mainly in order to educate the patient and provide legal medical protection. From all surveyed dentists 62% use 35 mm analog camera, while 32% use digital camera. [13] In a similar study conducted in 2010 among 562 British dentists it was found that 48% of them use photography for the purpose of clinical practice. The main reasons for the use of photography are treatment planning (84%), training and motivation of the patient (75%), medico-legal reasons (71%) and communication with the dental laboratory (64%). Most often investigated dentists use digital camera (59%), rarely - 35 mm analog camera (34%) and least frequently - video camera (19%). [14]

Dental digital photography, which is part of micro-photography, enables easy and accessible training and documentation of patients. Digital images can be stored quickly and safely for academic purposes or legal protection of performed treatment. This is reason to believe that the digital camera is an indispensable part of dental equipment and dental photography training should be an integral part of dental education. [9]

The aim of the study was to determine the extent and

reasons for usage of photography by dentists in Bulgaria for the needs of everyday practice.

MATERIAL AND METHODS

Anonymous survey was conducted among 254 dentists practicing in Sofia, 64 (25.2%) - men and 190 (74.8%) - women. The average age of respondents was 43.21 years.

A questionnaire consisting of 9 questions, divided into two parts, was developed. The first part covers questions about the dental practice of respondent doctor. The second part includes questions about the use of photography for the purpose of daily practice.

For analysis of the data methods for frequency analysis of qualitative variables (nominal and ranks) were used, which includes absolute frequencies, relative frequencies (in percentage), cumulative relative frequencies (in percentage).

RESULTS

I. Character of the dental practice of surveyed dentists (DDM)

Responses to the first part of the questionnaire survey on the character of the dental practice are statistically processed and presented in Table. 1.

Tab. 1. Distribution of respondent dentists according to the nature of dental practice and gender.

Character of dental practice		Service			Type of practice		Work with assistant		Age	
		< 5 years	5-10 years	> 10 years	Private	group	With assistant	Without assistant	24-35 years	>35 years
MEN (64)	number	12	12	40	54	10	24	40	26	38
	%	18,75	18,75	62,5	84,4	15,6	37,5	62,5	40,6	59,4
WOMEN (190)	number	30	8	152	160	30	54	136	40	150
	%	15,8	4,2	80	84,2	15,8	28,4	71,6	21,1	78,9
TOTAL (254)	number	42	20	192	214	40	78	176	65	189
	%	16,5	7,9	75,6	84,3	15,7	30,7	69,3	25,6	74,4

It was found that among investigated dentists, the largest is the group of colleagues with work experience over 10 years - 192 people (75.6%), on second place - with experience of 5 years - 42 persons (16.5%) and finally with experience of 5 to 10 years - 20 people (7.9%).

The majority of surveyed dentists are practicing in private practice - 214 persons (84.3%) and only 40 people (15.7%) in group practice.

From all surveyed doctors 78 work with dental assistant (30.7%), while 176 people (69.3%) practice without supporting staff.

At the age of 24 to 35 years were 65 (25.6%) of the respondents, respectively 189 persons (74.4%) are above the age of 35 years.

II. Extent and reasons for usage of photography in dental practice

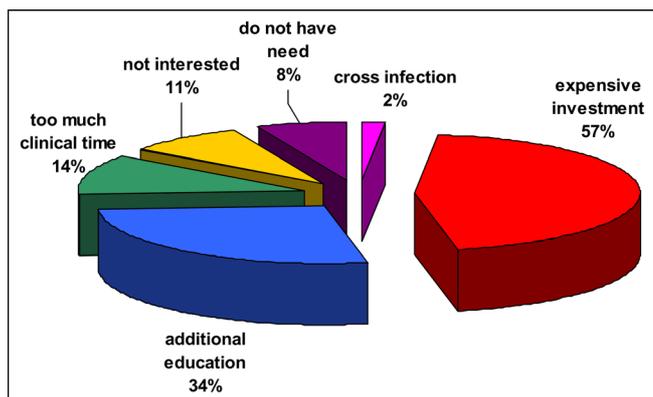
Responses to the second part of the questionnaire concerning the extent and reasons for application of dental photography for the purposes of the daily practice were statistically processed and presented in Fig. 1,2,3 and 4 in the table. 2.

From 254 investigated dentists, 82 persons (32%) indicated they use photography for the purpose of their daily dental practice, while 172 colleagues (68%) said that they do not apply this method in their work.

In the group of dentists who do not use photography in their professional activities 14 people (8.14%) said they did not feel the need to use it and 18 people (10.47%) responded that they had no interest in this method. It was found that 98 persons (56.98%) of the respondents who do not use dental photography, indicated the expensive investment in

equipment as a main reason. Additional training has been indicated as necessary for 58 persons (33.72%), 24 persons (13.95%) consider it a lost of clinical time and only 4 persons (2.33%) are worried about the risk of cross infection. The sum of percentages exceeds 100 percent because some people gave more than one response (Fig. 1).

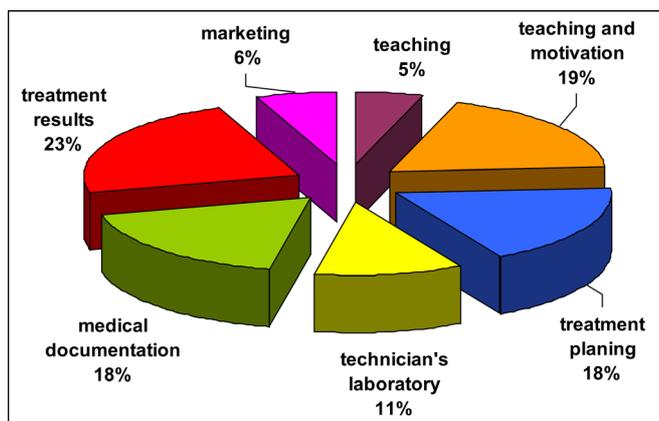
Fig.1. Reasons for non-use of dental photography



From the group of doctors using dental photography, 64 persons (78.05%) cited as main reason the need to record the achieved treatment results, 54 persons (68.85%) use this method for training and motivation of their patients. It was found that 50 persons (60.98%) applied dental photography to enrich the medical records of the patient and 48 persons (58.54%) developed treatment plan using that method. It was registered that 30 (36.59%) people use photography to improve communication with the dental laboratory, 18 people

(21.95%) use it for practice marketing and 12 people (14.63%) - for the purpose of teaching (Fig. 2).

Fig. 2. Reasons for use of dental photography



From the group of dentists applying photography in their activities, 58 people (70.73%) used a compact digital camera, 14 people (17.07%) - a digital SLR camera, 8 people (9.76%) - video camera and 30 people (36.59%) - intraoral camera. The sum of percentages exceeds 100 percent because some people gave more than one response (Fig. 3).

The distribution of dental photography usage in practice depending on age, gender, length of service, type of practice and work with the help of a dental assistant is presented at table 2.

Almost half of the surveyed doctors - 32 persons (48.5%) aged between 24 and 35 years use photography in their professional activity. From the group of colleagues over 35 years, about one third - 50 people (26.6%) use this

method.

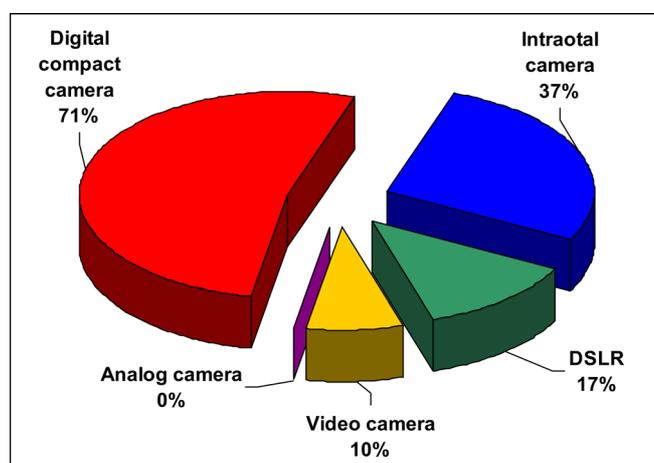
It was found that half of the men - 32 people (50%) use photography for the purpose of their practice, while less than a third of surveyed women - 50 people (26.3%) answered positively to this question.

Doctors with work experience under 5 years most often use dental photography - 20 people (47.6%), and colleagues with experience over 10 years, most rarely apply this method - 52 people (27.1%).

Dental photography is used by one third - 64 people (29.9%) of the colleagues that work in private practices and 18 people (45%) of the doctors in group practices.

Almost one half - 38 people (48.7%) of the colleagues who work with dental assistant use dental photography, while less than one third - 44 (25%) of the doctors who work alone, do not apply this method.

Fig. 3. Equipment used for dental photography



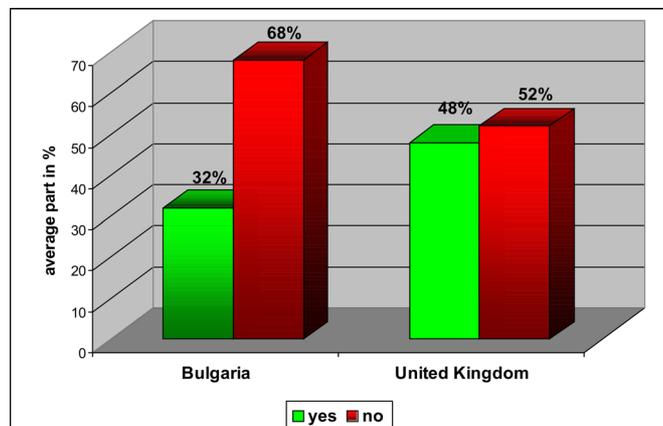
Tab. 2. Distribution of investigated dentists (254) according to usage of dental photography according to the factors - age, professional experience, kind of dental practice, working with dental assistant and age of the dentist.

Investigated dentists(254)		Use of photography in dental practice		Use (82)			Non-use (172)		
		n	%	n	%	p	n	%	p
Age	24-35 years	32	48,5%	0,054	34	51,5 %	0,092		
	> 35 years	50	26,6%		138	73,4%			
Gender	men	32	50%	0,031	32	50%	0,058		
	women	50	26,3%		140	73,7%			
Service	< 5 years	20	47,6%	0,078	22	52,4%	0,081		
	5-10 years	10	50%		10	50%			
	> 10 years	52	27,1%		140	72,9%			
Type of practice	private	64	29,9%	0,061	150	70,1%	0,045		
	group	18	45%		22	55%			
Work with assistant	with assistant	38	48,7%	0,001	40	51,3%	0,024		
	without assistant	44	25%		132	75%			

DISCUSSION

The rate and the factors which determine the use of photography in the dental practice has been established from the analysis of gathered results.

Fig. 4. Degree of dental photography usage in the daily practice of DDM practicing in Bulgaria and the UK [14].



The majority of dentists do not apply this method in their professional activities. About a third of respondents say that the photography takes place in their daily work, which shows retardation in comparison to the results of research conducted in the UK in 2010, according to which half of British doctors have perceived this method [14] (Fig. 4).

From the analysis of answers to the question why dentists do not use dental photography it makes impression that only one fifth of colleagues say they are not interested or do not find it necessary to apply this method. This indicates a positive trend compared to the results of the above-mentioned study in UK according to which over half of the respondents British doctors stated no interest in this direction [14]. On the other hand, almost two-thirds of respondent Bulgarian colleagues believe that investment in such equipment is extremely expensive and becomes a serious financial barrier to the introduction of this method in their work. The same answer is given by a third of British dentists. The reason for this may be sought in the existing differences in the financial position of Bulgarian and British doctors.

On the other hand the lack of preparation for the effective and appropriate use of dental photography does not allow the Bulgarian colleagues to expect predictable recovery of the investment. This statement is supported by the fact that about one third of the investigated Bulgarian dentists consider the need for additional training in this discipline. Colleagues point out that lack of information is a major obstacle to the implementation of this method in daily dental practice. This result requires a thorough analysis and understanding of the need to introduce appropriate form of theoretical and practical training in university, as well as in post-graduate education.

From the analysis of the responses to the question about the reasons why dental photography is used, it be-

comes clear that dentists use this method most commonly for the preparation of medical records, after which is the registration of health benefits, preparation of treatment plan, training and motivation patients, to improve communication with the dental lab, for practice marketing and most rarely for teaching. These results are consistent with those established by Morse [14] in 2010 for fellow practitioners in the UK.

Over four fifths of doctors using dental photography answered that they have a digital camera, one fifth have video camera and about two-thirds use intraoral camera. From the group using a digital camera, doctors with compact digital camera prevail. This kind of camera does not require extensive knowledge because the control of the photographic process is almost entirely automatic. Less than one fifth of colleagues have SLR camera, which involves additional training and experience. None of the respondent colleagues used analog 35 mm camera for the purposes of their practice, which confirms the statement of Desai [9], that the advantages digital dental photography assign its role of an indispensable part of dental equipment.

The results of the analysis showed that the degree of dental photography usage is closely linked to a number of factors.

With regard to the age of dentists it was revealed that almost half of young colleagues (to 35 years) use photography in their practice, while a positive answer to this question gave under one-third of older colleagues (over 35 years) which can be explained by less experience with modern digital cameras.

Distribution according to the factor of working experience is similar. Almost half of colleagues with experience under 5 years and those with experience between 5 and 10 years use dental photography. Less than one third of doctors with experience over 10 years respond positively to this question, which is in line with the results depending on the age factor.

Factor "gender" has a significant impact on the distribution of responses. Half of the men surveyed say they use dental photography, while less than a third of women give a positive response. These results confirm data published by Sharland [13] and Morse [14].

Working in a group practice is the reason why almost half of the surveyed doctors use dental photography, while one third of sole practicing colleagues respond positively to this question.

Distribution is similar according to the factor "work assistant". Half of the doctors who work with support staff have introduced photography in their practice, while less than a third of those who practice without assistant give a positive answer. These results can be explained by the fact that effective, easy and time-saving use of photography in everyday activity requires good organization and well-trained team.

CONCLUSIONS

1. Approximately one-third of the surveyed dentists in our country use dental photography for the purpose of daily practice.

2. Most often, dentists (2/3 of respondents) use compact digital camera for dental photography.

3. More than half of dentists say that the reason not to use dental photography in everyday practice is expensive investment in equipment and one-third of respondents indicated that further training is needed.

4. Most commonly dentists use photography to register the health benefits, secondly, for the purposes of medi-

cal records and thirdly to improve communication with the dental laboratory.

5. The percentage of colleagues who use dental photography is greater among men, among doctors under the age of 35 years and with experience under 5 years, dentists who practice in a group practice, and using a dental assistant.

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