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Original Article

Expanding the Functions of Dental Assistants in Bulgaria and Perceptions about Their Role in the Bulgarian Healhcare Workforce

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Abstract

Aim: The study queries a sample of dentists and dental assistants in Bulgaria about their understanding and perceptions of Expanded Function Dental Auxiliaries (EFDA). The study considers whether expanding the skillset of dental assistants to function in specific scenarios without personal supervision by the dentist may be a viable strategy to address various oral health inequities in the country.

Materials and methods: An anonymous survey was conducted among 103 practicing dentists and 100 dental assistants throughout the country. The questionnaire consisted of 20 questions that probed respondents' understanding about the duties performed by EFDAs and their potential to increase productivity and efficiency of the dental workforce. Sociological (poll) and statistical (alternative analysis) methods were used in the survey.

Results: The majority of respondents were female. Most worked in the larger cities. One worked in a village. Most were ethnic Bulgarians and none were Roma, reflecting the racial imbalance in the national workforce. Two-thirds (67%) believed that dental assistants with appropriate training are capable of doing expanded dental procedures without personal supervision by a dentist. The majority (83.7%) believed that EFDAs could improve efficiency of a dental practice, while 58.1% indicated that with appropriate training, they could perform expanded duties as well as the dentist. However, only one third believed that EFDAs could increase practice output (38.9%); enhance the quality of the dentist's work (37.4%); or decrease patient anxiety (31.5%). Though most respondents (78.3%) believed that a patient would not be receptive to an EFDA placing a restoration without personal supervision by the dentist, two thirds of respondents (66.5%) would like to see dental assistants trained to perform expanded duties otherwise reserved for dentists. Most respondents felt that EFDAs could help to build a well-functioning dental team.

Conclusions: Most respondents believed that EFDAs can benefit the efficiency of a practice, suggesting that Bulgarian dental professionals would respond favorably to enhancing the skillset of assistants with expanded functions. The study suggests they are skeptical about "general" versus "personal" supervision. EFDAs may potentially provide improved access by underserved communities, while building a more inclusive oral healthcare workforce reflective of the population.

Keywords

dental assistant, dentist, expanded function dental auxiliary, healthcare work force, healthcare inequity

INTRODUCTION

From a historical perspective, the collaborative relationship between dentist and dental assistant has increasingly transformed into a dental team. Teamwork and cooperation between healthcare professionals can have a positive impact on the delivery of high-quality health care and work satisfaction outcomes.[1] The first time in history a dentist operated with support staff can be traced to C. Edmund Kells, who hired the first female dental assistant in 1885 to provide dental treatment to women without the need for a male chaperone.[2]

As dentists began delegating more tasks to dental auxiliaries, "Four-Handed Dentistry" was introduced in 1960 to reduce stress and fatigue of the operator and to coordinate the work of both the dentist and assistant, working as a team to streamline treatment.[3] The role of auxiliary staff in dental practice has evolved over the years and in 1968, the World Health Organization revised the classification for auxiliary staff.[4] Non-operating auxiliary staff not directly carrying out any independent procedures in the mouth include the classifications of: Dental Surgery Assistant, Dental Secretary, Dental Laboratory Technician, and Dental Health Educator. Operating auxiliary staff directly working in the mouth under supervision include: School Dental Nurse, Dental Therapist, Dental Hygienist, and Expanded Function Dental Auxiliary.[4]

In the late 1960's, the new auxiliary staff concept of "Dental Nurse" or "Expanded Function Dental Auxiliary" (EFDA) was also introduced in the United States. The Boards of Dentistry in several states adopted this concept after a major push came with a funded grant secured by Dr. Ronald Occhionero, who pioneered and formalized this new concept at Case Western Reserve University School of Dentistry.[5] Structured after the New Zealand Dental Nurse Program[6], several dental assistants were trained in the proper placement of restorative materials. Since the only place these auxiliaries could practice was within a dental school, dental students were allowed to work with EFDA auxiliaries in a practice-like setting. The student prepared the tooth and the EFDA restored it allowing the student the opportunity to work on another patient. Following this pilot program, the Ohio State Board of Dentistry officially recognized the EFDA as another form of dental personnel and set up rules for their education and testing.[5]

The EFDA concept is now recognized across the United States with educational programs in many states.[7] Today the EFDA has many functions in addition to restoring prepared teeth, depending on the state they practice in, including most reversible procedures. Recently, the Ohio State Board of Dentistry added retraction cord packing to their long list of acceptable EFDA functions.[8]

While efficiency and productivity are often used to measure the success of a dental practice, Lipscomb et al. (1975) examined the changes in productivity and profitability that result from hiring one or more EFDAs and found that a dentist in solo practice can more than double their net revenue by hiring one EFDA.[9]

Beazoglu et al. (2010) found that practices that used EFDA personnel treated more patients and had higher gross billings and net incomes than those practices that did not; the more services they delegated, the higher the practice's productivity and efficiency. The effective use of EFDA personnel has the potential to substantially expand the capacity of general dental practices to treat more patients and to generate higher incomes for dental practices.[10]

Research has shown that expanding the scope of practice for EFDA auxiliaries may also increase the efficiency of the nation's dental care delivery system and provide needed services to more people at less cost.[11] Expanding the scope of practice for EFDA personnel can rapidly increase states' dental capacity in response to rising demands for dental care[12], while increasing access to care for the underserved citizens, including children, the elderly and those with special needs.[13]

The inclusion of an EFDA personnel also allows the dentist the option to treat many more patients in a given time period or to maintain their existing practice while working fewer hours.[7] They can also treat the underserved while maintaining a desired income due to the increased production afforded by utilizing an EFDA.

AIM

In Bulgaria, however, most dentists work on their own and there are few practices with more than one assistant.[14] Hence, the aim of this study is to introduce the concept of EFDA to Bulgarian dentists and dental assistants and to query their opinion about expanding the skillset of dental assistants to function in specific scenarios without personal supervision by the dentist. In addition, the study considers the use of an EFDA program to potentially address various health inequities in the country.

MATERIALS AND METHODS

A survey was conducted among 103 dentists and 100 dental assistants working at dental offices throughout the country. The survey tool was an anonymous questionnaire, with 20 mixed and closed YES/NO questions (Supplemental Information).

The questionnaire requested information about the gender of the respondents (Q1), as well as their education, employment history, and work location (Q2-6). Q7-12 asked respondents for their opinions concerning whether dental assistants should be permitted to perform various procedures typically done by dentists, such as administering local anesthesia or taking final impressions for fixed and removable prostheses. Q13-16 asked respondents whether they have heard of EFDAs and whether they could function under "direct supervision" of a dentist, as well as increase the

efficiency of a dental practice. Q17 asked respondents what additional training should be required of assistants to function without the "personal" supervision of a dentist and in what ways would an EFDA impact the chairside experience of a patient. Q18-19 asked respondents whether EFDAs could impact the quality of a dentist's work, as well as if they would be trusted by the patient. Q20 asked respondents if they would be receptive to an EFDA in the dental workforce. Finally, Q21 asked for the nationality of the respondent.

The poll was conducted in October 2021 after a team of educators and students from the USA and Bulgaria interacted via Skype to review and translate questions from English into Bulgarian. The initial English version of the survey was reviewed by two translators and one adjudicator to determine if each translation represents the questions' original intent.[15] A retrospective think-aloud pretesting technique was used to harmonize the Bulgarian version. A pilot test of the survey was then carried out in which test respondents were debriefed to validate question equivalency and question content. After validating the survey, it was then conducted online.

203 dentists and dental assistants practicing in Sofia, Plovdiv, Varna, Burgas, Blagoevgrad, Haskovo, and Ruse provinces were sent a letter by email in October 2021, describing the purpose of the survey and requesting voluntary participation along with instructions for accessing the online survey through "Google Drive" via a secure link administered by a designated caretaker at the Medical University of Plovdiv. Data was collected according to the study protocols of the university.

The survey was approved by the Ethics Committee of the Medical University of Plovdiv under Protocol No. 6/07.10.2021, which determined this study is exempt as it involves educational tests, surveys, interview procedures, or observation of public behavior. A cover letter accompanying the survey served as the 'implied' informed consent form, whereby a statement contained in the letter indicated that completion and return of the survey implies consent to participate in the research. The survey did not ask for any identifiable information and was conducted in full accordance with The World Medical Association Declaration of Helsinki.

RESULTS

Of the total number of respondents (n=203), 51% were dentists and 49% were dental assistants. The majority of respondents were female (74.4%). Approximately half of respondents (54.7%) had up to five years of work experience, while a third of respondents (34.5%) had 6-15 years of experience. The vast majority of respondents (93.1%) worked in a major city, with one fifth of the respondents (21.7%) working in the capital city, Sofia alone. Only one dental assistant reported practicing in a village **(Table 1)**.

About two thirds of the respondents (69.5%) reported working at a dental center, while the remainder worked at a group practice (16.3%) or a solo practice (14.3%). A little more than half of respondents (57.1%) received their training at a dental school, while half of the assistants (51.7%) reported being certified in a dental assisting program. A third (36.8%) was trained on the job, while 11.49% reported being trained in a general medical assisting program.

The majority of respondents (77.8%) believed that dental assistants despite proper training should not be allowed to administer local anesthetic (Q7). Similarly, two-thirds (68.8%) agreed they should not place and carve amalgams (Q8) or place and finish a composite restoration (74.9%) prepared by the dentist (Q9). In contrast, approximately half (55.7%) agreed they should be allowed to fabricate and seat a provisional crown for a tooth prepared by the dentist (Q10) **(Fig. 1)**.

Although 57.6% of respondents believed that dental assistants could be delegated certain duties which are currently the duties of dentists and prohibited to dental assistants (Q12), most respondents (78.8%) believed that dental assistants should not be permitted to take final impressions for a crown or removable prosthesis without the personal supervision of the dentist (Q11).

When asked if they have heard of the concept of "Expanded Function Dental Assistant", half of the respondents (51.7%) indicated YES (Q13). Two-thirds (67%) also indicated that dental assistants with appropriate training are capable of doing certain procedures without personal supervision by a dentist (Q14) **(Fig. 2)**.

The majority (83.7%) believed that a dental assistant capable of performing expanded duties could improve efficiency of a dental practice (Q15), while 58.1% indicated that with appropriate training, they could perform expanded duties normally reserved for dentists and perform them as well as the dentist (Q16).

When asked what additional training should be required of a dental assistant to perform expanded duties (Q17), the vast majority (89.2%) indicated a certified EFDA training program at a dental school. The respondents believed an Expanded Function Dental Auxiliary could contribute to the effectiveness of the dentist's work by (Q18): relieving the dentist to engage in more productive work on multiple patients (74.4%), shortening treatment chair time (74.4%), and improving overall efficiency at the dental office (80.8%). However, only one-third believed that EFDAs could increase the volume of work performed by the dentist (38.9%), enhance the quality of the dentist's work (37.4%), or decrease patient anxiety (31.5%) **(Fig. 3)**.

Although the majority of respondents (78.3%) believed that a patient would not be receptive to or trust a dental assistant to place an amalgam in a tooth prepared by a dentist without personal supervision of the dentist (Q19), two-thirds of respondents (66.5%) indicated they would like to see dental assistants trained with an enhanced skillset and be permitted to perform expanded duties which otherwise are currently reserved for dentists (Q20).

Finally, when asking the respondents about their ethnicity (Q20), about one tenth (9.1%) of the surveyed

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Table 1. Summary of responses to survey questions probing Bulgarian dentists and dental assistants about their perceptions of EFDAs

Bulgarian Dentist & Dental Assistant Perceptions about EFDAs					
Question		**Assistants (n=100)**		**Dentists (n=103)**	
1	Female	86		64 (62.1%)	
	Male	14		39 (37.9%)	
3	0-5 yrs	69		42 (40.8%)	
	6-15 yrs	26		44 (42.7%)	
	16-30 yrs	2		13 (12.6%)	
	30+ yrs	3		4 (3.9%)	
4	Sofia	17		27	
	Big city	79		66	
	Small city	3		10	
	Village	1		-	
5	Solo practice	3		26 (25.2%)	
	Group PR	7		26 (25.2%)	
	Dent Center	90		51 (49.5%)	
6	DDS Degree	-		103	
	CertDentAsst	59		-	
	CertMedAsst	9		-	
	Non-Med	32		-	
7	Local anesthesia	38 yes	62 no	8 yes (7.8%)	95 no
8	Amalgam	45 yes	55 no	20 yes (19.4%)	83 no
9	Composite	45 yes	55 no	6 yes (5.8%)	97 no
10	Temporary crown	69 yes	31 no	44 yes (42.7%)	59 no
11	Final impressions	30 yes	70 no	12 yes (11.6%)	91 no
12	Expanded duties	60 yes	40 no	57 yes (55.3%)	46 no
13	EFDA Awareness	48 yes	52 no	50 yes (48.5%)	53 no
14	EFDA w/ Training	73 yes	27 no	63 yes (61.2%)	40 no
15	Increase efficiency	91 yes	9 no	79 yes (76.7%)	24 no
16	Work as good as DDS	72 yes	28 no	46 yes (44.7%)	57 no
17	Training required	90 certified	10 uncertified	81 certified	12 uncertified
18	Relieves dentist	80		70 (68.0%)	
	Decrease chair time	48		45 (43.7%)	
	Increase output	39		40 (38.8%)	
	Increase dentist quality	34		41 (39.8%)	
	Decrease Px anxiety	32		28 (27.1%)	
	Increase organization	82		82 (79.6%)	
19	Patient trusts EFDA	31 yes (31%)	69 no	13 yes (12.6%)	90 no
20	Want EFDA Train	77 yes/23 no (77%) 4 males said no/1 male no was Cypriot		58 yes/45 no (56.3%) 2 foreigners said no	
21	Nationality	3 foreign (Cypriot), 7 Bulgarian Turks; 90 ethnic Bulgarians		4 foreign (Ukrainian, Greek); 3 Bulgarian Turks; 96 Bulgarians	

workforce reported being non-Bulgarian. The ethnic diversity of the workforce was accounted for primarily by Bulgarian citizens of Turkish, Armenian, and Greek ancestry. Although the EU's European Commission estimates the Roma population in Bulgaria to be between 700,000 and 800,000 people, there were zero participants in either the assistant pool or dentist pool (Q21), who reported being of Roma ethnicity. The Roma minority was clearly underrepresented in the results of this survey.

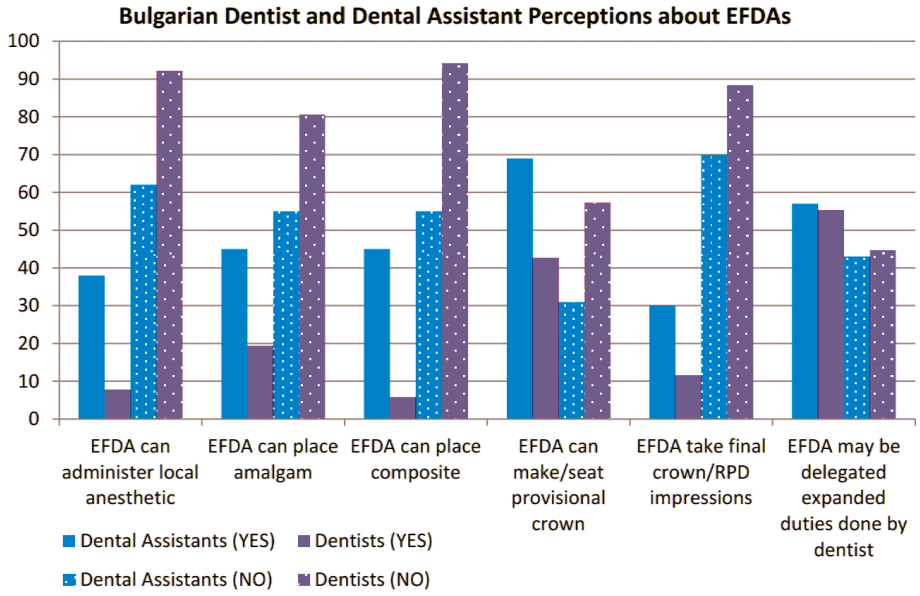

Figure 1. Comparison of Bulgarian dentist and dental assistant responses to Q7-Q12. Both groups generally believed that dental assistants, despite proper training, should not be allowed to administer local anesthetic (Q7), to place and carve amalgams (Q8), or place and finish a composite restoration (74.9%) prepared by the dentist (Q9). In contrast, approximately half agreed they should be allowed to fabricate and seat a provisional crown for a tooth prepared by the dentist (Q10). Although more than half of both groups believed that dental assistants with proper training could be delegated expanded functions, which are currently the duties of dentists (Q12), most respondents believed that dental assistants should not be permitted to take final impressions for a crown or removable prosthesis without the personal supervision of the dentist (Q11). In comparing responses to Q7-9 between individual groups, the differences between Bulgarian dental assistants and dentists was significantly higher (*t*-test, p=0.006) indicating assistants are more embracing of the idea of performing restorative procedurec without personal supervision by the dentist than the dentists themselves.

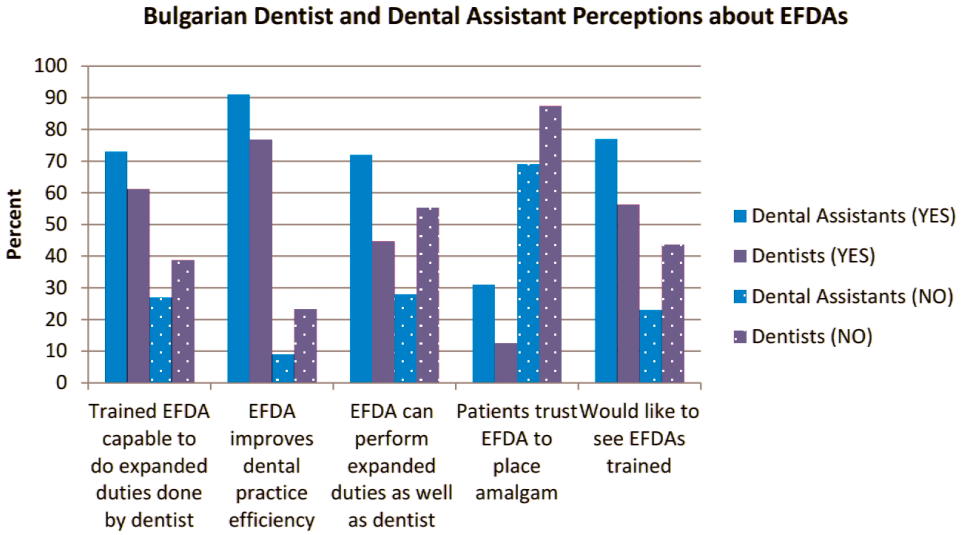

Figure 2. Comparison of Bulgarian dentist and dental assistant responses to Q14-16 and Q19-20. The majority of both groups indicated that dental assistants with appropriate training are capable of doing expanded functions without personal supervision by a dentist (Q14) which could improve the efficiency of a dental practice (Q15). While 58.1% of the group collectively indicated that with appropriate training they could potentially perform expanded duties as well as the dentist (Q16), the difference between both groups was significant. The results would suggest that the dental assistants have more confidence in their ability to perform expanded functions than the dentists. Although the majority of both groups believed that a patient would not trust a dental assistant to place an amalgam in a tooth prepared by a dentist (Q19), they also indicated they would like to see dental assistants trained with an enhanced skillset and be permitted to perform expanded duties which otherwise are currently reserved for dentists (Q20). The differences between both groups, however, was significant (*t*-test, p=0.002) suggesting that the dental assistants are more embracing of the idea than the dentists are.

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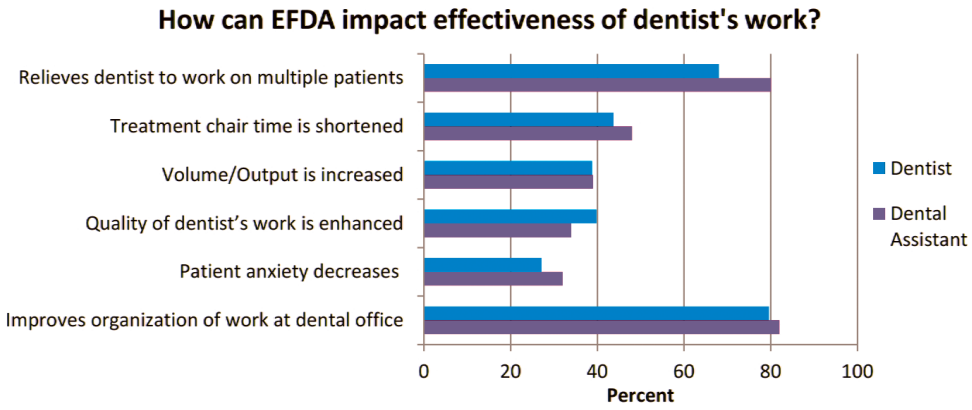

Figure 3. Comparison of Bulgarian dentist and dental assistant responses to Q18. Both groups believe an EFDA can contribute to the effectiveness of the dentist's work by: relieving the dentist to engage in more productive work on multiple patients; improving overall efficiency at the dental office, and to a lesser degree, shortening treatment chair time. However, the majority in both groups did not believe that EFDAs could increase the volume of work performed by the dentist; enhance the quality of the dentist's work; or decrease patient anxiety. The differences between groups was not statistically significant (*t*-test, p=0.265).

DISCUSSION

Labor law in Bulgaria allows the dentist to hire assistants without any previous medical education and to train them on the job.[16] However, many dentists in Bulgaria believe that dental assistants must also earn a bachelor degree in medicine to do their job.[14] While it is common for U.S. assistants to perform expanded functions, such as fluoride prophylaxis, taking radiographs, and maintaining conscious sedation, which can potentially be added to the skillset of Bulgarian assistants[8], this too is not universally accepted by dental practitioners in Bulgaria. This is unfortunate as most Bulgarian dentists generally believe the active engagement of a dental assistant improves the quality of their services, increases their productivity, and decreases stress.[17] As the interpersonal and hierarchical relationships between dentists and assistants are important in building a well-functioning team[17], holding back assistants from developing their skillset may unintentionally have the opposite effect[18].

Dental assistants are indispensable to a well-functioning dental team. Their duties vary and include a list of 70 tasks developed by the ADAA/DANB Alliance, which represent the broad range of dental assisting core competencies in the United States.[8] The listed core competencies provide a useful base to facilitate comparison between the U.S. and Bulgaria.

Much like in the U.S., dental assistants in Bulgaria are legally authorized under "personal" supervision of a dentist to do a broad range of procedures **(Table 2)**.[8] While the list is not a complete accounting of permissible duties of a dental assistant in Bulgaria, the general takeaway is that these functions when performed are done under the "personal" supervision of a dentist. "Personal supervision" means "the dentist is physically present in the treatment room to oversee and direct all intraoral or chairside services of the dental assistant and a licensee or registrant is physically present to oversee and direct all extraoral services of the dental assistant".[8]

The distinctions between "personal" supervision and the legal concepts of "direct", "general", and "public" supervision have not yet made their way into the psyche of the Bulgarian "dental team" as a means to increase further the efficiency of the individual dental practice. In the U.S., "direct supervision" means that "the dentist is present in the treatment facility, but is not required to be physically present in the treatment room while the registered dental assistant is performing acts assigned by the dentist".[8]

"General supervision" means that "a dentist has delegated the services to be provided by a registered dental assistant. The dentist need not be present in the facility while these services are being provided".[8] Finally, "public health supervision" means "the dentist authorizes and delegates the services provided by a registered dental assistant to a patient in a public health setting, with the exception that services may be rendered without the patient's first being examined by a licensed dentist".[8] These concepts, if adopted by the Bulgarian legal system, could potentially expand the duties of a dental assistant **(Table 3)** to facilitate delivery of services to remote parts of the country where there is a shortage of dentists.

While many Bulgarians can and do access dental services and the dental care system provides care efficiently for those who demand it, important barriers impede access for many Bulgarians.[19-24] To address these needs, EFDA duties could potentially cover basic dental needs to improve access to care for the working poor, disenfranchised minorities and underserved rural communities. To increase the availability of dental care for disadvantaged groups in geographically isolated areas, incentives could be offered to attract dental assistants to these underserved areas, including adequate reimbursement from government-funded programs.[20,21,24]

Table 2. Duties of a Dental Assistant (US)[8]

- Receive and prepare patients for treatment, including seating, positioning chair, and placing napkin
- Using the concepts of four-handed dentistry, assist with basic restorative procedures, including prosthodontics and restorative dentistry
- Using the concepts of four-handed dentistry, assist with basic intraoral surgical procedures, including extractions, periodontics, endodontics, and implants
- Prepare procedural trays/armamentaria set-ups
- Maintain field of operation during dental procedures through the use of retraction, suction, irrigation, drying, placing and removing cotton rolls, etc.
- Select and manipulate gypsums and waxes
- Mix dental materials
- Expose radiographs
- Chart existing restorations or conditions
- Perform routine maintenance of dental equipment
- Monitor and respond to postsurgical bleeding
- Apply effective communication techniques with a variety of patients
- Transfer dental instruments
- Provide patient preventive education and oral hygiene instruction
- Perform sterilization and disinfection procedures
- Provide pre- and post-operative instructions
- Apply topical fluoride
- Pour, trim, and evaluate the quality of diagnostic casts
- Take, record, and monitor vital signs
- Clean and polish removable appliances and prostheses
- Process, mount, and label dental radiographs
- Apply topical anesthetic to the injection site
- Monitor nitrous oxide/oxygen analgesia
- Maintain emergency kit
- Fabricate custom trays, to include impression and bleaching trays, and athletic mouthguards
- Recognize basic medical emergencies

Another important issue is access for people in Bulgaria with disabilities, which is difficult because of their special needs and the complex management of their care.[21] Many Bulgarians with disabilities are homebound, institutionalized, or unable to cooperate with care in a traditional dental setting. The care of these people can potentially improve with dental assistants who have additional training necessary to treat these patients with the necessary specialized skills. Outreach programs, which deploy EFDAs at the provincial level, may also meet the needs of patients unable to receive care in traditional dental offices in the big cities. Furthermore, recruiting minorities to fill the role of EFDAs may not only help shape responsible and effective health policies of tomorrow, but may help offset the brain drain due to the current demographic crisis as well.[20,21]

Over the past three decades, Bulgaria has experienced a dramatic demographic crisis, fueled by negative population growth and negative net international migration. According to Dimova et al. (2018), the steady population decline at a rate of -6 per 1000 population has concomitantly led to a steep drop in the working-age population, while the population of 65 years and older has grown to 20.4% of the overall population. As a result, the age dependency ratio of people aged 65+ (as percent of working-age population) has increased from 18% to 31.1%.[20]

With alarming poverty and significant regional variances in all related indicators, there have been ambitious reform plans to introduce integrated care into the Bulgarian social health insurance system. While total health expenditure as a percentage of Gross Domestic Product (GDP) increased to 8.2% in 2015, Dimova et al. (2018) report the system has not been effective in reducing amenable mortality. High overall out-of-pocket spending (47.7% of total health spending in 2015), despite the Bulgarian social health insurance system, further exacerbates the already considerable socioeconomic and regional inequities.[20]

Dental care in Bulgaria is delivered in outpatient and inpatient facilities. The majority of dental practices are con-

Table 3. Duties of Expanded Function Dental Assistants (US)[8]

• Perform mouth mirror inspection of the oral cavity
• Phone in prescriptions at the direction of the dentist
• Complete laboratory authorization forms
• Place amalgam for condensation by the dentist
• Place and remove retraction cord
• Perform coronal polishing procedures
• Evaluate radiographs for diagnostic quality
• Place and remove dental dam
• Size and place orthodontic bands and brackets
• Remove sutures
• Dry canals
• Tie in archwires
• Place, cure, and finish composite resin restorations
• Place liners and bases
• Place periodontal dressings
• Apply pit and fissure sealants
• Place orthodontic separators
• Size and fit stainless steel crowns
• Take preliminary impressions
• Perform supragingival scaling
• Place and remove matrix bands
• Take final impressions
• Fabricate and place temporary crowns
• Perform vitality tests
• Place temporary fillings
• Carve amalgams
• Remove temporary crowns and cements
• Remove temporary fillings
• Remove permanent cement from supragingival surfaces
• Remove periodontal dressings
• Place post-extraction dressings
• Respond to basic medical emergencies
• Remove post-extraction dressings
• Place stainless steel crown

centrated in the big cities. Only selected dental care services are fully covered by Social Health Insurance, whereas the majority of procedures are paid for by the patient. Bulgaria's total health expenditure as a percentage of GDP is below the EU15 average despite trending towards an overall increase.[20]

Meanwhile, more than 120,000 people, or roughly 5.5% of all full-time employees, are working in the health care sector in Bulgaria. While this number may seem sufficient, there are persistent geographical distortions in health care labor supply throughout the country. Contrary to most EU Member States, the number of practicing dentists per capita between 2010 and 2015, has consistently been growing, reaching 1.16 dentists per 1000 population in 2016. In 2015, a total of 7547 dentists were recorded, which is 11.3% more than in 2000. This is the highest density of practicing dentists per 1000 population in the EU in 2016.[20]

Nonetheless, there are significant regional disparities in the distribution of dentists. Almost half of all dentists (48% in 2016) work in only three districts - Sofia, Plovdiv, and Varna. Most dental clinics are concentrated in the capital, university centers, and big cities also.[20]

Meanwhile, unmet dental needs remain high, especially in low income groups. Nearly 12% of the Bulgarian population reported unmet dental care needs in 2015. Financial reasons are by far the leading cause, followed by waiting lists and the distances to the next dental care provider. With very few exceptions, dental services are paid mostly by patients, in turn, which creates financial barriers to their use by people with lower incomes.[20]

The rural population more often reported unmet health care needs compared with those living in small towns and cities. Rural residents went without a dental examination more often due to expenses (payment for a check-up, transportation cost). The problems in access to dental services mainly in small towns and villages are due to the insufficient number of health care professionals and facilities in these settlements. Approximately 60% of residents in small-towns and rural areas did not use dental services when needed because of the long distances to providers.[20]

Reducing health inequalities is one of the priorities of the government as it struggles to find ways to overcome regional imbalances, improve access and quality, and assure the availability of health services in small settlements. However, due to frequent turnovers of leadership, there is a lack of continuous and consistent policy implementation. Hence, health inequalities between urban and rural populations as well as inequalities in access to the health system continue to grow.[20]

The key to meeting the oral health needs of the Bulgarian public lies in having a responsive, competent and elastic work force.[21] The demographic changes in Bulgaria make it imperative for dentistry to have the right number of providers in the right places to allow the Bulgarian public access to the dental services they need. The factors involved in determining what changes in the composition will be necessary, include not only the gross numbers of dentists and the anticipated size of the Bulgarian population, but also the number of part-time practitioners and assistants, the diversity and geographic distribution of the dental work force, and dentists' productivity.[21]

During the past 20 years, the makeup of the dental workforce in Bulgaria has changed significantly, in particular with the enormous increase in the number of female dentists.[22] This trend is a testimony of the nation's commitment to gender equality. However, it is imperative that efforts be made to increase the participation of minority groups in the dental profession to achieve balance with the public's present and future ethnic distribution also.[19-21] The need for equitable minority representation in the den-

tal work force is further reflected by the fact that the vast majority of participants queried in the study were, indeed, ethnic Bulgarians.

Roma in Bulgaria face significant discrimination in healthcare. A 2013 survey by the Bulgarian government indicated that 68.1% of Roma "remained outside the social security system".[25] Access to health services is also a problem for Roma in Bulgaria, as Roma living in rural areas have very limited access to regular health care where they live. The UN Refugee Agency reports that disease outbreaks are also more severe among Roma, with child mortality rates approximately three times higher than those of the general population.[25]

Given the healthcare inequities of underserved communities throughout Bulgaria, another reality exacerbating these imbalances is the fact that the population is simply not growing to keep up with the pace of dentist turnout. [23,24] Circumstances can change, but the dental profession must follow the national work force trends carefully and act accordingly in regions where the number of dentists is declining with provincial-specific needs and circumstances in mind.[21]

Dental output could be increased in these communities through more efficient use of allied dental personnel such as EFDAs, without necessarily requiring an increase in the aggregate number of dentists. This is a cost-effective means of generating additional dental services. This may be facilitated by expanding community service in the predoctoral curriculum of Bulgarian dental schools to include clinical rotations of EFDA-like assistants with expanded duties in the villages. Although most dental care would continue to be provided by general dentists, this might be a means to circulate more dental assistants with expanded duties and specialized training in more rural parts of the country.[21]

CONCLUSIONS

The results of this survey suggest that the dentist and dental assistant workforce in Bulgaria is predominantly female and primarily comprised of individuals who are of Bulgarian ethnicity. With almost half the entire surveyed dental healthcare work force working in the larger cities and only one respondent working in a village, the survey reflects the demographic disparity in the distribution of dental professionals throughout the country. The majority of dental professionals work at private solo practices, group practices and dental centers in the larger cities. Although the vast majority of the dental assistant workforce has achieved various degrees of medical or dental higher education, there is no program in Bulgaria to train and delegate dental assistants to perform expanded functions without personal supervision by the dentist. Despite this finding, more than half of dental professionals queried in this study believe that dental assistants play a vital role in the success of an efficient and well-running office. At a minimum, training Bulgarian dental assistants to perform expanded duties without "personal supervision" by the dentist may increase dentists' productivity, while potentially helping to bridge the healthcare gap in underserved Bulgarian communities and solve serious oral health inequities among the Bulgarian people.

Conflict of interest

The authors have no conflict of interest.

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(Supplemental Information)

SURVEY

The purpose of this study is to investigate your opinions about expanded duties of dental assistants in dental practice. Your voluntary self-filling of the questionnaire implies informed consent to participate in this survey. The survey is anonymous. No personal identifiers will be collected. Please mark down your answers to the questions or write your answer to the question where blank spaces are provided.

1. You are:
- Female
- Male
2. Your profession is:
- Dentist
- Dental Assistant
3. Your work experience as a healthcare provider is:
- Up to 5 years
- 6 to 15 years
- 16 to 30 years
- Over 30 years
4. Location of the practice you are working in is:
- In the capital city
- In a big city
- In a small town
- In a village
5. The type of practice you work in is:
- Individual practice
- Group practice
- Dental Center
6. Your education is:
- Dentistry/Dentist
- General medical
- Dental assistant
- Non-medical
7. Do you think a dental assistant with proper training should administer local anesthesia?
- Yes
- No

8. Do you think a dental assistant can place and carve an amalgam in a tooth prepared by a dentist?
- Yes
- No
9. Should a dental assistant be permitted to place and finish a composite restoration in a tooth cavity prepared by a dentist?
- Yes
- No
10. Do you think a dental assistant should be allowed to fabricate and seat a provisional acrylic crown on a crown preparation finished by a dentist?
- Yes
- No
11. Do you think a dental assistant should be allowed to take final impressions for a crown or removable partial denture without personal supervision by the dentist?
- Yes
- No
12. Do you think that a dental assistant could be delegated certain duties which are currently the duties of dentists and prohibited to dental assistants?
- Yes
- No
13. Have you heard or know about Expanded Function Dental Auxiliaries in the Dental Workforce?
- Yes
- No
14. Do you think that dental assistants with appropriate training are capable of doing certain procedures, which are normally restricted for the dentist without personal supervision by a dentist?
- Yes
- No
15. Do you think a dental assistant capable of performing expanded duties could improve efficiency of a dental practice?
- Yes
- No
16. Do you think that a dental assistant with appropriate training could perform expanded duties normally reserved for dentists and perform them as well as the dentist?
- Yes
- No
17. What additional training should a dental assistant require to do expanded duties?
- Certified training at an EFDA program offered at a dental school
- Uncertified training at a dentist office by the dentist
18. How could an Expanded Function Dental Auxiliary contribute to the effectiveness of the dentist's work? Please mark all that apply in your opinion.
- Relieves the dentist to engage in more productive work on multiple patients
- The treatment chair time is shortened
- The volume of the activity is increased
- The quality of the dentist's work is enhanced
- Patients feel more relaxed in the presence of a dental assistant
- Improves the organization of work at the dental office
19. In your opinion, would a patient be receptive to/trust a dental assistant placing an amalgam in a tooth prepared by a dentist without personal supervision by the dentist?
- Yes
- No
20. Would you like to see dental assistants trained with an enhanced skillset be permitted to perform expanded duties which otherwise are currently reserved for dentists?
- Yes
- No
21. If you are born in Bulgaria and practicing in Bulgaria, what is your ethnicity?
- I am an ethnic Bulgarian
- I am an ethnic Turk
- I am an ethnic Greek
- I am an ethnic Roma
- I am an ethnic Armenian
- I am an ethnic Russian
- I am an ethnic Ukrainian
- I am an ethnic Serbian
- I am an ethnic Cypriot
- I am an ethnic Serbian
- I am of another ethnicity (Please indicate ethnicity) _____
- I am not from Bulgaria

Folia Medica

Расширение функций ассистентов стоматолога в Болгарии и восприятие их роли в качестве рабочей силы в системе болгарского здравоохранения

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Резюме

Цель: Во время исследования был проведён опрос среди представительной выборки стоматологов и ассистентов стоматолога в Болгарии на предмет их понимания и восприятия роли помощников стоматолога с расширенными функциями (EFDA). В исследовании рассматривается вопрос о том, может ли расширение набора навыков ассистентов стоматолога для работы в специфических ситуациях без личного наблюдения со стороны стоматолога быть жизнеспособной стратегией для решения различных проблем в области дентальной медицины в стране.

Материалы и методы: Проведён анонимный опрос среди 103 практикующих стоматологов и 100 ассистентов стоматолога по всей стране. Анкета состояла из 20 вопросов, которые проверяли понимание респондентами обязанностей, выполняемых EFDA, и их потенциала для повышения производительности и эффективности рабочей силы в сфере дентальной медицины. В исследовании использовались социологические (опрос) и статистические (альтернативный анализ) методы.

Результаты: Большинство респондентов были женщинами. Большинство работало в крупных городах. Один работал в деревне. Большинство из них были этническими болгарами, и ни один из них не был цыганом, что отражает расовый дисбаланс в национальной рабочей силе. Две трети (67%) считают, что ассистенты стоматолога с соответствующей подготовкой способны выполнять расширенные стоматологические процедуры без личного наблюдения стоматолога. Большинство (83.7%) считают, что EFDA могут повысить эффективность стоматологической практики, а 58.1% указали, что при соответствующей подготовке они могут выполнять расширенные обязанности так же, как и стоматологи. Однако только одна треть считала, что EFDA могут увеличить результативность практики (38.9%); повысить качество работы стоматолога (37.4%); или уменьшить тревогу пациента (31.5%). Хотя большинство респондентов (78.3%) считают, что пациент не будет восприимчив к тому, чтобы EFDA устанавливала реставрацию без личного наблюдения со стороны стоматолога, две трети респондентов (66.5%) хотели бы, чтобы ассистенты стоматолога были обучены выполнять расширенные обязанности, которые в противном случае были бы зарезервированы для стоматологов. Большинство респондентов считали, что EFDA могут помочь создать хорошо функционирующую команду стоматологов.

Заключение: Большинство респондентов считают, что EFDA могут повысить эффективность практики, предполагая, что болгарские стоматологи положительно отреагируют на расширение набора навыков ассистентов с расширенными функциями. Исследование показывает, что они скептически относятся к „общему“ и „личному“ надзору. EFDA потенциально может обеспечить улучшенный доступ для недостаточно обслуживаемых сообществ, в то же время повышая уровень подготовки рабочей силы в области дентальной медицины для обслуживания населения.

Ключевые слова

ассистент стоматолога, стоматолог, помощник стоматолога с расширенными функциями, рабочая сила в системе здравоохранения, неравенство в сфере здравоохранения